



STRUCTURAL REFORMS IN GREECE, 2010-2018

Final Report

Centre of Planning and Economic Research (KEPE)
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Structural reforms in Greece, 2010-2018

Final Report

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ABSTRACT

Since 2010 Greece undertook a wide range of structural reforms to deal with its fiscal challenges, loss of competitiveness and weaknesses in productivity and efficiency. The present study aims to assess reforms pursued in the framework of the requirements of the first and second economic adjustment programmes, focusing on eight major reform categories and issues: the facilitation of new business entry, the liberalisation of professions/economic activities, energy market reforms and privatisations, privatisations in the transport sector, the utilisation of public real estate assets and product market liberalisation of upstream sectors. For each of these issues, the study provides a more or less self-contained analysis, based on detailed and, in many cases, non-publicly available data and information, and using both qualitative and quantitative methodologies adapted to the nature of the issues examined. The screening and assessment of the reforms indicated considerable progress in the direction of facilitation of new business entry and improvement of competition in the transport and energy sectors and professions/economic activities of the service sector. Progress has also been recorded with respect to privatisation programmes in transport, energy and the utilisation of real estate assets. Privatisation processes are still in progress, and initial indications of the impacts from recently completed privatisations are positive. Given that several of the reforms examined in the study have been completed recently or are still ongoing, the economic benefits of the reforms are expected to materialise progressively in the future, along with the improvement of economic conditions in the country, the development of new business activities and the generation of new investments linked to the reforms.

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EXECUTIVE SUMMARY

Since 2010 Greece undertook a lengthy list of structural reforms to deal with its fiscal challenges, loss of competitiveness and weaknesses in productivity and efficiency. In this context, the present study evaluates the implementation of structural reforms agreed in the first and second adjustment programmes and aimed at the enhancement of competition in markets, the improvement of the business environment and privatisations. The study focuses on eight major reform categories and issues affecting key sectors of economic activity in Greece or inducing significant changes in the business environment and the operation of markets.

The methodology adopted includes the screening of the relevant reforms, the analysis of their implementation and economic impact and the evaluation of their progress with respect to original goals. The analysis is based on detailed and, in many cases, non-publicly available data and information from a wide range of official national sources, and employs both qualitative and quantitative methodologies. In each case, the methodologies used are adapted to the nature of the issues examined, and selected so as to overcome as far as possible the objective difficulties relating to the timing of the reforms, the effects of the crisis and data availability. In the case of very recent reforms or reforms that are still largely in progress, quantitative information is utilised to the extent possible, mainly for descriptive and qualitative analysis. Moreover, existing impact assessments or ex-post evaluations of the reforms are taken into account. Through this analysis, the study reaches conclusions and policy implications, including the identification of remaining reform needs.

For each of the individual reform categories examined, the study provides a more or less self-contained analysis.

Chapter two discusses the pre-programme period, describing the debate in domestic political circles, as well as among stakeholders, about economic reforms during the 2000s. The focus of the discussion is placed on reforms related to the functioning of product and services markets, state-owned enterprises and the general business environment. The assessment of this debate showed that the slow implementation of market-supporting reforms was related to the prevailing political culture, the reluctance of the political establishment to deal with the resistance of employers' associations, labour unions and lobbies, along with the poor collective understanding about cause-and-effect relationships between institutions and growth.

Chapter three presents and analyses the main reforms targeted at the facilitation of new business entry, addressing the crucial need to reform processes, requirements and costs for setting up new businesses. The analysis identified several key measures: the simplification of the procedures for establishing new businesses (one-stop-shops) with related or consecutive measures such as the General Commercial Registry (GEMI), which reduced bureaucratic procedures for establishing new businesses, improved the mechanism for monitoring of commercial enterprises and promoted transparency; the introduction of the Private Company (PC), which offered an attractive alternative business form for entrepreneurs; the reduction of costs/capital

requirements for establishing new businesses; and the simplification of licensing procedures for new start-ups through electronic start-up notification. Overall, the qualitative analysis of the reforms indicated great progress in the easing of procedures and requirements for starting new businesses, and identified areas for further policy action for (i) the codification of legislative acts and the creation of a simple up-to-date guide for businesses, (ii) the improvement of the operation and interoperability of GEMI, (iii) the further reduction in costs and procedures, (iv) the improvement in other related requirements for starting new businesses and (v) the improvement of the system of monitoring and sanctions. The empirical results suggest that in selected sectors of the economy the implementation of one-stop-shops brought about changes in the observed rates of business entry for legal entities affected by the reform. With regard to the reduction of minimum capital requirements for capital companies, a positive impact on business entries was found. Regarding the effect on new business entries from changes in the taxation of businesses according to their bookkeeping system, the results indicate that -on average- more businesses using double-entry bookkeeping enter the market than those using single-entry bookkeeping.

Chapter four evaluates the effects of legislative changes for the liberalisation of professions/economic activities, focusing on their impact on competition, prices and employment. The liberalisation of professions/economic activities was aimed at enhancing competition in the service sector in Greece, increasing employment and reducing prices/fees. This reform covered a large number of activities which prior to the reforms were highly regulated. The largest part of the liberalisation process has been completed, bringing about the abolition or drastic reduction of restrictions in a wide range of professions/economic activities. The screening of the legislative framework for 260 professions and economic activities has shown that 41 of these professions can currently be classified as regulated, 70 as being subject to minor regulations and 149 as needing an announcement/licensing procedure either accompanied by specific qualifications or not. Remaining regulations have been maintained on the grounds of public interest, public safety and consumer protection, and concern mainly scientific professions with high educational qualifications, a high degree of specialisation and a sensitive nature of services provided. The main regulations refer to "reference fees/prices" when a written agreement has not been signed, exclusive or shared rights, and the requirement for a director or qualified manager of the business authorised to practice the profession, when the owner of the business is not licensed to practice the profession. The calculation of regulation indices for a sample of professions/economic activities based on the methodology of the European Commission, suggested that the degree of regulation decreased for nearly all cases under consideration after the implementation of the reforms. The results from the empirical analysis of the impact of the reform on prices, indicated an impact on the consumer price index of the professions affected by the reforms. On the impact on employment of selected professions, the analysis identified a positive impact in the cases of engineers and street salespersons and a negative impact in the cases of architects and agents.

Furthermore, Chapter four attempts an assessment of the reform of the professional qualifications recognition system in Greece. The limited data available suggest that the reform facilitated the movement of professionals who acquired their qualifications abroad. Most of the applicants are Greek citizens and since economic conditions in Greece at the moment are unfavourable, no great inflows of professionals from EU+ member states are expected.

Chapter five reports the current status of the energy sector in Greece, and discusses the reforms implemented until today. Moreover, it assesses the initial results of these reforms for the market, identifies the remaining limitations and dysfunctions of the market, as well as key reforms needed in the future. Additionally, this chapter discusses recent developments in the privatisation processes of energy corporations and energy infrastructures. The analysis showed that a number of important reforms were implemented, whereas many others are still in progress or in an early stage. An important step for the liberalisation of the Greek electricity market was the unbundling of the operator of the market, the power transmission operator and the distribution system operator in 2011. Additionally, in 2016, the Forward Electricity Products Auctions System was established as a temporary mechanism, in order to promote competition and decrease the relative market shares of the Public Power Corporation (PPC). The analysis showed that these reforms had a positive effect on the market, reducing PPC's share in the retail market and increasing competition. Another important step was the reform of the Renewable Energy Sources (RES) support mechanism from a Feed-In Tariff support scheme to a Sliding Feed-In Premium mechanism with Competitive Procedures. The mechanism resulted in reduced RES prices, while changes in the relevant legislation are expected to further enhance competition. The energy market gradually moves to more competitive conditions and a large part of statutory changes is expected to be completed in 2019. An important target is the launch of the EU Target Model in the Greek electricity market. Regarding privatisations of energy corporations and energy infrastructures, it seems that after a long delay, most of the procedures have begun.

Chapter six presents and analyses the main reforms in the transport sector (rail, port and airport markets, road freight, combined transport and logistics), the impact they had on the landscape of the Greek transport industry, and the extent to which they had an impact on liberalisation and the enhancement of competition. Furthermore, the chapter provides a description and assessment of privatisation programmes in the transport sector. The analysis showed that reforms occasionally enhanced market liberalisation and competition and prepared the space for current and future privatisations. The effects of reforms can be considered as limited, as some of them were not completed in time or are still ongoing and because of the lack of adequate investment to ensure connectivity and interoperability of transport services. Strategic complementarities should be achieved within the transport sector and across transport, energy and ICT network industries, at major trade hubs/clusters, beyond the narrow scope of individual industries and firms' business plans. After the privatisations, airport, port and rail industries have shown some improvements on economic and operational performance terms, although their market share has not yet

changed substantially, as the full potential of privatisations can only be realised several years later. The privatised port of Piraeus, which is transformed into the largest cargo hub in the Mediterranean Sea, and the 14 regional airports, have experienced the largest benefits, as they refer to international markets and are managed by large strategic investors/operators. The consolidation and expansion of railway and combined (sea-rail) transport services, in conjunction with the development and modernisation of the relevant infrastructure, including logistics parks, create new opportunities for TRAINOSE and other market players.

Chapter seven provides a review and evaluation of the real estate asset privatisation program of the Hellenic Republic Asset Development Fund (HRADF), presenting the regional distribution of privatised assets and placing emphasis on the progress of the larger privatisation projects (e.g. Hellinikon, Astir Vouliagmenis and IBC-Golden Hall). The analysis assesses the programme in terms of proceeds received and procedures followed, and provide indications of the economic benefits of privatisations for particular sectors or regions and for the economy as a whole. The analysis showed that HRADF's privatisation programme comprises land plots for the development of mixed-uses, tourism, recreation and residential uses, hotels, thermal springs, Olympic Games facilities, smaller properties for urban, residential, tourism and commercial uses, the assets of Sale & Leaseback programmes A, B and real estate properties abroad. The regional distribution of the assets indicates a high degree of concentration in specific geographical areas, i.e., in Attica, Central Macedonia, Peloponnese and the islands of Corfu, Rhodes and Crete. For several properties, privatisation procedures are either pending or in progress, while for the larger assets for which tender procedures have been concluded, property development has either not started or has not been completed. Hence, thus far, the only obvious effects from the privatisation programme concern the proceeds received, amounting to €596.9 million. Nevertheless, development plans, particularly for the larger assets, can be expected to have significant positive economic effects, particularly for the tourism sector, the enhancement of fixed capital investment, the maintenance or rescue of historical buildings or facilities that remain unused and are gradually deteriorating, and the fiscal revenues from the taxation of the economic activity and wealth to be generated.

Chapter eight examines whether the level of upstream regulation in the network industries of transport, energy and telecommunications affects total factor productivity (TFP) growth of Greek industries. For the analysis a TFP growth model on 30 two-digit industries of the Greek economy for the period 1996-2015 was estimated to explore the extent to which regulation in network industries has affected productivity growth in Greek industries. Fixed effects and GMM econometric results suggest that upstream regulation in the sectors of energy, transport and communication has not affected productivity of Greek industries in a significant way. However, it exerts an indirect negative effect on TFP growth which is more acute in laggard industries. The estimates indicate that industries lagging behind the technology frontier experience higher TFP growth rates.

1. INTRODUCTION

1.1 ***Background***

The microeconomic impact of structural reforms is an important factor for long-term growth and employment. The timing, quality and effective implementation of reforms can create conditions for the improvement of productivity and competitiveness in the economy. More particularly structural reforms aimed at improving the business environment and promoting competition in the markets for goods and services can facilitate entrepreneurship and provide incentives favouring innovative activities and an optimal allocation of resources.

In 2010, Greece requested financial assistance from its partners, as it could not meet its fiscal obligations through new external borrowing. Apart from the grave fiscal problems encountered by the country, impediments to competition and weaknesses in productivity and efficiency lied at the root of the country's fiscal crisis and required pressing action. In this context, Greece undertook a lengthy list of structural reforms to deal with its fiscal challenges and loss of competitiveness.

The first of the three economic adjustment programmes (2010-2012) identified a number of structural reforms as necessary for restoring economic growth, increasing competitiveness, balancing public finances, and ultimately enabling Greece to return to international capital markets. The second economic adjustment programme (2012-2015) took stock of progress made on the structural reforms of the first program and added some more that were either not included in the first program or were not fully implemented. The reforms adopted in the context of these programmes placed great emphasis on addressing problems related to public finances and the labour market. In parallel, reforms to improve the business environment and reduce regulatory costs and complexity were launched progressively during the period 2010-2018, and although an extraordinary range of reforms has already been implemented, the reform process is in certain areas still underway.

1.2 ***Objectives and scope***

In the above context the current study aims at identifying pressing reform needs in Greece, through an analysis of structural reforms agreed in the first and second adjustment programmes, including the background of the reforms, their intended impact, actual impact to date, and scope for further reform. The study focuses on a range of reforms aimed at the enhancement of competition in markets, the improvement of the business environment and privatisations. Other major reform areas, such as the labour market reform, the public administration reform, the fiscal reform, the educational reform and the judicial reform fall outside the scope of this study.

Given the large scale and complexity of reforms relating to competition, the business environment and privatisations in Greece, the study focuses on the following key reform categories and issues:

- a) Business entry reforms
- b) The liberalisation of professions/economic activities
- c) Energy market reforms and privatisations
- d) Privatisations in the transport sector
- e) Utilisation of public real estate assets
- f) Product market liberalisation of upstream sectors

The above scope covers a wide range of structural reforms affecting key sectors of economic activity in Greece or inducing significant changes in the business environment and the operation of markets. Reforms on business entry are a fundamental component of policies towards the improvement of the business environment, tackling the key need for an overhaul in the processes, requirements and costs for setting up new business. The liberalisation of professions/economic activities is a flagship reform aiming at enhancing competition in the service sector in Greece, and covers a large number of activities which prior to the reforms were highly regulated. Reforms with respect to the energy and transport sectors and policies for the utilisation of public real estate assets refer to key sectors of economic activity and cover most of the privatisation procedures falling under the responsibility of the Hellenic Republic Asset Development Fund (HRADF)¹.

1.3 *Methodology and data sources*

The study provides a screening of the relevant reforms agreed and implemented in the context of the first and second adjustment programmes, analyses their implementation and economic impact during the period 2010-2018 and evaluates their progress with respect to original goals. For each of the individual reform categories falling in its scope, the study provides a more or less self-contained analysis. The screening of relevant legislative acts and their implementation includes the identification of consecutive reforms not foreseen in the first two economic adjustment programmes. The economic analysis of reforms is based on detailed and in many cases non-publicly available data and information from a wide range of official national sources, and employs both qualitative and quantitative methodologies. In the case of very recent reforms or reforms that are still largely in progress, quantitative information is utilised to the extent possible, mainly for descriptive and qualitative analysis. Moreover, existing impact assessments or ex-post evaluations of the reforms are taken into account. Through this analysis, the study reaches conclusions and policy implications, including the identification of remaining reform needs.

¹ The Hellenic Republic Asset Development Fund (HRADF) was established in 2011 and according to L. 3986/2011, to promote the implementation of privatisations in Greece. The HRADF was set to be responsible for the execution of the country's privatisation and development plan, as defined in the Medium-Term Programmes. In 2016, L. 4389/2016 established the Hellenic Corporation of Assets and Participations SA (HCAP). The ownership of assets of HRADF was set to be transferred to the HCAP, with some exceptions.

In each case, the methodologies employed are adapted to the nature of the issues examined, and selected so as to overcome as far as possible the objective difficulties relating to the timing of the reforms, the effects of the crisis and the availability of data.

With respect to the timing of reforms, many of the reform processes under examination are still ongoing. In some cases (e.g. privatisations) some of the major reforms are still anticipated, while in certain other cases reforms have only been recently implemented. In the former cases, our study provides a description of the foreseen reforms. In the latter cases (e.g. energy, transport), provisional evaluations of effects are presented where possible, with any quantitative information being utilised mainly for descriptive and qualitative analysis, as the post-implementation period is too short to allow for systematic quantitative assessments.

With respect to the effects of the economic crisis, the recessionary conditions prevailing during much of the period after the implementation of several of the reforms had profound effects on business entry and exit, employment, prices and other important aspects of economic activity in Greece. As a result, the effects of structural reforms on the relevant economic figures may often be obstructed or masked by the crisis, a fact which is taken into account in our analysis and the evaluation and interpretation of its results. Where feasible on the basis of data availability and timing of the reforms, the application of a suitable quantitative methodology, i.e. the Difference-in-Differences method described further below, is employed in order isolate to the extent possible the effects of the reforms from those of the crisis or other factors.

With respect to data availability, official publicly available data for our purposes are limited and not sufficiently disaggregated. Therefore, our analysis is based to a considerable extent on detailed non-publicly available data and information from a wide range of official national sources. Indicatively, our analysis employs data and information from the following sources:

- Hellenic Statistical Authority (ELSTAT): National Accounts, Labour Force Statistics (detailed non-publicly available data), Consumer Price Index (detailed non-publicly available data), port traffic data.
- Independent Authority for Public Revenue (IAPR or AADE in Greek): Data on new entries, exits and the total stock of all firms in Greece, as declared to the local tax offices (firm level confidential data).
- Ministry of Finance: Professions Monitoring Indicators Database, State Budget.
- Greek Ministry of Education, Research and Religious Affairs-Council for the Recognition of Professional Qualifications (SAEP): Data on applications for recognition of professional qualifications (publicly and non-publicly available data).
- Hellenic National Academic Recognition and Information Centre (NARIC or DOATAP in Greek) (publicly and non-publicly available data).
- Independent Power Transmission Operator (ADMIE).

- Hellenic Operator of Electricity Market (LAGIE).
- Hellenic Energy Exchange (HEnEx): Electricity market reports.
- Public Power Corporation (PPC).
- Regulatory Authority for Energy (RAE).
- Hellenic Republic Asset Development Fund (HRADF): Asset Development Plans, Reports, Financial Statements, Press releases.
- Civil Aviation Authority: Data for airport traffic.
- Hellenic Ports Association and individual port authorities.
- Firm level data: Financial statements and reports.
- Hellenic Federation of Enterprises (SEV): Business Pulse annual survey.
- Notify Business: Data on electronic start-up notifications.
- Eurostat: Transport Statistics, Energy Statistics.
- European Commission: Regulated Professions Database.
- OECD: Product Market Regulation Database.
- World Economic Forum: Global Competitiveness Reports.
- The World Bank: Doing Business Reports.
- Information collected through interviews with stakeholders from Greece's main productive sectors (for new business entry reforms).

Analytical quantitative methodologies are used in our analysis, to examine the following issues:

- (a) The impact of reforms facilitating business entry on the evolution of start-ups of new businesses.
- (b) The impact of liberalisation of professions/economic activities on employment and prices.
- (c) The impact of product market liberalisation of upstream sectors (transport, energy and communications).

For the analysis of issues (a) and (b), a standard approach namely the Difference-in Difference (DID) method is used (Ashenfelter and Card, 1985; Imbens & Wooldridge, 2009; Australian Government, 2011; European Commission, 2013; OECD, 2014; Khandker et al., 2010; Gertler et al., 2016).

The DID method aims to assess the impact of policy reforms before and after their implementation for groups of individuals or enterprises affected by the reforms. Thus, impacts are expressed in the form of differences in means or proportions between the observed mean outcomes for those entities that benefited from it (the "treatment group") to a group similar to the treatment groups (the "control group") except that the control group has not been exposed to the intervention before and after the implementation of the reforms. The DID methodology controls also for any differences between the "treatment" and "control" groups that are constant over time. Thus, the trend for an individual or enterprise is the difference in outcome for that individual or enterprise before and after the reform. By subtracting the outcome of the before situation from the after situation, the effect of all characteristics that are unique to that individual or enterprise and that do not change over time are cancelled out.

For the analysis of issue (c) above, we employ a total factor productivity growth model to examine whether the level of upstream regulation in the network industries of transport, energy and telecommunications affects total factor productivity (TFP) growth of Greek industries.

The methodological approach described above draws from the experience obtained from a series of studies conducted in recent years for the assessment of structural reforms in Greece (e.g. Athanassiou, E. et. al., 2013, 2015, 2016; Athanassiou, L. et. al., 2001; Karagiannis et. al., 2017; Kotsi et. al, 2005, 2012, 2015, 2016).

1.4 Structure of the study

As mentioned above, for each of the individual reform categories falling within its scope, the study provides a more or less self-contained analysis.

Chapter 2 discusses the pre-programme period, describing the debate in domestic political circles, as well as among stakeholders, about economic reforms during the 2000s. The focus of the discussion is placed on reforms related to the functioning of product and services markets, state owned enterprises and the general business environment.

Chapter 3 presents and analyses the main reforms targeted at the facilitation of new business entry, providing an assessment of the simplification of procedures for establishing new businesses and the implementation of the General Commercial Registry (GEMI), the introduction of the Private Company (PC), the reduction of costs/capital requirements for establishing new businesses and the simplification of licensing procedures for new start-ups through electronic start-up notification.

Chapter 4 evaluates the effects of legislative changes for the liberalisation of professions/economic activities, focusing on their impact on competition, prices and employment. Furthermore, the Chapter attempts an assessment of the reform of the professional qualifications recognition system in Greece.

Chapter 5 reports the current status of the energy sector in Greece, and discusses the reforms implemented until today. Moreover, it assesses the initial results of these reforms for the market, identifies the remaining limitations and dysfunctions of the market and highlights the key reforms needed in the future. Additionally, this chapter presents and critically discusses the recent developments in the privatisation processes of energy corporations and energy infrastructures.

Chapter 6 presents and analyses the main legislative reforms in the transport sector (rail, port and airport markets, road freight, combined transport and logistics), the impact they had on the landscape of the Greek transport industry, and the possible extent to which they had an impact on liberalisation and the enhancement of competition. Furthermore, the chapter provides a description and assessment of privatisation programmes in the transport sector.

Chapter 7 provides a review and evaluation of the real estate asset privatisation program of the HRAFD, presenting the regional distribution of privatised assets and placing emphasis on the progress of the larger privatisation projects. The analysis assesses the programme in terms of proceeds received and procedures followed, and provides indications of the economic benefits of privatisations for particular sectors or regions and for the economy as a whole.

Chapter 8 examines whether the level of upstream regulation in the network industries of transport, energy and communications affects total factor productivity (TFP) growth of Greek industries. The analysis covers the period between 1996 and 2015 for which product market regulation data are currently available.

Finally, *Chapter 9* summarises the main conclusions of the analysis and its implications regarding the scope for further reform.

2. THE PRE-PROGRAMME PERIOD

2.1 *Introduction*

A deficient institutional environment on the part of EU Member-States lagging behind EU or Eurozone economic averages lowers their growth potential and undermines their prospects for real economic convergence. At the same time, highly dissimilar institutional arrangements across Member-States create frictions and transactions costs which impede the well-functioning of product and services markets at the European level, thereby blocking either explicitly or implicitly European economic integration. To enhance the Single Market, the European Commission's policy agenda has focused on efforts to harmonise the institutional environment across Member-States. In most cases these efforts take the form of structural reform recommendations directed to Member-States.

Interestingly, all Member-States adopted EU-driven reform recommendations a fact that suggests that all countries had scope for structural reforms. However, as Member-States differ regarding their convergence with EU institutional standards the list of reform recommendations faced by each country differs as well. In this respect, Greece belongs to the group of Member-States with the longest lists of reform recommendations issued by the European Commission (Brinke and Enderlein, 2017).

Suffering chronic institutional deficiencies Greece has been under pressure to narrow its institutional gap European Commission's standards since it joined the European Economic Community (the predecessor of EU) in 1981 (Sotiropoulos, 2012). However, these pressures became particularly strong only after the country proved to be unprepared to face the economic and financial crisis in 2010. As for the country's responses to the EU directions, one can easily distinguish between two periods: the period before and the period after 2010, or equivalently, the period that preceded and the period that followed the outbreak of the Greek debt crisis.

Despite a number of successful social, state and economic reforms (e.g. introduction and recognition of civil marriages, implementation through state legislation of gender equality in all spheres of public and social life, redistribution of political power from the central to local governments, privatisation of public enterprises, liberalisation of the financial system, etc.) the process of adopting and implementing market-supporting institutions during the period 1981-2010 was at best slow and gradual (Spanou, 2008; Kalyvas et al 2012; Sotiropoulos, 2012). From 2010 onwards, Greece's structural reform performance improved considerably. Indeed, soon after Greece's European partners responded to the calls of the Greek government for financial assistance, the country embarked on an unprecedented and massive implementation of structural reforms. This time, the creation of a friendlier business environment was among the top priorities of the Greek authorities.

From one point of view, the striking difference between the two periods should come as no surprise. The bailout packages were provided under the condition that Greece

would respect and follow closely European Commission's reform recommendations. In other words, Greece assumed the obligation to include the implementation of numerous structural reforms in its economic adjustment programme. Even so, however, one cannot avoid the question as to why Greece failed to reform institutionally its economy when Greek governments had more power and opportunities to act and take charge before others do.

Although Greece is indeed currently on a path of strong reform momentum, it is still unclear whether all the newly legislated reforms have been absorbed by society. Because it is one thing to legislate structural reforms, it is quite another to implement them successfully. In this respect, identifying the causes of the country's failure to develop an institutional framework comparable to EU standards during good times, and most importantly, through its own initiatives remains a topic of paramount importance for future reference. In a nutshell, knowledge about past mistakes, omissions and causes of inaction are very likely to have interesting implications regarding current and future policy in the domain of structural reforms.

Against that background, this section describes the debate over economic reforms during 2000s in domestic political circles as well as among stakeholders. The focus will be on reforms related to the functioning of product and services markets, the state-owned enterprises and the general business environment. The ultimate goal of the analysis will be to offer explanations as to why Greeks wasted the opportunity to proceed to economic structural reforms under their own initiative and converge institutionally to their European counterparts during good times.

2.2 *The Greek politico-economic environment during 2000s*

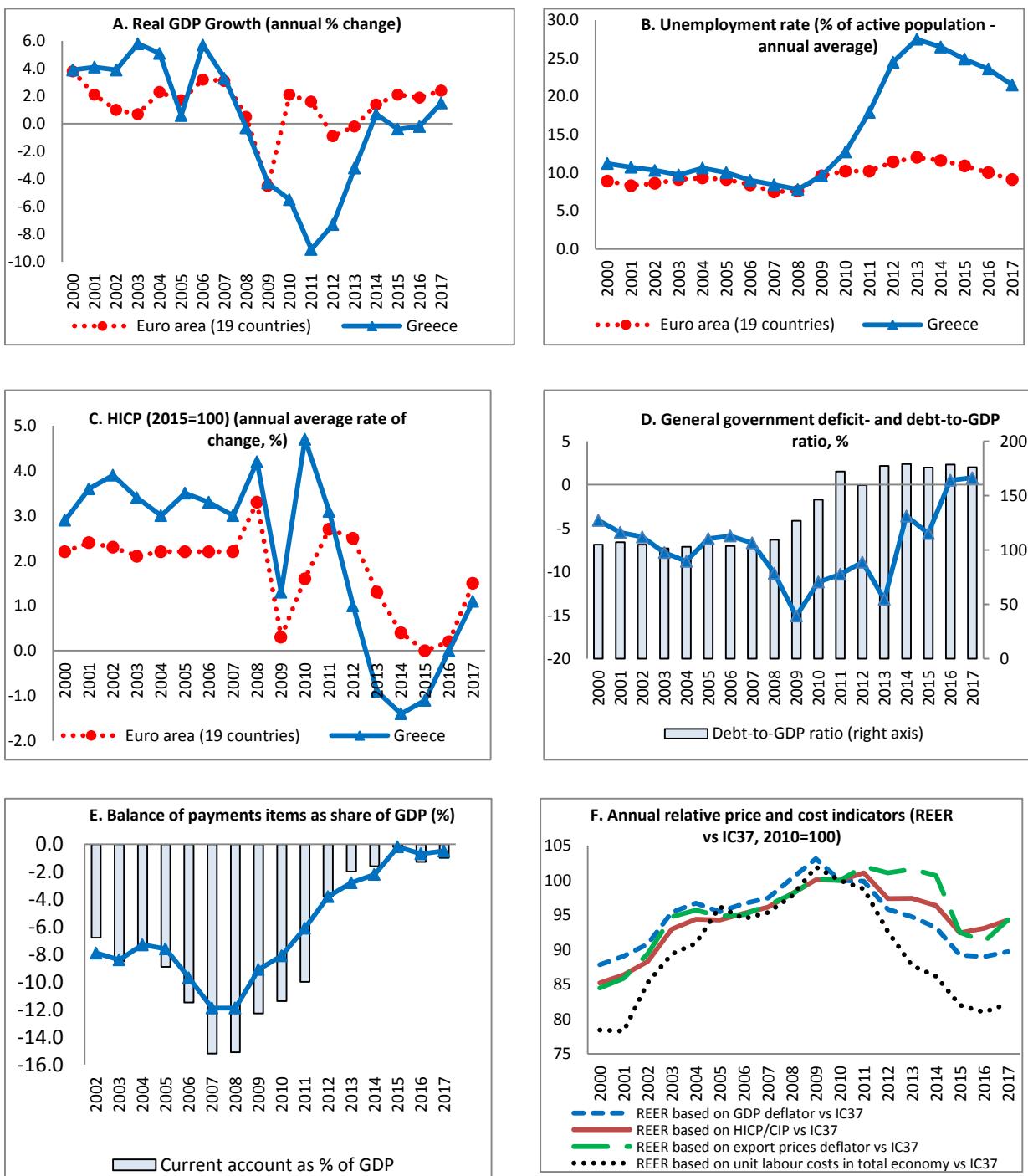
2.2.1 *High economic growth rates and rising incomes*

From the dawn of the new millennium until the outbreak of the Global Financial Crisis in 2008, Greece experienced a combination of remarkably high rates of economic growth, relatively stable prices and decreasing unemployment (see Figure 2.1 A-C). With the average annual rate of growth standing at 4.1% (i.e., 2.1 percentage points above the Euro Area average), the Greek economy was – along with Ireland and Luxemburg – one of the fastest growing economies in the Euro Area.

Initially, the economic expansion was fuelled by the fruits of certain economic reforms (e.g. the liberalisation of the financial system) and the prudent economic policy that had been adopted by the Greek government in order for the country to meet the Maastricht criteria. Once Greece became the twelfth member of EMU in 2001, the economy entered a new era of low risk premia and interest rates. In this environment, households were given the opportunity to maintain their high propensity to consume and satisfy their strong appetite for consumption-now-versus-tomorrow. Given the sharp reduction in the government's borrowing costs, public expenditures for consumption and investment were on the rise as well. As for the corporate sector, the conditions of ample liquidity that were prevailing in domestic financial markets and the continued credit expansion to firms, allowed many entrepreneurs to undertake more

investments and expand their businesses. Along with favourable international conditions and one-time events, such as the hosting of the Olympic Games in 2004, the above demand-side factors were the main drivers of the fast growth experience during 2000-2007.

Figure 2.1: Key macroeconomic developments



Sources: Eurostat, European Commission Directorate - General Economic and Financial Affairs

2.2.2 Positive economic sentiment

Despite the serious risks inherent in relying too heavily on domestic demand, and despite the fact that the economy was exhibiting symptoms of serious weaknesses (e.g. accumulation of internal and external imbalances, gradual erosion of the country's cost competitiveness) (see Figure 2.1 D-F), the prevailing economic climate was one of high confidence. From one point of view, Greek households were quite justified to be confident. In sharp contrast with the double-digit inflation rates, the weak drachma and its frequent devaluation episodes before the mid-1990s, Greeks were now holding and sharing the same strong currency with Germany and other advanced European economies. The period of income stagnation was succeeded by a period of rising incomes and gradual convergence to the European levels. Last but not least, massive bank lending gave the opportunity to a growing number of Greeks to become homeowners.

After a lengthy period of robust economic expansion and with the onset of the global crisis the growth rates of the Greek economy turned negative in 2008. Nonetheless, unlike other advanced economies, the landing of the Greek economy was soft reflecting the relatively low exposure of domestic banks to international toxic assets and the country's small dependence on exports. The fact that Greece weathered the first phase of the global crisis relatively well allowed Greeks to believe that their economy would escape the crisis with minor injuries. This expectation changed abruptly only after Greece's 2009 public finances proved to be significantly worse than previously thought.

2.2.3 Constitutionally strong governments and a pro-Europe public opinion

During the decade preceding the first economic adjustment programme (2000-09), the Greek political stage was dominated by two political parties enjoying high shares of the vote in all of the four general elections that were held. Thus, during this period, the country was governed by strong majoritarian single-party governments of either the centre-right or the centre-left. Despite their different ideological origins, the rotation of the two parties in power produced no major changes in the country's policy priorities and objectives. Being aware of the country's weaknesses, the governments of this period promoted the economic and administrative modernisation of Greece and its convergence to Europe. Despite this similarity in policy goals, the debate on specific structural reforms remained the arena of fierce competition and political confrontation between the two major political forces (Spanou, 2008) while other smaller Eurosceptic parties were also always present in this debate (Tsirbas and Sotiropoulos, 2016).

During the same time period, Greek public opinion was highly supportive of further European integration (Featherstone and Papadimitriou, 2008). It seems that as Greek citizens had grown tired of the country's institutional inefficiencies, the general prospect of the country's institutional convergence towards European standards was attractive to most people.

2.3 *Institutional deficiencies and inertia*

During the negotiations regarding the inclusion of Greece in the European Monetary Union, the negotiators from each side were well aware of the country's institutional deficiencies. The Greek economy was characterised by (a) a disproportionately large and inefficient public sector that was encouraging rent-seeking activity on the part of the corporate sector, (b) a large underground economy, (c) widespread tax evasion, (d) rigid labour, product and services markets, (e) a fragile and costly health care and pension system, and (f) an unbalanced industrial structure. Nevertheless, it was expected that by implementing a comprehensive structural reform programme, Greece would manage to close its institutional gap with Europe. It was also believed that Greece's closer financial and economic integration with Europe would provide, either directly or indirectly, additional support to the Greek effort.

About ten years later, in the attached document to the Memorandum of Understanding signed between the Greek government and the "Troika", it was explicitly admitted by all parties of the agreement that Greece suffered the same institutional deficiencies as in the year 2000. In other words, the country had failed to address and cure its institutional pathologies.

The combination of high economic growth rates, rising incomes and positive economic sentiment along with constitutionally strong pro-European governments, as well as a public opinion supporting further European integration was an ideal concurrence of political and economic circumstances for Greece to enact and implement the required reforms. Paradoxically, Greece did not take advantage of this exceptionally positive conjuncture.

2.4 *Explaining the Greek paradox*

In a volume of articles devoted to Greece's structural reforms during the period 1974-2010, foreign and Greek scholars originating from the disciplines of economics and political science try to understand the Greek paradox (Kalyvas et al, 2012). Though the authors adopt a variety of theoretical and empirical approaches to conceptualise structural reforms in Greece, their analysis gives rise to a list of explanations that complement each other. At the top of this list lies the fragmentation of society into social groups with vested interests in the economic status quo (Sotiropoulos, 2012; Spanou, 2012; Matsaganis, 2012). Hostile social response to reforms (Christodoulakis, 2012), low reform capacity on the part of Greek governments (Monastiriotis and Antoniades, 2012), and absence of a strong domestic constituency supporting pro-market reforms (Featherstone and Papadimitriou, 2012) complete the list.

The aforementioned explanations are quite plausible, well-documented and give an accurate picture of the impediments to structural reforms in Greece. These considerations, however, should not be taken to imply inaction on the part of Greek governments during 2000s. In fact, Greece did enact and implement a large number of laws related to structural reforms between 2000 and 2010. In our view, if Greece performed poorly in the domain of structural reforms this (partly) reflects the

"incomplete character" of the adopted reforms as well as the narrow range of pro-market reforms undertaken (i.e., reforms that increase the degree to competition in product and services markets). In what follows, we make an effort to clarify our arguments.

As far as the volume of legislative activity is concerned an analysis of the OECD Economic Surveys of Greece confirms that Greek governments did indeed make efforts to improve the country's institutional framework. As is well known to scholars of the Greek economy, these Surveys devote a whole chapter to the country's reform activity which is summarised in a single table. The second column of these tables clearly indicates the large number of actions taken by Greek governments during 2000s².

Needless to say, legislation in the form of unsystematic partial measures taken over a period of time cannot lead to structural reform. The enactment of legislation in a piecemeal manner gives rise to what Ostrom (2005) calls "rules-in-form" (i.e., dead letters) rather than "rules-in-use" (i.e., rules which are actually followed and have an effect on society). This brings us to the issue of "incompleteness" which in this case has a twofold notion: either the enacted laws were too narrowly defined thereby failing to serve the general purpose of the reform or the laws were referred to marginal parametric changes that were meaningless in the Greek institutional context.

For example, in order to foster liberalisation in areas dominated by the public sector and boost competition in the corresponding markets, it was recommended that Greece abolish the upper limits on private ownership for all public enterprises (OECD, 2005). Though Greece responded positively to this recommendation, the actual procedure followed was gradual as the enacted laws referred to a limited number of selected public enterprises.

Another interesting example is related to the promotion of technology and innovation. To improve support to R&D in the business sector, one law enacted in 2002 and two more enacted in 2004 provided favourable tax incentives for R&D (OECD, 2005). Although, the spirit of these three laws was in the right direction; in practice none of them produced fruitful results. This was to be expected, as tax incentives for R&D are meaningful only as part of a set of measures taken to improve the overall effectiveness of country's national system of innovation.

Bearing in mind that the aforementioned cases are not exceptions to the general rule governing structural reform during 2000s, one naturally wonders: why is "incompleteness" a distinctive feature of structural reform implementation in Greece? Why has it been so difficult for Greek governments to design, enact and implement coherent sets of rules that would improve the country's institutional framework? To answer this question, it is necessary to analyse the multi-sided pressures exerted on the Greek reform process from domestic and external factors. On the one hand, domestic social groups (i.e., labour unions, employers' federations and lobbies) were

² See, for example, OECD (2002, Chapter IV, Box 11, pp. 142-145), OECD (2005, Chapter 3, Box 3.3, pp. 95-96), OECD (2007, Chapter 1, Annex 1.A1, pp. 38-40) and OECD (2009, Chapter 1, Annex 1.A1, pp. 52-56).

competing with each other either to promote beneficial institutional changes for themselves or to block undesirable ones. On the other hand, there was increasing pressure from the European institutions and bodies (i.e., European Commission) for greater reform efforts. In a sense, Greek governments were in the middle of a difficult political terrain where domestic and external forces were pulling in opposite directions. Rejecting the European Commission's directives outright in their entirety was out of the question. By the same token, due to a lack of consensus among domestic social groups, full compliance with the European standards was also not possible. With very few choices at their disposal, Greek political authorities were trying to buy time by implementing marginal and incomplete changes as discussed above. The purpose was to signal their commitment to structural reforms without causing unpleasant effects on domestic social groups.

Let us now draw attention to the second part of our initial proposition, which associates the country's poor reform performance with the limited energy devoted by Greek governments to enhance competition in product and services markets. As a starting point, it should be pointed out that Greece has been always ranked poorly by European comparisons of product and services markets (OECD, 2011). Indeed, many product and services markets in Greece, especially those of the non-tradable sector, were rigid and highly regulated, characterised by entry barriers and weak competition. As a consequence, incumbents enjoyed abnormal profits at the expense of households' welfare. Firms in the tradable sector, which use highly priced non-tradable services as inputs, suffered losses – in terms of cost competitiveness – as well. Nonetheless, reforms directed at restoring competition in domestic services markets were hardly on Greece's reform agenda during 2000s. This begs the question: What led to this choice?

The simplest explanation that comes to mind is that incumbents in the non-tradable sector were engaged in bargaining, lobbying and political actions in order to deter changes of the status quo. Thus, due to the way politics were shaped in Greece, incumbents were able to maintain their vested interests. While plausible, this explanation reflects only the first part of a two-part story.

The second part relates to the passive stance of those who have suffered losses (i.e., consumers, firms in the tradable sector and would-be entrants). Had these groups reacted strongly to the institutional inertia of the non-tradable sector, it would have been very difficult for Greek public authorities to show undue concern with some professional interests and make distinctions at the expense of the general interest. However, neither consumers nor would-be entrants emerged as demanders for institutional changes. With consumers' associations lacking the institutional status required to represent the interest of their members, consumers were virtually excluded from the public debate regarding structural reforms. At the same time, it was practically impossible for would-be entrants to coordinate their actions and form the minimum necessary coalition so as to effect institutional changes. As for firms producing tradable goods (i.e., manufacturing firms), their interests were focused on

tax and labour cost issues rather on reforms that enhance competition in the non-tradable sector.

2.5 *Concluding remarks*

Greece's EMU entry in 2001 provided the country with a window of opportunity to close the institutional gaps that separated it from its European trading partners. Reality, however, turned disappointing as the booming years between 2000 and 2008 witnessed no major structural and institutional changes. The prevailing political culture, the reluctance of the political establishment to deal with the resistance of employers' associations, labour unions and lobbies along with the poor collective understanding about cause-and-effect relationships between institutions and growth all acted against reforms thereby leading to institutional inertia.

In a nutshell, "...governments, once the key objective of euro membership was in the bag, assumed they could begin to enjoy the benefits of monetary union without facing the political costs of further structural reform" (Hopkin, 2015, pp.163).

3. BUSINESS ENTRY REFORMS

3.1 *Introduction*

Prior to 2010, the procedures for starting new businesses in Greece ranked very low by international standards, as they involved a series of outdated, complex and costly requirements. According to the World Bank's Doing Business 2010 report (DB2010), at the time the report was issued (2009) starting a typical limited liability SME in Greece involved 15 procedures, took 19 days, cost 10.9% of income per capita and required a minimum capital of 21.4% of income per capita. On this basis, according to DB2010 Greece ranked 140th out of 183 economies on the ease of Starting a Business.

The simplification of procedures for establishing new businesses has been generally regarded to promote new business entry and job creation while also generating additional government revenues. Such potential gains were undoubtedly of great importance for Greece right from the beginning of the fiscal adjustment programmes, as the new business creation necessary for the recovery of output and employment was severely challenged by the deep economic and fiscal crisis.

Given the above situation, Greece undertook from 2010 onwards a wide spectrum of measures affecting new business entry. More particularly, in the framework of the 1st and 2nd adjustment programmes' requirements for the improvement of the business environment, the main horizontal reforms targeted specifically to the facilitation of new business entry across Greece's business sector were:

- The simplification of the procedures for establishing new businesses
- The introduction of the Private Company, a new capital company form, and
- The reduction of costs/capital requirements for establishing a new business

The above three aspects of the reforms and related or consecutive measures, such as the implementation of the General Commercial Registry (GEMI), will represent the main focus of the analysis in this chapter. Furthermore, and for the purpose of extending the discussion to the facilitation of new business entry through the simplification of licensing procedures for new start-ups, the analysis will look into the recent reforms related to electronic start-up notification.

The methodology employed in the analysis combines the screening and qualitative assessment of the reforms with a quantitative analysis of the impact of selected reforms on new business entry using a Difference-in-Differences approach. The data and information employed in this analysis, originate from a variety of sources, including the relevant legal documents, competitiveness and business environment indicators, business opinion surveys, detailed non-publicly

available data on firm entries and exits, and information collected through interviews with private sector stakeholders. To take stock of the experience and needs of stakeholders from Greece's main productive sectors, interviews were conducted with representatives from the Hellenic Federation of Enterprises (SEV), the National Confederation of Hellenic Commerce (ESEE), the Greek Tourism Confederation (SETE) and the Commercial and Industrial Chamber of Athens (EBEA).

3.2 Screening and qualitative assessment of regulatory changes

The large range of issues addressed by new business entry reforms and more particularly the need for an overhaul of the processes, requirements and costs for establishing new businesses across different economic activities and legal forms, added considerably to the duration and the complexity of the reform process. The process was initiated in 2010 and is still ongoing, involving to this date a large succession of new, supplementary, or, in some cases, revised regulatory amendments. Given the complexity of the reforms and the lack of a systematic account of their progress to date, the analysis begins with a review and assessment of the regime in place prior to the reforms and the regulatory changes implemented during the period 2010-2018, on the basis of the relevant legal documents.

3.2.1 Procedures and costs for establishing a new business in Greece prior to the reforms

Before the reforms, setting up a new business in Greece required a lengthy process of interaction of the founders with various public authorities involved. Table 3.1 lists the key procedures required to set up a new firm in Greece in year 2009, distinguishing among the five most popular forms of business available at the time and described in Box 3.1.

As evident from Table 3.1, establishing a capital company involved the highest degree of complexity, with 14 procedures identified in the case of the SA and 13 procedures required in the case of the LLC. Numerous steps were also needed for setting up a partnership, with 11 procedures identified for the case of a LP and or a GP with non-zero initial capital. Sole proprietorships, on the other hand, featured a comparatively simpler start-up process involving 6 steps, a characteristic which added to their attractiveness to new small businesses.

Table 3.1: List of procedures required for establishing a new business in Greece prior to the reforms (2009), by main legal form

Procedure	SA	LLC	GP/LP	Sole proprietorships
Obtain preapproval of the company's name from the local Chamber of Commerce and Industry	X	X	X	X
Obtain an 'advance fee collection note' from the local Bar Association, for representation by a lawyer in the signing of the articles of association	X	X**		
Sign the articles of association before a notary public	X	X		
Deposit capital	X	X	X*	
Pay Hellenic Competition Commission charge to a bank	X			
Submit articles of association to the competent authority (the Prefecture or the General Secretariat for Commerce and Consumer Protection); obtain administrative approval in the case of companies with initial capital over €3 mil.; obtain announcement from the Prefecture that the company has been set up.	X			
Pay to the local tax authority the tax on the concentration of capital	X	X	X*	
Pay to the local tax authority the fee for publication of the summary of the articles of association in the Official Gazette		X		
Obtain a stamp from the Lawyers Pension Fund			X	
Obtain a stamp from the Athens Lawyers Welfare Fund***			X	
Submit the articles of association to the Court of First Instance for publication		X	X	
Submit summary of the articles of association to the Printing Office for publication in the Official Gazette	X	X		
Submit to the Prefecture or the General Secretariat for Commerce and Consumer Protection 1) proof of submission of the articles of association for publication in the Official Gazette and 2) announcement by the prefecture stamped by the tax authority	X			
Register owner/partners with the competent social security organisation	X	X	X	X
Submit necessary documents for starting activity to the local tax authority	X	X	X	X
Register at the local Chamber of Commerce and Industry	X	X	X	X
Make a seal	X	X	X	X
Have the tax authority hole-stamp the company's invoice and account books	X	X	X	X
Number of procedures	14	13	11*	6

*if start-up capital is not zero

** Mandatory for LLCs with initial capital of over €29,347 for Athens Bar Association jurisdictions and €11,748 for the rest of the country.

***Only for businesses established in the jurisdiction of the Athens Lawyers Welfare Fund.

Box 3.1: The five most popular forms of business in Greece prior to the reforms	
Legal Persons	<p><i>Capital Companies</i></p> <ul style="list-style-type: none"> • <i>Société Anonyme (SA)</i>- <i>Anonymos Eteria (AE)</i> in Greek <p>A legal entity similar to the French "Société Anonyme" or the German "AG". The owners of the company are known as shareholders and their liability is limited to the amount contributed to the share capital.</p> <ul style="list-style-type: none"> • <i>Limited Liability Company (LLC)</i> -<i>Eteria Periorismenis Efthynis (EPE)</i> in Greek <p>A legal entity similar to the French "Sarl" or the German "GmbH". The owners of the company are known as participants, unit holders or partners and are liable only to the extent of their contributed capital.</p>
	<p><i>Partnerships</i></p> <ul style="list-style-type: none"> • <i>General Partnership (GP)</i> - <i>Omorythmos Eteria (OE)</i> in Greek <p>A legal entity in which all the partners are jointly and severally liable for the debts of the partnership without limitation in liability.</p> <ul style="list-style-type: none"> • <i>Limited Partnership (LP)</i> - <i>Eterorythmos Eteria (EE)</i> in Greek <p>A legal entity similar in all respects to the General Partnership, except that the liability of the limited partner is limited to his contributed capital. At least one partner must have unlimited liability. If a limited liability partner is engaged in the management of the partnership, he loses his limited liability status.</p>
Natural Persons	<ul style="list-style-type: none"> • <i>Sole proprietorship – Atomiki Epichirisi</i> in Greek <p>An individual (natural person) who carries out business operations as a sole trader or freelance professional and is fully liable for the operation's obligations and debts.</p>

The tasks described in Table 3.1 imposed significant costs for new businesses both in terms of time and in terms of financial resources. On one hand, the complexity of the process as a whole raised for many new businesses the need to pay for the assistance of specialists, such as lawyers, business advisors and accountants. Furthermore, many of the individual tasks listed in the Table were subject to the payment of specific fees or charges depending on the legal form and initial capital of the new business. More particularly:

- i. Preapproval of the company's name by the competent Chamber was subject to a fixed charge of about €35 for all legal forms.
- ii. Representation by a lawyer in the signing of the articles of association of a capital company was subject to an 'advance fee collection note', calculated as a regressive proportion of the company's initial capital (1% for the first €44,020 of initial capital, 0.5% for over €44,020 and up to €1.47 million of capital, etc., according to art. 161 of LD 3026/1954 as amended by art. 37 of L. 2915/2001). Indicatively, for a company with initial capital of €60,000 the advance fee collection note amounted to €520.10.
- iii. Signing of the articles of association before a notary public was subject to notary fees which included a fixed amount of €12, a proportional amount of 1.2% of the company's initial capital with a ceiling of €460 for the SAs, and an additional charge of €4 per page plus VAT. Indicatively for SAs notary fees were in the area of €600 including VAT.
- iv. The Hellenic Competition Commission charge amounted to 0.1% of initial capital for SAs only.

- v. The tax on the concentration of capital amounted to 1.0% of initial capital. Indicatively, for a company with initial capital of €60,000 the tax amounted to €600.
- vi. The fee for publication of the articles of association to the Official Gazette amounted to €544.67 for SAs and €271.80 for LLCs.
- vii. Obtaining a stamp from the Lawyers Pension Fund was subject to a charge of 0.5% of initial capital for LPs and GPs only.
- viii. Obtaining a stamp from the Athens Lawyers Welfare Fund was subject to a charge of 1% of initial capital, plus a stamp of 3.6% over this 1% for LPs and GPs established in the jurisdiction of the Athens jurisdiction only.
- ix. The charge for registration with the social security fund for the self-employed (OAEE) for each owner/partner/shareholder liable amounted to €111.10.
- x. Registration to the competent Chamber was subject to charges which differed across Chambers and legal forms. Indicatively, the total charge for registration and first year subscription could be in the area of €400 for SAs and €150 for LLCs.
- xi. Making a seal could cost about €40.

On the basis of the above, setting up a SA with initial capital equal to the minimum set by law at the time, i.e. €60,000, was subject to minimum total cost of about €2,900 for payment of the fees and charges listed above. More generally, since the higher the size of initial capital the higher the corresponding total fees and charges, it is evident that for larger new companies the relevant financial burden was at the time substantial. Furthermore, even for very small businesses the corresponding burden was in fact quite considerable, taking into account their relatively limited means.

At this point it should be emphasised that the supporting documents required in the framework of the processes listed in Table 3.1, often placed a need for prior completion of a number of other administrative procedures. Depending on the nature and scale of the activities of each particular new business, such procedures could range from quite simple tasks (e.g. obtaining proof of prior registration of owners to a social security organisation) to fairly or very complex licensing processes (e.g. acquiring and registering property, obtaining construction permits, obtaining installation and operation licenses, acquiring approval of establishment by the local authorities, etc.). In cases where more complex prerequisites applied, it seems that the duration, cost and uncertainties surrounding the outcome of the relevant procedures often imposed an additional serious obstacle to new business entry.

3.2.2 The simplification of the procedures for establishing new businesses

A breakthrough in the procedures for setting up companies and partnerships in Greece was initiated through L. 3853/2010, the main innovation of which was the introduction of one-stops-shops. One-stop-shops were set to be responsible for collecting all documents and fees required from the founders for the establishment of new entities, and completing, in principle within two days, all necessary administrative actions through interaction with the competent authorities. In terms of the legal forms of new business that could be set-up via one-stop shops, these included SAs, LLCs, GPs, LPs and later Private Companies (PCs), but not sole proprietorships. The range of new businesses covered by one-stop-shops was originally limited by some exceptions, the most notable one being that of sanitary interest activities.

The operation of one-stop-shops started in April 2011, in conjunction with the long awaited activation of the General Electronic Commercial Registry (GEMI), a single, modern registry of commercial businesses, which replaced existing registries kept at the prefectures and courts of first instance. GEMI was originally introduced by L. 3419/2005 with a plan to be put to operation by 2007, but its implementation was postponed several times up to 2010. The activation of GEMI was in itself an important reform for the facilitation of new business entry and a prerequisite for the operation of one-stop-shops. Furthermore, the implementation of GEMI, which as of the end of year 2012 also included the records of businesses set up prior to its activation, brought about major improvements to the mechanism of monitoring of commercial enterprises, reducing bureaucratic procedures and promoting transparency.

The legislative framework for GEMI and one-stop-shops was revised and supplemented on several occasions in the subsequent years, to further simplify and digitalise the relevant processes and to lift some of the original exceptions to the scope of one-stop-shops.

More particularly, regarding GEMI, Ministerial Decision K2-4946/2014 in conjunction with Ministerial Decision 79752/2015 introduced a 'Digital Submission Service' allowing for the electronic handling of several procedures involved in the operation of GEMI and its interaction with businesses. This major improvement to the system diminished paperwork and the need for personal interaction with GEMI services, both for the issuing of certificates and copies of deeds and data registered with GEMI, and for the submission of applications and supporting documents to GEMI and the payment of relevant fees and charges.

With regard to the operation of one-stop-shops, L. 4441/2016 updated the procedures for establishing new businesses and provided for a number of improvements to the system, including: (i) the introduction of the electronic one-

stop-shop, a digital service making it possible to set a business from a distance within a matter of a few minutes, (ii) the introduction of standardised articles of association applicable to GPs, LPs and PCs, but also to SAs and LLCs with some exceptions specified by Law and (iii) the lifting of the exclusion of sanitary interest activities from one-stop-shops, with a few exceptions. The use of standardised articles of association was prescribed as a prerequisite for establishing a business via the electronic one-stop-shop, but also as a means of helping founders to draw up easily the articles of association of their companies as private documents. Notably, for LLCs and SAs this was equivalent to abolishing the requirement for signing the articles of association before a notary public, except for cases where a notarial deed was deemed necessary by Law.

The improvements introduced by L. 4441/2016 have been enacted progressively since 2016, with the process regarding the implementation of the electronic one-stop-shop being currently in progress. More specifically, the content of the standardised articles of association for SAs, LLCs, PCs, GPs and LPs was defined in MD 31637/2017, while the gradual implementation of the electronic one-stop-shop was initiated in June 2018, following publication of Interministerial Decision 63577/2018 which provided an update of the procedures, requirements and technical details for the operation of one-stop-shops. As of 10/9/2018, electronic one-stop-shops are accessible to all forms of PCs (single and multi-member), while up to the end of 2019 their availability is planned to be extended to all legal forms.

Following the aforementioned reforms, and as presented in Table 3.2, establishing an SA, LLC, PC, GP or LP in Greece currently requires –with a few exceptions- three procedures, namely (i) submitting necessary documents and paying fees and charges to the one-stop-shop, (ii) registering partners/managers/directors/board members with the Single Social Security Entity (EFKA), as applicable on the basis of social security legislation, and (iii) making a company seal, a requirement which although abolished by L. 4156/2013 is still in effect as it is used in practice by banks. One-stop-shops are easily accessible to new businesses across the country, operating via a network which currently includes 59 local Chambers and more than 2,700 local notaries. Comparing this regime with the one described in Table 3.1., it is evident that the reforms have brought about a major simplification of the process for establishing new companies and partnerships. On the other hand, for sole proprietorships no substantial changes have taken place in the framework of the reforms, except for the obligation to register with GEMI in the case of exercising a commercial activity. Thus, starting-up a new sole proprietorship still involves 6 procedures, including the submission of necessary documents to the local tax authority.

Table 3.2: List of procedures required for establishing a new business in Greece after the reforms (2018), by main legal form

Procedure	SA	LLC	PC	GP/LP	Sole proprietorships
Start business at one-stop-shop/electronic one-stop-shop	X	X	X/X	X	
Obtain preapproval of the company's name from the local Chamber of Commerce and Industry (preregistration)					X
Preregister with the competent social security organisation					X
Submit necessary documents for starting activity to the local tax authority					X
Register at the local Chamber of Commerce and Industry-GEMI					X
Register with the single social security entity (EFKA)	X	X	X	X	X
Make a seal	X	X	X	X	X
Number of procedures	3	3	3	3	6

3.2.3 The introduction of the Private Company

To meet the need for simpler and lower-cost start-up and operation of SMEs in Greece, L. 4072/2012 established a new corporate form, the Private Company (PC) or Idiotiki Kefalaiochiki Etaireia (IKE) in Greek. The PC featured a number of important, and in some cases innovative characteristics, which were particularly attractive mainly to small and medium-sized businesses. Currently, and following various legislative changes and reforms related to businesses start-up requirements, the social security system and taxation, most of the initial advantages of the PC are still valid, preserving the popularity of the PC as a form for new businesses (see Section 3.3.1).

The most important characteristics defining the attractiveness of the PC compared to other legal forms of business in Greece are:

- 1) The disengagement of company participation/shares from the capital

In a PC, shares are defined not with capital as the sole denominator, but rather on the basis of a wider range of contributions which may include assets in *capital form* -monetary or in kind, as in other business forms- but also assets in *non-capital* or in *guarantee form*, such as the provision of services or the assumption of liability towards third parties on behalf of the company. This original feature of the PC, allows for a very flexible, personalised business structure, which can be shaped closer to a partnership or closer to an SA or an LLC according to the needs of the business and its members.

2) Limited liability

Similarly to the LLC and the SA, the PC alone is liable with its property regarding the company's obligations. The only exception is where a PC member participates in the company with guarantee contributions and thus undertakes a liability towards third parties for the debts of the company up to a specific amount defined in the articles of association.

3) Flexibility

Flexibility has been a key feature and advantage characterizing many of the aspects of the incorporation and operation of the PC, including the choice of company name, the number of partners (one or more), the option of capital or non-capital contributions (as mentioned above), and the procedures for decision making (e.g. the PC is managed by one or more managers, meetings of partners can be held through teleconference and abroad, decisions are reached by absolute majority of shares, any amendments and changes are made by a private agreement).

4) Ease of establishment

A PC may be incorporated by means of a private document, unless a notarial deed is specifically required by the Law or if the partners prefer so. Corporate documentation may be drafted in any official EU language. The PC acquires legal personality following the one-stop-shop or, more recently, the electronic one-stop-shop procedure for incorporation.

5) One (1) euro minimum capital requirement

At the time the PC was introduced, minimum capital requirements applied only to the other two capital company forms, and were quite substantial, amounting to €60,000 for the SA and €4,500 for the LLC. By the end of 2012, these requirements were reduced to €24,000 for the SA and €2,400 for the LLC, while in May 2013 they were abolished for the LLC. The €1 minimum capital has been considered as one of the most attractive features of the PC, although it actually represented an advantage only compared to the SA and, for a limited time period, to the LLC.

6) Lower social security contributions to EFKA

This has been a key advantage of the PC compared to other legal forms, particularly from 1.1.2017 onwards, when social security reforms have linked contributions to EFKA to the taxable income. In the case of the PC, the liability for social security contributions to EFKA falls only upon the person acting as manager, and members are not obliged to pay contributions on their dividends, with the exception of the single-member PC in which the manager is the

company's sole owner. In the case of the sole proprietorship and the GP, LP and LLC, the owners/partners are all obliged to pay contributions to EFKA, while in the case of the SA members of the board of directors possessing over 3% of company shares are also liable to EFKA contributions. The contributions of the manager in a multi-member PC are calculated as 26.95% of the fee he receives (which can be zero), with the minimum contribution defined at 26.95% of the minimum wage (i.e. € 167.95 up to the end of 2018). The contribution of owners/partners in the other legal forms mentioned, are calculated as a 26.95% share of the profits/dividends they receive. Indicatively, for a business with two partners making a profit of €50,000, annual contributions to EFKA could be as low as €2,015 in the case of a PC, but could sum up to €13.475 in the case of a sole proprietorship, GP, LP or LLC.

7) Tax treatment

Taxation is generally a complex issue touching upon various aspects of the activity and property of a business. Whether or not the tax treatment of the PC presents an advantage compared to alternative legal forms depends on the specifics of each business, particularly with respect to the size of its profits. Generally speaking, the PC has quite demanding accounting obligations, including a double-entry bookkeeping system, and the obligation to publish its financial statements. Furthermore, it is subject to a corporate income tax rate of 29%, plus an additional tax rate of 15% on distributed profits.

As evident from the information in Table 3.3 which presents the bookkeeping requirements and profit tax rates applicable to the main legal forms of business in Greece as of 2016 and up to the end of 2018, the tax treatment of the PCs is currently the same as that of the SAs, LLCs and GPs/LPs applying double-entry bookkeeping. Notably, in the period after the introduction of the PC, the taxation of business profits in Greece went through considerable changes, with an effect both on the incentives to start a new business and on the attractiveness of alternative businesses forms. Most notably:

- For profits obtained from 1/1/2013 a) the corporate income tax rate applying to businesses with double-entry bookkeeping increased from 20% to 26%, b) the corporate income tax rate for LPs and GPs with single-entry bookkeeping increased from 20% to 26% for profits up to € 50,000 and to 33% for profits over € 50,000, c) for sole proprietorships the €5,000 tax free amount was abolished and the progressive business income tax scale (ranging from 0% to 45%) was replaced by tax rates set to 26% for profits up to € 50,000 and 33% for profits over € 50,000, and d) the tax rate of 25% on dividends applicable up to then to capital companies was reduced to 10%, with this tax obligation being extended to include all businesses with double-entry bookkeeping (i.e. also LPs and GPs with double-entry books).

- For profits obtained from 1/1/2015 the corporate tax rate for businesses with double-entry bookkeeping increased from 26% to 29%.
- For profits obtained from 1/1/2016 a) the corporate income tax rate for GPs and LPs with single-entry bookkeeping systems was aligned to that of companies with single-entry books, i.e. it changed to 29%, and b) the business income tax scale for sole proprietorships was equalised to that applying to the incomes of natural persons, as presented in Table 3.3.
- For profits obtained from 1/1/2017 the tax rate on dividends applying to businesses with double-entry bookkeeping increased from 10% to 15%.

Table 3.3: Bookkeeping requirements and tax rates on corporate/business income and dividends applicable to the main legal forms of business in Greece (for profits obtained from 2016 to 2018)

Legal form of business	SA	LLC	PC	GP and LP	Sole proprietorship
Bookkeeping system					
Single-entry	-	-	-	Yes. Provided the turnover does not exceed €1.5 million.	Yes. Provided the turnover does not exceed €1.5 million
Double-entry	Yes-compulsory	Yes-compulsory	Yes-compulsory	Yes. If turnover exceeds €1.5 million or otherwise by choice.	Yes. If turnover exceeds €1.5 million for two consecutive years or otherwise by choice
Taxation of corporate/business income and dividends					
Corporate/business income tax rate	29%	29%	29%	29%	22% for €0-20,000 29% for €20,001-30,000
Tax rate on dividends	15%	15%	15%	No tax in case of single-entry books.	No tax
Tax rate on dividends	15%	15%	15%	No tax in case of single-entry books.	No tax

The tax reforms implemented as of 1/1/2013 were clearly in favour of the PC, as they reduced considerably the tax burden for capital companies while raising the tax burden for partnerships, as well as for sole proprietorships with low to moderate profits. The tax changes implemented as of 1/1/2016 had mixed results on the attractiveness of the PC, as they raised the tax burden for partnerships with single-entry books and profits below €87,500, while also changing considerably the tax burden for sole proprietorships, reducing it for businesses with profits below €34,550 and increasing it for businesses with profits above this level. The tax increases imposed as of 1/1/2015 and 1/1/2017 raised the tax burden for all capital companies, including the PC.

3.2.4 The reduction of costs/capital requirements for establishing new businesses

The reduction of costs for establishing new businesses was an important objective of reforms for the facilitation of new business entry. This objective was pursued progressively during the period 2010-2018, both through specific provisions for

the abolition or reduction of individual costs/fees required for establishing businesses, and through the overall simplification of the relevant processes, which saved time and lessened the need for acquiring assistance or services from specialists (e.g. lawyers, notaries, tax advisors).

In terms of the reduction of minimum capital requirements for establishing new capital companies, the introduction of the PC in itself was a major step in this direction, since the minimum capital requirement for this type of company was set at only one (1) euro. The reforms also had, as already mentioned, a major impact on the minimum capital applying to the other two capital company forms. More particularly in January 2013 L. 4111/2013 reduced the minimum capital requirements from €60,000 to €24,000 for the SA and from €4,500 to €2,400 for the LLC. Furthermore, in May 2013, L. 4156/2013 eliminated altogether the minimum capital requirement for the LLC.

In terms of the reduction of individual costs/fees for registering new businesses, major cost savings were associated with the introduction of the PC, while additional cost reductions were progressively implemented through the operation of GEMI and one-stop-shops, as well as through the abolition of a number of compulsory fees and charges. More particularly:

- i. The fixed charge for preapproval of the company's name by the competent Chamber was abolished by L. 3853/2010.
- ii. Representation by a lawyer in the signing of the articles of association of an LLC or an SA was made non-compulsory for companies with initial capital of up to €100,000 according to L. 3853/2010. Thus, for companies of this size, the requirement for payment of the relevant lawyers' fees - as described in see section 4.2.1 above - was abolished.
- iii. The reforms lifted the requirements for signing the articles of association of capital companies before a notary public, except for the cases where a notarial deed was deemed necessary by Law. Setting up a PC could be done by means of a private document right from the introduction of this new company form in 2012, while setting up an SA or an LLC by means of a private document was made possible in 2017, following the specification of standardised articles of association for all major business forms.
- iv. The obligation for payment of a 1.0% tax on the concentration of capital upon establishment of a company was abolished according to L. 4254/2014.
- v. The fee for publication of the articles of association to the Official Gazette was abolished by L. 3853/2010.
- vi. The Lawyers Pension Fund charge of 0.5% of initial capital for LPs and GPs was abolished by L. 4393/2016.
- vii. The Athens Lawyers Welfare Fund charge of 1% of initial capital for LPs and GPs in the Athens jurisdiction was abolished by L. 4393/2016.

viii. Compulsory registration and subscription to Chambers was abolished as of 1/1/2015. According to L. 4314/2014, all businesses registered with GEMI automatically become members of the competent Chamber. Each member can pay an annual subscription to the Chamber in order to be entitled to the Chamber's contributory services. The annual subscription is determined by each Chamber, within a range defined by Ministerial Decision 78030/2014 (indicatively 50-100€ for an SA, 40-70€ for a PC or LLC, 30-50€ for a GP or LP, 10-20€ for a sole proprietorship).

To cover the administrative costs of one-stop-shops and GEMI for the establishment of new businesses, L. 3853/2010 introduced a Company Establishment Note and a GEMI registration fee. At the time and according to CMD K1-802/2011, the GEMI registration fee was set at €10 for all company forms, while the Company Establishment Note was set at €50 for GPs and LPs and at €70 for SAs and LLCs, plus €5 per additional founder for businesses with more than 3 founders.

Currently, following the reforms mentioned above, as well as the revision of the relevant administrative costs according to CMD 63577/2018 and the increase of minimum capital requirements for SAs to €25,000 according to L. 4548/2018, establishing a new business in Greece involves the following charges:

1. A GEMI registration fee of €10.
2. A Company Establishment Note of €50 for LPs and GPs and €60 for PCs, LLCs and SAs, plus €3 per additional founder over 10 founders. Businesses established via the electronic one-stop-shop are charged 30% of the amounts just mentioned and are not subject to the €3 charge per additional founder over 10 founders.
3. A charge for checking of the company name and distinctive title. The charge amounts to €30 and is payable only in the case the new business opts for a check at the national level (the check at the prefecture level is free of charge).
4. The Hellenic Competition Commission charge amounting to 0.1% of the initial capital and applicable to SAs only.
5. The cost of making a seal which can be in the area of €40.

On the basis of the above, it is clear that the reforms have brought about major reductions in both the costs and the capital requirements for setting up a new business in Greece. Indicatively, and for the purpose of comparison with the example provided in section 3.2.1, it is worth mentioning that the minimum cost³ of establishing a SA in Greece currently stands at about €350, assuming an initial capital of €25,000. In the case of a €60,000 initial capital, the minimum charges

³ Not inclusive of obligations for contributions to EFKA, since their payment is not considered as a prerequisite for establishing a business.

for establishment of a SA currently sum up to €710, a great improvement compared to the corresponding amount of €2,900 required prior to the reforms.

3.2.5 *Electronic start-up notification*

Prior to the reforms, the difficulties associated with starting a new business in Greece were, as already mentioned, not limited to the complex procedures involved in registering the business. Depending on the nature and characteristics of each particular activity, bringing the business to the point where it would be ready to start its operation could be subject to the completion of a number of other, often complex, procedures such as acquiring and registering property, obtaining a construction permit and/or an environmental permit, acquiring an installation license etc. Furthermore, in many cases, businesses that were otherwise ready to operate could not actually start their activity prior to obtaining an operational license from the competent administrative authority.

The general goal for reduction of licensing and related costs for industry was included in the objectives of the 1st economic adjustment programme, while the more specific target for simplification of operational licensing procedures for businesses was explicitly incorporated in the requirements of the 2nd programme. Although the process of amendment of licensing requirements for professional activities and certain individual productive sectors (e.g. manufacturing) was initiated in 2011, a comprehensive legislative reform for the simplification of operational licensing procedures for economic activities in Greece was pursued at a later stage. A first attempt to this direction was made through L. 4262/14, which abolished operational licenses for 103 activities of the manufacturing sector, while further along L. 4442/2016 replaced the relevant provisions of L. 4262/14, and established a new legislative framework for the exercise of economic activities in Greece. According to the provisions of L. 4442/2016, the requirements for starting the operation of activities in a wide range of economic sectors have been linked to the assessment of related potential risks for the public interest. In general terms, under this new regime, low risk activities may operate freely, medium risk activities may employ the newly introduced "notification" tool allowing them to start operating without a need for ex ante administrative checks and operational licensing, while only high-risk activities fall under an ex ante "approval" procedure which represents a simplification over the previous operational licensing regime.

The entire system of recording notifications and managing approvals and related administrative checks/controls is envisaged to operate via a dedicated Integrated Information System (OPS-ADE). The system is expected to be completed in about two years from the time of writing, but in the meantime the implementation of notification has already progressed to a great extent. More particularly, from June 2017, notifications are submitted by businesses electronically, through the Notify Business platform (<https://notifybusiness.gov.gr>). This transitory platform was

initially made available to activities in certain key sectors of the Greek economy, namely (i) food and beverages manufacturing, (ii) sanitary interest stores, theatres and cinemas, (iii) tourism accommodation and pools and (iv) storage and distribution centres. Further along, the use of notification was extended to cover (v) certain mining activities, as of January 2018 according L. 4512/18 and (vi) all manufacturing as well as certain activities in related sectors, as of June 2018 according to L. 4549/18.

Although the issue of simplifying licensing procedures for businesses in Greece is very wide and often industry-specific, the particular aspect of the relevant reform which falls within the scope of the current study and relates to the adoption of electronic start-up notification has clearly progressed to a great extent over the recent period. Thus far, a simplification of procedures for starting the operation of businesses has been completed for 10 out of 15 groups of activities targeted by L. 4442/2016, so arrangements are pending for the activities of the remaining 5 groups (i.e. Group 1: agriculture, forestry and fisheries, Group 2: Supply of electricity, natural gas, steam and air-conditioning, Group 12: education, Group 13: activities related to human health and social care, Group 14: arts, entertainment and recreation).

3.2.6 Assessment of the reforms on the basis of business environment indicators

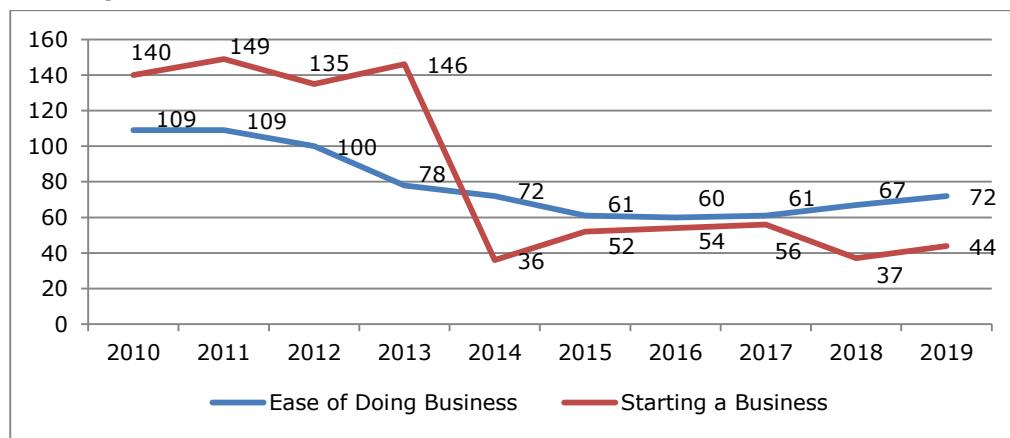
Important information on the effectiveness of the reforms on new business entry in Greece is reflected in the relevant competitiveness and business environment indices for Greece included in the World Bank's Doing Business reports and the World Economic Forum's Global Competitiveness reports. These indices provide useful information on Greece's position and progress against other countries in key areas addressed by the reforms.

World Bank Doing Business Indicators

The values of the Ease of Doing Business indicator, as published in the World Bank's Doing Business reports from 2010 onwards, provide a general picture of improvements in the country's business environment vis-à-vis other countries in the course of the reforms. Furthermore, the corresponding values of the Starting a Business indicator provide signals of the competitiveness gains from the main reforms targeting the facilitation of new business entry in Greece. Notably, to avoid misinterpretation of year to year variations in these indices, we must bear in mind their limitations as to the extent that they can reflect reform measures, given their structure, the standardised dimensions and approach they employ across countries and the frequent adjustments in their methodology of calculation. Furthermore, we must be aware that, to some extent, differences in the index values from one year to the other may simply be due to changes in other countries' business environment.

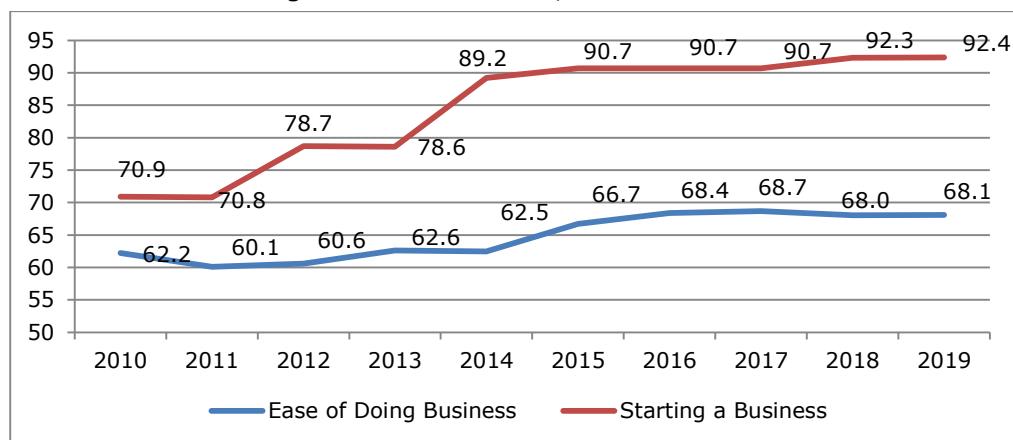
According to the World Bank's Doing Business 2019 report (DB2019) starting a typical Limited liability SME in Greece (a PC operating in Athens) involves 4 procedures, takes 12.5 days, costs 1.5% of income per capita and requires a minimum capital of 0% of income per capita. On this basis, in DB2019 Greece ranked 44th in 190 economies on the ease of starting a business, an improvement of 96 positions compared to its initial 140th position in DB2010 (Figure 3.1). This major progress in ranking, was accompanied by a substantial reduction of the corresponding distance to frontier⁴ for Starting a Business in Greece, from 29.1% in DB2010 to 7.6% in DB2019 (Figure 3.2). Notably, as reflected in Figure 3.1, the improvement in Greece's ranking with respect to Starting a Business was greater compared to the corresponding important gain of 37 positions recorded in the overall Doing Business Indicator.

Figure 3.1: Ranking of Greece according to the Ease of Doing Business and Starting a Business indices, 2010-2019



Source: The World Bank, Doing Business 2010 to 2019.

Figure 3.2: Distance to frontier of Greece according to the Ease of Doing Business and Starting a Business indices, 2010-2018



Source: The World Bank, Doing Business 2010 to 2019.

⁴ The distance to frontier shows the distance of each economy to the "frontier," which represents the best performance observed on each of the indicators across all economies in the Doing Business sample. An economy's distance to frontier is reflected on a scale from 0 to 100, where 0 represents the lowest performance and 100 the frontier.

Substantial improvements in rankings during the period under consideration are connected with key reforms implemented along the way. In particular, the sharp decrease in the DB2014 Starting a Business indicator reflects mainly the introduction of the PC, and the related major savings in terms of time, cost and minimum capital requirements compared to a typical limited liability SME that could be set up prior to the reform (an LLC according to the assumptions of DB2013 and earlier Doing Business reports). Furthermore, the decline recorded in the DB2018 Starting a Business indicator reflects the social security reforms, according to which starting a business was made easier through the establishment of a unified social security institution (EFKA).

The above being said, it must be noted that the overall evolution of the Starting a Business indicator through the period examined does not seem to reflect adequately the effects of important reforms facilitating new business entry. For example, since the indicator is calculated by assuming a standardised business form (in Greece the LLC before the reforms and the PC after the reforms), following the introduction of the PC the value of the indicator is not affected by subsequent measures simplifying new business entry for other business forms. Thus, the indicator does not reflect e.g. the major reduction of the minimum start-up capital for the SA and the elimination of the corresponding minimum capital for LLC, and the introduction of the option to set up a SA or an LLC by means of a private document using standardised articles of association.

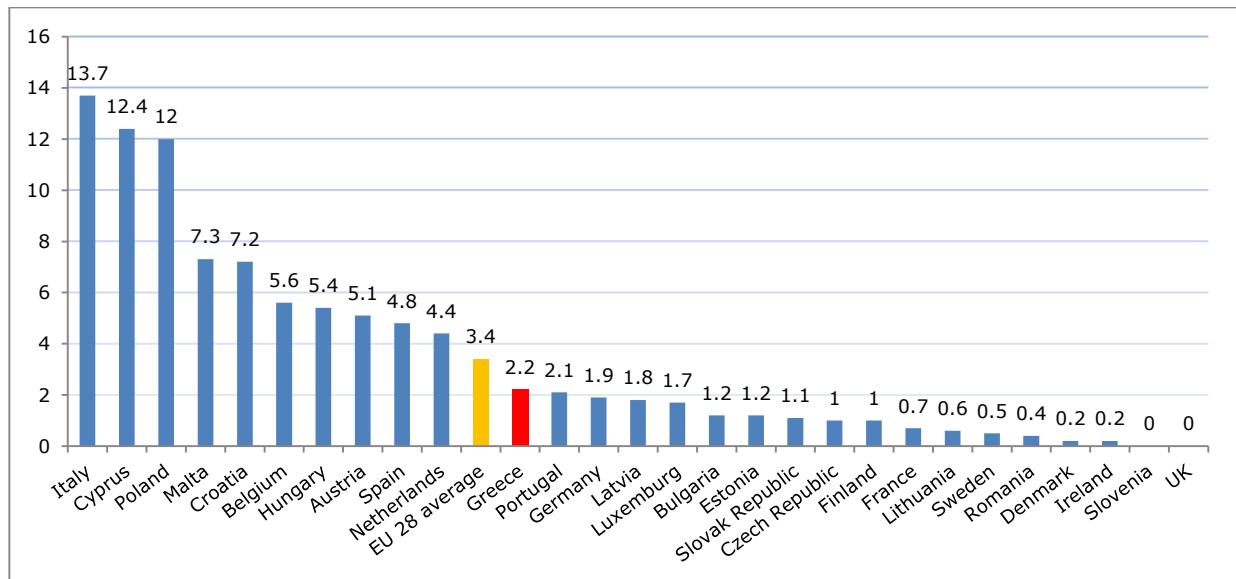
World Economic Forum's Global Competitiveness Index

The latest Global Competitiveness Report of the World Economic Forum (WEF, 2018) incorporates a major revision of the Global Competitiveness Index methodology. This revision includes the introduction of "business dynamism" as one of the 12 main pillars of competitiveness taken into account for the calculation of the index. Within this pillar, the *cost of starting a business* and the *time to start a business* represent 2 of the 8 relevant criteria according to which individual countries are assessed and ranked. Since these two criteria were not incorporated in previous years' calculations of the Global Competitiveness Index, there are no relevant rankings before 2018 on the basis of which to assess the year-by-year results of the reforms. However, the overall effect of the reforms in terms of placing Greece in a good position against its competitors with respect to the cost and time to start a business can be evaluated on the basis of the rankings for 2018.

Starting from the cost of starting a business, Greece is ranked in the 45th position among 140 countries. According to this assessment and compared with other EU countries, Greece ranks in the 18th position among the 28 EU member states in terms of the cost of starting a business. More particularly, as illustrated in Figure 3.3, the cost of starting a business in Greece is estimated at 2.2% of GNI per capita, with the best performers in this respect being the UK and Slovenia with

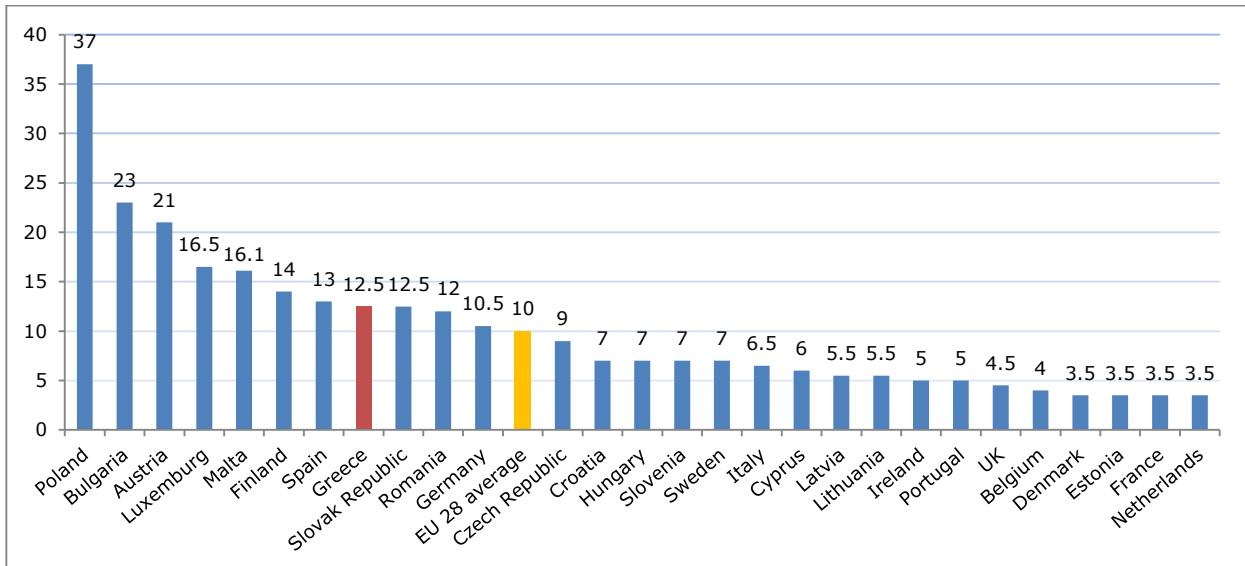
zero costs and the weakest performer being Italy with a cost of 13.7% of GNI per capita. Although on the basis of these rankings, it seems that there are margins for further reduction of the cost of starting a business in Greece, this cost is currently lower than the corresponding average of EU countries (3.4%), and overall one could say that the current position of Greece in this respect is quite satisfactory.

Figure 3.3: Cost of starting a business in EU28 countries (% of GNI per capita), 2018



Source: World Economic Forum, The Global Competitiveness Report 2018.

In terms of the time to start a business, Greece is ranked in the 77th position among 140 countries, with this ranking corresponding to the 21st position among the 28 EU member states. As presented in Figure 3.4, the time to start a business in Greece is estimated at 12.5 days, with the best performers in this respect being France, the Netherlands, Estonia and Denmark with a time requirement of 3.5 days, and the weakest performer being Poland with a time requirement of 37 days. On the basis of these rankings, the time to start a business in Greece lies above the average of EU countries (10 days), and overall it seems that there are still considerable margins for speeding up the process of starting a business in Greece.

Figure 3.4: Time to start a business in EU28 countries days), 2018

Source: World Economic Forum, The Global Competitiveness Report 2018.

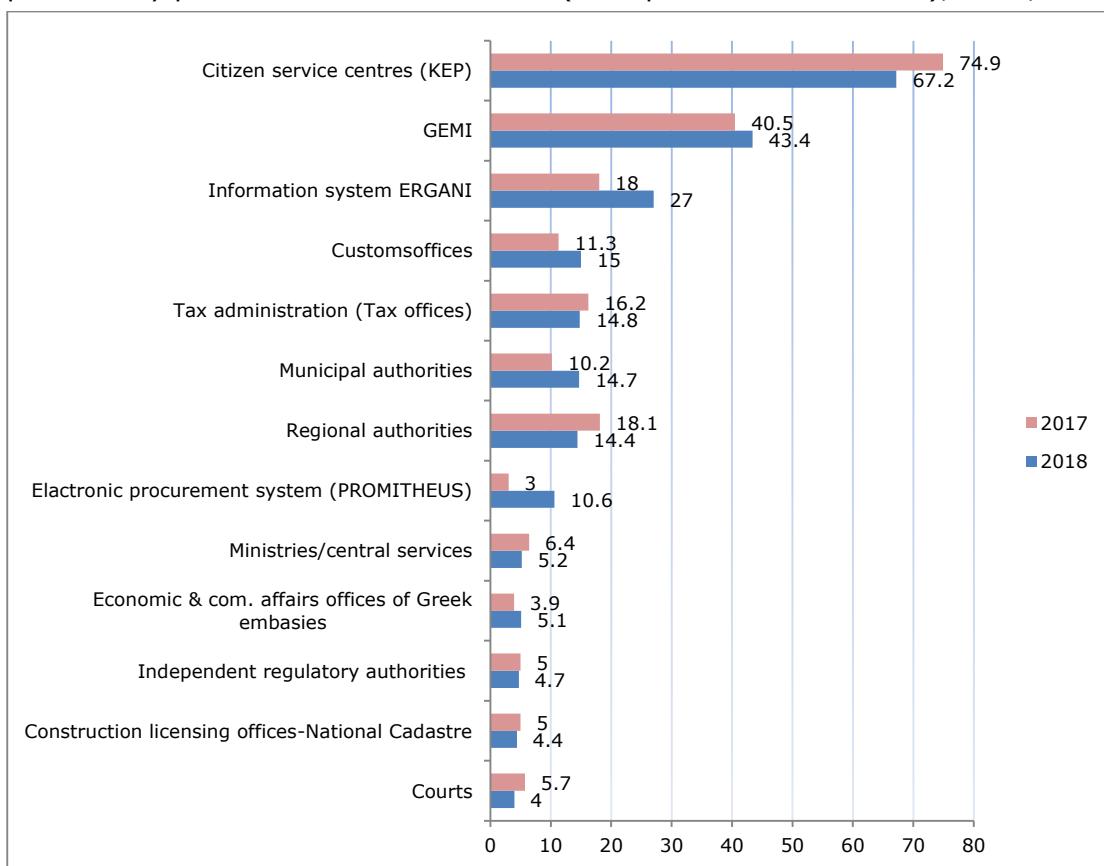
3.2.7 Assessment of the reforms on the basis of business opinion surveys

The Business Pulse annual survey conducted by the Observatory of the Hellenic Federation of Enterprises (SEV) provides useful indications on the perceptions of businesses in Greece regarding the quality of services provided by public administration bodies, the obstacles faced by businesses in their day-to-day operations, and the impact of recent reforms aiming at the improvement of the business environment. The survey was conducted in 2017 and 2018, on a weighted representative sample of 706 and 680 Greek businesses, respectively.

With respect to the degree of satisfaction of businesses from the quality of the services provided by public administration bodies, GEMI ranked second from the top, with the relevant rate of satisfaction amounting to 43.4% in 2018, from 40.5% in 2017 (Figure 3.5). The same ranking⁵ was also achieved by GEMI with respect to the transparency of the services offered, with the relevant rate of satisfaction reaching 46.5% in 2018, from 34.9% in 2017. Notably, according to the 2018 survey, respondents that were not satisfied by GEMI services identified as primary and more urgent areas for improvement the efficiency of GEMI (35.5%), the level of service provided (39.4%) and infrastructures of GEMI (21.7%). On the other hand, only a small proportion of non-satisfied respondents suggested a need for improvement of GEMI in the areas of interest/politeness of staff (15.5%) and trust (14.8%), while a significant share of respondents (20.9%) did not identify a specific area for improvement of GEMI services.

⁵ Citizen Service Centres (KEP) ranked in the 1st position both in terms of the quality and in terms of the transparency of the services provided.

Figure 3.5: Degree of satisfaction of businesses from the quality of services provided by public administration bodies (% of positive assessments), 2017, 2018



Source: Hellenic Federation of Enterprises (SEV), Business Pulse annual surveys, 2017, 2018.

In terms of the obstacles faced by businesses in their day-to-day operations, the complexity of procedures for the licensing and operation of businesses was identified as an area of very high difficulty by 28.4% of respondents in 2018, versus 32.7% of respondents in 2017. Furthermore, the complexity of the processes for the establishment, transformation, termination or bankruptcy of businesses was identified as an area of very high difficulty by 22.1% of respondents in 2018, versus 27.9% of respondents in 2017.

Turning to the assessment of businesses with respect to the necessity of recent reforms aimed at the improvement of the business environment, in 2018 a share of 26.1% of the respondents deemed necessary the electronic record of company acts via GEMI, while 11.6% of the respondents deemed necessary the replacement of ex ante administrative checks by the new start-up notification process. The latter share is somewhat low, but a reason for this maybe that the sample of businesses employed for the survey includes mostly established firms for which this tool may not be as important as for new entrants.

Concerning the assessment of the impact of the reforms on the operation and course of businesses, the electronic record of company acts via GEMI was

considered as a very positive reform by the majority of respondents (54.3%), with a very small share of businesses assessing this reform as very negative (5.8%). Indeed, among the reform categories on which businesses were asked to provide their opinions, GEMI accounted by far for the largest share of positive assessments. On the other hand, most respondents (52.6%) stated that they were not affected by start-up notification, with a significant share assessing this reform as very positive (21.1%) and only a very small share stating that the reform is very negative (5.5%). Again, the evaluation of start-up notification may be explained by the composition of the sample employed in the survey.

Notably, when asked to identify the most important obstacles to their operation, the tax regime was prioritised in the first position by businesses of all sizes and locations, with other important obstacles reported including legislative complexity, the administration of justice, access to financing, financing tools, energy costs, and licensing for establishment. With respect to licensing, this was reported as one of the most important obstacles by a significant proportion of large businesses (29.9%) and a large share of businesses located in central and south Greece (45.2%).

Finally, when asked to assess the priorities of government policy to secure growth, businesses prioritised as most important the reduction of tax rates (84%), the placement of emphasis in attracting investment (49.2%), the pursuit of a final solution for the sustainability of the public debt (18.7%), and the implementation of laws already introduced (10.8%).

On the basis of the above, it appears that businesses have a very positive opinion of the reforms related to GEMI, and a positive to neutral opinion of the reforms referring to start-up notification. Furthermore, it seems that among the areas relating to the legislative framework for setting-up a business, the ones that seem to remain as serious obstacles for a subset of businesses are licensing and legislative complexity, the latter obstacle not being limited, of course, to the legal framework for new business entry.

3.2.8 Discussion and policy implications incorporating information from interviews

The above screening of the regulatory changes implemented during the period 2010-2018, already provided the basis for a preliminary qualitative assessment of the reforms. Drawing also from the information collected through interviews conducted in the framework of the current study, the following remarks are useful to be considered at this point.

First of all, there is no doubt that the reforms have eased to a great extent the procedures and requirements for starting new businesses activity in Greece, cutting down on the bureaucracy involved in establishing a business, reducing the

relevant costs and capital requirements, introducing the option of a new, cost-effective and flexible corporate form, and lifting unnecessary requirements for ex ante licensing once the business is ready to legally operate.

The above being said, there are still significant margins for improvement of the ease of starting a business in Greece, particularly in the following areas:

- *Codification of legislative acts and creation of a simple updated online guide for businesses.* The complexity and fragmentation of the legal framework for the establishment of new businesses, following several years of consecutive reforms and updates of procedures and requirements for starting a business, was a feature which came out very clearly in the framework of the current study and the effort devoted to classify and present the legislative changes resulting from the reforms. Moreover, the same feature of complexity and fragmentation emerged as an important issue in the interviews with private sector stakeholders. It is clear that to improve the effectiveness of the reforms, it is necessary to progress with the codification of legislative acts and the creation of a simple, accessible and promptly updated guide, presenting and explaining all the requirements and procedures for starting a new business in Greece.
- *Improvement of the operation and interoperability of GEMI.* Although GEMI ranks high in the perception of businesses, there is a further need for improvements in terms of efficiency (e.g. technical capacity of the system, speed of procedures), as well as in terms of the breadth of information recorded in the database (e.g. financial and employment data) and the interoperability of the system with other authorities and services (e.g. courts of first instance, the Ministry of Finance TAXISnet system, EFKA, ERGANI etc.). The latter improvements will help to increase transparency and secure more up-to-date information with respect to the operation and the status of businesses (e.g. their financial position, whether they are active or not, any bankruptcy procedures, etc). Currently there is a process underway for the revision of the legislative framework of GEMI, with a new Law expected to be passed in Spring 2019.
- *Further reduction in the costs and procedures for setting up and starting the operation of businesses.* Measures in this direction, with an eye also to the improvement of Greece's ranking in international business environment indicators, could include: the implementation of the planned extension of the availability of electronic one-stop-shops to all legal forms, a consultation with banks to pursue abolishment of their practice to require a company seal, and a reassessment of the €30 charge payable by new businesses who opt for a check of their company name and distinctive title at the national level. Furthermore, other measures in

this direction include the implementation of e-notification in the remaining sectors planned to be covered, and the timely establishment of the Integrated Information System (OPS-ADE).

- *Improvement in other related requirements for starting new businesses.* In parallel with the reforms examined in the current chapter, a significant reform effort has been made so far to simplify and clarify a series of other procedures and prerequisites which play a key role in the decision to establish a business in Greece. To reap the benefits from the reforms for the facilitation of new business entry, further efforts are necessary e.g. in the direction of simplifying various licensing procedures and requirements and introducing a spatial plan for the country with a clear and rational delineation of land uses.
- *Improvement of the system of monitoring and sanctions.* Much of the success of simplified procedures for the establishment of new businesses rely on the businesses themselves fulfilling their legal obligations, by abiding to relevant regulations and requirements and providing accurate and timely information to GEMI and other relevant authorities. The improvement of the system of monitoring (e.g. random checks) and sanctions to offenders is important for the success of the reform.

3.3 Quantitative analysis of the impact of the reforms

The quantitative analysis of the reforms is based on detailed non-publicly available data on firm entries and exists before and after the reforms. For this purpose, two data sources can be used: (a) the Independent Authority for Public Revenue (IAPR -AADE in Greek), which keeps firm level data as declared at the local tax offices, and (b) the General Electronic Commercial Registry (GEMI), which keeps data on new entries from 2012 onwards, for businesses obliged to register with GEMI. In our analysis we choose to use the data from AADE for the period from January 2009 to October 2018,⁶ since these data are available for a longer time period and cover all businesses in Greece.

3.3.1 Developments in business entries and exits

Table 3.4 presents the evolution of new business entries in Greece, broken down by legal form, based on the data retrieved from AADE. From the evolution of the relevant figures, it is evident that sole proprietorships represent the largest share of new entries throughout the period 2009-2018. For this legal form the first years of the crisis and up to 2013 were characterised by a small drop in entries, which was subsequently followed by an upward trend, with the exception of 2015, a year of turbulence characterised by the imposition of capital controls combined with the financial, fiscal and political uncertainty. The negative of the crisis is also

⁶ Data for earlier years will not be used, as there is a break in the series in 2008, due to a change in the classification system.

reflected in the evolution of entries of most other legal forms until 2015, with a marked exception in the case of PCs where entries followed an upward trend. From 2016, positive trends are observed in the entries of all legal forms of business, with the exception of LLCs which continued to decline. It is worth noting that 2018 seems promising for entries in almost all legal forms, given that the data for the period from January to October 2019 display in most cases an increase compared to the previous year.

Table 3.4: Business entries registered in AADE by legal form, 2009-2018

	SA	LLC	GP	LP	PC	Other	Sole proprietorship	Total
2009	1,308	2,994	6,744	3,058		5,785	76,345	96,234
2010	1,211	2,574	6,965	3,446		6,300	74,718	95,214
2011	955	2,313	5,624	3,028		5,198	64,475	81,593
2012	883	2,048	4,493	2,297	734	4,438	60,243	75,136
2013	858	1,234	3,666	1,681	2,940	5,399	64,770	80,548
2014	686	649	3,278	1,519	3,820	6,551	78,868	95,371
2015	573	373	2,596	1,275	3,780	4,568	60,044	73,209
2016	595	259	2,836	1,421	4,779	4,627	75,278	89,795
2017	665	234	2,931	1,953	6,883	4,804	87,230	104,700
2018*	573	205	3,320	2,298	7,959	3,736	45,539	63,630
Total	8,307	12,883	42,453	21,976	30,895	51,406	687,510	855,430

* Data for 2018 refer to the period 1/1/2018-31/10/2018

Source: Own calculations on the basis of data from AADE.

More particularly, new entries of PCs reached 6,883 in 2017 and 7,959 in the period from January to October 2018. Thus, for the period 2012-2018 as a whole, PCs accounted for a share of 18.4% of the newly created companies that were legal entities. On the other hand, LLCs experienced in relative terms the biggest drop in entries, thus amounting to just 234 in 2017 from 2,994 in 2009 (average annual rate of change of -27.3%). New entries of GPs also decreased heavily, amounting to 2,930 in 2017 from 6,744 in 2009 (average annual rate of change of -9.9%), new entries of LPs reached 1,953 in 2017 from 3,058 in 2009 (average annual rate of change-5.4%), while entries of SAs amounted to 665 in 2017 versus 1,308 in 2009 (average annual rate of change of -8.1%). Overall, the figures show a shift in new business entries towards PCs and away from LLCs and GPs, and to a lesser extent LPs. As expected on the basis of their many advantages, PCs were considered by many entrepreneurs as more attractive form of business compared to LLCs and partnerships. Table 3.5 presents the evolution of business exits in Greece, broken down by legal form. The data indicate that, with the exception of PCs, all legal forms displayed overall major exit trends, even in the more recent years, with LLCs showing the largest negative average annual rate of change of -8.37%.

Table 3.5: Business exits registered in AADE by legal form, 2009-2018

	SA	LLC	GP	LP	PC	Other	Sole proprietorship	Total
2009	762	1,225	6,163	1,528	-	4,316	78,923	92,922
2010	808	1,493	7,640	2,041	-	5,964	111,789	129,740
2011	730	1,733	8,119	2,366	-	14,589	110,860	138,399
2012	724	1,710	8,063	2,533	24	4,126	103,791	120,971
2013	519	1,386	7,178	2,356	185	3,394	89,900	104,918
2014	495	1,303	6,213	2,129	317	3,712	79,227	93,396
2015	458	1,002	5,058	1,802	468	2,884	74,039	85,711
2016	531	1,017	4,899	1,808	720	2,418	108,698	120,091
2017	421	611	3,110	1,180	654	2,078	79,147	87,201
2018*	267	330	1,780	675	544	1,162	36,018	40,776
Total	5,715	11,810	58,223	18,418	2,924	44,643	872,392	1,014,125

* Data for 2018 refer to the period 1/1/2018-31/10/2018

Source: Own calculations on the basis of data from AADE.

Table 3.6 presents the evolution of net business entries in Greece. As it appears, SAs and PCs are the two company forms that display a continuous positive outcome. On the contrary, GPs exhibit negative net entries from 2010 to 2017, while it is interesting enough that LLCs and LPs display negative net entries after the PCs were introduced, suggesting again that PCs served as a better substitute to these legal forms for new companies. More specifically, net entries of PCs for the period 2012-2017 reached almost 28 thousand, while SAs displayed positive net entries amounting to 2.6 thousand companies for the whole period examined and 1.4 thousand after 2012. On the contrary, GPs exhibited a negative net total for the period examined, with net entries being less than total entries by 37.1%. Moreover, for the period after the reform, net entries were negative not only for GPs (with entries falling short of exits by 57% of the total entries), but also for LLCs (a 47.1% shortage of exits over entries). Finally, sole proprietorships show negative net entries for the whole period under examination, a result well anticipated since this category consists mainly of natural persons many of whom could not afford to pay social security contributions in a period of economic crisis and thus exited the market.

It is worth noting that, as shown in Table 3.7, the mortality rate of businesses that entered the market from 2009 onwards was relatively moderate for all types of business forms, with SAs having the lower mortality rate of 12.76%. For the period after the reform (i.e. from 2012), LLCs, GPs and LPs display a mortality rate of around 50%, showing that there is a significant impact on these types of businesses. On the other hand SAs continue to have the lowest rate of mortality, 16.64%, a result well anticipated since large scale businesses are generally more viable. The newly established PCs display a mortality rate of 8.61% showing that these businesses are also viable and enter the market having the potential to survive.

Table 3.6: Net business entries registered in AADE by legal form, 2009-2018

	SA	LLC	GP	LP	PC	Other	Sole proprietorship	Total
2009	546	1,769	581	1,530		1,469	-2,578	3,312
2010	403	1,081	-675	1,405		336	-37,071	-34,526
2011	225	580	-2,495	662		-9,391	-46,385	-56,806
2012	159	338	-3,570	-236	710	312	-43,548	-45,835
2013	339	-152	-3,512	-675	2,755	2,005	-25,130	-24,370
2014	191	-654	-2,935	-610	3,503	2,839	-359	1,975
2015	115	-629	-2,462	-527	3,312	1,684	-13,995	-12,502
2016	64	-758	-2,063	-387	4,059	2,209	-33,420	-30,296
2017	244	-377	-179	773	6,229	2,726	8,083	17,499
2018*	306	-125	1,540	1,623	7,415	2,574	9,521	22,854
Total	2,592	1,073	-15,770	3,558	27,971	6,763	-184,882	-158,695

* Data for 2018 refer to the period 1/1/2018-31/10/2018

Source: Own calculations on the basis of data from AADE.

Table 3.7: Percent of business exits over entries in the period 2009-2018 only for those businesses that entered the market in the same period.

	SA	LLC	GP	LP	PC	Other	Sole proprietorship	Total
Entries	8,307	12,883	42,453	21,976	31,469	51,406	687,510	856,004
Exits	1,060	3,430	16,555	7,172	2,709	12,727	205,053	248,706
Mortality rate	12.76%	26.62%	39.00%	32.64%	8.61%	24.76%	29.83%	29.05%

* Data for 2018 refers to the period 1/1/2018-31/10/2018

Source: Own calculations on the basis of data from AADE.

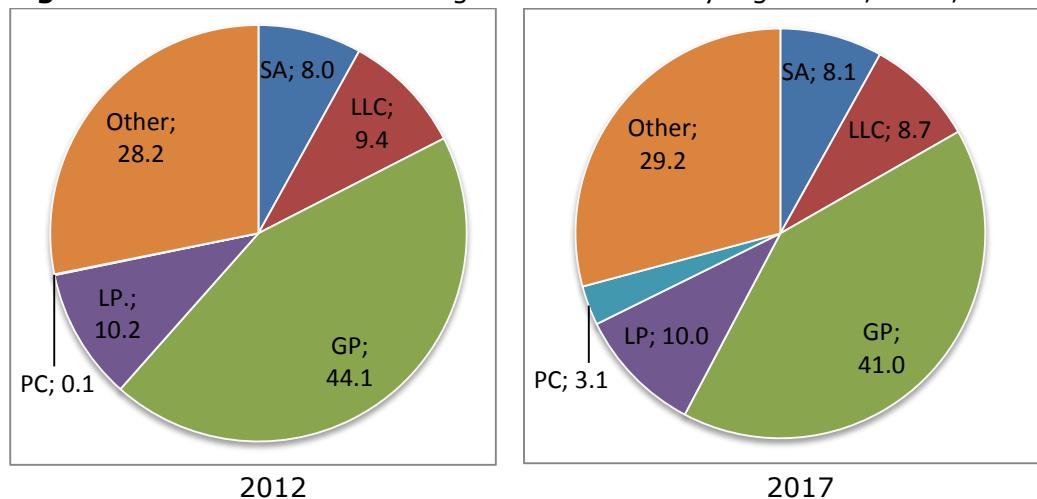
Figure 3.6 presents the decomposition of the stock of business by legal form in two waves; 2012, when the reform took place and 2017, the year with the latest available data. The figures show, as expected from the entry and exit data discussed above, that the reform caused a shift from LLCs and GPs towards, mainly, the newly established form of PC. The share of SAs and LPs in the stock of businesses remained fairly constant.

Table 3.8 describes the bookkeeping system used by new businesses. Single-entry bookkeeping is generally used by GPs, LPs and Natural Persons (sole proprietorships), while double-entry bookkeeping is generally used by SAs, LLCs and PCs. Before the reform, 94% of all legal entities were using the single-entry bookkeeping system, a percentage that dropped after the reform to less than 90%⁷. Moreover, if Natural Persons are excluded, then the percentage of business entering the market and keeping single-entry books is somewhat above 70% of the total, while after the reform it declines significantly, reaching just 45% of the total business entries. From these figures it becomes apparent that the reform

⁷ Note that not all businesses registered in AADE are obliged to keep either of these two types of books, while some, especially Natural Persons, are exempt or non-liable to keep books.

changed the attractiveness of the single-entry bookkeeping system for new companies, and almost 55% of the newcomers in 2017 decided to use the double-entry booking system. This is a positive development, since double-entry bookkeeping is conducive to the reduction of tax avoidance, while it is also beneficial for businesses and indicative of more efficient business operation.

Figure 3.6: Stock of business registered in AADE by legal form, 2012, 2017



Source: Own calculations on the basis of data from AADE.

Table 3.9 records new business entries in the main sectors of the Greek economy. A significant share of entries, almost 20% of the total in average, come from the sector of wholesale and retail trade, with more than 20 thousand new businesses registered in 2009, a figure that dropped in the following period, reaching 12,141 entries in 2017 (an average rate of change of -6.42%). The sector of professional, scientific and technical activities ranked next in the creation of new businesses (12,216 entries in 2017) and is a sector that experienced a somewhat slower drop in its average rate of change (almost -6%).

Accommodation and food services is a sector that resisted the economic crisis and new businesses emerged in the market during the whole period under examination (9,058 new businesses in 2009 and an average rate of change of only -1%). On the contrary, the construction sector, which has suffered deeply from the economic crisis, had in 2017 less than three times the entries of 2009. Furthermore, manufacturing seems to follow its own pattern in creating new businesses regardless of the crisis, given that the number of entries is fairly steady throughout the period examined. Only primary sector activities have positive rates of growth, but these are mainly in the form of natural persons and out of the scope of the analysis.

Table 3.8: Business entries registered in AADE by legal form and bookkeeping system, 2009-2018

Year	Single-entry Bookkeeping System							Double-entry Bookkeeping System							% of Total	Total
	SA	LLC	GP	LP	PC	NP	Total	SA	LLC	GP	LP	PC	Total			
2009	52	42	6,616	2,958		64,243	77,234	93,7	1,256	2,952	101	94		5,226	6.3	82,460
2010	75	71	6,808	3,295		63,658	77,921	94,4	1,136	2,503	114	126		4,655	5.6	82,576
2011	30	51	5,530	2,908		54,598	65,203	93,7	925	2,262	75	120		4,359	6.3	69,562
2012	22	27	4,419	2,234	7	51,467	60,226	93	861	2,021	71	63	727	4,513	7.0	64,739
2013	20	27	3,629	1,641	43	55,528	63,429	91,8	838	1,207	39	35	2,897	5,631	8.2	69,060
2014	20	10	3,243	1,494	37	59,085	67,386	92,3	666	639	30	26	3,783	5,603	7.7	72,989
2015	17	2	2,587	1,259	25	45,850	51,963	91,1	556	371	10	13	3,755	5,064	8.9	57,027
2016	17	2	2,825	1,412	23	46,843	53,420	89,9	578	257	10	8	4,756	6,018	10.1	59,438
2017	14	1	2,920	1,944	24	42,883	49,935	85,9	651	233	12	9	6,859	8,173	14.1	58,108
2018*	10	5	3,316	2,291	38	34,842	42,347	82,4	563	200	4	7	7,921	9,075	17.6	51,422
Total	277	238	41,893	21,436	205	518,997	609,064	91,3	8,030	12,645	466	501	31,264	58,317	8.7	667,381

* Data for 2018 refer to the period 1/1/2018-31/10/2018

Natural Persons (NP)

Source: Own calculations on the basis of data from AADE.

Table 3.9: Business entries registered in AADE by sector of economic activity, 2009-2018

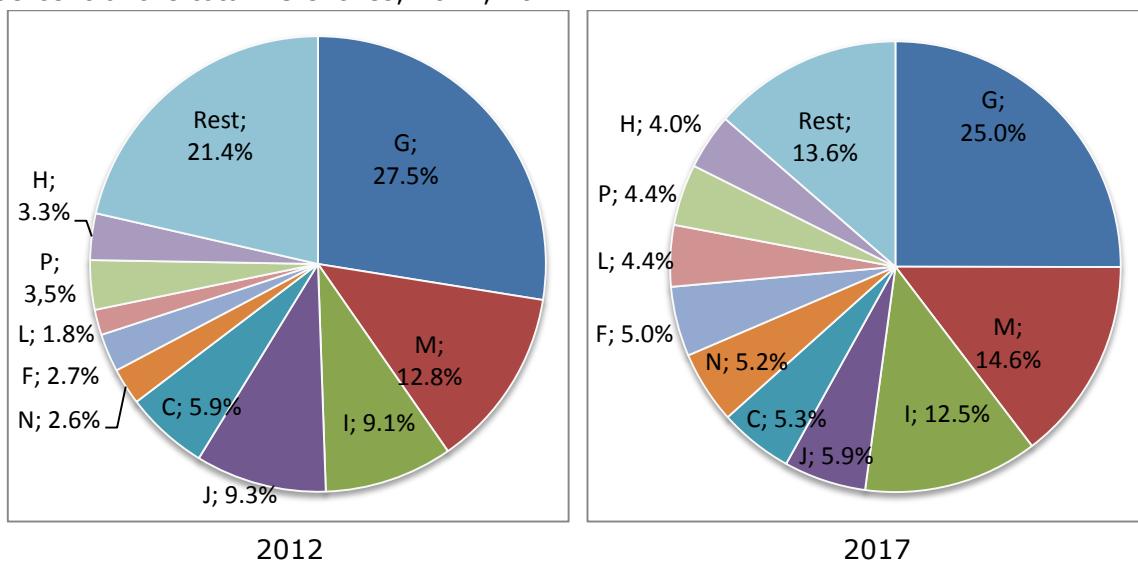
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018*	Yearly average (2009-2017)
A	Agriculture, forestry and fishing	17,122	16,240	14,610	12,839	14,370	30,086	19,260	37,770	51,112	12,556	23,712
B	Mining and quarrying	28	21	14	18	30	29	18	25	27	30	23
C	Manufacturing	2,666	2,458	2,396	2,845	3,097	2,961	2,307	2,289	2,764	2,184	2,643
D	Electricity, gas, steam and air conditioning supply	1,228	2,050	1,716	1,264	419	191	117	174	229	308	821
E	Water supply; sewerage; waste management and remediation activities	192	183	199	188	170	138	119	115	119	133	158
F	Construction	7,631	6,687	3,687	2,979	2,904	3,132	2,708	2,469	2,801	3,396	3,889
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	20,637	19,183	16,952	16,479	17,606	15,658	12,893	12,595	12,141	10,620	16,016
H	Transporting and storage	3,570	4,778	5,190	3,109	3,493	2,926	2,636	2,397	2,543	2,680	3,405
I	Accommodation and food service activities	9,058	10,281	9,101	9,037	10,230	9,780	8,650	8,103	8,310	7,906	9,172
J	Information and communication	2,590	2,321	2,018	1,952	2,134	2,133	1,870	1,528	1,727	1,566	2,030
K	Financial and insurance activities	1,283	1,245	1,309	1,716	1,628	1,448	1,326	1,481	1,544	1,269	1,442
L	Real estate activities	1,026	825	575	471	799	1,018	601	698	1,139	1,292	795
M	Professional, scientific and technical activities	12,216	12,176	9,936	8,650	9,706	10,551	7,966	7,479	7,456	7,936	9,571
N	Administrative and support service activities	3,312	2,657	2,171	1,840	2,182	2,126	2,048	1,816	1,977	2,364	2,237
O	Public administration and defence; compulsory social security	1,301	721	570	454	263	237	171	227	241	144	465
P	Education	2,269	2,325	2,414	2,155	1,915	1,884	1,690	1,469	1,549	1,519	1,963
Q	Human health and social work activities	4,073	4,008	3,733	3,938	3,704	3,864	3,321	3,915	3,515	3,030	3,786
R	Arts, entertainment and recreation	2,343	2,117	1,953	1,858	2,127	2,197	1,927	1,937	1,944	1,798	2,045
S	Other services activities	3,845	5,141	3,253	3,340	3,769	5,010	3,580	3,307	3,562	2,898	3,867
	Total	98,399	97,427	83,808	77,144	82,559	97,383	75,223	91,810	106,717	65,647	90,052

* Data for 2018 refer to the period 1/1/2018-31/10/2018

Source: Own calculations on the basis of data from AADE.

Figure 3.7 presents the composition of entries PCs by sector of economic activity in two waves; 2012, when the PC form was introduced and 2017, the year with the latest available data. It should be noted that the figure lists individually all sectors for which PC entries account for more than 4% of total entries in the corresponding year, with these sectors accounting for 86% of total PC entries in 2017 and 74% in 2012. All other sectors are included in the sector "Rest". From the figure it is clear that, as expected from the entry data by sector discussed above, a high share of total PC entries corresponds to three sectors of economic activity, namely wholesale and retail trade, professional, scientific and technical activities and accommodation and food service activities. The share of PC entries corresponding to these sectors accounted for more than 50% of the total in both years. More particularly, in 2017 one fourth of PC entries were in the sector of wholesale and retail trade, with the PC form accounting for 47% of total business entries in the this sector. In the same year, 14.6% of the PC entries were in the sector of professional, scientific and technical activities, with the PC form accounting for 45% of the total entries in the sector. The corresponding figures for accommodation and food service activities were 12.5% as a share of the total PC entries and 41% as a share of business entries in the sector. It bears noting that the share of PC entries in total business entries rose significantly in this period in all these sectors, an anticipated result given that the PC is the only legal form with consistently increasing entries.

Figure 3.7: Private Companies registered in AADE by sector of economic activity, as a percent of the total PC entries, 2012, 2017



Note: G: Wholesale and retail trade, M: Professional, scientific and technical activities, I: Accommodation and food service activities, J: Information and communication, C: Manufacturing, N: Administrative and support service activities, F: Construction, L: Real estate activities, P: Education, H: Transporting and storage, Rest: Arts, entertainment and recreation, Other services activities, Agriculture, forestry and fishing, Mining and quarrying, Electricity, gas, steam and air conditioning supply, Water supply; sewerage; waste management and remediation activities, Financial and insurance activities, Public administration and defence; compulsory social security, Human health and social work activities.

Source: Own calculations on the basis of data from AADE.

Table 3.10 presents the evolution of electronic start-up notifications of all available activities in certain key sectors of the Greek economy, on the basis of data from Notify

Business platform, covering the period from July 2017 until December 2018. The data indicated that there have been more than 58 thousand notifications during the period of implementation of the notification tool. From these notifications, almost 74% referred to activities of sanitary interest, 19.7% were in tourism accommodation, while food and beverages manufacturing activities accounted for only 2.2% of the total. The activities included recently in the system, i.e. mining and manufacturing activities, account for 5% of total notifications in the second half of 2018. It should be noted that this is a transitory platform and figures recorded in the system may be affected by difficulties in the use of the notification tool by entrepreneurs. When returning to make a correction to an earlier notification, the amendment may be actually recorded as a new notification. Thus, the data must be considered with caution, although there has been a great effort by the competent authority to clean the data accordingly.

Table 3.10: Business notifications registered in Notify Business Platform by available activities

	B' Semester 2017	A' Semester 2018	B' Semester 2018	Total
Mining Industry	0	0	25	25
Storage and distribution centres	149	136	187	472
Sanitary interest activities	14,896	14,660	13,264	42,820
Manufacturing	0	0	263	263
Food and beverages manufacturing	1,163	1,016	857	3,036
Tourism accommodation & pools	3,140	4,771	3,527	11,438
Total	19,348	20,583	18,123	58,054

Source: Own calculations on the basis of data from Notify Business, Ministry of Economy and Development

3.3.2 Empirical analysis

Given that the reforms were not applied uniformly across businesses during the period under consideration, in this section new business entry data are employed to perform a quantitative analysis of the impact of the reforms. More particularly, a Difference-in-Differences (DID) approach is used to examine the impact on new business entries arising from the reforms relating to the introduction of one-stop-shops and the reduction of minimum capital requirements for capital companies. In addition, since as discussed in section 3.2.3, tax reforms influence the attractiveness of alternative business forms, we also examine the impact on new entries from the change in the tax treatment of businesses with single-entry bookkeeping.

It should be noted that in the case of the reform referring to electronic start-up notification, the post-implementation period is too short to allow for a similar quantitative approach to compare new entries between sectors affected by the reform (e.g. the food industry) and similar sectors not affected by the reform (e.g. other manufacturing sectors). In the case of the reform referring to the introduction of the PC, new PC entries were naturally first recorded in 2012, when the implementation of the reform was initiated. Therefore, using PC companies only as a treatment group for some type of similar quantitative analysis is not an option. Nevertheless, PC new

entries are included in the treatment groups of the applications, which means that the effects of PC are incorporated in the impacts detected in the analysis that follows.

CASE 1: The one-stop-shop reform

We first examine the impact of the simplification of the procedures for setting up new companies, as implemented from 2012. For this purpose, we compare the evolution of new business entries between (i) entries of companies with legal forms for which one-stop-shops were applicable (capital companies and partnerships) and (ii) entries of sole proprietorships, for which one-stop-shops do not apply.

In the context of the DID methodology, the regression to be estimated is:

$$Y_i = \alpha + \beta Time + \gamma Treated + \delta DID + e$$

where:

Y_i is the dependent variable

$Treated$ is a dummy equal to 1 for the “treated group” and equal to 0 for the “control group”

$Time$ is a dummy set to 0 for the period before the reform and 1 for the period after the reform

DID is an interactive term multiplying the dummies, $Treated \times Time$

α is the constant term

β is the treatment group specific effect

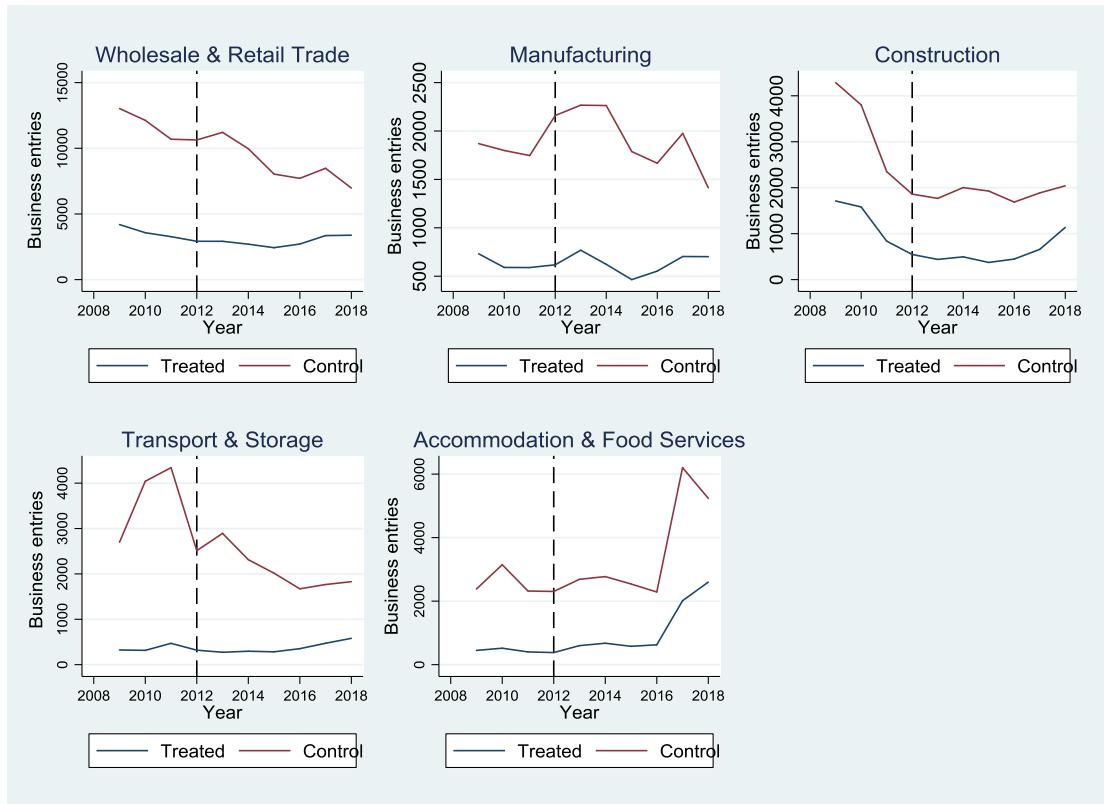
γ is the time trend common to the control and treated groups

δ is the true effect of treatment, and

e is the error term

In the particular case examined, the “treated group” consists of new entries in the form of capital companies and partnerships (SAs, LLCs, PCs, GPs and LPs) and the “control group” consists of new entries in the form of sole proprietorships. The dummy $time$ is set to 0 for the period before 2012, when the reform was not in place, and 1 afterwards. The analysis excludes new entries in economic activities for which one-stop-shops did not apply until 2016 (i.e. sanitary interest activities).

The results obtained by estimating the DID regression for the whole sample, i.e. for companies of all sectors except for sanitary interest activities, did not provide statistically significant results. Therefore, we proceeded to evaluate the impact of the reform on major sectors of the Greek economy. The sectors examined are Wholesale and Retail Trade, Manufacturing, Construction, Transport & Storage and Accommodation & Food Services. The evolution of business entries in the treated and control groups for these sectors are presented in Figure 3.8. In all cases the control group consisting of sole proprietorships is characterised by a larger number of new entries throughout the period examined. However, the first impression is that there are differences in trends between the treated and control groups.

Figure 3.8: New business entries in selected sectors

Source: AADE.

Table 3.11 presents the results of the DID analysis. The DID coefficient, that is the coefficient showing whether the expected mean change in business entries from before to after the reform was different between the control and the treated groups, is statistically significant for three sectors, i.e. Wholesale & Retail trade, Construction and Transport & Storage. This suggests that in these sectors the implementation of the reform was followed by a change in the observed rate of entries. Furthermore, the positive sign of the DID coefficient depicts that the reforms contributed positively to new entries in the creation of new partnerships and capital companies in these sectors. On the other hand, the remaining two sectors, namely Manufacturing and Accommodation & Food Services, do not appear to have been affected by the reform, as the respective DID coefficient is statistically insignificant, although the two groups evolve differently in the two periods, and in the case of Accommodation & Food Services there is a statistically significant increase for the mean difference in expected entries for both groups.

It is noted that a decline in business entries over time is reflected in the results for the three sectors, as indicated by the negative coefficient of the time trend. The treated coefficient is significant for all three cases, suggesting that the treated group has evolved in a different pattern than the control group. The DID statistics for the "before" and "after" the reform periods suggest that there was a significant difference between the treated and the control groups both in the period before and in the period after the reform. More specifically, in the Wholesale & Retail sector the mean difference in expected entries in the control group decreased by -236.5 entries after the reform, while in the intervention group by only -60.5. For the Construction sector

these figures are -131.3 and -65.4, respectively. An interesting result occurs in the Transport & Storage sector, where the mean difference in expected entries in the control group decreased by -127.1 entries after the reform, while in the treated group the estimate of the mean expected entries is not statistically significant, though its value of 0.23 is in a confidence interval that is definitely around zero, showing a stronger impact of the reform in the sector and essentially a stabilisation on average of the entries at the 2012 level. Moreover, the reform seems to contribute to the reduction of the gap in new entries between the two groups.

Table 3.11: Case 1 - Results of Difference-in-Differences estimation

Variables	Wholesale & Retail Trade	Manufacturing	Construction	Transport & Storage	Accommodation & Food Services
Time	-236.5*** (28,14)	12.63* (6,837)	-131.3*** (9.381)	-127.1*** (14.14)	71.60*** (23.37)
Treated	-689.3*** (33.24)	-97.31*** (8.075)	-175.3*** (11.08)	-277.1*** (16.70)	-180.0*** (27.60)
Diff-in-diff	176.0*** (39.80)	-12.35 (9.669)	65.93*** (13.27)	127.3*** (20.00)	-19.55 (33.05)
Constant	995.7*** (23.50)	150.4*** (5.710)	290.0*** (7.834)	307.9*** (11.81)	218.0*** (19.52)
Observations	238	238	238	238	238
R-squared	0.040	0.710	0.748	0.681	0.431
Before					
Mean control t(0)	995.7***	150.4***	290***	307.9***	218***
Mean treated t(0)	306.4***	53.14***	114.8***	30.81***	38***
Diff t(0)	-689.3***	-97.31***	-175.3***	-277.1***	-180***
After					
Mean control t(1)	759.2***	163.1***	158.7***	180.8***	289.6***
Mean treated t(1)	246***	53.42***	49.37***	31.04***	90.05***
Diff t(1)	-513.3***	-109.7***	-109.3***	-149.7***	-199.6***
Linear prediction (t=1)					
Treated=0	-236.5***	12.6*	-131.3***	-127.1	71.6***
Treated=1	-60.5***	0.38	-65.4***	0.23	52.0***

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

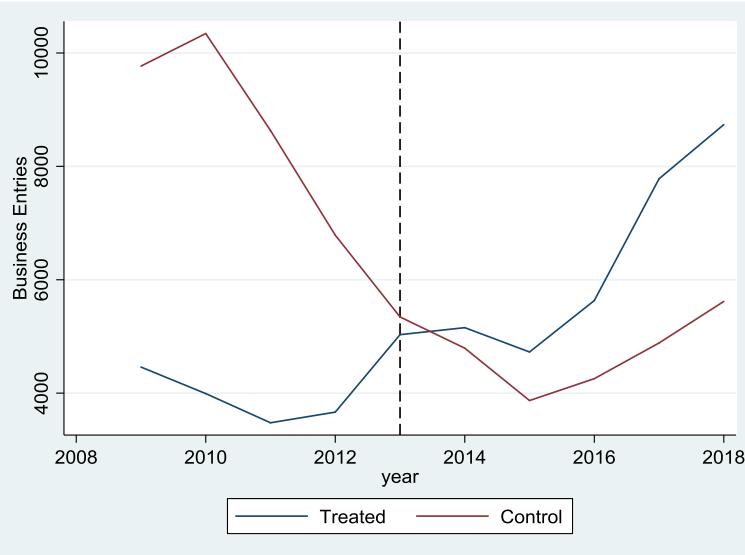
CASE 2: Reduction of minimum capital requirements

As a next step, we investigate the impact of the reduction of minimum capital requirements for capital companies, as implemented from 2013. To this end, we compare new business entries between (i) the legal forms where capital requirements were affected by the reform and (ii) new entries in legal forms for which the reform was not relevant.

In the context of the DID methodology the “treated group” consists of new entries in the form of capital companies (SAs, LLCs, PCs) and the “control group” consists of new entries in the form of partnerships (GPs and LPs).

The evolution of business entries in the treated and control groups are presented in Figure 3.9. It becomes obvious that the two groups follow a different pattern in their evolution in the period considered. In the period after the reform, capital companies display a positive time trend, while partnerships display initially a negative time trend, followed by a recovery from 2016.

Figure 3.9: New business entries in capital companies (treated) and partnerships (control), 2009-2018



Source: AADE.

As a first step, a DID equation is estimated. The results depicted in Table 3.12 show that there is a statistically significant difference between the two groups. The DID coefficient of 532.3, shows a positive impact on business entries of capital companies over partnerships. The reform will have a positive effect on business entries for the treated group, with 197.2 entries on average in the after the reform period and a negative effect on the control group with a decrease of 335.1 in business entries.

Table 3.12: Case 2 - Results of the simple Difference-in-Differences estimation

Variables	Parameters	Before	
Time	-335.1 *** (28.70)	Mean control t(0)	740.3 ***
		Mean treated t(0)	324.9 ***
Treated	-415.4 *** (31.35)	Diff t(0)	-415.4 ***
		After	
Diff-in-diff	532.3 *** (40.58)	Mean control t(1)	405.1 ***
		Mean treated t(1)	522.0 ***
Constant	740.3 *** (22.17)	Diff t(1)	532.3 ***
Observations	238		
R-squared	0.470		
Linear prediction (t=1)			
<i>Treated</i> = 0	-335.1 ***		
<i>Treated</i> = 1	197.2 ***		

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The treated group consists of three different types of legal forms, i.e. SAs, LLCs and PCs, and from the descriptive statistics it became obvious that the main upward trend in business creation comes from PCs. Thus a treated group was created, where treated=1 for SAs, treated=2 for LLCs, treated=3 for PCs and treated=0 for GPs and LPs (the control group). The results splitting the effect of the reform in each category of legal form are presented in Table 3.13. The results indicate that the reform has a significant negative impact on the control group, as discussed above, but the positive impact on the treated group is owed to the newly established legal form of PC with the minimum capital requirement of 1 euro (an increase of 397.6 entries on average). SAs are affected slightly with a decrease of -35.1. With regard to LLCs, they experience the highest reduction of all legal forms in the treated group.

Table 3.13: Case 2 – Slitting the effect of the reform by legal form

Variables	Parameters	
Time = 0	(Base outcome)	
Time = 1		
	Treated = 0 (GPs & LPs)	-335.1 ***
	Treated = 1 (SAs)	-35.1 ***
	Treated = 2 (LLCs)	-165.2 ***
	Treated = 3 (PCs)	397.6 ***

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notably, business forms in the control and treated groups have one more significant difference, the bookkeeping system they follow. Most capital companies employ the double-entry bookkeeping system, while most partnerships use single-entry bookkeeping. Since the tax treatment of companies changed in the course of the period under consideration on the basis of their bookkeeping system, thus also influencing the attractiveness of alternative corporate forms for new businesses, it is interesting to include also a new dummy in the estimated equation, taking the value of 1 when a company uses the double-entry bookkeeping system and 0 otherwise. By including this dummy we obtain the following Difference-in-Difference-in Differences (DDD) equation:

$$Y_i = \alpha + \beta Time + \gamma Treated + \delta Dummy + \varepsilon Diff1 + \zeta Diff2 + \eta Diff3 + \theta DID + e$$

where:

Y_i is the dependent variable

Treated is a dummy equal 1 for the “treated group” and 0 for the “control group”

Time is a dummy set to 0 for the period before the reform and 1 for the period after the reform

Dummy is a dummy that takes the value of 1 when a company uses the double-entry bookkeeping system and 0 otherwise

Diff1 is an interactive term multiplying the dummies *Treated* \times *Time*

Diff2 is an interactive term multiplying the dummies *Treated* \times *Dummy*

Diff3 is an interactive term multiplying the dummies *Time* \times *Dummy*

DDD is an interactive term multiplying the dummies *Treated* \times *Time* \times *Dummy*

e is the error term, and

$\alpha, \beta, \gamma, \delta, \varepsilon, \zeta, \eta$ and θ are the unknown parameters

The results indicate that there is a change in business entries owed to the reform (Table 3.14). The DDD coefficient shows that business entries were affected differently in the control and the treated group (both in type of business as in the bookkeeping system used). With regard to the legal form of the companies, the relative Difference-in Difference coefficient of 319.0 shows that the reform affected positively the business creation in the treated group, that is capital companies. The second Difference-in Difference coefficient of 309.6 shows also that the reform affected positively the business creation in the dummy group, i.e. companies using the double-entry bookkeeping system. Furthermore, the negative coefficient of the time trend indicates that total business entries are decreasing, an anticipated result since partnerships are far more in numbers than capital companies. The treated and the dummy coefficients are significant, suggesting that the treated group has evolved differently compared to the control group, and that new entries have also evolved differently between companies with double and single-entry bookkeeping systems. The results were to be anticipated, since the opportunity to establish a capital company with lower or even zero minimum capital was a decisive incentive favouring capital companies with double-entry bookkeeping systems (in particular PCs) compared to partnerships.

TABLE 3.14: Case 2 - Results of Difference-in-Differences-in-Difference estimation

Variables	Parameters	Before	
Time	-322.1 *** (20.44)	Mean control - A t(0) Mean control - B t(0)	15.92 *** 724.3 ***
Treated	-716.3 *** (22.32)	Mean treated A - t(0) Mean treated B - t(0)	316.9 *** 8.0 ***
Dummy	-708.4 *** (25.83)	Diff t(0)	1,017.3 ***
		After	
Dummy * Treated	1,017 *** (31.57)	Mean control - A t(1) Mean control - B t(1)	3.5 *** 402.3 ***
Time * Treated	319.0 *** (29.03)	Mean treated - A t(1) Mean treated - B t(1)	517.3 *** 4.9 ***
Time * Dummy	309.6 *** (29.55)	Diff t(1)	911.2 ***
		Linear prediction (t=1)	
DDD	-106.1 *** (41.42)	<i>Treated</i> = 0 <i>Treated</i> = 1	-170.6 *** 96.5 ***
Constant	724.3 *** (15.78)	<i>Dummy</i> = 0 <i>Dummy</i> = 1	-159.1 *** 96.3 ***
Observations	460		
R-square	0.851		

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The DDD statistics for the "before" and "after" the reform periods suggest that there was a significant difference between the treated and the control group as well as between companies with different bookkeeping systems, in both periods, before and after the reform. It is interesting to point out that the type of bookkeeping system

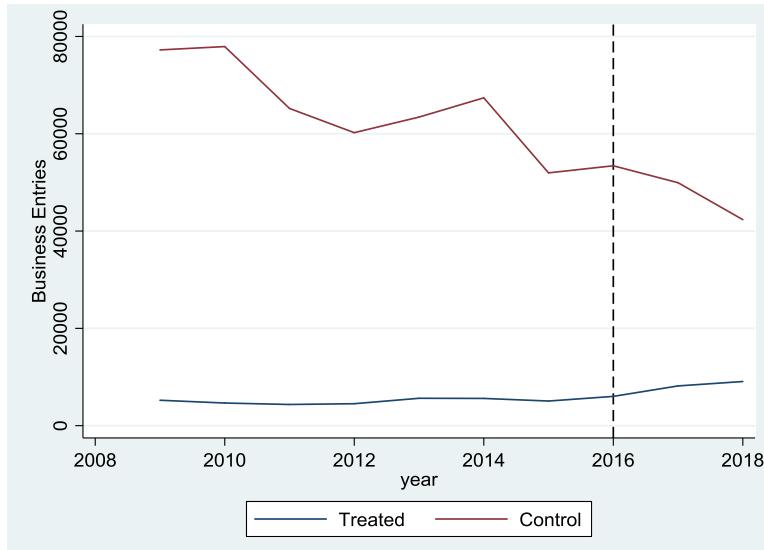
used exhibits a larger impact on business entries for the control group, while the type of legal form was of more importance for the treated group. More specifically, the mean difference in expected entries of partnerships decreased by -170.6 entries after the reform, while for capital companies it increased by 96.5 entries. With regard to the type of bookkeeping system they use, partnerships exhibit a decrease in mean expected entries by -159.1 in the period after the reform, while capital companies are projected to increase their mean expected entries by 96.3.

CASE 3: Changes in the taxing system for companies

Taxation is generally a complex issue and the tax treatment of businesses is a determinant of new business entry, influencing also the choice between alternative legal forms. Generally speaking, and up to 2015, the corporate income tax rate applying to businesses differed according to the type of bookkeeping system used (among other criteria such as in legal form as the size of its profits). In 2015, the corporate income tax rate for companies using double-entry bookkeeping was 29%, while the corresponding rate for companies using single-entry bookkeeping and sole proprietorships was either 26% or 33%, depending on the size of their profits. From 2016, the corporate income tax rate for companies with single-entry bookkeeping changed to 29%, while for sole proprietorships (also applying single-entry bookkeeping) the tax scale was equalised to that of natural persons. It is interesting to examine whether and how this change has affected new business entry. For this purpose, we examine the evolution of new business entries between (i) businesses with double-entry bookkeeping which will represent the "control group" and (ii) businesses with single-entry bookkeeping. The dummy *time* is set to 0 for the period before 2016, when the reform was in place and 1 otherwise.

Figure 3.10 depicts the evolution of business entries in the treated and control groups. It is obvious that companies keeping a single-entry bookkeeping system were larger numbers than companies using the double-entry bookkeeping system. From a first glance it appears that the two groups evolve in a different way in the period investigated.

According to Table 3.15, the DID coefficient is statistically significant and positive reflecting the fact the reform had an impact on business entry. Eliminating the difference in taxation for different bookkeeping systems led to a change in the entry decision towards creating businesses that use the double-entry booking. Both time and treated coefficients are statistically significant and negative, due to the much higher numbers of businesses with single-entry bookkeeping system.

Figure 3.10: New business entries by bookkeeping system, 2009-2018

Source: AADE

From the DID statistics for the “before” and “after” the reform periods, the difference of the mean of business entries between companies with double-entry and single-entry bookkeeping are statistically significant, signalling that bookkeeping is a factor affecting entry decisions for entrepreneurs in both the period “before” and “after” the reform, though the impact on business entries employing single-entry bookkeeping is higher in the “before” the reform period, while the impact on business entries with double-entry bookkeeping is higher in the “after” the reform period. More specifically, the mean difference in expected entries of companies with single-entry bookkeeping decreased by 1,353.3 after the reform, while companies with a double-entry bookkeeping display an increase of 245.5 entries on average. These results indicate that the reform aiming to eliminate tax benefits according to the bookkeeping system led entrepreneurs to divert from keeping single-entry to double-entry books.

Table 3.15: Case 3 - Results of Difference-in-Differences estimation

Variables	Parameters	Before	
Time	-1,353*** (178.3)	Mean control t(0)	5,516***
		Mean treated t(0)	417.3***
Treated	-5,099*** (136.8)	Diff t(0)	-5,099***
		After	
Diff-in-diff	1,601*** (252.2)	Mean control t(1)	4,163***
		Mean treated t(1)	664.7***
Constant	5,516*** (96.71)	Diff t(1)	-3,498***
Observations	238		
R-squared	0.878		
Linear prediction (t=1)			
<i>Treated</i> = 0	-1,353.3***		
<i>Treated</i> = 1	247.5***		

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.4 Concluding remarks

Greece undertook from 2010 onwards a wide spectrum of measures aimed at the facilitation of new business entry. The main reforms implemented in this direction concerned the simplification of the procedures for establishing new businesses, the introduction of the Private Company and the reduction of costs/capital requirements for establishing a new business. Furthermore, other related or consecutive measures were put in place over the same period, most notably the activation of the General Electronic Commercial Registry (GEMI) and electronic start-up notification.

The operation of one-stop-shops, in conjunction with the activation of GEMI, were important reforms for the facilitation of new business entry, reducing bureaucratic procedures, bringing about major improvements to the mechanism of monitoring of commercial enterprises and promoting transparency. Moreover, the introduction of the PC, a legal form of business with many attractive features for small and medium-sized businesses, served as an alternative for entrepreneurs offering limited liability status, flexibility, ease of establishment, lower social security contributions and a 1 euro minimum capital requirement. The reforms brought about major reductions in the costs involved in setting up new businesses, both through the reduction and/or abolition of individual costs/fees required for establishing a new business and through the overall simplification of the relevant processes, which saved time and lessened the need for acquiring assistance or services from specialists. In addition, the reforms reduced drastically the minimum capital requirements for setting up new capital companies, both via the introduction of the PC for which the minimum capital requirement was set at only 1 euro, and through the a major change of the minimum capital requirement applying to the other two capital company forms (the SA and the LLC). Finally, the recently established electronic start-up notification system simplified operational licensing procedures for businesses.

International business environment indicators point to an improvement of Greece's competitive position with respect to the ease of starting a business. According to the World Bank's Doing Business indicator, Greece has significantly improved its position both in the ease of starting a business (96 positions) as well as in its distance to the frontier (37 positions), while the Global Competitiveness Report of the WEF places Greece in the 18th position among the 28 EU countries in terms of cost of starting a business, and the 21th position in terms of time to start a business. Furthermore, business opinion surveys suggest that businesses have a very positive opinion of the reforms related to GEMI, and a positive to neutral opinion of the reforms referring to start-up notification.

Overall, the qualitative analysis of the reforms performed in this chapter suggested that reforms have eased to a great extent the procedures and requirements for starting new businesses activity in Greece. Furthermore, significant margins for policy action towards the improvement of the current system and procedures were identified with respect to: (i) the codification of legislative acts and the creation of a simple updated online guide for businesses, (ii) the improvement of the operation and

interoperability of GEMI, (iii) the further reduction in the costs and procedures for setting up and starting the operation of businesses, (iv) the improvement in other related requirements for starting new businesses and (v) the improvement of the system of monitoring and sanctions.

Turning to the results from the quantitative analysis of trends in business entries and exits, data on the evolution of new business entries show a shift of new businesses towards PCs and away from LLCs and GPs, and to a lesser extent LPs. As expected on the basis of its many advantages, the PC was considered by many entrepreneurs as more attractive form of business compared to the LLC and partnerships.

According to the empirical analysis on the basis of the Difference-in-Differences methodology, it appears that in selected sectors of the economy, namely in Wholesale & Retail Trade, Construction and Transport & Storage, the implementation of one-stop-shops brought about changes in the observed rates of business entry for legal entities affected by the reform. In the first two sectors, the reforms contributed positively to the creation of new capital companies and partnerships, while in the third sector, the expected entries remained rather stable, close to the level of year 2012.

With regard to the reduction of minimum capital requirements for capital companies, a positive impact on business entries was found. More specifically the DID estimation showed that capital companies, not only did not follow the decreasing trend of business entries of the control group, i.e. GPs and LPs, but on the contrary they exhibit an increasing trend in entries. This result can be attributed mainly to the introduction of PCs, as indicated by the decomposition of the effect of the three types of legal form of the treated group. These estimation results show that PCs served as substitute legal form not only for partnerships but also for LLCs. If the bookkeeping system used is incorporated in the DID equation, the results become more robust and show that entrepreneurs chose to establish capital companies that use the double-entry booking system.

With respect to the effect on new business entries from changes in the taxation of businesses according to their bookkeeping system, the results indicate that businesses using double-entry bookkeeping enter the market on an average more than those with single-entry books. After the reform, entrepreneurs establish more partnerships and capital companies that keep double-entry books.

4. THE LIBERALISATION OF PROFESSIONS AND ECONOMIC ACTIVITIES

4.1 *Introduction*

Governments often intervene in markets to regulate their structure or the behaviour of firms or professionals (OECD, 2017). There can be good economic reasons for such interventions, such as preventing market failure arising from the presence of externalities, overseeing common public resources and public goods, limiting market power and reducing inefficiencies from insufficient or asymmetric information. On the other hand, restrictions on starting or expanding businesses, rules that restrict the incentives of professionals or companies to compete and regulations that limit the choice or information available to consumers can have significant impacts on the affected sectors and, at times, reduce productivity and harm consumers.

According to the European Commission (2017), at least 21% of the labour force in the European Union can be considered as working in a regulated profession. In Greece, 22% of the labour force can be considered as working in regulated professions in 2016, with 40% of this labour consisting of professionals in health and social services, followed by business services (22%), public services and education (7%), construction (7%) and wholesale and retail trade (3%).

One of the main justifications for regulation in economic activities is the existence of asymmetric information between professionals and clients. Generally, consumers are not in a position to assess the quality of the professional services they buy (even after buying them) and, being in a position of relative weakness, need to be protected. Under these circumstances, professionals and/or firms may have an incentive to reduce quality and/or to set higher than competitive prices (Canton et al., 2014). Sub-optimal quality services can lead to negative externalities and thus to costs for third parties. Furthermore, other problems arising from information asymmetries, thus justifying regulation, include adverse selection and moral hazard (OECD 2017, 2018).

The necessity and the potential economic impact of regulations have been analysed extensively in the literature (Koske et al., 2015; Kotsi et al., 2015; Canton et al., 2014; Paterson et al., 2003). Most of the entry regulations (a university degree, practicing and professional examinations) are considered to be essential in order to ensure adequate and high-quality services to consumers. On the other hand, conduct regulations (e.g. restrictions on prices and fees) have proven in some cases to be costly and ineffective means of achieving public interest goals. Many empirical studies have shown that introducing regulation will not necessarily reduce the adverse effects of the imperfect information problem (e.g., Paterson et al., 2003; Kleiner and Kudrle, 2000). In fact, if the regulation is not appropriately designed and implemented, it can impose market restrictions, limit consumer choice, and reduce the number of professionals being able to enter the market (Canton et al., 2014). Furthermore, impediments to competition may harm market performance (Canton et al., 2014). A limited degree of competition in the services market may hamper an efficient

allocation of resources across companies and lead to higher prices due to a de facto situation in which providers have some degree of market power in service provision. Restrictive product market regulation is also associated with lower multifactor productivity levels. Services, such as finance, accounting, transportation, communications, legal services and other commercial services are critical for the production of other goods. Bourles et al. (2013) argued that anticompetitive regulations have an impact on productivity that goes beyond the sector in which they are applied, and this effect is more important for the sectors closer to the productivity frontier.

A number of studies confirm that making regulations more proportionate and adapted to market reality by relaxing the most restrictive and unjustified requirements results in faster productivity growth, improved market dynamics (specifically leading to more market openings), more start-ups and new innovative services brought to the market by new entrants, enhancing competition, employment creation and investment. Furthermore, the removal of unjustified restrictions also leads to benefits for consumers in terms of lower prices as a result of reduced profit rates, greater consumer choice and better quality of services (Nickell, 1996; Blundell et al. 1999; Niccolleti and Scarpetta, 2003; Aghion et al., 2004; Griffith et al., 2006; Arnold et al., 2011; Bourles et al., 2013; Canton et al., 2014; Fournier, 2015; World Bank, 2016; European Commission, 2017).

In light of the above, countries have removed poorly designed regulations in markets over the past decades, reducing state involvement on market entry and conduct and making it easier for professionals to create and expand companies. In some cases, regulation has been totally abolished, while in others it has been replaced by better designed legislation that can improve competition (Koske et al., 2015). Enhanced competition can raise output per capita by increasing investment and employment as well as by encouraging companies to be more innovative and efficient, thereby increasing productivity (Koske et al., 2015; Bourles et al., 2013; Bouis and Duval, 2011; Conway et al., 2006; Nicoletti and Scarpetta, 2005; Copenhagen Economics, 2004).

In Greece, regulatory barriers on professions/economic activities were among the highest in the EU and OECD countries (Koske et al., 2015). In 2011, Greece introduced a framework Law establishing the principle of professional freedom and eliminating unjustified restrictions to the access and exercise of professions/economic activities. Previous studies for the case of Greece have shown that these reforms had positive effects in terms of lower prices for consumers (e.g. for legal professions, accountants and tax consultants) and market entry (e.g. for tourist guides, chartered valuers) (Athanassiou et al., 2015, Kotsi et. al. 2015, 2016). The aim of this section is to assess the reform and evaluate the effects of the reforms on prices and employment.

4.2 Methodology and data

The analysis will consist of the following steps:

- (a) Screening of existing laws and regulations. We discuss the legislative framework of professions/economic activities affected by the reforms, categorising them into three groups according to the number and intensity of remaining regulations on market entry and conduct. Entry regulations include education requirements/qualifications, compulsory chamber/association membership, quotas, exclusive or shared exclusive rights. Conduct regulations include reference prices and fees, geographical restrictions, minimum distances, restrictions on the structure and form of business, restrictions on inter-professional cooperation, regulations on advertising/marketing and other restrictions.
- (b) Qualitative assessment of the impact of the liberalisation of professions/economic activities on competition. We perform a qualitative assessment of the impact of legislation on market competition, using the Competition Assessment Guide of the OECD (2017). According to the Competition Assessment toolkit, regulations are assessed on the basis of whether they limit the number or range of suppliers, the ability of suppliers to compete, the incentive of suppliers to compete, or the choices and information available to consumers.
- (c) Quantitative evaluation of the impact of the liberalisation of professions/economic activities on prices and employment. Based on methodology of the European Commission (2017) we calculate a composite regulation index for the measurement of the intensity of the reforms in selected professions and economic activities before and after the implementation of L. 3919/2011. Furthermore, we examine entries and exits in 23 regulated professions/economic activities. In addition, we assess the impact of the liberalisation on prices of services and employment and more specifically on self-employed individuals, on the basis of the DID methodology. We assess the effects of the reforms by comparing developments in professions and economic activities affected by the reforms to a group of professions/economic activities that were not exposed to the reforms. In the analysis we employ data from the Ministry of Finance (entries and deletions from the Register files of the Chamber Associations) and detailed non-publicly available data from ELSTAT on prices of services (Consumer Price Index) and employment (Labour Force Survey).

4.3 Screening of the reforms

In March 2011, the Greek government introduced L. 3919/2011 which eliminated unjustified restrictions to the entry and exercise of a wide range of professions and economic activities, and provided special provisions for a number of specific professions (e.g. notaries, lawyers, engineers, statutory auditors). L. 3919/2011 was followed by a number of further legislative acts and interpretative circulars, therefore prolonging the full implementation of the reforms. The provisions of L. 3919/2011, as amended and supplemented by Laws 4002/2011, 4038/2012, 4093/2012, 4152/2013,

4261/2014, 4257/2014, 4254/2014, 4497/2017, 4512/2018, 4530/2018 and 4582/2018, have been implemented for several professions and economic activities.

As a result of the reforms, the following restrictions were abolished: (a) *quotas* or restrictions on the number of persons licensed to practice a profession throughout the country or in a certain geographical region, (b) dependence of administrative licensing on the existence of real needs (evaluation of socio-economic needs), (c) geographical restrictions-minimum distances between facilities, (d) prohibition of branches or practicing in more than one facility, (e) exclusive reserved or shared reserved rights (f) restrictions on the structure and form of business/companies, (g) restrictions on the structure of corporate partnerships or the composition of equity capital, (h) minimum prices and/or wages and (i) obligation of the professional to offer together with their services other specific services.

Furthermore, the administrative licensing procedure to practice a profession or economic activity was replaced with a new procedure that requires an announcement to the relevant administrative authority of intent to open a business, accompanied by all necessary supporting credentials. Each profession and economic activity is freely practiced after three months from the announcement of the activity start-up. The implementation process of this provision proved, in practice, much more complicated than initially anticipated. Additional legislation (L. 4152/2013) was deemed necessary to implement the new announcement procedure.

L. 3919/2011 sets special provisions for notaries, lawyers, law firms, engineers and statutory auditors. More specifically, for *notaries*, the law defines fixed and proportional fees/prices with respect to the value of the contract, restrictions on advertising on the basis of L. 3844/2010 and an increase in the number of available notary positions. *Lawyers* are permitted to practice throughout the country but must establish their office in the region in which they are registered. Clients and lawyers can freely negotiate and agree on prices in writing. Otherwise, there is a provision for "legal prices/fees" which are defined in the Code of Conduct of Lawyers (depending on the case, they amount to the minimum prices/fees defined in the regime prior to the reforms or are determined as a percentage of the contract value with a descending scale). Lawyers must pay contributions to the Hellenic Association of Lawyers. Law firms have the right to establish branch offices nationally according to the terms and conditions of the Code of Conduct of Lawyers, and branch offices abroad, according to EU legislation. *Engineers* and clients can freely negotiate and agree on the fees for construction projects. Otherwise there is a provision for "legal fees" converting the mandatory minimum fees (Presidential Decree 696/1974) to minimum "legal fees". Engineers must pay a mandatory 2% of fees to the Technical Chamber of Greece. The fees of *statutory auditors and audit firms* for all types of audits are to be determined by free agreement with clients, as well as minimum hours required for carrying out statutory audits. These hours are to be determined by the Hellenic Accounting and Auditing Standards Oversight Board (HAASOB or ELTE in Greece), upon the recommendation of the Supervisory Board of the Institute of Certified Public Accountants of Greece (SOEL), taking into account indicative criteria. The law

determines the maximum annual employment hours per auditor, with the possibility of the diversification of hours by ranking (senior auditor, assistant auditor, probationary or trainee auditor) and equivalent to that experience.

Table 4.1 lists additional legislative acts, recommendations and circulars issued in the process of implementation of L. 3919/2011 in order to complete the reforms. A detailed screening of the reforms is presented in the studies of Kotsi et al. (2012, 2013, 2015, 2016).

Table 4.1: Additional legislative acts, recommendations and circulars issued in the process of implementation the reforms

Recommendations	
Hellenic Competition Committee	12 recommendations on 44 professions/economic activities that had requested their exemption from the reform.
Laws	
L. 3982/2011	technical professional activities
L. 4070/2012	passenger cars for public use
L. 4046/2012	33 health professions/economic activities, stevedores, certified valuers, accountants/tax consultants, actuaries, temporary employment agents, private employment agencies, real estate agents
L. 4093/2012	passenger car rental services, vehicles with drivers, tobacco products' retail sales, accountants, private schools, foreign language teaching centres, vocational training private institutes, energy building auditors, stevedores, temporary employment agents, private employment agencies, tourist guides, press agencies, newsagents
L. 4038/2012	road transport, lawyers, law firms, notaries, trade fairs and street/outdoor trade
L. 4070/2012	taxis, driving instructors
L. 4152/2013	certified valuers, antique dealers, repairers of ancient or newer monuments, conservators of antiquities and art, refineries, biofuel disposal, transport and trade of petroleum products, 9 social security economic activities, trade of fertilizers-production and trade of multipurpose plant materials, butchers, veterinarians, tug services, reel trade, private investigation offices, manufacturing of pyrotechnics, security, street-market traders, private education
L. 4111/2013	rental services of passenger cars with drivers, accountants, lifelong learning centres, private schools, energy building auditors
L. 4280/2014	energy building auditors
L. 4264/2014	street/outdoor stationary and itinerant trade, street-markets, street-market vendors, fair trade, tutorial teaching centres, private education
L. 4254/2014	actuaries, certified valuers, geotechnicians (agronomists, foresters, geologists, veterinarians), pharmacies, retail trade in liquid fuels, travel agents, car rental agencies, road transport tourist companies, installers of electrical and mechanical facilities, one-day care clinics, temporary employment agents
L. 4497/2017	street-market vendors, street/outdoor stationary and itinerant trade, street-market vendors-producers, street-market vendors-salesmen, mobile snack stands
L. 4512/2018	fair trade, emergency road assistance, hairdressers-barbers, manicure and pedicure technicians
L. 4530/2018	passenger cars for public use, private KTEO, heavy goods vehicle driver schools
L. 4582/2018	trade fair, travel agents, private passenger cars with drivers from travel agencies, tourist guides
Interpretative Circulars	
Ministry of Finance	certified valuers, actuaries, custom brokers, marine chemists
Ministry of Defence	tobacco product retail sales, buffet operation
Ministry of Economy and Development	accountants/tax advisors, trade fairs
Ministry of Infrastructure, Transport and Networks	radio technicians, radio electricians, driving instructors, driving schools, car mechanical technicians, emergency road assistants, vocational training schools of transporters
Ministry of Labour	stevedores, private employment agencies, temporary employment agents
Ministry of Health	34 health professions and economic activities
Ministry of Civil Protection	key/lock manufacturers, moneychangers, pawnbrokers
Ministry of Culture	higher private schools of dramatic art, higher private dance schools, amateur dance schools, conservatories-music teaching schools, technicians related to art/culture production, antique dealers, repairers of ancient or newer monuments, conservators of antiquities and art, auctions
Ministry of Tourism	tourist guides

Following a long and complex process, the implementation of the reforms has been completed for the vast majority of professions/economic activities under liberalisation, bringing about the abolition or drastic reduction of restrictions in a wide range of professions/economic activities. The need for an administrative license to exercise a profession or economic activity was replaced by an announcement of intent to practice the profession or to open a business, maintaining all the necessary requirements of a degree, practice, examinations and other supporting credentials. Quotas on the number of practitioners, geographical restrictions and restrictions on the establishment of branch offices were abolished for the majority of professions/economic activities, with the exception of a small number of professions. Natural or legal persons who are practitioners have been allowed to enter the market for the majority of economic activities, subject to the recruitment of a qualified person authorised to exercise the profession. Remaining regulations have been maintained on the grounds of public interest, public safety and consumer protection. As pointed out by Athanassiou et.al. (2015) and Kotsi et. al. (2016), who also assessed the relevant reforms for specific professions, the remaining restrictions concern mainly scientific professions, while most professions for which major regulations remain also had a high intensity of regulations prior to the reform. Notably, many of these professions are characterised by high educational qualifications, a high degree of specialisation and a sensitive nature of services provided. These characteristics justify to a certain extent the higher intensity of existing regulations, a pattern which is also observed internationally.

In the present study the screening of the legislative framework covered 260 professions/economic activities. Tables 4.2 and 4.3 present the remaining entry and conduct regulations for each profession after the implementation of the reforms. The professions are classified into three groups according to the number and intensity (more or less restrictive) of the regulations: (a) regulated professions (Table 4.2), (b) professions with minor regulations (Table 4.2), and (c) professions only with licensing/announcement and "other regulations" (Table 4.3). "Other regulations" comprise the registration of practitioners in registries, compulsory fees paid to third parties, compulsory renewal of the administrative license after a certain period of time, technical requirements for the establishment of facilities and bank letters of guarantee.

The screening of the legislative framework has shown that 41 professions/economic activities can be characterised as regulated, 70 have minor regulations, while 149 are subject to an announcement/licensing procedure either accompanied by specific qualifications or not (Figure 4.1). In the first group, apart from licensing/qualifications, the main remaining regulations refer to compulsory chamber membership, reference fees/prices when a written agreement has not been signed and to exclusive or shared rights. In the second group the main remaining regulations apart from licensing/qualifications, refer to the qualifications of the director/manager when the owner is not licensed to practice the profession and to compulsory chamber membership.

Figure 4.1: Short description of regulations after the liberalisation of the professions and economic activities

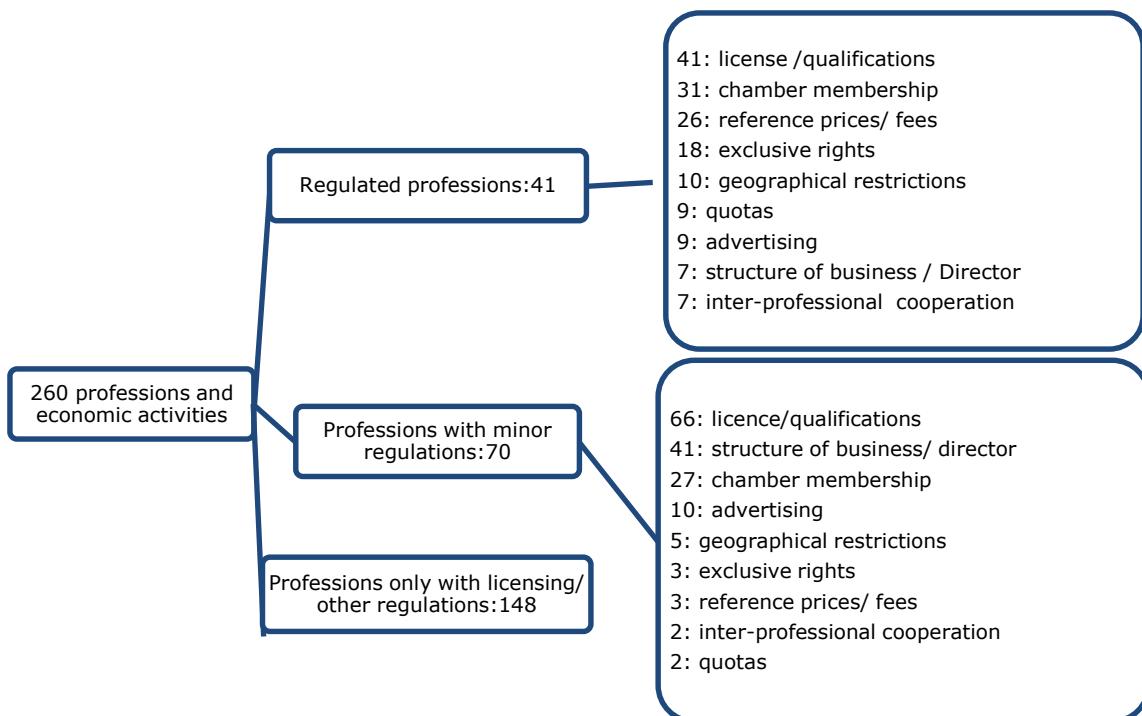


Table 4.2 List of professions and economic activities according to the intensity of the regulations after the liberalisation

List of profession and economic activities	Entry regulations				Conduct regulations					
	Licence/ Education requirements/ qualifications	Compulsory chamber/ association membership	Quotas	Exclusive or shared exclusive rights	Reference prices/ prices & fees	Geographical restrictions/ minimum distances	Structure and form of business/ Director appointing	Inter- professional cooperation	Advertising/ marketing	Other
Regulated professions										
Statutory auditor	*	*		*					*	
Auditor Companies	*	*		*					*	*
Actuary	*			*						
Certified valuer	*			*						*
Translator/Interpreter	*				*					*
Pharmacy	*	*	*				*	*	*	*
Lawyer	*	*		*	*				*	*
Law companies		*		*	*	*	*	*	*	*
Notary	*	*	*	*	*	*		*	*	*
Bailiff	*	*	*	*	*	*			*	*
Rehabilitation Centre	*	*					*	*		*
One-day care clinic (outside private clinics)	*						*	*	*	*
Energy building auditors	*	*		*	*	*				*
Architect/Civil/Electrical/Mechanical/Chemical/ Mining & Metallurgical/Naval Mechanical Engineer	*	*		*	*					*
Information and Communication Systems/ Computer and Telecommunications/ Electrical – Computer/ Electronic – Computer/ Mechanical Engineer and Aeronautical/Production and Project Management/Environmental/Planning & Regional Development/Mineral Resources/ Engineer/Land Surveyor/Computer Engineer and Informatics/Computer Engineer, Telecommunications and Networks	*	*			*					*
Stevedore	*	*		*						
Oenology/Winery Lab	*	*	*				*	*		
Street-market vendor - producer	*	*					*			*
Street-market vendor - salesman	*		*			*	*			*
Street/outdoor stationary & itinerant trade	*		*			*				
Emergency road assistance services	*				*	*		*		*
Passenger cars for public use (taxi etc.)	*		*			*			*	*
Road transport of passengers-KTEL	*		*	*		*				*

List of profession and economic activities	Entry regulations				Conduct regulations				
	Licence/ Education requirements/ qualifications	Compulsory chamber/ association membership	Quotas	Exclusive or shared exclusive rights	Reference prices/ prices & fees	Geographical restrictions/ minimum distances	Structure and form of business/ Director appointing	Inter- professional cooperation	Advertising/ marketing
Professions with minor regulations									
Physician/Dentist	*	*							*
Physician/Dentist Office/Centre	*						*		*
Pharmacist	*	*							*
Physiotherapist/Dental Technician	*	*						*	
Physiotherapy/Dental Lab/Optical and Contact Lenses Store	*					*			*
Nurse	*	*							
Midwife	*	*						*	
Health Visitors	*	*							
Social Worker	*				*				
Diagnostic Centres	*						*		*
Physical Medicine and Rehabilitation Centres	*						*		*
Chronic Hemodialysis Units (outside private clinics)	*					*	*		*
Elderly care/daily care Centres/Early childhood care centres	*	*					*		*
Nursery school	*						*		*
Camps for children	*					*			*
Support centre for people with disabilities	*						*		*
Centre of creative activities for children with disabilities	*	*					*		*
Hair Salon/Manicure and Pedicure lab	*						*		
Slimming Unit - Diet Unit	*						*		*
Beautician/Cosmetologist	*	*							
Funeral services	*					*			
Accountant/tax advisor	*			*					
Tourist guides	*			*					*
Marine Chemists/Geologist	*	*							
Coach/trainer	*	*							
Naval agent	*							*	*
Commercial agent		*			*	*			
Temporary employment agents	*			*					*
Yacht taxi	*							*	*
Rental services of shipping transports	*					*			*
Primary and secondary private school	*				*		*		*
Vocational Training Private Institute (IEK)/Lifelong learning centres level 1 & 2/Private Colleges/Foreign language teaching centres/tutorial centres	*						*		*

Structural Reforms in Greece, 2010-2018

List of profession and economic activities	Licence/ Education requirements/ qualifications	Compulsory chamber/ association membership	Quotas	Exclusive or shared exclusive rights	Reference prices/ prices & fees	Geographical restrictions/ minimum distances	Structure and form of business/ Director appointing	Inter- professional cooperation	Advertising/ marketing	Other
Vocational training school of transporters/Driving school services/Teaching centres of high-speed craft drivers	*						*			*
Organisation of diver's certification	*			*			*	*		
Street-Kiosk/Buffet operation			*							
Trade of tobacco products										*
Trade of petroleum products type A/type B1 (Airforce)/type B2 (Shipping)/ type C (LPG)	*						*			*
Gas station within/outside the borders of the town/LPG/Natural Gas Stations	*						*			*
Agriculturalist/ Forester/ Veterinarian/Ichthyologist	*	*								
Trade of fertilizer products and trade of multipurpose plant materials type A, B, C, and D	*	*					*			*
Seed-production business	*	*					*			*
Operation of a nursing business-type A, B, C	*	*					*			*
Nursery holding business of vineyard's plantation	*	*					*			*
Trade of fertilizer products type A & B	*	*					*			*

Source: Assessment based on the screening of laws, ministerial decisions, interpretative circulars and informational material from the two Interministerial Working Groups under the responsibility of the Greek Ministry of Finance.

Table 4.3: List of professions/economic activities with licensing procedure/announcement and other regulations

Technicians	(1)	(2)	Transport	(1)	(2)
Plumber/Plant Combustion & Engineer/ Oxygen- and Electric-welder/Refrigeration expert Technician	*		Road transport of commodities	*	*
Plumber Master-Technician and Foreman	*	*	Car, taxi and van driver	*	*
Plant Combustion Master-Technician and Foreman	*	*	Bus/tourist bus/minibus driver	*	
Plant Engineer Master-Technician and Foreman 1st, 2nd, 3rd, 4th specialty	*	*	Technical service station of cars, vehicles, motorcycles etc.	*	*
Oxygen- and Electric-welder Technician A, B class	*	*	Passenger car/bus/cargo vehicle station/Wash services of cars	*	*
Refrigeration expert Master-Technician and Foreman	*	*	Private vehicle inspection centres	*	*
Assistant Work Machine Operator - specialty 1 to 8	*	*	Private vehicle centres - Inspector	*	
Work Machine Operator class A, B - specialty 1 to 8	*	*	Driving instructor	*	
Electrician Master-Technician - specialty A, D	*	*	Special tourist coaches for public use	*	*
Installer of low-voltage photovoltaic systems	*	*	Car rental/Motorcycle/Limousine businesses	*	*
Electrician Installer 1st, 2nd, 3rd, 4th Group - specialty A	*	*	Tourist road transport businesses	*	
Electrician Technician - specialty A, C, D	*		Rental services of passenger cars/motorcycles and vehicles with chauffeur services for private use	*	*
Electrician Installer 1st Group - specialty C	*	*	Special tourist coaches for public use	*	*
Maintainer Electrician - specialty D	*	*	Rental services of passenger cars, motorcycles and vehicles with chauffeur services for private use	*	*
Electrician Installer 1st, 2nd Group - specialty D			Shops on ships/anchored ships (sanitation interest)	*	*
17 Vehicle/Bicycle/specialised technicians/repairers	*	*	Diving instructor/Dive services for leisure/Diver/Diver under practicing	*	*
Radio technician, Radio electrician A & B, Radio technician assistant, Radio scribe, Radio telephonist			Boat services (Lanzas)/Tug services	*	*
Medical-Paramedical	*		Security of seized/decommissioned ships	*	*
Psychologist/Optician/Occupational Therapist/Public Health Supervisor/Pharmacist Assistant/Dentist Assistant/ Prostheses and Orthotics Technician/Medical Radiation Physicist-Hospital Physicist/Medical Radiation Physicist in ionizing radiation/Dietician/Radiologist/Speech/talk therapist/Ambulance crew			Rental services of boats and crafts	*	*
Nurse Assistant	*	*	Lifeguard teaching centre	*	*
Fitness centres/gyms	*	*	Floating reception of petroleum residues from ships	*	*
Beauty Care services/Hairdresser - Barber - Hair beauty Salon/Manicure and Pedicure Technician			Refuse ship services	*	*
Various professions/economic activities			Facility services in beach	*	*
Trade fairs	*		Lifeguard/Sailor	*	
Teaching in home	*	*	Street/outdoor trade on ships	*	
Teaching in a foreign language centre/tutorial centres	*	*	Collection of petroleum residues from tankers and floating yards	*	*
Private employment agencies	*	*	Trade of special products/professions		
Centre of creative activities for children	*	*	Manufacturing of explosive products/ pyrotechnic products	*	
Customs Broker	*		Shotfirer-blaster	*	*
Travel agencies/Yacht brokering companies/Press agencies/Pawnbroker	*	*	Priming of weapon cartridges – trade/ Reel retail trade	*	
Real estate agents/brokers	*	*	Security services/practitioner	*	
			Private investigation offices	*	*
			Private investigation practitioners	*	
			Administrative licence of refining/ biofuel disposal/ transport and trade of petroleum products/Bottling of LPG	*	
			Trade of petroleum products type B2 (asphalt)/ heating oil/supply of bottled LPG/petroleum products - direct supply	*	*
			Collection of petroleum residues from a tanker	*	*
			Lock/key manufacturer	*	*

Notes: (1) licensing/announcement, education requirements, qualifications, (2) other regulations

Source: Own estimations based on screening of laws, ministerial decisions, interpretative circulars and informational material from the two Inter-ministerial Working Groups under the responsibility of the Greek Ministry of Finance.

4.4 Qualitative assessment of the impact of the reforms

The imposition of restrictions on professions and economic activities, such as lawyers, notaries, engineers, technicians, health professionals, private schools, etc., could harm competition and lead to a clear limitation of professional freedom. Even though regulation may be in many cases justified on the grounds of securing the quality of services and consumer protection, the lifting of unnecessary restrictions limiting the number or range of suppliers, the ability and incentives of suppliers to compete and the choices and information available to consumers, can produce beneficial effects for consumers, employment and productivity growth. The implementation of L. 3919/2011 and its subsequent legislation brought about major improvements in this direction, thus promoting competition in professions/economic activities.

The replacement of the administrative licensing procedure to practice a profession by an announcement to the relevant administrative authority has facilitated the entry of new practitioners in the market. After the reform, the professionals and the owners of firms are free to practice their profession or establish their facilities three months from the announcement of the activity start-up, accompanied by all necessary supporting credentials. Furthermore, for the majority of professions (with the exception of a few professions with special provisions, such as notaries) after the reforms practitioners can exercise their profession nationwide and one or more branches can be established throughout the country.

The abolition of compulsory minimum/maximum prices and fees can improve competition among professionals and have a positive impact on consumer welfare by lowering prices. Empirical studies have concluded that the imposition of minimum fees or prices did not dissuade professionals from providing low-quality services at high prices (OECD, 2017). However, the "reference prices" defined in specific professions may in practice result in a level of fees or prices applied by the majority of practitioners, if reference prices are used as focal point.

The level of regulation on the structure and form of business/companies and inter-professional cooperation differs among economic activities. For professions with restrictions on the qualifications of the owner, the reforms permitted the establishment and operation of facilities to natural and legal persons who do not fulfil the education requirements to exercise the profession, under the condition of appointment of a qualified director/manager. This improvement was implemented for economic activities referring to education, culture, health, beauty care, pharmaceuticals, etc., and lifted restrictions on the range of suppliers. In some cases, the director/manager of the business/branch facilities participates as a shareholder with a certain predefined percentage in the capital of the firm, e.g. pharmacies, medical centres. Inter-professional cooperation is allowed in specific professions, but restrictions continue to apply in particular professions on the grounds of public interest. In the case of law firms, the reforms refer to the simplification of the procedures for the establishment of the firm and the amendment of the incorporation charter, without removing restrictions on the corporate structure of the firm and the inter- and/or intra- cooperation between lawyers and/or between lawyers and other professionals. The participation of a legal entity or a natural person who is not a notary is prohibited in the co-establishment of notary firms. Agreements between notaries from other regions, lawyers, engineers and bailiffs are permitted in order to promote their work.

In a number of regulated professions, entry requirements comprise a reserve or shared reserve of particular activities. According to the screening of existing regulations, the reserved activities identified are similar to those described in the earlier study of Avgitidis (2014). Most of the reserves are found in professions of the financial sector (e.g. certified valuers, actuaries, accountants/tax advisors, statutory auditors), the legal sector (e.g. lawyers, notaries) and the technical sector (e.g. architects, civil/electrical/mechanical/naval engineers, geotechnicians). Reserved

activities are justified on the grounds of consumer protection, public health and safety, protection of the environment, protection of national heritage and other reasons of public interest. In most cases, these regulations seem to adhere to the principle of proportionality, e.g. the obligation of insurance companies to employ an actuary; or the obligation of a certain size of enterprise to employ the services of an accountant/tax advisor for the submission of their tax declaration; or the provision allowing for the audit of economic statements only by statutory auditors. However, this is not always the case, e.g. the mandatory valuation of assets transferred to a mutual fund by a certified valuer, which can in some cases be carried out by an independent valuer.

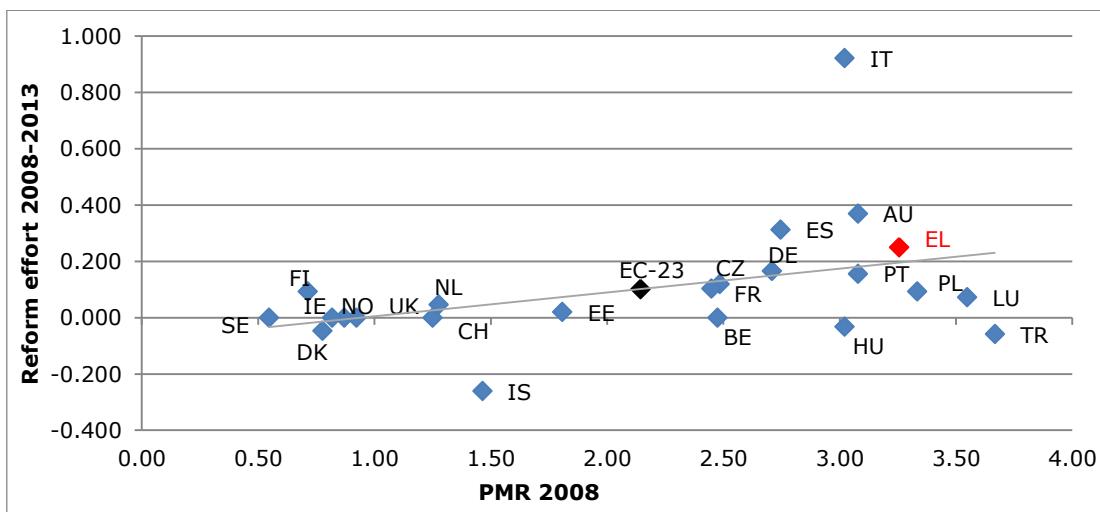
The removal of restrictions on advertising can lead to positive effects for consumers (OECD, 2017). The consumer receives information through advertising about different types of services and the conditions in which they are provided, the introduction of new services or/and the entry of new professionals into the market. Thus, the consumer may have better information to choose between the services provided, reducing the search cost. Empirical studies (OECD, 2007) have shown that advertising restrictions result in higher prices for consumers. On the one hand, advertising can increase competition among professionals. On the other hand, the impact of advertising on the quality of the services provided is not clear. Advertising may have a negative impact when used by low-quality practitioners and a positive one when it refers to true, clear and non-misleading information. L. 3844/2010 regulates advertising under the condition that it harmonises with European law and ensures professional dignity, integrity and secrecy. For specific professions such as lawyers, notaries, pharmacists, private clinics, doctors, etc., the law imposes advertising restrictions to secure public interest.

4.5 Quantitative analysis of the impact of the reforms

4.5.1 Regulation indices of professions/economic activities

A common methodology for the quantitative assessment of regulation in professions/economic activities is the construction and calculation of regulation indices.

The OECD Product Market Regulation Indicator (PMR) measures the intensity of the reforms for 4 professional services (legal, accounting, architectural and engineering services) across OECD countries, and is available up to year 2013. As illustrated in Figure 4.2, the PMR indicators suggest that regulatory barriers decreased between 2008 and 2013 in most European countries, including Greece (from 3.26 in 2008 to 3.01 in 2013). On average, the PMR value of 23 European countries decreased from 2.14 in 2008 to 2.04 in 2013. Considering the two main components of the PMR index, the sub-indices for entry and conduct regulations in Greece in 2013 amounted to 3.50 and 1.25, respectively. The level of entry regulation was higher than conduct regulation, mainly due to education requirements, exclusive rights and compulsory chamber membership.

Figure 4.2: Overall regulation reform efforts in European countries

Note: Trend line in grey.

Source: OECD PMR database.

For the case of Greece, a similar approach was followed by Athanassiou et. al. (2016)⁸, who measured the degree of regulation in 90 professions/activities affected by the reforms in Greece via a composite regulation index. The methodology for the construction of the index was based on Paterson et. al. (2003) and Conway & Nicoletti, (2006), with some adjustments considered necessary for the case of Greece. The index was calculated for the regimes before and after the reforms and the analysis indicated a significant reduction in the relevant index values after the reforms, suggesting that the reforms brought about considerable changes to the relevant regulatory regime, in the direction of abolishing restrictions. Regarding the intensity of regulations prior to the reforms, the relevant indices indicated the existence of significant barriers to competition, related primarily to market entry and, to a lesser extent, to conduct. Professions/economic activities ranking high as to their total regulation index -and hence as to the strictness of their regulations- included those of notaries, lawyers and law firms, engineers and engineering companies, energy inspectors, statutory auditors, chartered surveyors, several health sector professions and services, customs brokers, taxi drivers, newsvendors and stevedores. After the reforms the observed decreases in the total index values were for most professions to a larger extent a result of the lifting of entry regulations (e.g. with respect to licensing) and to a lesser degree an effect of the abolition of conduct regulations. Correlations and regression analysis suggested that professions/economic activities with more stringent restrictions before the reforms tend to be characterised by a comparatively higher intensity of regulations after the reforms, as also suggested by Canton et al. (2014). While for many of the occupations maintaining relatively high regulation indices a certain degree of restrictions was justified by the requirements on scientific expertise and the special nature of the services offered (e.g. legal, engineering and health services), a small number of professions retained high index values despite the lack of such justifications.

⁸ The same methodology was also employed for the case of Greece in the studies of KEPE (2016, 2013).

The European Commission (2017) developed a restrictiveness indicator of occupational regulation (PRO-SERV), measuring the intensity of regulation for seven professions, i.e. tourist guides, real estate agents, lawyers, civil engineers, architects, accountants/tax advisors and patent agents (Figure 4.3) across the EU for year 2016. The methodology for the calculation of the index, which is presented in Box 4.1, added 11 regulatory items (restrictions) on top of the 10 items that were already included in the PMR. The PRO-SERV indicator places appreciable weight to regulatory exclusiveness, mostly as a result of reserved activities. Restrictions are grouped into four categories that reflect their nature.

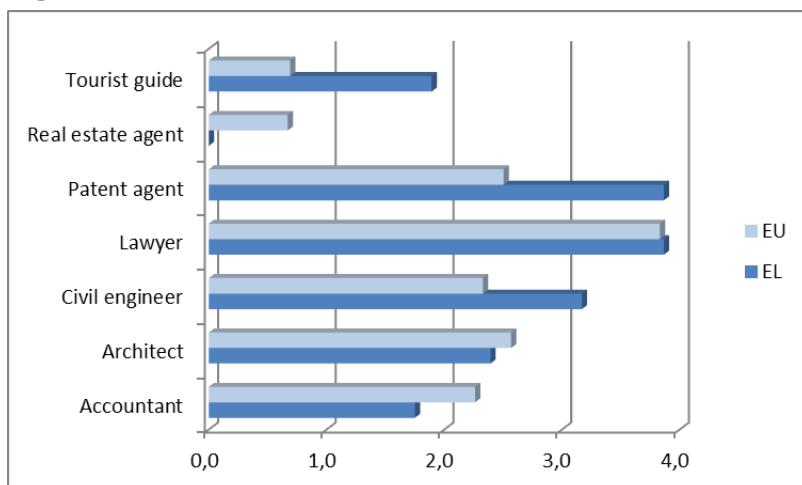
Box 4.1.: Methodology				
Restrictions	Criterion	Score	Weight	
Regulatory approach				
Exclusive or shared reserved activities	Share of activities exclusively reserved amongst the total number of activities predefined for each profession	0 to 6	0.31	
Qualification requirements				
Years of education and training	Number of years	0 to 6		
Number of pathways to obtain qualification	Number of pathways	0 to 6		
Existence of mandatory traineeship/ Obligation to have prior professional experience to get full capacity	Number of years	0 to 6	0.17	
Mandatory state exams	No/Yes	No=0/Yes=6		
Continuous professional development	Number of hours of training over a given period associated with the cost supported by the professional	0 to 6		
Other entry restrictions				
Compulsory membership/registration	No restriction=0 Registration only=2 Registration + annual fees=4 Registration + annual fees + other obligations due to the Code of Conduct=6	0 to 6		
Limitation of the number of licences	No/Yes	No=0/Yes=6	0.21	
Territorial validity	No/Yes	No=0/Yes=6		
Imposition of minimum distances	No/Yes	No=0/Yes=6		
Age restrictions	No/Yes	No=0/Yes=6		
Other authorisation requirements	No/Yes	No=0/Yes=6		
Exercise requirements				
Restriction on corporate form/type of entity	No restriction on the company form=0 Possible to exercise the profession in a corporate structure with limited liability=2 Not possible to exercise the profession in a corporate structure with limited liability=4 Sole practitioner only=6	0 to 6		
Shareholding requirements	Share percentage (minimum amount)	0 to 6		
Recruiting of a qualified professional as a manager of the business	No/Yes	No=0/Yes=6		
Joint exercise of professions	No restriction = 0 A general conflict of interest clause exists =2 Prohibition of some specific activities =4 Prohibition of all activities = 6	0 to 6	0.30	
Tariffs/fees/price restrictions	No prices/fees=0 Reference prices/fees on some activities=1.5 Reference prices/fees on all activities=3 Mandatory minimum/maximum prices/fees on some activities=4.5 Mandatory minimum/maximum prices/fees on all activities=6	0 to 6		
Restriction on advertising	No restriction=0 Specific rules on advertising=3 Advertising is forbidden=6	0 to 6		
Total			1.00	

Source: European Commission (2017).

The *Regulatory approach* refers to the exclusive or shared reserved activities. *Qualification requirements* are composed of the years of education and training, the number of pathways to obtain qualifications, the existence of mandatory traineeship or the obligation to have prior professional experience to get full capacity, the existence of mandatory state exams and the hours of continuous professional development. *Other entry requirements* refer to the compulsory membership/registration in professional bodies, the limitation of the number of licences granted, territorial validity, minimum distances and other authorisation requirements. *Exercise requirements* are composed of restrictions on corporate form or type of entities, shareholding requirements, the recruitment of a qualified professional to manage the business, joint exercise of professions, tariff restrictions and regulations on advertising. The values 0 to 6 correspond to the estimated level of restrictiveness of the regulation.

According to the PRO-SERV indicator, the level of restrictiveness is lower in Greece compared to the EU weighted average for architects, accountants and real estate agents, while it is higher for tourist guides, civil engineers and lawyers. As illustrated in Figure 4.3, similarly to the EU in the case of Greece lawyers exhibited the highest degree of restrictiveness.

Figure 4.3: Restrictiveness Indicators, Greece and the EU, 2016



Source: European Commission (2017).

In the present study we have calculated a composite regulation index to measure the intensity of the reforms in professions and economic activities before and after the reforms for a sample of professions and economic activities based on the methodology of the European Commission. Table 4.4 presents the entry, conduct and total regulation indices for a sample of professions and economic activities before and after the liberalisation. The regulatory approach, qualification requirements and other restrictions are reflected in the entry regulation index and the exercise requirements are reflected in the conduct regulation index. The total composite indicator is the weighted average of the four subgroups of restrictions. The total regulation index decreased for all professions and economic activities under consideration after the implementation of the reforms, with the exception of nurses. The total regulation index for nurses remained unchanged due to the fact that Law 3919/2011 did not

amend the qualification requirements and compulsory membership, which were the only restrictions on this profession. The highest reduction in the total index was observed in the case of lawyers.

The conduct regulation index presents higher reductions compared to the entry regulation index. Reductions in the conduct regulation index were due, mainly, to the abolition of restrictions on corporate structure and minimum/maximum prices and fees. The entry regulation index declined for the majority of professions, mainly due to the abolition of geographical restrictions, minimum distances and quotas on the number of licences. The qualification requirements and compulsory membership were not amended by the law for the majority of the professions and economic activities and, thus, they contribute less to the reduction of the total regulation index.

Table 4.4: Entry and Conduct Regulation indices for a sample of professions and economic activities before and after the liberalisation

	Entry			Conduct			Total		
	Before	After	Difference	Before	After	Difference	Before	After	Difference
Notaries	4.92	4.92	0.00	3.67	3.17	-0.50	4.54	4.39	-0.15
Bailiffs	5.10	5.10	0.00	3.00	2.50	-0.50	4.46	4.31	-0.15
Statutory auditors	4.23	4.35	0.12	1.50	0.50	-1.00	3.40	3.18	-0.22
Lawyers	4.68	3.48	-1.20	3.00	2.00	-1.00	4.17	3.03	-1.14
Law firms	3.60	3.30	-0.30	3.33	2.33	-1.00	3.52	3.01	-0.51
Stevedores	3.70	3.10	-0.61	1.00	0.00	-1.00	2.89	2.16	-0.73
Physician offices/ Physician centres	2.15	1.85	-0.30	3.34	1.50	-1.84	2.51	1.74	-0.77
Rehabilitation centres	1.85	1.54	0.30	2.83	1.83	-1.00	2.14	1.63	-0.51
Dentist offices/ Dental centres	1.96	1.66	-0.30	3.34	1.50	-1.84	2.38	1.61	-0.77
Physicians	2.15	1.85	-0.30	1.50	0.50	-1.00	1.95	1.44	-0.51
Dentists	1.96	1.66	-0.30	1.50	0.50	-1.00	1.82	1.31	-0.51
Physiotherapy labs	1.49	1.19	-0.30	3.33	1.50	-1.83	2.05	1.28	-0.77
Taxis	0.91	0.91	0.00	2.17	1.50	-0.67	1.29	1.09	-0.20
Hair salons	1.17	0.98	-0.19	1.00	1.00	0.00	1.12	0.99	-0.13
Physiotherapists	1.49	1.19	-0.30	3.00	0.50	-2.50	1.95	0.98	-0.97
Midwives	1.25	0.74	-0.51	1.00	1.00	0.00	1.17	0.82	-0.35
Hairdressers - Barbers	1.17	0.98	-0.19	0.00	0.00	0.00	0.82	0.69	-0.13
Foreign language teaching/tutorial centres	0.61	0.30	-0.30	1.33	1.00	-0.33	0.83	0.51	-0.31
Nurses	0.73	0.73	0.00	0.00	0.00	0.00	0.51	0.51	0.00

Source: Own calculations.

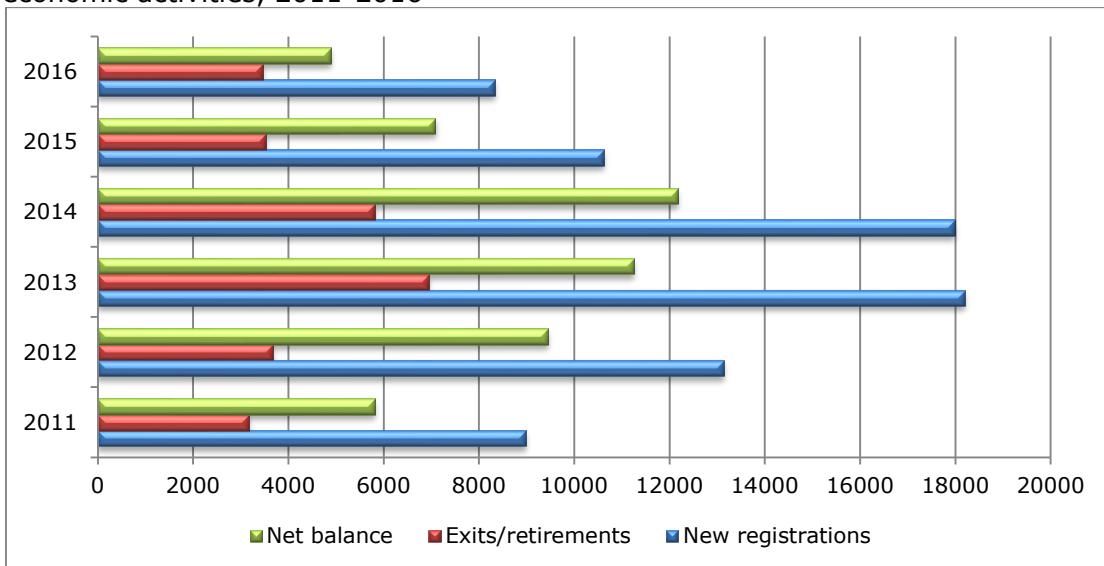
Taking into account the above mentioned assessments of the reforms via regulation indices, it is clear that the liberalisation has brought about a significant improvement in terms of a reduction in entry and conduct restrictions in professions/economic activities. According to the European Commission methodology, the improvement in index values seems to be lower compared to the earlier approach of Athanassiou et. al. (2016) which according to the OECD methodology assigned an equal weight on entry and conduct regulations and a much lower weight on reserved activities, placing higher emphasis on other restrictions that were lifted by the reforms and seemed to be of importance for the case of Greece.

4.5.2 New registrations and exits from the database of the Ministry of Finance

An assessment on the effects of the reforms on new entries/exits of professionals can be based on Ministry of Finance data covering 23 professions/economic activities considerably affected by the reforms. This database does not in all cases fully reflect the actual number of new entrants in the market. For example, new registrations in the Hellenic Medical Association refer to all newly graduated physicians (salaried and not salaried); the vast majority of registered energy auditors are already employed as engineers; and the compulsory registration of loaders was introduced in 2013.

Figure 4.4 presents the number (unbalanced data) of new registrations, exits or retirements and the net balance of the 23 professions/economic activities during the period 2011-2016. The number of new registrations and deletions follow the same trend over time. An increasing trend is observed until 2014, followed by a decreasing trend afterwards, reaching in 2016 values close to those of the first year under consideration. The newly established Registries and the compulsory registration of employees explain a portion of the rapid increase in the number of registrations in the period 2013-2014. On the other hand, the increased number of deletions could be a result of the simultaneous effect of company closures due to the crisis and pension system reforms. The net balance is positive throughout the period examined, which could be an indication of a positive effect of the reforms due to the elimination of entry restrictions.

Figure 4.4: Number of new registrations and deletions for 23 professions and economic activities, 2011-2016

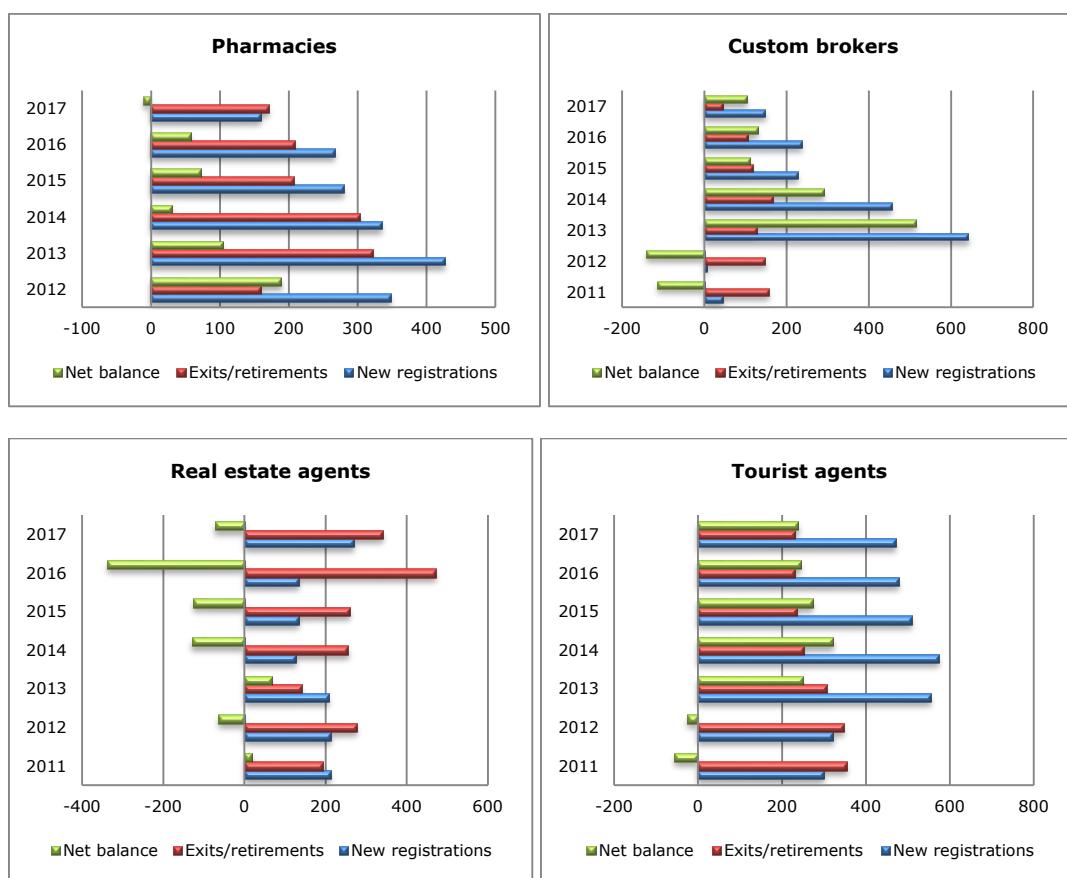


Source: Ministry of Finance: Professions Monitoring Indicators

More analytically, Figure 4.5 presents the number of new registrations, exits or retirements and the net balance for selected professions and economic activities that have been affected by the regulation. Custom brokers and tourist agents display a marked increase in new registrations in 2013. In the case of tourist agents increased new registrations are observed throughout the rest of the period examined, while in the case of customs brokers new entries follow a decreasing trend. In both

professions, the net balance of entries is positive from 2013 onwards. Given these developments, it is likely that the reforms had a positive impact on new entries in these professions, although it should be noted that positive trends in the case of tourist agents are partly related to the improving performance of Greece's tourism sector. In the case of pharmacies, a significant increase in entries is observed in 2013, with entries remaining substantial in the subsequent period. However exits from this activity have remained high throughout the period under consideration with net entries turning negative in 2017, a development related to social security reforms. In the case of real estate agents, entries exhibit fluctuations while exits remain relatively high, thus resulting in mostly negative net entries. This development is largely related to the deterioration of the real estate market during the years of crisis and the consequent decline of real estate transactions.

Figure 4.5: Number of new registrations, deletions and net balance for selected professions and economic activities, 2011-2017



Source: Ministry of Finance: Professions Monitoring Indicators Database.

4.5.3 Empirical analysis

In order to assess the economic impact of the liberalisation we employ the Difference-in-Differences (DID) approach to compare the evolution of prices and employment between professions/economic activities affected by the reforms and other professions not affected.

The regression to be estimated is:

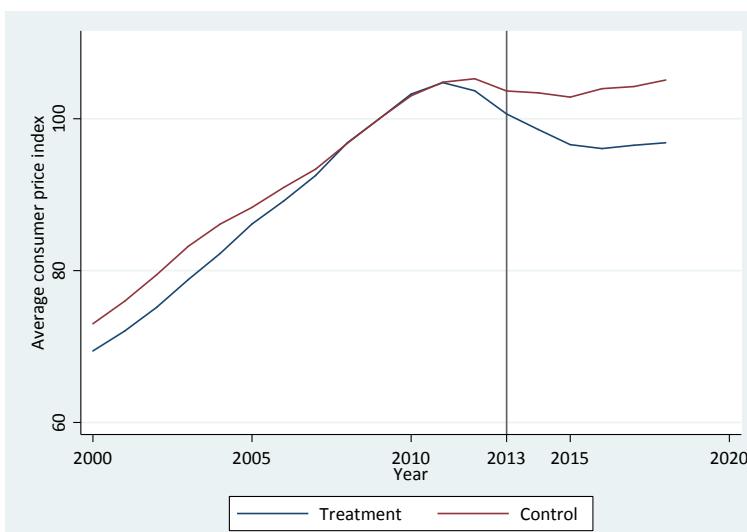
$$Y_i = \alpha + \beta Time + \gamma Treated + \delta DID + e$$

where Y_{it} is the dependent variable (i.e., prices and employment) and other variables and parameters are as defined in section 3.3.2 of the study.

CASE 1: Effect on prices

To evaluate the impact of the reforms on prices, we use the Consumer Price Index-CPI (at the 8-digit level) before and after the reforms (annual data) for 47 professions/economic activities that were affected by the reforms (treatment group) and 19 professions and economic activities that were not affected (control group). The treatment group includes services provided by lawyers, accountants, pharmacies, taxis, land transport, real estate agents, 6 health professionals and activities, 7 education activities, nursery schools, veterinaries, dancing and music schools, driving schools, plumbers, electricians, hairdressers, etc. Figure 4.6 presents the evolution of the CPI for the treatment and control groups. The year 2013 has been defined as a baseline period, as the implementation of the reforms started with the adoption of L. 4152/2013. After 2013, the index for the treatment group decreased at a higher rate (-1.12%) compared to the control group (-0.02%). This outcome may be a result of the free negotiation of prices in professions affected by the reforms but it is also likely to be related to the crisis, which influenced negatively prices in the majority of goods and services. In the last two years, both groups exhibited an upward trend in prices, averaging 0.40% for the treatment group and 0.73% for the control group. The slower increase in the CPI of professions affected by the reforms may also be an indication of an effect of the reforms on prices.

Figure 4.6: The evolution of the Consumer Price Index for the treatment and control groups, 2000-2018



Note: The grey line is a reference line for 2013

Source: ELSTAT

Table 4.5 presents the estimated parameters of the DID regression model. The results show that the reform exerts a negative effect on the consumer price index, that is reflected in the statistically significant negative sign of the DID coefficient. The coefficient of the treated dummy variable is also negative, indicating that the consumer price index for the treatment group decreased compared to the control group. The coefficient of the time dummy variable indicates that the consumer price index was higher before the implementation of the reform.

Table 4.5: Results of the Difference-in-Differences estimation

Variables	Parameters	Before	
Time	13.08 *** (1.60)	Mean control t(0) Mean treated t(0)	90.79 *** 88.78 ***
		Diff t(0)	-2.02 ***
Treated	-2.02 * (1.06)		After
Diff-in-diff	-4.32 ** (1.89)	Mean control t(1) Mean treated t(1)	103.87 *** 97.54 ***
		Diff t(1)	-6.33 ***
Constant	90.79 *** (0.90)		
Observations	1,254		
R-squared	0.111		
Linear prediction (t=1)			
<i>Treated</i> = 0	13.08 ***		
	8.76 ***		

Note: T-statistics in parentheses. *** 1%, ** 5%, *10% significance level.

CASE 2: Effect on employment

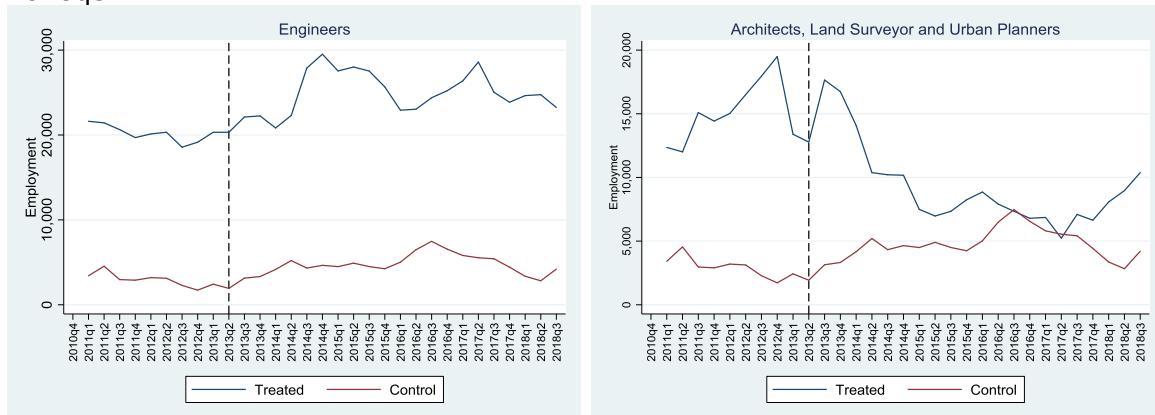
To evaluate the impact on employment before and after the implementation of the reforms, we use quarterly 3-digit data from the Labour Force Survey (LFS) for selected self-employed practitioners that were affected by the reforms (treatment group) and other practitioners that were not affected (control group). Due to lack of more detailed data, for some professions the data used for the analysis refer to the wider 3-digit occupational group. The results obtained by estimating the DID regression for the whole sample did not provide statistically significant results. Therefore, we proceeded to evaluate the impact of the reform on selected professions. The professions chosen belong to occupational groups within which we could distinguish professions that were affected by the reform and professions with similar characteristics that were not affected. Given that the 3-digit classification of LFS is not sufficiently detailed, the analysis is limited to those occupational groups within which we can fairly well identify treated and non-treated professions. The treated professions examined are engineers (214 and 215 on ISCO 2008 classification), architects, land surveyors and urban planners (216), agents (333) and street salespersons (521).

CASE 2a: Engineers and architects

We examine the impact of the reforms, as implemented from the second quarter of 2013, using the DID methodology by comparing employment of (i) engineers, which have been affected by the reform , that is the "treated group" and (ii) other scientific professions (e.g. physicists, meteorologists, mathematicians, statisticians, biologists) for which the reform was not relevant, the "control group". Furthermore, we also compare employment of architects, as the "treated group", with the same control group of other scientific professions.

The evolution of employment in the treated and control groups for engineers and architects are presented in Figure 4.7. In the case of engineers employment after the reforms seems to have increased despite the unfavourable conditions in the construction sector due to the economic crisis. On the contrary, architects display a sharp downward trend in employment up to the second quarter of 2017 and a small recovery afterwards. In both cases treated and non-treated groups seem to differ in the evolution of employment.

Figure 4.7: The evolution of employment in the treated and control groups, 2011q1-2018q3



Source: ELSTAT, Labour Force Survey.

The results from the DID estimation are depicted in Table 4.6. In the case of engineers, it is clear that there is a statistically significant difference between the two groups. The positive coefficient of the time trend indicates that total employment is increasing, while the positive coefficient of the treated dummy suggests that employment of engineers has increased at a higher rate than in other scientific professions. Furthermore, the DID coefficient shows a positive impact on their employment of about 10% on average. The DID statistics for the "before" and "after" the reform periods suggest that the reform had a positive effect on employment of engineers with the creation of 2,408 new employment positions on average in the after the reform period, while employment in the control group increased by just 543 new jobs on average.

Dividing the treated group into two categories of engineers, according to the LFS classification, i.e. electrical engineers and all other engineers, the upward trend in employment stems mainly from the second category, as shown by the results obtained

when splitting the effect of the reforms. The results indicate that the positive effect on employment in the treated group is due to the increase in the employment of other engineers by 6,346 new positions on average, which was partly offset by the negative effect on electrical engineers' employment (loss of 1,530 positions on average).

In the case of Architects the results show that employment in the period after the reform has decreased significantly, reaching almost half of the size of average employment in the period prior to the reform. The DID coefficient, which is statistically significant, negative and large in magnitude, reflects this reduction in employment.

The results for engineers are to some extent anticipated, as engineers retain rights to provide complementary services on e.g. regularisation of illegal constructions, energy inspection and other certificates. Many of these services are not related to new constructions and therefore have not been affected by the decline of the construction sector – on the contrary they have been favoured by relevant legislative requirements for existing buildings.

Table 4.6: Results of Difference-in-Differences estimation

Variables	Engineers	Architects, Land Surveyors, Urban Planners	Agents	Street Salespersons
Time	1,914*** (362.7)	1,914*** (362.7)	1,752*** (616.5)	-971.7**
Treated	17,366*** (384.1)	12,051*** (806.7)	-6,436*** (650.8)	1,451**
Diff-in-diff	2,902*** (710.7)	-7.605*** (111.2)	-1,765** (761.4)	2,754***
Constant	2,852*** (253.6)	2,852*** (253.6)	9,397*** (545.9)	7,494***
Observations	62	62	62	62
R-squared	0.96	0.76	0.90	0.62
Before				
Mean control t(0)	2,852***	2,852***	9,397***	7,494***
Mean treated t(0)	20,219***	14,903***	2,961***	8,946***
Diff t(0)	17,366***	12,051***	-6,436***	1,452**
After				
Mean control t(1)	4,766***	4,766***	11,149***	6,523***
Mean treated t(1)	25,034***	9,212***	2,948***	10,728***
Diff t(1)	20,268***	4,446***	-8,201***	4,206***
Linear prediction (t=1)				
Treated=0	543.7***	1,914***	1,752***	-972**
Treated=1	2,408***	-5,691***	-13.6	1,782***

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

CASE 2b: Agents

In the case of agents we examine the effect of the reform on a treated group including real estate agents, employment agents and contractors, etc. and a control group comprising insurance representatives, commercial sales representatives etc. According to Table 4.6 the DID coefficient is statistically significant and negative. This effect may

be attributed to the fact that conditions in both the real estate market and the labour markets were unfavourable until recently, thus masking any positive effect as a result of the reform.

CASE 2c: Street salespersons

In this case, the employment of street salespersons is examined against that of the control group consisting of other salespersons. The results presented in Table 4.6 show that the reform had a positive impact on the employment of the treated group. This is also reflected by the DID coefficient, which is significant and positive. Employment in the treated group has increased on average in the period after the reform by almost 1,800 new employment positions.

4.6 Concluding remarks

In 2011, Greece introduced a framework Law towards the elimination of unjustified restrictions to the access and exercise of professions/economic activities. Following a long and complex process, the implementation of the reforms has been completed for the vast majority of professions/economic activities under liberalisation. The reforms brought about the abolition or drastic reduction of restrictions in a wide range of professions/economic activities. The need for an administrative licence to exercise a profession/economic activity was replaced by an announcement, maintaining all the necessary supporting credentials. Quotas, geographical restrictions and restrictions on the establishment of branch offices were abolished for the majority of professions/economic activities. Restrictions on maximum/minimum prices and fees were abolished, and in some cases reference prices were introduced. The prohibition of a natural/legal person who was not a practitioner to enter the market was abolished in the majority of cases, subject to the recruitment of a qualified person.

The screening of the legislative framework for 260 professions/economic activities has shown that 41 of these professions can currently be characterised as regulated. Apart from licensing/qualifications, the main remaining regulations in this group of professions refer to compulsory chamber membership, reference fees/prices and exclusive/shared rights. Remaining regulations have been maintained on the grounds of public interest, public safety and consumer protection, and concern mainly scientific professions with high educational qualifications, a high degree of specialisation and a sensitive nature of services provided.

Regulation indices for a sample of professions/economic activities, based on the methodology of the European Commission, suggested that the degree of regulation decreased for all professions and economic activities under consideration after the implementation of the reforms. The conduct regulation index presents higher reductions compared to the entry regulation index.

The total net balance of new registrations for a sample of 23 regulated professions/economic activities included in the relevant database of the Ministry of Finance was found to be positive throughout the period examined, thus providing indications of a

positive effect of the reforms due to the elimination of entry restrictions. Outcomes differ between professions, as the impact of the reforms and the effects of the crisis and other factors vary among sectors.

The results from the empirical analysis of the impact of the reform on prices, suggested that the reform had an impact on the consumer price index of the treated group (professions affected by the reforms), in the sense that prices in this group initially decreased at a higher rate and subsequently increased at a slower rate as compared to the control group. The empirical analysis of employment data did not provide statistically significant results of an impact of the reforms on self-employment in the treated group as a whole. A further analysis of selected professions identified a positive impact on employment in the cases of engineers and street salespersons and a negative impact in the cases of architects and agents.

4.7 Assessing the reform of the system of professional qualifications recognition in Greece

4.7.1 Introduction

A profession is considered to be regulated when access and practice are subject to the possession of specific professional qualifications. Regulated professions can sometimes have adverse effects on economic efficiency and welfare.

The reforms regarding professional qualifications aim at making movement within European Union member-states –in both short and long-term- easier for individuals, despite linguistic and cultural obstacles that continue to exist. Through the reforms, national labour markets become more integrated and able to respond to shocks and imbalances faster and more effectively, through balancing demand for and supply of skills at the EU level. The result is expected to display a positive impact with respect to labour market imbalances (e.g. unemployment, vacancies,) and, hence, with respect to prices.

The potential benefits from removing obstacles in the free movement of professionals led the EU to reform the system of professional qualifications recognition and simplify the related administrative procedures, through the adoption of the Professional Qualifications Directive in the mid 2000's (Directive 2005/36/EC⁹). The Directive provided for the conditional mutual recognition of professional qualifications in all EU member-states, member-states of the European Economic Area (EEA)¹⁰ and Switzerland, applicable to the citizens of these countries.¹¹ It also introduced a system of mutual evaluation of national professional regulations and boosted transparency.

⁹ An assessment of the directive can be found at European Commission (2011).

¹⁰ The EEA includes Norway, Iceland and Lichtenstein. Henceforth, we will refer to this group of countries as EU+.

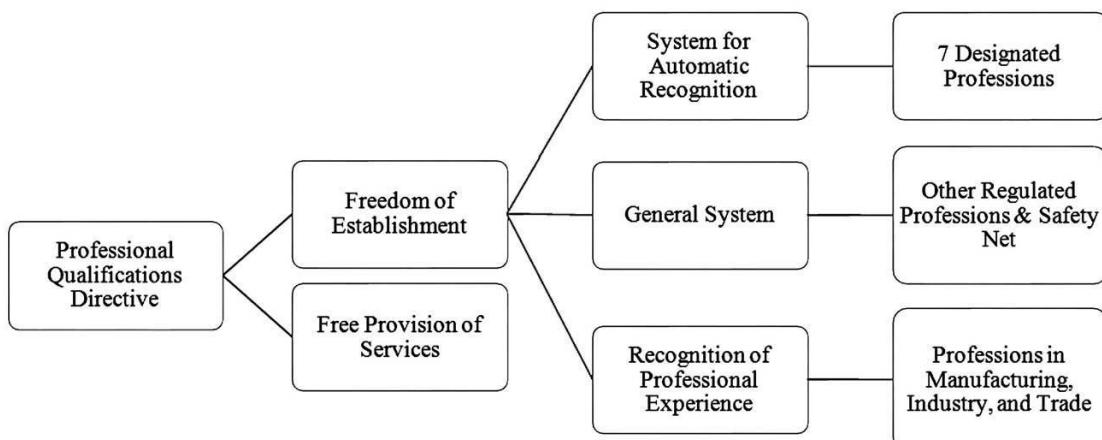
¹¹ There are some exceptions with respect to family members of European citizens, long-term EU residents (some restrictions apply) and acknowledged refugees.

The Directive addresses only professions that do not fall under another specific directive.¹²

According to the Directive, there are three types of professional qualifications recognition systems in place for individuals who wish to move to another country¹³:

1. *Automatic recognition*. This applies to regulated professions whose minimum education-training requirements are already harmonised at the European level: doctors (specialised or general), nurses responsible for general care, dentists (specialised included), veterinary surgeons, midwives, pharmacists and architects.
2. *Recognition on the basis of professional experience*. In certain regulated professions, such as in crafts, trades and industry¹⁴, professionals can ask for an automatic recognition of their professional qualifications based on their work experience.
3. The *general system* for professions that do not fulfil the conditions required for the automatic recognition regime. The recognition of qualifications is then based on the principle of mutual recognition¹⁵. The same applies to other regulated professions, access to which is granted to any individual who can prove that he/she is fully qualified in another EU+ member-country. However, if the authorities of the host country find significant differences between the skills acquired in the country of origin and those required for the same activity in the host country, the applicant is asked to choose between a training period and an aptitude test, before being awarded the recognition. These are referred to as compensation measures.

Figure 4.8: The three systems of professional qualifications recognition



Source: Kortese, 2016.

¹² For example, insurance mediators and auditors fall under the scope of specific directives (2002/92/EU and 2006/43/EU respectively).

¹³ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=LEGISSUM:c11065&from=EL> and https://ec.europa.eu/growth/single-market/services/free-movement-professionals/qualifications-recognition_en

¹⁴ ANNEX IV in the Professional Qualifications Directive (Directive 2005/36/EC) for a list of those professions.

¹⁵ Those who acquired a degree from a country before its accession to the EU+ present such a case.

Note that the recognition of professional qualifications is closely related to the recognition of educational skills and competences. Therefore, it can sometimes prove complicated¹⁶, especially in cases when one country requires specific years or/and type of education for a regulated profession, while another country does not or it requires a different set of qualifications and skills. Having work experience can sometimes prove useful.

The Directive 2005/36/EC was amended in 2013 by Directive 2013/55/EC, which introduced the European professional (electronic) card (EPC). Issuing the EPC involves a standardised electronic procedure and allows interested individuals to get their professional qualifications recognised easily and quickly. The card relies on the use of the Internal Market Information system (IMI)¹⁷, which can be used by an EU+ country to check the validity of qualifications of professionals. At first, the EPC was implemented for nurses responsible for general care, physiotherapists, pharmacists, mountain guides and real estate agents. Further to the above, the 2013 Directive established a single point of contact by country, for the recognition of professional qualifications.

The Directive 2005/36/EC was integrated to the Greek legislative framework with the PD 38/2010, nearly five years after its adoption. The same PD established the Council for the Recognition of Professional Qualifications (SAEP), which is the competent authority to examine whether the necessary requirements for the recognition of professional qualifications are fulfilled and award the recognition certificate. Given that the recognition of professional qualifications is sometimes closely linked to the recognition of educational qualifications, the Hellenic National Academic Recognition Information Centre (NARIC or DOATAP in Greek) is represented in SAEP with one member of its board of directors.

In 2017, PD 51/2017 added notaries to the list of professions that are not included in the general system of recognition and also provided for a number of other changes, including the introduction of the Electronic Professional Card based on Directive 2013/55/EC. Currently the list of regulated professions in Greece involves 153 professions¹⁸. Note, though, that it is not an exhaustive list. The general process of professional qualifications recognition is set to last as long as four months, although in practice it can last much longer.

¹⁶ An interesting discussion on the effect of educational reforms across member states and how they interact with the professional qualifications recognition directive can be found at GHK (2011).

¹⁷ IMI lays down rules on the use of the Internal Market Information (IMI) system for administrative cooperation including the processing and exchange of personal data of EU citizens between EU countries' competent authorities and the European Commission. More information available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:2401_2

¹⁸ The information can be found at the European Commission site http://ec.europa.eu/growth/tools-databases/regprof/index.cfm?action=regprofs&id_country=4&quid=1&mode=asc&maxRows=*#top Moreover, a list of regulated professions in Greek and English can also be found at: <https://www.esos.gr/arthra/spoydes-exoterikoy/spoydes-exoterikoy/ta-nomouetika-ryumizomena-epaggelmata-sthn-ellada>.

The current section of the study seeks to assess the reform of the professional qualifications recognition system in Greece, by presenting evidence based on data provided by SAEP, NARIC, The Technical Chamber of Greece (TEE) and ELSTAT. It builds on justified opinions of anonymous administrative personnel involved, and attempts to trace the peculiarities of the process so far. In this context and given the limitations imposed by the data, it discusses the current situation and the distortions observed in the Greek case, while recognising that in the future the system could prove more useful under specific circumstances.

4.7.2 Assessment of the impact of the reform

This section assesses the impact of the reform on professional qualifications recognition process on the flows of professionals whose degrees were awarded either in Greece or EU+ countries or third countries. The standard way to do that involves defining two groups, in our case groups of professionals, and apply the DID method discussed previously. One group, which was affected by the reform, is referred to as the treated group and another group, which was not affected by the reform, is referred to as the control group. The key assumption is that these two groups would evolve similarly in the absence of the reform. Data that would allow us to define such groups of professionals are not available in Greece. First of all, the Labour Force Survey, which is the richest survey for addressing labour market issues, does not provide data at the 4-digit level corresponding to individual professions, neither does any other survey conducted in Greece. Moreover, the LFS changed its classification system for professionals in 2011, so there is no way to compare groups of professionals before and after the reform of 2010. Even if such information was available, there is another shortcoming. Namely, the LFS provides no information with respect to the country where the degree was awarded or the country where professional qualifications were acquired. The professional chambers could have been a potential source of such data, but they were either unwilling to provide such data (invoking protection of personal data) or they did not have the necessary information available.

To overcome the lack of data we employ whatever source of information is available. In particular, we draw data from SAEP, NARIC (or DOATAP) and TEE. Data from the first source allow us to discuss the reform based on descriptive statistics, but data from the other two sources allow us to apply the DID method and get some interesting results.

Data on professional qualifications recognition from SAEP

Table 4.7 shows the number of applications submitted to SAEP over the past two years and the results of the evaluation process. Clearly, the total number of applications decreased in 2017 as compared to 2016 (it dropped by about 61%). On the other hand, half of the applications in 2017 were accepted (i.e. professional qualifications were recognised), with the corresponding share in 2016 being only 30%. The increase in the share of applications accepted in 2017 was accompanied by a reduction in the share of rejected applications (fewer than one out of ten in 2017

compared to one out of four in 2016) and a reduction in share of applications that required compensation measures¹⁹, i.e. either formal training or exams in specific subjects (13% in 2017 versus 23.5% in 2016).

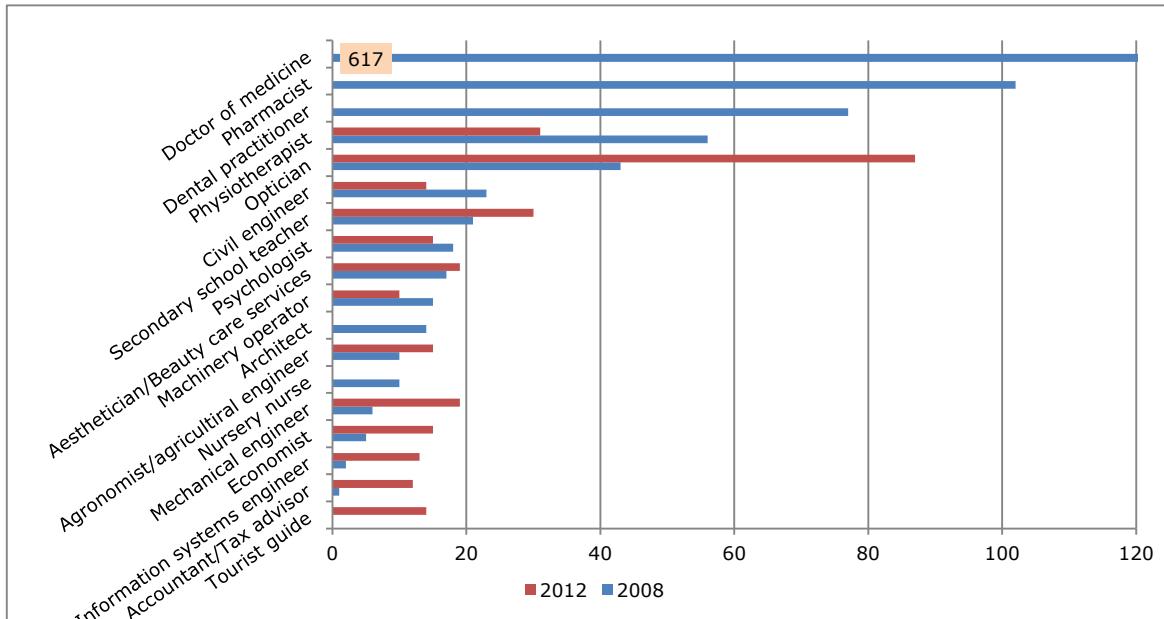
Table 4.7: Applications for professional qualifications recognition and results

	Accepted	Compensation measures required	Postponed	Rejected	Total
2016	70	55	49	60	234
2017	48	12	24	8	92

Source: SAEP

Figure 4.9 presents publicly available data on the number of decisions issued by SAEP on the recognition of professional qualifications for the purpose of permanent establishment in Greece in years 2008 and 2012. It is clear that the number of decisions varies considerably from one year to the other, which is not easy to justify. For instance, there is no obvious explanation why there were 617 decisions for doctors of medicine in 2008 and none in 2012. Furthermore, the same pattern was observed in the cases of pharmacists, dentists and architects. On the other hand, some professional groups that were non-existent in the decisions of 2008 had a visible presence in 2012. In any case, the numbers reported are small by any standard. Perhaps there were other issues that disrupted the normal flow of decisions by SAEP. The above reported data are the only available from SAEP. Therefore no solid conclusions can be drawn about the impact of the reform on their basis.

Figure 4.9: Number of decisions issued by SAEP by profession, 2008 and 2012



Note: the biggest number of decisions taken on recognition of professional qualifications for the purpose of permanent establishment in Greece in 2008 referred to Doctors of Medicine (617). The axis is truncated for practical reasons.

Source: EC Europa, Ranking the most mobile professions.

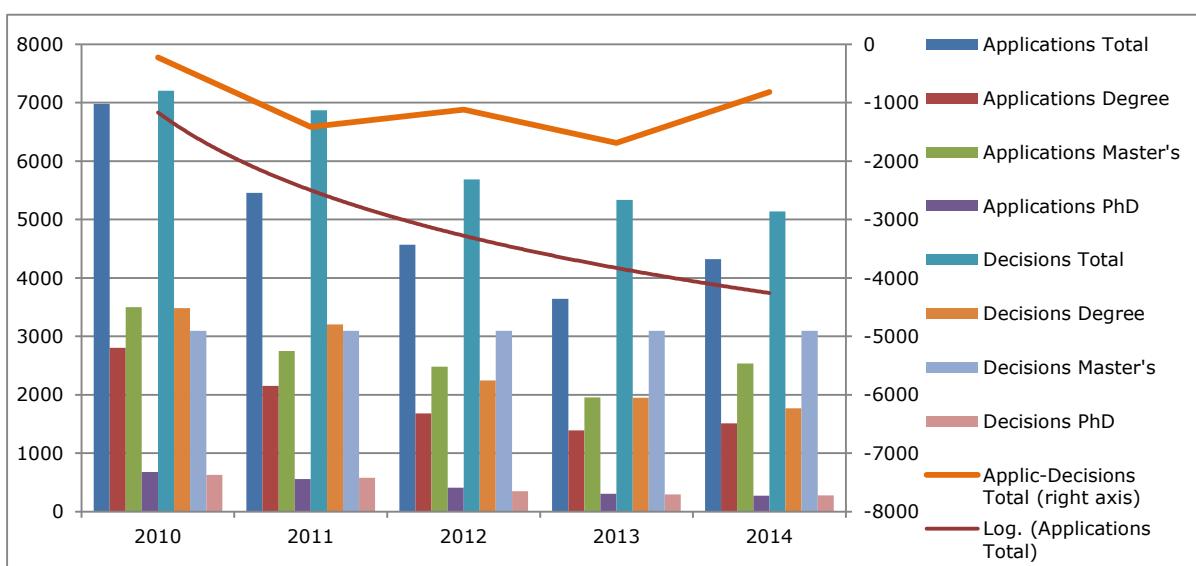
¹⁹ The majority of applications that involve compensation measures eventually receive recognition.

Data on applications and decisions for degree recognition from NARIC

Before the establishment of SAEP, almost any individual with a tertiary education degree from abroad who wanted to work in Greece had to apply for academic equivalence at the Hellenic National Academic Recognition and Information Centre (NARIC or DOATAP in Greek). Nowadays, for professionals who do not wish to work for the public sector, SAEP can be an alternative. In this context, the fact that the number of applications for accreditation have been decreasing between 2010 and 2014 (Figure 4.10) suggests that there may be a connection²⁰. In particular, it is possible that those who do not get an accreditation approval by NARIC or think that it is highly unlikely to get an approval, may turn to SAEP instead. Publicly available data from NARIC²¹ reveal that the number of applications decreased by almost 40% between 2010 and 2014, with bigger reductions for graduates (bachelor's degree) and PhDs, while the number of decisions reached decreased by almost 30%. The fact that decisions reached were systematically more than applications can be explained by delays in the process of accreditation in the past.

Notably, those who apply for professional qualifications recognition are mostly Greeks who have studied abroad and are repatriated. Therefore, aside from any connection of the decline in applications to NARIC with the establishment of SAEP, a large part of this reduction is explained by the fact that Greeks who studied abroad (fewer during the crisis) were from a certain point of time onwards increasingly unwilling to return to Greece for work, since the country suffered from a deep recession and high unemployment rates.

Figure 4.10: Data on applications and decisions for degree recognition, 2010-2014



Source: Publicly available data from NARIC (DOATAP).

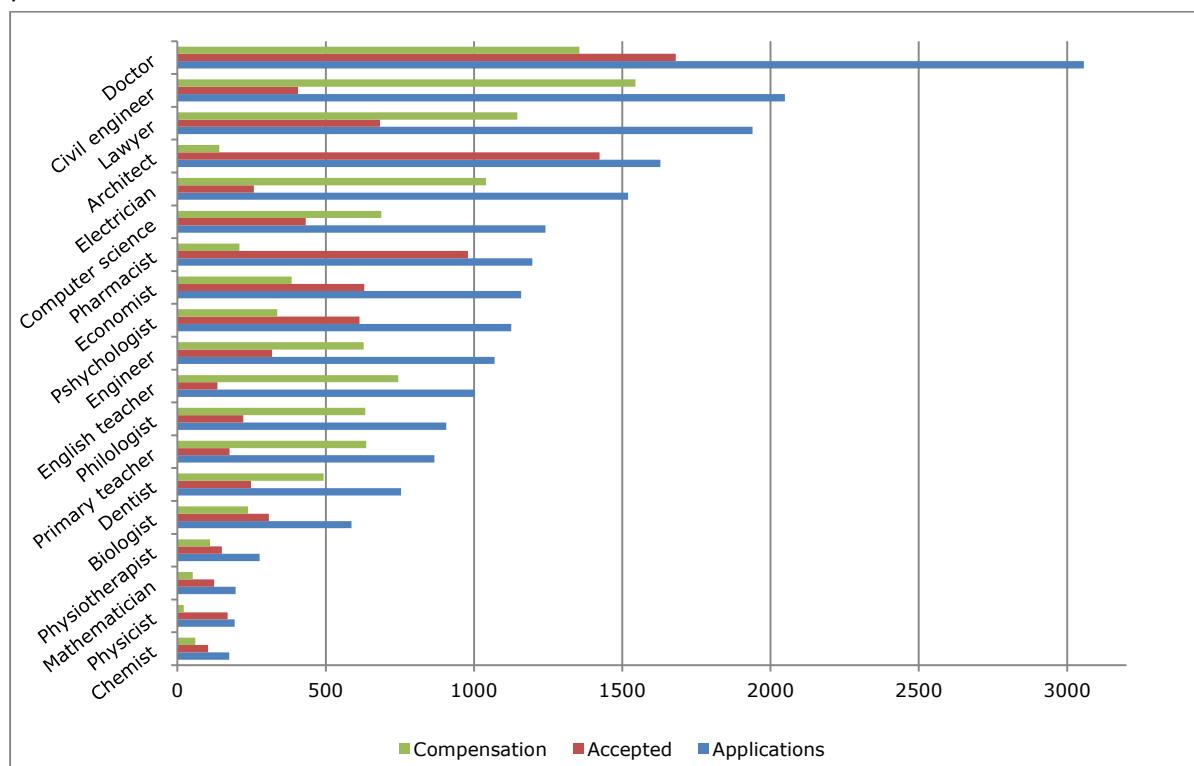
Figure 4.11 reports the professions with the highest number of applications for academic equivalence in the period 2005-2017, on the basis of data provided by NARIC. The data seem to indicate that having a degree from abroad recognised as

²⁰ On the other hand, it could be that Greeks who studied abroad, from a certain point of time and onwards were unwilling to return to Greece that suffered from high unemployment rates.

²¹ http://www.doatap.gr/gr/2010_2014.php

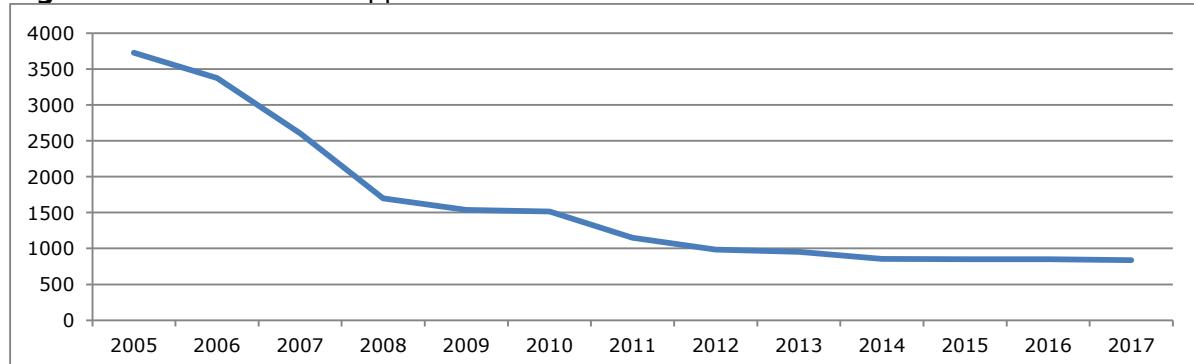
equivalent to a Greek one is not an easy task. The share of decisions that demanded compensation measures (i.e. additional training or exams) ranged from 10.9% for Physicists to 75.4% for civil engineers.²² The difficulty of receiving recognition depends on many factors, one of them being the country where the degree was awarded. Figure 4.12 presents the evolution of the number of applications. It is obvious that they have been declining at a faster rate until 2010. The decline continued, but it seems less steep ever since. If SAEP attracted some of the applicants diverting them away from NARIC, the opposite would perhaps be expected to happen.

Figure 4.11: Number of applications for professions for academic equivalence for the period 2005-2017



Source: Unpublished data from NARIC (DOATAP).

Figure 4.12: Number of applications to NARIC



Note: In some professions there are missing values. It is not clear if these are zeros or something else.

Source: Unpublished data, NARIC (DOATAP).

²² The lowest share of compensation measures is reported for Architects, but they had a special regime since 1985 (see Directive 85/384/EEC).

Empirical analysis on the basis of data from NARIC

In order to assess the impact of the reform, we bravely assume that the establishment of SAEP must have decreased flows towards NARIC, since it operated as an alternative option for, at least some of, those who wished to work in Greece, but were facing difficulties with NARIC. Instead of getting recognition of equivalence to a Greek degree, which is a strict procedure, as suggested above, interested individuals were given the opportunity to recognise their professional qualifications and then apply for a work permit to the competent authorities.

Figure 4.13 presents the evolution of the two groups under examination. The "treated" group consists of those who applied for academic equivalence and hold a degree from an EU+ country, while the "control" group consists of those who applied for academic equivalence and hold a degree from a non-EU+ country. Note that there is a peculiarity with Bulgaria and Romania. These two countries became members of the EU in 2007 and, according to officials at the NARIC, the full equivalence with the rest of the EU+ member states with respect to awarded degrees was completed in 2008. Therefore, before 2008 these two countries belong in the control group, and after 2008 they both belong to the treated group.

Figure 4.13: The evolution of groups over time



Source: Unpublished data, NARIC (DOATAP).

It is clear that the decline in applications until 2010 already discussed originated from the treated group, particularly in period 2005-2008. Since 2010, though, the two groups seem to follow parallel paths. The t-statistic test performed to check whether the distribution of applications for academic equivalence differs before and after 2010 proved that indeed it does so for both groups.²³ Although, as mentioned, the decline had already started in 2005, a significant part of it could have been the outcome of two countries' accession to the EU in 1/1/2007, namely Bulgaria and Romania. These

²³ Results are available upon request.

two neighbouring countries used to attract the majority of Greek students amongst non-EU+ countries.

Table 4.8 presents the results of the DID estimation. The number of applications for verifying degree equivalence are regressed on a dummy variable (*Time*=1, if year>2010 and 0 otherwise), a dummy for the treated group (*Treated*=1, if the degree was awarded from an EU+ member and 0 otherwise, with the peculiarity for Romania and Bulgaria mentioned) and *DID*, which is an interaction term for time and treated (i.e. *DID*=*Time***Treated*). The "before" and "after" statistics show that there was a difference in the number of applications both before and after the reform between the two groups. The difference was wider before the reform, though.

Table 4.8: Results of Difference-in-Differences estimation

Variables	Parameters	Before	
Time	-2.144*** (-0.725)	Mean control t(0) Mean treated t(0)	4.00 13.11
Treated	9.103*** (-1.785)	Diff t(0)	9.10
		After	
Diff-in-diff	-3.359* (-1.688)	Mean control t(1) Mean treated t(1)	1.86 7.60
Constant	4.003*** (-0.851)	Diff t(1)	5.74
Observations	3,120		
R-squared	0.040		

Standard errors in parentheses

*** p<0,01, ** p<0,05, * p<0,1

The decline in the number of applications over time already discussed is reflected in the results; there is a negative coefficient for time. On the other hand, there is a positive sign to the treated coefficient, which suggests that the group evolved differently from the control group. The statistically significant DID coefficient suggests that the reform had an impact on the number of applications submitted. The negative sign also suggests that the reform contributed to directing applications away from the NARIC. Hence, the results suggest, but do not prove, that the reform decreased the flow of applicants covered by the PD 38/2010 who opt for academic equivalence of their degree.²⁴

4.7.3 Case study: The effect of the reform on TEE new members

Anyone who wishes to work as a civil engineer, architect, mechanical engineer, etc. has to become a member of the Technical Chamber of Greece (TEE in Greek), in order to get a work permit. All groups of mechanics can apply to SAEP to get their qualifications recognised and then apply to TEE for membership and work permit. SAEP evaluates the qualifications and the accompanying documents submitted by applicants and can impose compensation measures to an applicant according to its

²⁴ The regression was also estimated for various groups separately, namely Doctors of Medicine, Lawyers, Civil Engineers, Electricians and Informatics degree holders. In all cases, the DID coefficient was statistically insignificant with the exception of the last two groups. Thus, the general result does not necessarily apply to all degrees.

judgment. Such measures can consist of either written exams in specific subjects or a period of on-the-job training.

The number of new TEE members dropped significantly during the recession, with some recovery being reported in 2017. This is probably due to the fact that until the end of 2016 those enrolled in TEE had to be also enrolled in the relevant social security fund (former TSMEDE) and pay contributions irrespective of their employment status. This obligation induced many new engineers who were unemployed at the time to delay their enrolment in TEE, thus leading to a decrease in the number of new members. Given the collapse of Greece's construction sector during the recession, many TEE related professionals, especially young ones, were practically unemployed. Moreover, the share of new TEE members with a degree from European countries has been declining over time: in 2007 they represented 27.7% of new members (3,167), while in 2017 the respective figure was 8.7% out of a smaller number of new members (1,853).²⁵

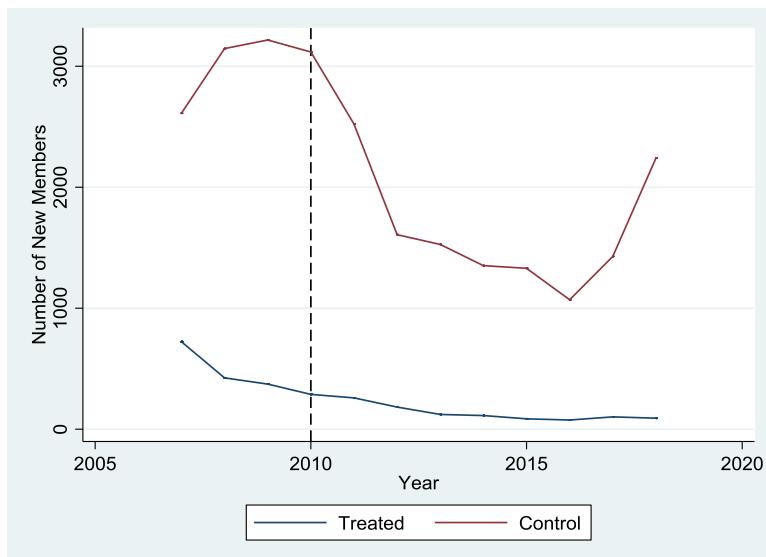
Figure 4.14 depicts the evolution of new TEE members over time. The "treated" group consists of the new TEE members who were awarded a degree in EU+ countries and, thus, they were subject to the EU directive and PD 38/2010. The control group consists of the new TEE members who were awarded a degree in Greece. Notably, architects are the only group of professionals who can apply for professional qualifications recognition directly to TEE and then enrol as members. Therefore, the directive on professional qualifications recognition did not change the designated process for them (recall that they are one of the seven groups of professionals that fall under the automatic recognition system). Since the focus is on groups of engineers who were affected or not by the reform, it seems that the safest choice would be to exclude architects from the analysis completely.²⁶

Up to 2010 the two groups followed different paths, but during period 2010-2016 the number of new members was declining for both groups, although the control group seems have been declining somewhat faster. Since 2016, only the number of new members with a degree from Greece started to increase sharply. The t-statistic test performed to check whether the distribution of new members differs before and after 2010 proved that indeed it does for both groups.

²⁵ There could be two reasons for that. First, fewer Greeks decided to study abroad due to the economic crisis and, second, those who did study abroad decided to postpone their return and look for a job abroad instead, due to the high unemployment rate in Greece. Note that employment in the construction industry declined drastically during the recession.

²⁶ Someone might argue that architects should be included in the control group. But, since it is possible for an architect to fall under the general system for various reasons (recall that is exactly why the general system was set up), we decided to exclude them completely.

Figure 4.14: The evolution of the number of new TEE members by groups of degree awarding countries



Source: TEE (Technical Chamber of Greece)

We analyse the evolution of the number of new TEE members through years 2007-2017 using the Difference-in-Differences method (DID). Table 4.9 reports the results of three regressions. In the first one (All) we regress the number of new members on a dummy variable ($Time=1/0$ if $year>2010/year<2011$), a dummy for the treated group ($Treated=1/0$ if the degree was awarded from an EU+ member-country/Greece) and DID , which is an interaction term for time and treated (i.e. $DID=Time*Treated$). The results indicate, as expected, that the number of new members decreased after 2010, while the number of new members with a degree from an EU+ country decreased too. Moreover, there seems to be a positive and statistically significant effect on the number of new members that belong to the treated group after 2010, indicated by the positive sign on the DID coefficient. The finding suggests that the reform probably made it easier for those holding a degree from an EU+ country to become members of TEE and, thus, work as engineers.

In the next two regressions the results for the two biggest groups of engineers are reported, namely electrical engineers and civil engineers. The general conclusions do not change. There is a general downward trend in the number of new members which is stronger for those with a degree from EU+. The DID estimate has a positive sign, which means that the reform had a positive impact on the number of new members with a degree from an EU+ country. The interaction effect proves stronger for civil engineers than electrical engineers. Interestingly enough, for those two groups of professionals the goodness of fit of the DID model (reflected in R^2) is better than the total.

Table 4.9: Number of new TEE members with a degree from an EU+ member-country

Variables	All	Electrical engineers	Civil Engineers
Time	-146.37** (49.89)	-401.25*** (54.18)	-338.13*** (65.04)
Treated	-321.90** (101.74)	-708.72*** (37.46)	-824.32*** (42.05)
Diff-in-diff	139.37** (49.36)	394.22*** (54.38)	322.04*** (66.16)
Constant	335.92*** (103.77)	719.75*** (37.17)	852.75*** (40.41)
Observations	381	66	94
R-squared	0.44	0.95	0.93
Before			
Mean control t(0)	335.92	719.75	852.75
Mean treated t(0)	14.02	11.034	28.43
Diff t(0)	-321.90	-708.716	-824.32
After			
Mean control t(1)	189.55	318.50	514.63
Mean treated t(1)	7.02	4.00	12.35
Diff t(1)	-182.53	-314.50	-502.28

Standard errors in parentheses

*** p<0,01, ** p<0,05, * p<0,1

Lastly, it should be stressed that these results must be treated with caution, since there is no data available on the number of new members that got their qualifications recognised through the Hellenic NARIC, i.e. applied and acquired for degree equivalence. However, since the procedure through SAEP or TEE is simpler and less demanding in theory, the majority is expected to have preferred applying for the recognition of their professional qualifications.²⁷

4.7.4 The effect of the reform on prices

In order for the reform to have a sizeable effect on a country²⁸, there has to be a shortage of specific groups of professionals that drives prices up²⁹. Shortages of labour would be accompanied by low unemployment rates and high wages/earnings from employment or prices charged to consumers. In such a case, allowing for inflows of professionals from other countries would be beneficial to restore equilibrium in the labour market and lower the cost of services.

The question arising is whether such an argument holds for Greece. Figure 4.15 depicts the unemployment rates for selected groups of tertiary education graduates.

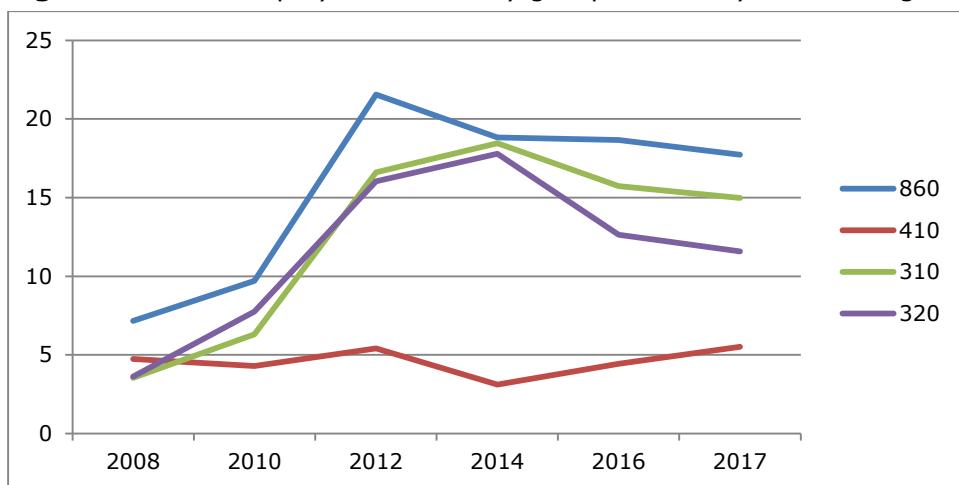
²⁷ Considering the fact that hires in the public sector, for which a degree from a Greek institute is a *sine qua non*, practically stopped in 2012 (recall the rule of 1 hire for every 10 separations, which later became 1/5 and 1/4), this assumption is quite realistic.

²⁸ Given that there is suitable data available, which there are not in the Greek case, CESE (2012) stresses the complexity of assessing the economic impact of a reform. For example, even when a negative relationship is found between reserved activities and performance, in most cases that is very low and statistically non-significant. That 'demonstrates the difficulty in isolating impacts to a single cause only'.

²⁹ An illustrative example on how a reform allowed prices to drop involves heavily regulated professions. See Athanassiou et al. (2015).

With the exception of medical school graduates, for which the unemployment rate has been stable around 5% throughout the period examined³⁰, the rest of the groups experienced a strong increase in the unemployment rate from 2008 and a progressive decline from 2014. Unfortunately, there is no evidence on wages of groups of professionals or self-employed. According to ELSTAT, though, the consumer price index for services in Greece stood at 102.96 in 2017 versus 106.15 in 2012 (2009=100). Thus, there is no evidence of either shortages in the labour market or increasing prices that a reform would alleviate. Note furthermore that these professions typically involve a big share of self-employed individuals, which means that their unemployment rates are probably underestimated, since self-employed professionals may continue to be registered as employed even with zero income.

Figure 4.15: Unemployment rates by group of tertiary education graduates



Notes: 860= Medical professions/ATEI (including opticians, physiotherapists, aestheticians), 410= Medical school/AEI (including dentists and pharmacists), 310= Polytechnic School - EMP (civil engineers and architects), 320= Polytechnic School - EMP (mechanical engineers, chemical engineers, etc.).

Source: LFS, ELSTAT, own calculations.

Even if there were shortages for specific professionals in the Greek labour market, in order for the reform to have a measurable effect on prices there should be enough professionals applying and getting their qualifications recognised compared to the number of professionals active in the country (or even region). It is clear from the above discussion and the data by SAEP that the number of those applying for professional qualifications recognition has been small until now. For example, according to SAEP, only 11 physiotherapists applied for professional qualifications recognition in 2016/2017, while according to earlier data (published), the corresponding number was 31 in 2012. According to ELSTAT data³¹ there were almost 600 more physiotherapists in 2013 compared to 2012. The same holds for period

³⁰ Note that doctors tend to emigrate more often than other professionals in search of a job. A phenomenon usually referred to as *brain drain*. Data from the Doctors Association (ISA) refer to 1,500 doctors asking for documents from ISA annually in the past five years (2013-2017), in order to emigrate. (<https://www.iefimerida.gr/news/407125/oi-ellines-giatroi-egkataleipoun-tin-ellada-pano-apo-1500-metanasteyoun-kathe-hrono>). This is an additional explanation of why the unemployment rate for doctors remains low. Another is that they work as self-employed.

³¹ The press release is available at <http://www.statistics.gr/documents/20181/b1a43dde-53c7-404c-b0d9-17933e74126e>.

2016/2017. Moreover, as already discussed, the share of new TEE members with a non-Greek degree in 2017 was less than 9% of the new members. Therefore, it seems clear that the number of those who did not study in Greece, but wish to work in the country, is very small and, thus, unable to critically influence labour supply and have an impact on prices.

4.7.5 Concluding remarks on the reform in Greece

The purpose of the reform is to facilitate flows of labour, i.e. professionals, between European countries and, thus, realise a unified European labour market. Such a market will be more capable to adapt to economic shocks easier and faster through the rationalisation of the labour cost and, consequently, the rationalisation of prices for services. Moreover, a unified labour market would allow professionals to move between countries and seek better employment opportunities, while at the same time relieving unemployment pressures and skill mismatches in national labour markets. Therefore, it would be beneficial for employers, employees and national economies in general.

Unfortunately, Greece is a special case; economic conditions are far from favourable at the moment. The country has been facing probably the worst economic recession ever, war time excluded. The unemployment rate skyrocketed to 28% in 2013, although it has been dropping ever since. Nevertheless, it still stands close to 19% (2018).³² Moreover, wages are still low: the average annual wage in PPP in Greece in 2017 was \$26,330 compared to \$37,033 in Italy, \$39,196 in Spain and \$50,330 in Austria.³³ Under these circumstances, it is hard to think of Greece as a suitable place to move and look for a job; therefore, inflows of professionals from other European countries are rather limited and will probably remain low in the future. Moreover, evidence suggest that there is an outflow of Greeks who emigrate, especially well educated ones, although there seem to be signs that the situation is gradually improving.³⁴

Nevertheless, the limited and imperfect available data suggest that the reform facilitated the moving of professionals who acquired their qualifications abroad. There is one important feature that needs to be pointed out though: those who apply for professional qualifications recognition are mostly Greeks who have studied abroad and are repatriated³⁵; according to SAEP officials over 95% of applicants have Greek citizenship. On the other hand, Laws 4093/2012 and 4111/2013 expanded the scope of the PD 38/2010 to graduates of private colleges that operate in Greece under franchise agreements or as branches of tertiary education institutes based on other

³² These figures are available at <http://www.statistics.gr/el/statistics/-/publication/SJO01/->.

³³ OECD statistics in https://stats.oecd.org/Index.aspx?DataSetCode=AV_AN_WAGE#. The average wage refers to full-time full-year equivalent employee in total economy.

³⁴ https://www.huffingtonpost.gr/entry/brain-drain-methoi-kai-aletheies_gr_5b77b82fe4b018b93e94115a

³⁵ Due to the *numerus clausus* policy (refers to a system which restricts the number of students accessing university; https://en.wikipedia.org/wiki/Numerus_clausus) in accessing tertiary education in Greece, some Greeks (fewer during the crisis) are forced to study abroad and then return and apply for professional qualifications recognition.

European countries.³⁶ Under these circumstances, the integration of the Directive 2005/36/EC is serving as a way to bypass the Greek constitution that does not allow for the operation of private tertiary education institutes.³⁷ On the other hand, the directive is probably proven useful for Greeks who wish to migrate and look for a job abroad. In this respect, it is good for individuals, but not for the country as a whole, considering that those who leave are usually highly competent and well educated.³⁸ Naturally, no one would seriously suggest blocking these flows.

On the other hand, the new system of professional qualifications recognition could allow professionals moving to the country in the future so long as two necessary conditions are fulfilled. First, economic circumstances would have to improve; the economy would have to start producing new sustainable and decently compensated jobs. Second, the growth process and the increase in demand for labour would have to cause skill mismatches, vacancies or increase tightness in the labour market; inflows of professionals from abroad could alleviate such pressures. For the time being, the job vacancy rate in Greece is close to 0.5%³⁹ Thus, there is no room to argue in favour of skill shortages. Once those requirements are fulfilled, we will be able to reassess the impact of the reform with more reliable data and perhaps draw more solid conclusions.

On the practical side, it is worth noting that SAEP is not the only competent authority to process the applications for recognising professional qualifications. That raises questions with respect to credibility and application of equal standards for all. There is also a related issue with data collection. The assessment of the process would be facilitated if all requests were directed towards one authority which would be responsible, at the same time, for collecting and processing all the relevant data. Finally, there are some issues with respect to SAEP's services regarding delays in issuing decisions which currently may extend up to three years.⁴⁰

³⁶ <http://www.ellinikakollegia.gr/anagnorisi/epagelmatiki-isodinamia-saep>.

³⁷ Perhaps the delays reported in the process are related to that (<https://www.esos.gr/arthra/56676/sti-voyli-oi-kathysteriseis-anagnorisis-ptyhion-apo-saep>), despite the fact that the Ministry of Education, Research and Religious Affairs took steps to improve the situation almost one and a half year ago (<https://www.esos.gr/arthra/51554/tropologia-gia-ta-ptyhia-ton-kollegion-kai-xenon-panepistimion>).

³⁸ Debate on brain drain in Greece. <http://www.newdiaspora.com/greek-neomigrants-research/>.

³⁹ <https://ec.europa.eu/eurostat/web/labour-market/job-vacancies/database>.

⁴⁰ A list of articles referring to SAEP and especially the associated delays can be found at <https://www.esos.gr/tags/saep>.

5. ENERGY MARKET REFORMS AND PRIVATISATIONS

5.1 *Introduction*

The energy sector is of great importance for the Greek economy, representing a significant share in GDP. More specially, in 2017, "Electricity, gas, steam and air conditioning supply" and "Manufacture of coke and refined petroleum products", represented 2% and 1% respectively, i.e. 3% in total of the Greek GDP. It should be mentioned that even if the GDP of the country decreased during the last decade, the added value of the sector increased marginally and for this reason its share increased from 1.9% in 2008 to 3% in 2017. Moreover, the share of the energy sector in the added value of industry increased from 15% in 2008 to 20.6% in 2017 (Eurostat, 2019). Additionally, the energy sector has the potential to attract new investments and create new jobs. At the same time, energy is a key parameter for industry and households, while energy cost and security of supply are key elements for the market. On the other hand, in the case of Greece, specific peculiarities and distortions in the energy sector seem to have limited its prospects and capacity to support economic development.

More particularly, a characteristic example is the change of the energy mix of the country during the last years (increase of the use of renewable energy sources and natural gas and decrease of the use of conventional sources such as lignite) that led to the increase of the energy cost and energy dependency (Lychnaras & Dagoumas, 2016). In particular for Renewable Energy Sources (RES), the support mechanism that was adopted to fulfil the national RES targets was based on guaranteed prices (Feed-In Tariffs) for the producers. In this scheme, the high prices of RES, along with other distortions of the market, increased the cost of renewable energy for the state and the consumers and led to a high deficit of the Specific Account for RES financing.

Another issue is that most energy markets in Greece were traditionally controlled by state-owned enterprises. A characteristic example is the Greek electricity market, which is characterised by a high degree of concentration and lack of competition, as the state-owned Public Power Corporation S.A. (PPC) is the largest power generator and electricity supplier in the country, owning the total of the lignite and large hydroelectric units. Additionally, the PPC is the main retailer of the electricity market and, until recently, owned and operated the country's electricity transmission system and the distribution network.

In this context, the main targets of the reforms planned in the first and second adjustment programmes were the liberalisation and the increase of competition in the energy market. More specifically, the policy targets set in the first adjustment programme were: to enable the effective liberalisation of the wholesale electricity market, including the opening up of lignite-fired electricity generation to third parties; to proceed with the rationalisation of tariffs and, more specifically, to adopt a mechanism ensuring that the energy component of regulated tariffs reflects wholesale market prices; to proceed with the privatisation of state-owned enterprises of the

energy sector in order to boost domestic and foreign direct investments and stimulate growth; and to unbundle network from supply activities. Respectively, the second adjustment programme targets were: to ensure that network activities are effectively unbundled from supply activities; to proceed to the privatisation of the PPC and the Public Gas Corporation S.A. (DEPA), following the unbundling of the Transmission System Operators (TSOs); to increase competition in the generation of electricity, for example, through access of third-parties to lignite-fired electricity generation and the sale of hydro capacity and other electricity generation assets to investors; and to reform the renewable energy support schemes.

5.2 *Methodology and data*

Until now, a part of the planned reforms was implemented, whereas many others are still in progress. Moreover, even in the cases of reforms which have been put into effect, the implementation has begun very recently and, therefore, only initial impacts can be assessed. Given this fact, our analysis focuses on reporting and presenting the current status of the energy sector in Greece, as well as recording the reforms implemented until today. Furthermore, it assesses the initial results of these reforms for the market, identifies the remaining limitations and dysfunctions of the market and highlights the key reforms needed in the future. Additionally, this chapter records the recent developments of the privatisation processes of energy corporations and energy infrastructures.

The data used for the report concern quantity and price data for the Greek energy sector, energy indicators and market statistics, as well as legislation and market reports and analyses. The main data sources employed were the Independent Power Transmission Operator (ADMIE) S.A, the Hellenic Operator of Electricity Market (LAGIE), the Regulatory Authority for Energy (RAE), the Hellenic Energy Exchange S.A. (HENEx) and the Hellenic Republic Asset Development Fund (HRADF).

5.3 *Market liberalisation and increase of competition*

As mentioned above, the main prerequisites of the 1st and 2nd adjustment programmes concerning the liberalisation and the increase of competition in the energy sector of Greece were the liberalisation of the wholesale electricity market, the increase of competition in the generation of electricity, the unbundling of network from supply activities and the reform of the renewable energy support schemes. Until now, a number of planned reforms in these areas have been accomplished (e.g. the unbundling of the Power Transmission Operator, the Electricity Distribution Network Operator and the Gas Transmission System Operator, the adoption of forward electricity products auctions, the revision of the RES support schemes etc.) and many others are still in progress (RAE, 2017). Overall, reforms are still in an early stage and even in cases where they have been put into effect, their implementation has begun very recently. The following section discusses the most important of these reforms and their initial results on the energy market.

5.3.1 Reforms of the Greek electricity market

An area where particular emphasis was given in the framework of the reforms is the electricity market. As mentioned above, the Greek electricity market is characterised by oligopoly conditions and a lack of competition. Traditionally, the state-owned PPC is the largest electricity generator, owning the total of the lignite and large hydroelectric units, and is also the main supplier of the electricity market. Additionally, until recently, the transmission system, as well as the distribution network for electricity, was also controlled by PPC. For this reason, this section reports in detail the most important recent reforms in this market.

i. Main parameters and characteristics of the electricity market

As it is known, a main pillar of the European policy for energy is the liberalisation of the electricity sector and the gradual integration of a single, competitive, internal EU electricity market. The integration of the internal market and the establishment of common rules for the operation of the market will contribute to the increase of efficiency in production, transmission and distribution of electricity, strengthen security of supply, enhance competitiveness and support the liberalisation of the market. This will increase competition and decrease the cost and the wholesale prices of electricity.

The electricity market is divided into four relevant markets: a) the production and supply of electricity at the wholesale level, b) the transmission of electricity, c) the distribution of electricity and d) the supply of electricity at retail level. The production and supply of electricity at the wholesale level, as well as the supply of electricity at the retail level, are the so-called “competitive activities”, where, the prices are expected to arise according to the rules of free competition. On the contrary, the electricity transmission and distribution markets are characterised by significant economies of scale and strong network effects. Therefore, they are considered as natural monopolies and for this reason it is unproductive and irrational to implement conditions of free competition (Farantouris, 2014). However, electricity transmission and distribution networks are essential infrastructures for the activities of their users (producers, suppliers, importers, traders) and their common use is considered as a prerequisite for the existence competition in the electricity market. It is therefore necessary that all involved enterprises face equal and non-discriminatory access to the existing networks, in order to ensure competition in the market. As a result, their function is ruled by a regulated third-party access regime. Therefore, companies that own or manage networks should be independent and unbundled from companies operating in the production and supply of electricity.

ii. Unbundling of Network activities from Supply

As mentioned, a main target of the first and second adjustment programme was to ensure that network activities will be effectively unbundled from supply activities. In this context, in 2011, the Greek Parliament adopted L. 4001/2011, for the operation of Electricity and Gas Energy Markets, for Exploration, Production and Transmission

Networks of Hydrocarbons and Other Provisions. This law harmonised the Greek legislation with the provisions of the third EU energy package of 2009, i.e. the DIRECTIVE 2009/72/EC that concerns the adoption of common rules for the organisation of the EU internal market for electricity. The law established: (a) the Operator of the Greek Electricity Market (LAGIE), as the independent operator of the market, (b) the Independent Power Transmission Operator (IPTO or ADMIE) S.A., as the independent operator, to operate, maintain and develop the Hellenic Electricity Transmission System and (c) the Hellenic Electricity Distribution Network Operator S.A. (HEDNO or DEDDIE), as the independent operator, to operate, maintain and develop the Electricity Distribution Network in Greece.

iii. Increase competition in electricity at the wholesale level

As already discussed, in Greece, the market for electricity supply at the wholesale level is characterised by a high degree of concentration, including only small number of competitors. This is because, traditionally, PPC is the main power producer and there are significant barriers that limit the entry of new businesses. Such barriers are: (a) the exclusive access of PPC to resources such as lignite mines and large hydroelectric units, (b) the significant high investment costs for the construction of power stations and the high risk of such an investment, (c) the inability of private producers to create a diversified energy portfolio (beside natural gas) in relation to the high prices of natural gas, (d) the limited imports of electricity etc. (Farantouris, 2014). In the relevant market for retail electricity supply, the first private power supply companies appeared in the mid-2000. Nevertheless, the above limitations of the wholesale market also create distortions to the retail energy market, as most suppliers were obliged to draw energy exclusively from the wholesale market and mainly from the PPC. As a result, PPC remained the main power producer, as well as the main power supplier in Greece. However, the liberalisation of the Greek electricity market is directly linked to the reduction of the market share of PPC by 2020. In this context, L. 4336/2015, of August 2015, *inter alia*, instituted the requirements in the energy sector on Greece and the time frame for their implementation. In particular, according to this law, until 2020 any company should not produce or import, more than 50% of the total electricity that is produced or imported in Greece. To this end, it is necessary to adopt measures and mechanisms that ensure third-party access to lignite and hydroelectric production, for example via forward auctions of electricity products. According to this, the law sets the obligation to design and establish competitive auctions for electricity products in the market, in order to decrease PPC share in retail and wholesale electricity market by 25%, with a target of falling under 50% by 2020.

iv. Implementation of Forward Electricity Products Auctions

Following this, in May 2016, Law 4386/2016, in articles 133 to 141, established the exchange system for electricity forward auctions, also known as NOME auctions. The purpose of this provision was to adopt regulatory measures to i) ensure the equal access of the eligible electricity suppliers in the domestic energy mix, ii) develop

healthy competition between suppliers and iii) improve quality and prices of the electricity supply to end consumers. More particularly, the Forward Electricity Products Auctions System (FEPAS) was established by virtue of Law 4336/2015 and Law 4389/2016 in order to promote healthy competition in the Greek wholesale and retail electricity markets and decrease the relative market shares of PPC under 50% by 2020. The FEPAS provides access for PPC competitors to Forward Electricity Products (with physical delivery obligation to the current day-ahead market structure) so that competitive portfolios can be deployed (HEnEx, 2018).

According to L. 4389/2016, the Yearly Quantities released as Forward Electricity Products in the Auctions are calculated yearly, on the basis of the relative decrease of the PPC market shares by the end of each year, taking into consideration the consumption volume of the Interconnected System and Network. The Yearly Quantities to be auctioned are the result of the "Yearly targets for PPC market share reduction" multiplied by the total volume of the Interconnected System of the previous year (HEnEx, 2018). In this context, the first Auction of Forward Electricity Product was conducted by LAGIE in October 2016. In 2017 and 2018, four auctions per year have been performed, while for 2019 the first auction took place in February and three more auctions have been scheduled. Table 5.1 presents the details of these auctions. We should note that LAGIE, as the operator of the market, had the responsibility for these auctions. As the Hellenic Energy Exchange S.A. (HEnEx) has been incorporated in 2018, it will gradually take over these procedures, as it is discussed below.

Table 5.1: Forward Electricity Products Auctions

Year	Auction Day	Auction Code	Volume (MWh)	Quantity ⁽¹⁾ (MWh/h)	Yearly Quantity (MWh/h)	Weighted Average Price (€/MWh)
2016	25/10/2016	2016A01	4,029,600	460	460	37.39
2017	31/01/2017	2017A01	1,270,200	145	1,153	41.06
	26/04/2017	2017A02	1,270,200	145		39.69
	19/07/2017	2017A03	1,270,200	145		43.04
2018	25/10/2017	2017A04	6,289,680	718	1,883	45.17
	07/02/2018	2018A01	3,504,000	400		42.21
	18/04/2018	2018A02	3,504,000	400		41.98
	18/07/2018	2018A03	3,504,000	400		48.79
	17/10/2018	2018A04	5,983,080	683		54.67
2019 (*scheduled)	08/02/2019	2019A01	3,074,400	350	1,972	53.97
	17/04/2019*	2019A02	3,118,320	355		(N/A)
	17/07/2019*	2019A03	4,392,000	500		(N/A)
	16/10/2019*	2019A04	6,737,328	767		(N/A)

⁽¹⁾The Quantity refers to the Volume for a period of 8760 hrs, i.e. 365 calendar days, as the physical delivery period for the product of each auction.

Source: HEnEx, 2019b.

From Table 5.1, it is worth noting that the auctioned volume increased in 2018, while for 2019 it was expected to decrease, as the NOME auctions mechanism will be gradually repealed because of the restructuring of the Greek electricity market, as it is discussed below. However, at the end of 2018, the share of PPC in the retail electricity market exceeded 80%, while, according to the adjustment programmes' prerequisites, this share should have decreased to 62%. For this reason, according to RAE decision

164/2019 of January 28th, 2019, the schedule for 2019 auctions has been readjusted and the scheduled quantity increased from 1444 MWh/h to 1972 MWh/h.

NOME auctions, as a temporary mechanism for the decrease of the share of PPC in retail market, seemed to have a positive effect, as it is presented in the following section. However, there are also some distortions in this system. An example is that in these auctions, traders are also participating in order to buy energy that will be exported afterwards. In this way, some of the energy obtained through the auctions is not supplied to the Greek market, thus not reducing the retail market share of PPC. At the same time, the participation of the traders is characterised by higher bids that raise the final prices of the auctions, and therefore, the cost for the Greek market consumers. In this context, RAE adopted measures for the restriction of electricity exports of the companies participating in NOME auctions (RAE decision 148/2019 of January 24th, 2019). It is worth noting that the average purchase price of electricity from the auctions has increased, as presented in table 5.1. This is an important obstacle for the increase of the share of private suppliers in the retail electricity market.

v. Restructuring of the Greek electricity market – Target Model

In order to achieve the integration of electricity markets across the EU, a common model of operation of markets in each country is needed. The EU has developed such a model, known as the “Target Model” that provides the basic market principles to be adopted by the Member States. Its implementation is based on the creation of four separate markets for electricity (a. Forward market, b. Day-Ahead Market, c. Intra-Day Market and d. Balancing market). However, the current model of the Greek electricity market differs fundamentally from the European Target Model and does not allow its coupling within the framework of the single market. More specifically, the current model of the Greek electricity market is a mandatory pool of producers, within the Day-Ahead Scheduling (DAS). More specifically, the DAS is the wholesale market for the transactions of all the electricity products that will be produced, consumed and traded the next day in Greece (i.e., a Day-Ahead Market). However, as mentioned above, a Forward Market is partially implemented via natural-delivery futures auctions (NOME). Until today, LAGIE has been responsible for the supervision of the operation of the market.

In August 2016, the Law 4425/2016 came into force, regarding the restructuring of the Greek electricity market for the implementation of integration towards the single internal European electricity market. The law is mainly based on the European Regulations (EC) 714/2009, on conditions for access to the network for cross-border exchanges in electricity (EC, 2009b) and (EU) 2015/1222, establishing a guideline on capacity allocation and congestion management (EC, 2015). This law defines the four Electricity Markets according to the EU Target Model: a. Forward Market, b. Day-Ahead Market, c. Intra-Day Market and d. Balancing Market. These markets will replace the existing DAS market. LAGIE was set as the Operator for three of them (Forward, Day-Ahead and Intra-Day Market), whereas ADMIE was set as Operator for

the fourth market (Balancing Market). Additionally, according to the Law, the main responsibility of ADMIE, as the independent manager of the National Power Transmission System, is to achieve the coupling of the Greek electricity with the corresponding European market.

vi. Hellenic Energy Exchange

Finally, in January 2018, Law 4512/2018 on Arrangements for the Implementation of the Structural Reforms of the Economic Adjustment Programmes and Other Provisions came into force. The law modified the previous Laws for the energy market (Law 4011/2011 and Law 4425/2016) and established the *Hellenic Energy Exchange S.A. (HENEx)*. The main priorities of HENEx are: (a) the security of energy supply, (b) the coupling of the Greek electricity market with the corresponding European market and (c) the reduction of energy costs, via the strengthening of competition. The authority of HENEx, as the successor of the Operator of the market (LAGIE), is the organisation and operation of the future wholesale market, i.e. of Forward, Day-Ahead and Intra-Day Markets, i.e. all future markets. This means that the current responsibilities of LAGIE are expected to be transferred to HENEx, while, after the integration of the electricity market, the responsibilities of LAGIE will focus on the management of RES and the guarantees of origin. The operation of the Balancing Market has been entrusted exclusively to the transmission system operator (ADMIE).

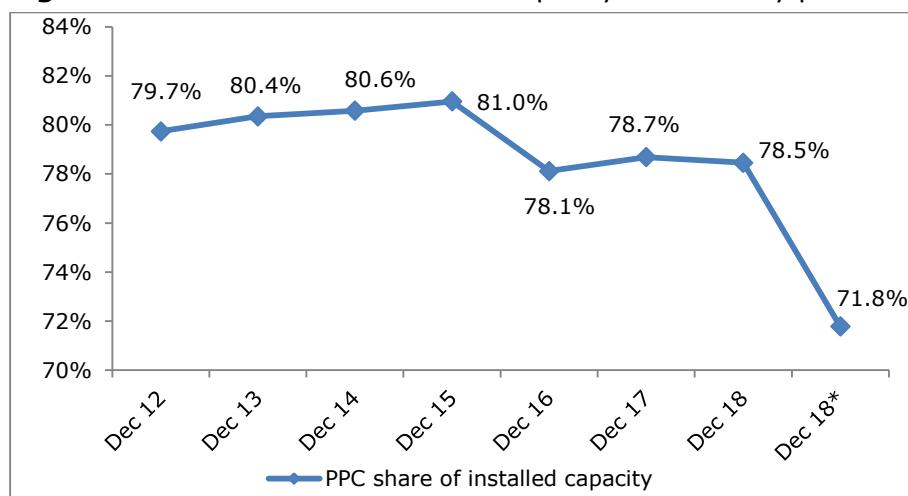
In November 2018, the *Energy Exchange Clearing House S.A. (EnExClear)* was founded, in order to clear the Day-Ahead and the Intra-Day Market transactions of the HENEx. According to latest information available, the Hellenic Energy Exchange will start its operation in June 2019. Regarding, the forward electricity products auctions mechanism, this will be gradually repealed. The auctions will normally continue until the fully activation of the Target Model and the beginning of the operation of the HENEx. After that, the auctions will be gradually integrated into the new market and finally, they are expected to stop.

5.3.2 Competition in the Greek electricity market – Assessment of the impacts of the reforms

The data for the status and development of the electricity market are recorded in detail in the Day Ahead Scheduler (DAS) Monthly Reports published by HENEx. These monthly reports were previously published by LAGIE and are available from September 2012 until December 2018. Regarding power generation in Greece, there are: 14 lignite units of 3.90 GW installed capacity and 16 hydroelectric units of 3.17 GW installed capacity, all owned by PPC. Additionally, there are 14 natural gas units of 5.00 GW installed capacity, of which, five units of 2.38 GW installed capacity, are owned by PPC, while the rest are owned by private producers. Finally, the installed capacity of RES units is 5.47 GW and the majority of them belong to private investors (HENEx, 2019a). It bears noting that all “traditional” technologies, i.e. lignite and large hydroelectric units are operated by PPC, while, private investments are mainly focused on renewable and natural gas units.

In particular, regarding power generation technologies excluding RES, i.e. from lignite, hydroelectric and natural gas units and according to the latest DAS report of December 2018, besides PPC, there are also 4 private enterprises in operation, namely ELPEDISON, HERON, KORINTHOS POWER and MYTILINEOS. The share of installed capacity of PPC was 79.7% in December 2012, increased to 81% in December 2016 and decreased again to 78.5% in December 2018 (HENEx, 2019a). We should note that this share also includes the Meliti and Megalopoli power stations that are under the bailout-required disinvestment plan of PPC's lignite units, as it is discussed below. If we exclude these, the share of PPC decreased to 71.8% (Figure 5.1). It is obvious that the share of PPC's installed capacity hasn't been reduced during the last 6 years. However, this is not surprising, because of the barriers that limit the entry of new businesses in the specific market, as it has been discussed in the previous section.

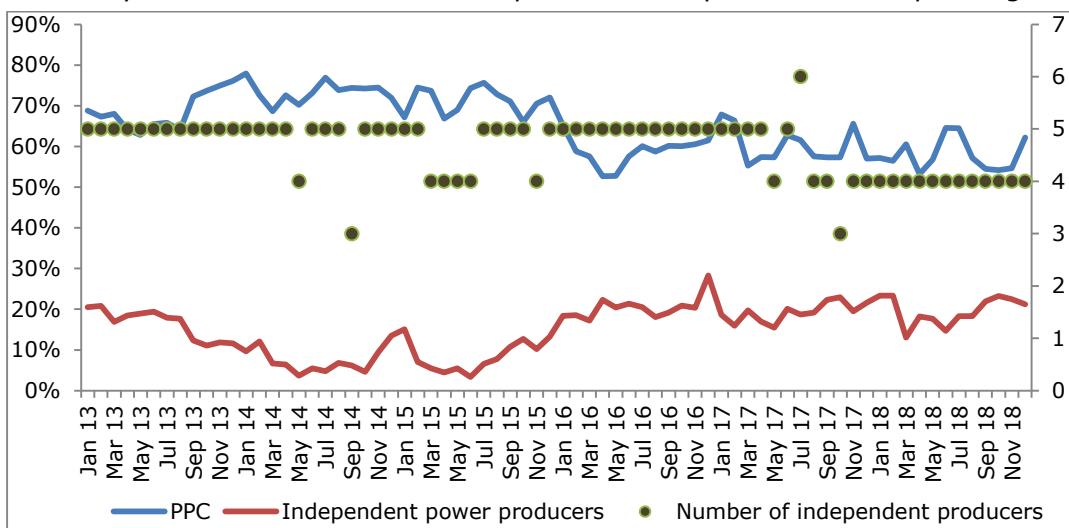
Figure 5.1: Share of PPC's installed capacity in electricity production market



* Installed capacity, excluding Meliti and Megalopoli power stations.
Source: HENEx, 2019a.

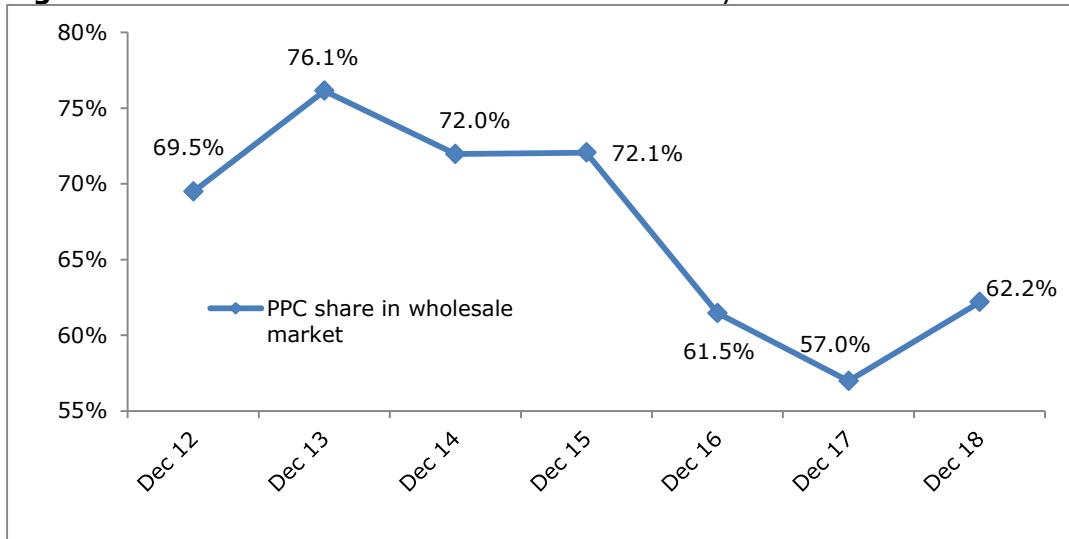
Regarding the wholesale electricity market, Figure 5.2 presents the monthly development of the share of PPC, as well as the share of the independent power producers in the market, for the 6-year period 2013-2018. We should note that the share produced by RES units has been considered but it is not illustrated here. The figure also records the number of independent producers. It is worth noting that the independent producers, excluding RES producers, never exceed the limit of six, while in 2018, there were only four. In order to get clearer results, Figure 5.3 presents the share of PPC in the wholesale market only for the last month of each year. It is obvious that since 2016, where the Forward Electricity Products Auctions System auctions started, the share of PPC decreased.

Figure 5.2: Share of PPC and independent power producers in the wholesale electricity market and number of independent enterprises active in power generation



Source: HEnEx, 2019a.

Figure 5.3: Share of PPC in the wholesale electricity market

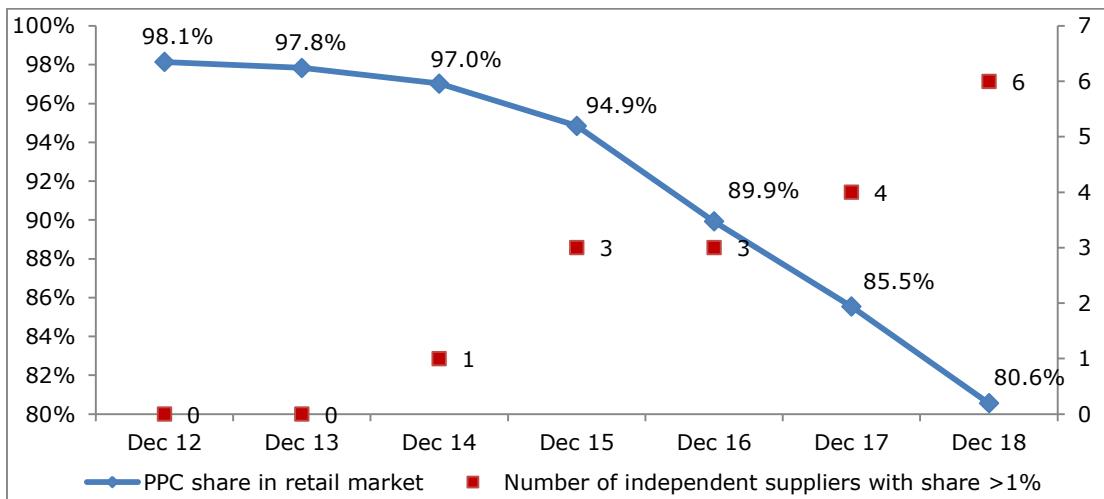


Source: HEnEx, 2019a.

Another important issue is the recent development in the electricity retail market. According to DAS reports, at the time of writing, apart from the PPC, there are also 32 licensed private suppliers, whereas there were only 18 in 2012 and 16 in 2015 (HEnEx, 2019a). Of course, only a limited number of them managed to achieve a notable share of the market. Nevertheless, the supply share of the PPC decreased from 98.1% in December 2012 to 80.6% in December 2018 (Figure 5.4). However, as mentioned, this decrease was not enough according to the obligations of the country and for this reason the quantity of electricity for the NOME auctions in 2019 has been readjusted. Overall, it seems that the reforms for the liberalisation of the electricity supply market and especially the Forward Electricity Products Auctions System, which started in 2016, managed to reduce the PPC share and increase competition. A few characteristic examples are the offers from private suppliers in order to gain new customers and the effort of PPC to maintain its selling prices in order to keep its

customers. Notably, since July 2016, PPC adopted a 15% discount for domestic customers that pay their bills on time, to increase its competitiveness against private suppliers.

Figure 5.4: PPC's supply share in the retail electricity market



Source: HEnEx, 2019a.

5.3.3 Reform of the renewable energy support schemes

A main obligation of the 2nd adjustment programme for Greece, in 2012, was the reform of the support mechanism of renewable energy. More specifically, the previously adopted legislations (Laws 3468/2006 and 3851/2010) to increase the share of Renewable Energy Sources (RES) in Greece, in order to fulfil the national RES targets, were based on a "Feed-In Tariff" support scheme. According to this, RES production stations didn't participate in the competitive process of the wholesale electricity market. On the contrary, each licensed RES producer, signed a 20-year contract with LAGIE for the sale of electricity to receive a fixed guaranteed price for each MWh produced, according to the RES technology, for the total period of the contract. The guaranteed price was considered as an operational aid burdening the state and the consumers. It should be mentioned that the high prices of RES, along with other distortions of the market, led to a high deficit of the Specific Account for RES financing. This caused dysfunctions in the RES market and especially in new licensing, as well as in the payment of the producers. In order to eliminate the deficit of the Specific Account for RES (an obligation that it also mentioned in the adjustment programme) and restrain the rising cost for customers, in April 2014, the Greek parliament adopted the so called "New Deal" (Law 4254/2016). The law readjusted the fixed prices of the ongoing valid contracts of the established RES units at lower levels.

Nevertheless, the above Feed-In Tariff remained valid until the end of December 2015. In August 2016, Law 4414/2016, regarding the new support scheme for RES and Co-generation power stations, came into force. This law aimed at restructuring the RES support legislation, in order RES to be incorporated into the wholesale energy market with the best cost-effective manner for the market, the state and the customers. Additionally, the main targets set in the Law were to achieve an 18%

share of RES in consumption until 2020 and reduce the cost of renewable energy for the consumer. The key element of this law was the change of the "Feed-In Tariff" into a "*Sliding Feed-In Premium*" mechanism (EU, 2016). According to this scheme, all new RES and Co-generation power stations would be able to sign a 20-year contract with LAGIE, in order to receive an operating aid in euro per MWh of produced electricity. However, in this case, the operating aid would be offered as a *Premium* on the wholesale market revenue and would not cover the total cost of the renewable energy produced.

More particularly, according to the new scheme, all newly established wind energy units of capacity above 3MW, as well as, all the other technologies units of capacity above 500kW would be obliged, from then on to participate in the wholesale electricity market in order to sell their produced electricity. From this procedure, they would be able to gain their revenue according to the Specific Market Price, i.e. the *Wholesale Price* of the electricity market. The additional *Premium* received would be calculated as the difference between a *Reference Price* for each RES technology and the above revenue. This means that, for each MWh produced, the RES producer would finally receive the Reference price, consisting of the market price plus the state aid (*Premium*). Initially, the Reference Prices for each technology were administratively defined in L. 4414/2016, but from January 2017, new RES power stations should participate in the newly established *Competitive Procedures*, where the Reference Price, for each participant, would arise via tender auctions, as the Strike Price of the auction. Before each auction, RAE would define the maximum starting price (bid), in order to limit the cost of RES. This mechanism has two important advantages in terms of reducing the cost of renewable energy, and hence the total cost of electricity for the consumers. First, as mentioned, each RES producer receives a final price, a part of which is considered as aid (i.e. the *Premium*), compared to the previous mechanism, where the total Tariff was treated as aid. This means lower costs for the state, and hence for the consumers. Additionally, the competitive mechanism of the RES auctions contributes to reduce the wholesale market price of renewable electricity. This will have a positive effect for the price of electricity at the retail market and ultimately for the consumers.

Regarding the RES power stations of lower capacities, i.e. wind farms of capacity less than 3MW and all other RES and Co-generation power stations of capacity less than 500kW, these are excluded from the Feed-In Premium mechanism and are not obliged to participate into the electricity market. The specific units will have the option to continue receiving a fixed price, according to the Feed-In Tariff scheme, i.e., the Reference Prices that initially defined administratively by L. 4414/2016.

A main target of the new scheme is to achieve an 18% share of RES in electricity consumption, by 2020. According to this, the schedule for the period 2018-2020 is to conduct auctions for 2,600 MW of new capacity of Wind and Photovoltaic (PV) units. In particular, 2,600 MW will be distributed along the three year period until 2020 as follows: 1,000 MW in 2018, 1,000 MW in 2019 and 600 MW in 2020. More specifically for 2018, the scheduled auctions were 300 MW for PVs, 300 MW for Wind and 400 MW

mixed. The implementation of Law 4414/2016 started essentially in 2018, when the first RES auctions took place. In 2018 there were two rounds of auctions. The *first round* was performed in July and concerned the following 3 categories, with the respective results:

- Category I: Photovoltaic units under 1 MW ($PPV \leq 1 \text{ MW}$). The maximum auctioned capacity was 70 MW, while the total offered capacity reached 53.48 MW. Prices ranged between €75.78 and €80.00/MWh and the weighted average price was €79.02/MWh.
- Category II: Photovoltaic units between 1 and 20 MW ($1 \text{ MW} < PPV \leq 20 \text{ MW}$). The maximum auctioned capacity was 230 MW, while the total offered capacity reached 52.92 MW. Prices ranged between €62.97 and €71.00/MWh and the weighted average price was €63.81/MWh.
- Category III: Wind power units between 3 MW and 50 MW ($3 \text{ MW} < PWIND \leq 50 \text{ MW}$). The maximum auctioned capacity was 300 MW, while the total offered capacity reached 170.92 MW. Prices ranged between €68.18 and €71.93/MWh and the weighted average price was €69.53 /MWh.

The *second round* of auctions was performed in December and also concerned the above 3 categories of RES units. The available information on the auctions and their results is the following:

- Category I ($PPV \leq 1 \text{ MW}$): The maximum auctioned capacity was 61.95 MW, while the total capacity of the projects participating was higher (102.19 MW). Prices ranged between €63.00 and €69.00/MWh and the weighted average price was €66.66 /MWh.
- Category II ($1 \text{ MW} < PPV \leq 20 \text{ MW}$): The maximum auctioned capacity was 86.47, while the total capacity of the projects participating was higher (151.32 MW). However, the capacity of the projects for which offers were made was considerably lower (65.33 MW). Because of this, RAE decided that this auction was characterised by lack of competition and cancelled it. Nevertheless, the prices ranged between €62.97 and €71.91/MWh.
- Category III ($3 \text{ MW} < PWIND \leq 50 \text{ MW}$): The maximum auctioned capacity was 160.94 MW, while the total capacity of the projects participating was higher (281.65 MW). Prices ranged between €55.00 and €65.15/MWh and the weighted average price was €58.58 /MWh.

Because of the fact that we only have initial results from this procedure, one can only draw preliminary, nevertheless important conclusions about the reformed mechanism. It is clear from the first two rounds of auctions of the reformed support mechanism that the implemented RES prices were reduced. For example, the weighted average prices for the third category, that reached about €70 /MWh in the first round and €59 /MWh in the second round, are much lower than the reference price of €98/MWh for wind power stations. Additionally, in the second round of auctions, the implemented RES prices decreased more, and in some cases, the strike prices were even lower than the respective wholesale market prices.

Regarding the following steps, the next auction is scheduled for the 15th of April, 2019. It is important to note that this is the first common auction for wind power and PV units and concerns a maximum auction capacity of 600 MW. More particularly, it concerns wind power projects of up to 50 MW and PVs over 20 MW. This common auction will increase competition between the two main RES technologies and is expected to have a positive effect on the prices of electricity produced. Nevertheless, nowadays, the Ministry of Environment, Energy and Climate Change, along with RAE, work on some changes to re-enforce competition in the context of the new mechanism, in order to further reduce RES prices. More specifically, the Reference Prices of L. 4414/2016, and mainly those for wind and PV units, will be decreased. This means lower prices for the payment of the RES categories that are not obliged to participate in the wholesale market and the Sliding Feed-In Premium mechanism. Additionally, the part of the 2018 capacity that was not covered through the above mentioned auctions, will be added to the auctions of 2019. Finally, the categories of the 2019 auctions will be revised. The new categorisation will include: i) 3 MW < PWIND ≤ 50 MW, ii) 50 MW < PWIND, iii) 500 kW < PPV ≤ 20 MW, iv) 20 MW < PPV, and another three categories of combined power stations.

5.4 *Privatisation procedures*

According to data of the Hellenic Republic Asset Development Fund (HRADF), the state privatisation fund, known also as TAIPED, three privatisations of energy corporations (DEPA, PPC and HELPE) and another two privatisations of energy infrastructures (DESFA and The South Kavala Natural Gas Storage) are planned or are in progress (HRADF, 2019a; HRADF, 2019b; HRADF, 2018a). It seems that after a long delay, most of the privatisation procedures of energy assets have begun, while, right before the end of 2018, one privatisation process was successfully completed.

Public Gas Corporation (DEPA)

The DEPA Group consists of companies active in natural gas market. The Public Gas Corporation S.A. (DEPA S.A.) is active in the wholesale, trading and supply of natural gas to large customers. The Hellenic Gas Transmission Operator (DESFA S.A.), owns and operates the regulated high-pressure gas transport network and LNG regasification facilities in Greece. Through its regional distribution and supply companies, the DEPA Group is also active in the distribution and supply of natural gas to residential customers and SMEs. Finally, the Group is also active in key international transit pipeline projects, such as the Greece-Italy Interconnector, the Greece-Bulgaria Interconnector and the Eastern Mediterranean Pipeline. Currently, the HRADF holds 65% of DEPA and Hellenic Petroleum holds the remaining 35% (HRADF, 2019a; HRADF, 2018a). At the beginning of the privatisation process of DEPA Group, in February 2012, the HRADF launched an international public tender process for the privatisation of both DEPA S.A and its subsidiary, DESFA S.A. This tender was not completed and nowadays, according to HRADF's Asset Development Plan (ADP), DESFA and DEPA are considered and treated as separate assets (HRADF, 2018a).

Regarding the current ongoing procedure for the sale of DEPA S.A., it was decided to set as a prerequisite the split of the gas company into two firms, DEPA INFRASTRUCTURE, managing the distribution network and DEPA TRADE. In this context of its transformation, in 2018 DEPA managed to get an agreement for the sale of its 51% share in Zenith Gas Supply Company to Italian Eni, for a total amount of €52 million. Additionally, DEPA reached an agreement for the acquisition of Shell's 49% share of the EPA Attiki and EDA Attiki (the Gas Supply and the Gas Distribution Companies, respectively, that cover the wider area of the region of Attiki), for an amount of €150 million. The schedule of HRADF for the privatisation of DEPA is divided into two stages. First, 50% plus one of DEPA TRADE shares will be offered to investors via a tender process and the remaining, including veto rights, will be transferred to the Greek State. Second, after the completion of the first stage, 14% of DEPA INFRASTRUCTURE shares will be offered to investors via a tender process and at least 51% will remain to the Greek State (HRADF, 2018a). So far, the bill for the separation of DEPA Trade from DEPA Infrastructure was submitted in order to be voted and authorised by the Greek Parliament. This legislation includes all the details regarding the privatisation of the above shares, as well as the shares that will be kept by the Greek State.

Hellenic Petroleum (HELPE)

Hellenic Petroleum S.A. (HELPE S.A.) is a leading energy group in Greece, and in South Eastern Europe, with presence in 6 countries and significant export activity representing more than 50% of its total sales volume. The range of activities of HELPE includes the Supply, Refining and Trading of petroleum products, as well as Fuels Marketing, both in Greece and abroad, Petrochemicals/Chemicals Production and Trading, Oil & Gas Exploration and Production, Power Generation & Trading, as well as Renewable Energy Sources, Consulting and Engineering services in the energy sector and Transportation of crude oil and products (pipelines, sea transportation). The Greek State, via HRADF, holds 35.5% of HELPE shares, the Latsis group, via PanEuropean Oil and Industrial Holdings S.A., holds 45.5% of the shares and the remaining shares are held by institutional (11%) and private (8%) investors (HRADF, 2019a). The schedule for the privatisation of HELPE involves the sale of at least 50.1% of its shares, plus the managerial rights (HRADF, 2018a). The HELPE sale effort, which was originally presented as a fast-track procedure to be completed in autumn 2018, has been delayed but is nowadays in progress.

More specifically, in April 2018, the HRADF launched an international public tender process for the sale of a majority stake of the share capital (no less than 50.1%) of HELPE S.A., together with HELPE's other major shareholder, "PanEuropean Oil and Industrial Holdings S.A.". The tender process will be conducted in two phases, a pre-qualification phase (Phase A) and a binding offers phase (Phase B). In May 2018, HRADF announced that five investment schemes expressed their interest and in July 2018, HRADF decided that two investors (Glencore Energy UK LTD and Vitol Holding B.V.) meet the criteria to participate in the second phase of the tender for the acquisition of the 50.1% stake of the share capital of HELPE. In January 21st, 2019, in

the context of the Second Phase of the tender process, the Board of Directors of HRADF, approved the consortia formation by the qualified investors, i.e. (a) a consortium between Glencore Energy UK LTD and "CIEP Participations S.a. r.l. SICAR" of the Carlyle Group and (b) a consortium between Vitol Holding BV and "Société Nationale pour la Recherche, à la Production, Transport, Transformation et Commercialisation des Hydrocarbures" (Sonatrach). For the next step, these consortia are expected to submit their bidding offers within the first quarter of the year.

Public Power Corporation (PPC)

The Public Power Corporation S.A. (PPC S.A.) is the biggest power producer and electricity supplier in Greece, with approximately 7.4 million customers and about 68% of the country's total installed capacity. It holds infrastructural assets in lignite mines and units, large hydroelectric units, GAS and RES power generation units, transmission and distribution network etc. (HRADF, 2019a). As mentioned, in 2011, in order to support the liberalisation of the electricity market, two wholly owned subsidiaries of PPC were created, i.e. the Independent Power Transmission Operator S.A. (ADMIE) and the Hellenic Electricity Distribution Network Operator S.A. (DEDDIE).

The privatisation of PPC differs from the processes of the other energy assets. In particular, on April 9th, 2014, 17% of the existing share capital of PPC S.A., including voting rights, was transferred by the Hellenic Republic to the HRADF. Additionally, on March 20th, 2018, another 34.123% of the existing share capital of the company was transferred by the Greek State to the Hellenic Corporation of Assets and Participations S.A. (HCAP S.A.). Consequently, HCAP participates in PPC's share capital directly with 34.123% and indirectly with 17% through HRADF, which is a subsidiary of HCAP. As the Greek State owns 100% of voting rights in HCAP S.A., this means that today, the Hellenic Republic holds 51.123% of the total voting rights in PPC, (PPC, 2019). As mentioned, HRADF holds 17% of PPC's shares (HRADF, 2018a), so, it is only responsible for the privatisation of this stake of the share capital of PPC. Nevertheless, this privatisation hasn't been moved forward until today and it is not clear yet how HRADF intends to capitalise this asset. It seems that HRADF will first wait for the disinvestment procedure of PPC lignite units to be completed, in order to have a clear assessment of the asset.

Regarding the disinvestment procedure, it has already been mentioned that the exclusive access of PPC on lignite extraction mines strengthens its dominant place in the market and decreases competition (EC, 2008; EC, 2009a). Because of this, a bailout-required disinvestment of PPC lignite units and mines, as well as the power stations, representing 40% of the overall lignite capacity, has been decided. Even if this procedure is not related to HRADF processes, it is worth mentioning here, as it is directly connected to the prerequisites of the first and second adjustment programmes for the decrease of PPC share in lignite and it also seems that it will affect the sale of the 17% shares of PPC. In this context, the first phase of the bailout-required disinvestment procedure of MELITI and MEGALOPOLI lignite units was completed at

the beginning of July 2018 and 5 participants to the tender, from Greece and abroad, passed to the second stage, which enables them to submit their final binding offers. Nevertheless, the disinvestment process faced many obstacles, as investors claimed that the specific units were not profitable under the current terms of the sale, and hence, they were not economically viable. For this reason, the Greek government and PPC have made important efforts in order to improve the terms for the sale of the units and get better offers. The deadline for the submission of final binding offers was extended many times and it was finally set for February 6th, 2019. However, only two out of the five participants that passed on to the second phase of the tender submitted offers. Unfortunately, these offers were low and eventually this tender procedure was considered as unsuccessful. Nowadays, the PPC together with the government are planning to repeat the auction under new more favourable terms. Otherwise, they will be obliged to find another way to achieve the obligatory decrease of PPC's share in generation.

The Hellenic Gas Transmission System Operator (DESFA)

The Hellenic Gas Transmission System Operator S.A. (DESFA S.A.) was established in 2007 as a wholly owned subsidiary of DEPA S.A., in the framework of liberalisation of the gas market. DESFA owns, operates, maintains, manages, exploits and develops the National Natural Gas System (NNGS) and the Liquefied Natural Gas (LNG) terminal located in Revythoussa island. As mentioned above, in February 2012, the HRADF launched an international public tender process for the privatisation of both DEPA S.A and DESFA S.A. together. In 2016, the procedure for the sale of the 66% stake of the share capital of DESFA, to the State Oil Company of the Republic of Azerbaijan (SOCAR) for a total amount of €400 million was deemed unsuccessful. Nowadays, according to HRADF's Asset Development Plan (ADP), DESFA and DEPA are considered and treated as separate assets (HRADF, 2018a).

Regarding the new procedure, on March 16th, 2017, HRADF announced its decision to proceed with a new tender for DESFA that involves the sale of 66% of DESFA shares (31% held by HRADF and 35% held by HELPE), and transfer of the remaining 34% of the shares to the Greek state (HRADF, 2019a). In the first phase of this process, in August 2017, 6 investment schemes expressed their interest for the acquisition of 66% of DESFA shares and in September 2017, HRADF decided that only two of these schemes, i.e. (a) The consortium of companies Snam S.p.A., Enagás Internacional S.L.U. and Fluxys S.A. and (b) The consortium of companies Regasificadora del Noroeste S.A., Reganosa Asset Investments S.L.U., S.N.T.G.N. Transgaz S.A. and European Bank for Reconstruction and Development (EBRD), were qualified to proceed to the next phase of the process and submit bidding offers. During the second phase, in February 2018, the above schemes submitted bidding offers. In March 2018, HRADF unsealed these offers, but requested the submission of improved offers. In April 2018, HRADF unsealed the improved offers of the two consortia and according to the terms of the tender process, requested from the first consortium (Snam S.p.A., Enagás Internacional S.L.U. and Fluxys S.A.), which submitted the higher offer, to submit an even more improved higher offer. Finally, on April 19th, 2018, the Board of Directors of

HRADF accepted the improved financial offer, of a total amount of €535 million, of the preferred consortium.

The agreement for the acquisition of the 66% stake of the shares of DESFA for a total bidding offer of €535 million, was signed on July 20th, 2018, between HRADF, Hellenic Petroleum SA and “SENFLUGA Energy Infrastructure Holdings S.A.”, the company set up by the preferred investor consortium. The final transfer of the shares was completed in December 2018. This was the first successfully completed privatisation process for the energy sector, bringing revenue of €251.28 million for the privatisation programme, as the remainder of the price was paid to HELPE. In addition to that, DESFA’s current business plan foresees the implementation of an investment plan of €330.66 million by 2023.

The South Kavala Natural Gas Storage

This project is related to the conversion of the depleted offshore natural gas field of South Kavala to the country’s first Underground Gas Storage (UGS) facility. At present, the South Kavala gas field in the Thracian Sea is used by Energean Oil S.A. According to the revised HRADF Asset Development Plan (ADP), that was authorised on 15/02/2019 by the Government Council for Economic Policy (KYSOIP), the tender procedure for the use, development and commercial exploitation of the asset as a natural gas storage facility, is planned to begin during the second semester of 2019 (HRADF, 2019b).

5.5 Summary and conclusions

The Greek energy sector, which is of great importance for the economy and the development of the country, faces specific barriers and limitations that restrict its potential. In this context, the policy targets for energy in the first and second adjustment programmes for Greece were the liberalisation and the increase of competition in the energy market. As presented in the above analysis, until now, a number of important reforms were implemented, whereas many others are still in progress or in a primary stage. However, even in the cases of reforms that have been put into effect, their implementation has begun very recently and, therefore, only initial impacts can be assessed. Nevertheless, nowadays, the energy market moves, gradually, from the state-controlled centralised model to more competitive market conditions and a large part of statutory changes is expected to be completed during 2019. From the analysis, it was made clear that there are a few primary impacts in specific energy markets, such as the electricity and RES market, as a result of the reforms of the framework. However, these impacts are limited and the effect on the national economy is not clear yet.

More specifically, regarding electricity, an important step for the liberalisation of the Greek electricity market was the unbundling of the operator of the market, the power transmission operator and the distribution system operator in 2011. Additionally, a main obligation from the adjustment programmes was to increase competition in power generation, as well as in the wholesale and retail electricity market. In this

context, the Forward Electricity Products Auctions System, also known as NOME, was established and started operating in 2016, as a temporary mechanism, in order to promote competition and decrease the relative market shares of the PPC. The analysis showed that these primary reforms had a positive effect on the market, as they reduced the PPC share in retail market and increased competition.

Another important development was the reform of the RES support mechanism. The previously adopted Feed-In Tariff support mechanism has been reformed to a Sliding Feed-In Premium mechanism with Competitive Procedures via tender auctions. Until now, there are only primary results from this procedure, but one can gain preliminary, nevertheless important conclusions. From the first and second auctions of the reformed support mechanism in 2018, it is clear that the resulting RES prices are reduced. Regarding the following steps in this framework, the Ministry of Environment, Energy and Climate Change along with RAE, plan some changes of the relevant legislation in 2019, in order to re-enforce competition in the context of the new mechanism and hence, further reduce RES prices.

As it is known, a main target for EU is the integration into a single, competitive, internal European electricity market with common rules. The EU target Model provides the basic market principles to be adopted by the Member States, in order to introduce a common model for the operation of the market in each country. However, the standing model of the Greek electricity market does not allow its coupling within the framework of the single market. In this context, an important target for 2019 is the launch of the Target Model in the Greek electricity market. Up to now, all Codes for the Day-Ahead, the Intra-Day and the Balancing market have already been published. Additionally, the Hellenic Energy Exchange (HEnEx S.A.) and the Energy Exchange Clearing House S.A. (EnExClear) have been founded, whereas, the HEnEx is expected to start its operation in June 2019. With regard to forward electricity products auctions, they will continue until the full activation of the Target Model and after that, they will be gradually integrated into the new market and finally, they are expected to stop.

Regarding privatisations of energy corporations and energy infrastructures, it seems that after a long delay, most of the procedures have begun. Moreover, right before the end of 2018, the first case has been successfully completed. In particular, in December 2018, the final transfer of the 66% stake of DESFA shares has been completed. This was the first successful privatisation process for the energy sector that brought revenue of €251.28 million for the privatisation programme. Additionally, DESFA's current business plan foresees the implementation of an investment plan of €330.66 million by 2023 and the new stakeholders have the ambition for DESFA to become an important player in the south-eastern European gas market. Concerning the privatisation process for DEPA, the legislation for the separation of DEPA Trade from DEPA Infrastructures is expected to be voted by the Greek Parliament in March 2019, in order to begin the procedure for the sale of the 50% plus one of the shares of DEPA Trade. With regard to ELPE, the relevant procedure runs the Second Phase of

the tender process and the two consortia of companies that have been qualified are expected to submit their binding offers within the first quarter of the year.

Finally, the privatisation of 17% of PPC's shares, owned by HRADF, is not moving forward right now, because it is considered as a following step after the bailout-required disinvestment procedure of Meliti and Megalopoli PPC's lignite units. For this, the Greek state and PPC put in a lot of effort to improve the terms for the sale of the units, in order to get better offers. However, the tender procedure did not deliver the anticipated results and it was considered as unsuccessful. Nowadays, the PPC together with the government are planning to repeat the auction under new more favourable terms. Otherwise, they will be obliged to find another way to achieve the obligatory decrease of PPC's share in generation. Additionally, this may also delay the phase out of the NOME auctions mechanism.

6. PRIVATISATIONS IN THE TRANSPORT SECTOR

6.1 *Introduction*

This chapter presents and analyses the structural reforms that took place in Greece during the current decade, regarding the privatisation of state-owned enterprises (SOEs) belonging to the transport sector. According to the Greek strategic growth plan, transport industries, such as those of seaports, railways and airports, are considered as critical to accelerate the economic recovery and support the sustainable development of the country.

Besides, the development strategy of the Hellenic Corporation of Assets and Participations (HCAP S.A.) gives high priority to the interconnectivity of the main road and rail axes with international ports and industrial areas to improve transport sector efficiency and promote the intermodal (combined) transport. Amongst others, transport and logistics services possess a key role in promoting the attractiveness of Greece as an international logistics hub and destination for tourists and FDI (Tsekeris, 2016; Vogiatzoglou and Tsekeris, 2016). In addition, transport is regarded as a significant determinant of the territorial cohesion and the efficiency of the Greek economy at the national and regional level (Papaioannou et al., 2017).

Taking into account the mounting role and economic significance of those industries for the Greek economy, this section first reports the objectives and tasks related to the existing (and potential) privatisation programmes, following the transfer of major transport assets to and their central management by the Hellenic Republic Asset Development Fund (HRADF). After describing the relevant methodology and data sources, it provides an assessment of the reforms that were scheduled and actually carried out during the three adjustment programmes, especially with regard to promoting privatisation (sales or concessions) of transport infrastructure, mostly in the rail, port and airport sectors. The preliminary assessment of transport privatisations relies on key measures of transport output, financial performance and employment. Last, some policy implications are identified giving emphasis to those factors that may hamper or facilitate a successful implementation and a positive impact of reforms, especially privatisations.

6.2 *Objectives and tasks*

This section examines the structural reforms that took place in Greece during the current decade, in relation to the privatisation of SOEs belonging to the transport sector. These privatisation programmes concern:

1. *Railways*: Following the market liberalisation –under the supervision of the Regulatory Authority for Railways–, two companies have obtained licence to provide rail freight transport services, together with the formerly state-owned TRAINOSE, which was sold to the Italian State Railways (1/2017) and basically retains the monopolistic power in the market. In June 2018, the 100% sale of the

Hellenic Company for Rolling Stock Maintenance (ROSCO S.A.) by TRAINOSE was announced.

2. *Seaports*: The programme concerns the sale of 51%+16% of Piraeus Port Authority (OLP) (since 1/2017) to COSCO Pacific, following the 40-year concession of the Piraeus Container Terminal (PCT) to the same company (in 2009), the recent (as of May 2018) sale (67% of share capital) of Thessaloniki Port Authority (OLTH) to a multi-national consortium (composed of the Terminal Link subsidiary of CMA CGM, the Deutsche Invest Equity Partners, and the Russian-Greek Belterra Investment Fund), and the potential privatisation of 10 major peripheral ports (S.A.), whose assets have been transferred to the HRADF and their concession will focus on their most important terminal facilities, e.g., freight, passenger terminals or cruise terminals.
3. *Airports*: It refers to the (40+10 years) concession of 14 major peripheral airports to Fraport (since 4/2017), divided into 2 clusters of 7 airports each, the 20-year extension of the current concession and the prospective sale of 30% stake of the Athens International Airport (AIA), and the potential concession of another 23 peripheral airports by the HRADF. Besides, the new airport of Heraklion is under development through a Public-Private Partnership (PPP) scheme.

Other ongoing and potential privatisation programmes refer to the:

- a) *Highways*: the long-term (35 year) concession of the state-owned 'Egnatia Odos' toll highway (the final concession price will rely on the completion of the technical, legal and financial processes and the toll pricing policy, as part of a central, fully integrated road transport management system that will include satellite-based electronic toll collection and automatic number-plate recognition. It is noted that a distance-based highway charging scheme based on satellite and licence plate recognition systems is planned to be deployed at the national level to ensure the fairer pricing of road users, according to the burden incurred to pavement conditions, the road capacity and the environment, and the more efficient collection of toll revenues. Possible extensions of current toll highway concessions are also under consideration, particularly that concerning the most profitable highway, i.e., Attiki Odos (the peripheral highway of the Athens metropolitan area). Additionally, in combination with the typical model of long-term concession, the implementation of PPPs in the highway sector is planned to be launched, especially for the development of the North Crete highway axis (VOAK).

Logistics parks (or freight villages): The largest logistics park in the country is currently under development in Thriasio Pedio, Attica, and it is expected to be in full operation by 2024. In a total land area of 1,600,000 m² owned by the Hellenic Railways Organisation (OSE) and managed by GAIAOSE (subsidiary company responsible for the exploitation of public railway real estate), the first part of the 200 million euro investment plan for the development of freight storage facilities (in a land area of 590,000 m²) has been scheduled through a 60-year concession with a private consortium (ETVA-VIPE and Goldair), while government revenues

are anticipated to exceed 30 million euro during the whole concession period. The second part of investment plan (Thriasio II) refers to the development of an Intermodal Rail Freight and Consolidation Centre, based on a PPP scheme, where the private operator will invest about 22 million euro over a minimum concession period of 25 years. A competitive bidding process is also in progress for the concession of a land area of 672,000 m² by GAIAOSE in Thessaloniki, in order to develop a combined freight transport logistics centre with a budget of 200 million euro. Other plans of GAIAOSE for the development of logistics centres refer to Alexandroupoli, within a land area of about 500,000 m² with a budget of 150 million euro, and Larisa, within a land area of about 300,000 m² with a budget of 100 million euro. Key element for the development of synergies and successful implementation of the above projects constitute the strategic cooperation of the freight village operators with the port authorities in each region, particularly, the COSCO-PCT in Attica, OLTH in Thessaloniki, and Alexandroupolis Port Authority.

Table 6.1: Total share capital value of Greek state in transport enterprises

Company	Total capital share value (in euro)	Capital share owned by the Greek state (in euro)	% capital share owned by the Greek state
Piraeus Port Authority (OLP)	25,000,000	1,784,440	7.14
Thessaloniki Port Authority (OLTH)	10,080,000	705,600	7.00
Athens International Airport (AIA)	300,000,000	90,000,000	30.00
Egnatia Odos	6,900,000	6,900,000	100.00
Alexandroupolis Port Authority	1,354,741	1,354,741	100.00
Volos Port Authority	8,192,157	8,192,157	100.00
Elefsina Port Authority	895,400	895,400	100.00
Igoumenitsa Port Authority	9,783,640	9,783,640	100.00
Heraklion Port Authority	1,533,515	1,533,515	100.00
Kavala Port Authority	7,605,775	7,605,775	100.00
Corfu Port Authority	2,500,206	2,500,206	100.00
Lavrio Port Authority	303,051	303,051	100.00
Patras Port Authority	17,389,590	17,389,590	100.00
Rafina Port Authority	864,090	864,090	100.00
Greek State Assets not listed on the Stock Market			
Attiko Metro	4,049,337	4,049,337	100.00
Athens Urban Transport Organisation (OASA)*	2,346,985	2,346,985	100.00
Athens International Airport (AIA)*	300,000,000	75,000,000	25.00
Corinth Canal (AEDIK)*	11,818,950	11,818,950	100.00
Evia Island Ports Authority (OLNE)	4,092,714	4,092,714	100.00
Hellenic Railways Organisation (OSE)	4,799,198	4,799,198	100.00
GAIAOSE	42,149,200	42,149,200	100.00
National Highway Fund (TEO)**	56,407,000	56,407,000	100.00

Notes: *Subsidiaries of the Hellenic Corporation of Assets and Participations S.A., which also includes other regional airports not operated by Fraport. Attiko Metro (including the Athens Metro and Thessaloniki Metro) and OSE have been excluded from HCAP. **Under clearance.
Source: Greek State Budget 2018 and HRADF (2018).

In addition, a restructuring plan is in progress to rationalise operating costs, expand capacity, improve overall efficiency and differentiate or attract revenues from new (private-sector) sources for SOEs such as the Athens Urban Transport Organisation (OASA) and Attiko Metro (the latter was excluded from the Hellenic Corporation of Assets and Participations-HCAP). Table 6.1 reports the total share capital value of the Greek state in transport enterprises, including those transferred to the HRADF and other assets not listed on the stock market. In particular with regard to the HRADF assets, AIA represents the largest (60%) capital share owned by the Greek state, with the 10 peripheral ports to follow in order with a total of 34%. Egnatia highway covers about 5% of the total state-owned capital share of transport assets.

6.3 Methodology and data sources

The first part of the analysis describes main legislative reforms in the transport sector, the way they affected the landscape of the Greek transport industry, and the possible extent to which they had an impact on the liberalisation and enhancement of competition. This part identifies some critical factors influencing the efficiency performance and conditions of competition in transport markets, as expressed by the economic characteristics of road haulage firms, the modal share of inland freight transport, the container port throughput and the modal shift potential of the long-distance road transport of containers. The analysis takes into account existing studies and policy reports concerning Greece in each transport industry under examination, such as the rail sector (Tsekeris and Tsouma, 2010), the port sector (Niavis and Tsekeris, 2012) and the airport sector (Tsekeris and Vogiatzoglou, 2011a; 2011b), as well as the general market conditions in the entire sector of passenger transport (Tsekeris, 2010) and freight transport (Tsekeris, 2016).

Furthermore, a preliminary inspection of indicators of Product Market Regulation (PMR) released by the OECD (Koske et al., 2015) is conducted to signify the improvements made in the competition conditions of various transport industries, in terms of the entry barriers/regulations, public ownership share, and/or vertical integration, given that the first adjustment programme (5/2010-2/2012) focused on the liberalisation of transport services. The competitiveness of the markets under examination is depicted with use of indexes about the availability and quality of rail, port and air transport infrastructure (based on the WEF Global Competitiveness Reports) and Eurostat's harmonised prices indexes.

The second part of the analysis provides a brief assessment of the privatisation programmes in the transport sector. As the privatisation of these industries has taken place only recently most emphasis is given to the qualitative assessment of possible impacts, based on key economic and operational figures before and after the launch of major reforms, such as the launch of private-sector operations. The empirical analysis is primarily conducted on data obtained from the Greek state and European Commission agencies (ELSTAT and Eurostat), such as prices indexes and operational measures of transport output by mode and (rail, port and airport) terminal and/or company and the relevant modal shares, and measures of economic performance by

use of published financial reports of each company. However, some data limitations should be taken into account, like the unavailability of financial accounts for airports (except for Fraport and AIA) and of employment data in the airport sector (the Labour Force Surveys of ELSTAT collect data at the 3-digit level of economic activity according to NACE rev. 2, thus, merging the number of persons employed in all the transport terminal/auxiliary facilities). The empirical analysis signifies key elements that may facilitate or hamper the successful implementation of privatisations, in terms of the expected positive impacts, and possible unintended consequences. In turn, suggestions are made with regard to possible corrective interventions and the prioritisation of reforms in the transport sector.

6.4 *Reforms to liberalise transport markets and enhance competition*

Reforms to enhance competition in the rail, port and airport markets

During the last decade and, particularly, during the first two economic adjustment programmes, several reforms took place in the rail, port and airport sectors to enhance market liberalisation and strengthen competition (Table 6.2). In brief, the companies/legal entities providing commercial services in the (rail, maritime and air) transport sector were restructured and separated from those providing administrative and regulatory services, and independent regulatory authorities were established for railways, ports and civil aviation. The main challenges that were addressed refer to the debt restructuring/consolidation (especially in the rail sector), the reduction of fiscal burden and attraction of new, private-sector funding sources, and the introduction and enhancement of competition in public passenger and freight transport services. The main results expected from these reforms concern the increase of efficiency of related transport industries, the growth of freight and passenger modal share in favour of the rail and combined transport services, the higher diversification and interconnection of value-added activities within transport and between transport and other sectors, and the greater openness and contribution of transport to the national product and employment.

Table 6.2: Major reforms in the rail, port and airport sectors to strengthen competition

Reform measure	Implementation years	Main content of reforms	Main challenges addressed	Expected results
Actions to Strengthen Competition in the Rail Sector	2007-2010	Restructuring of the Hellenic Railway Organisation (OSE) that took over the network management, while commercial activities were assigned to TRAINOSE. Establishment of the Railway Regulatory Authority that provides railway operating licences. Transfer of TRAINOSE to the HRADF.	Debt restructuring and consolidation of OSE and its subsidiaries, establishment of competitive commercial railway services.	More competition, increased efficiency and growing modal share of the rail sector in the passenger and freight transport market.
	2013			
Actions to Strengthen Competition in the Port Sector	2012	Transfer of 12 major port authorities (S.A.) to the HRADF.	Attraction of large liner shipping companies, operation of both cargo transhipment and transit services in major ports.	More competition, increased efficiency, diversification and openness of the port sector.
	2014	Separation of regulatory and commercial activities, and establishment of the Regulatory Authority for Ports.		
Actions to Strengthen Competition in the Airport Sector	2011	Transfer of administration, management and exploitation rights of 37 regional airports to HRADF.	Airport revenues from both aeronautical and non-aeronautical activities, and attraction of new funding sources.	More incoming tourism, expansion of airport operations and financing the needs of smaller (lower-demand) airports.
	2018	Separation of regulatory and commercial activities, establishment of the new Civil Aviation Authority that offers regulatory services and reorganisation of the former Civil Aviation Authority to operate state-owned airports and seaplane services.		

Reforms to enhance competition in road freight, combined transport and logistics

I. *Liberalisation of public road haulage services*: Road freight transport is typically involved –to a larger or lesser extent– in all types of supply chains, such as in the first-mile and last-mile distribution of goods. In this way, it affects the efficiency performance and cost structure of the whole transport and logistics sector. The liberalisation of public road haulage services since 1/2012 (according to the L. 3887-3888/2010 and L. 3943/2011) concerned the removal of entry barriers and price constraints in order to reduce transport costs, increase competition, create economies of scale, improve quality of services (particularly those offered by third-party logistics-3PL), and also create incentives for upgrading truck vehicle fleet and logistics facilities. However, this Liberalisation Act was introduced in the course of the severe economic depression, thus, offering scarce opportunities to invest in new vehicle stock and infrastructure and realise economies of scale.

II. *Institutionalisation and modernisation logistics industry*: The institutionalisation of logistics services (according to the L. 4302/2014) included the specialisation of such activities as green logistics and urban logistics to support the provision and

diversification of high value-added services and enhance competition, and processes (licensing, financing, planning) for effective spatial and functional organisation of the logistics industry, including logistics parks and urban consolidation centres. Nonetheless, the current legislative framework is regarded as still incomplete, while some existing actions were either not implemented or ineffectively implemented, in a slow and incremental way. Hence, several more structural reforms (supportive legislative actions) should be made to formulate and implement a comprehensive national logistics plan and attract investment in physical and digital infrastructure to allow the interoperability among transport modes and facilitate combined transport services.

Moreover, the increased importance of the national highway system included in the TEN-T and the growing amount of transit cargo arriving at Greek seaports call for effective management of the peak road traffic (more than ever in the prospect of the increasing share of mega-ships), the (currently low) digitalisation of road haulage services, the planning of a network of logistics hubs and the elimination of cross-border bottlenecks through the upgrading of the related infrastructure, equipment, and processes at the customs clearance points. The main current and ongoing developments that take place in Greece to address the above challenges include:

- (i) *A National Transport Plan* (to be completed within 2019), which will provide a strategy, planning tools and capacity building for the sustainable development of the transport infrastructure and services by efficiently combining all modes over the next 20 years, so as to enhance the competitiveness and growth of the country,
- (ii) *A logistics hub network development plan* to enhance combined transport operations and rationalise traffic loads in the road network through co-loading and improved truck loading factors, to achieve a balanced regional distribution of traffic loads, and to increase efficiency, innovation and scale economies, and
- (iii) *The new Road Toll Agency*, which succeeds the National Highway Fund (TEO) currently under clearance, and will be responsible for the planned free-flow distance-based electronic tolling of highway users per vehicle category and the collection of toll revenues, in conjunction with an electronic system of monitoring, collecting and processing all road traffic loads and the implementation of the national Intelligent Transport System (ITS) strategy and ITS architecture.

Brief assessment of transport reforms during the first two adjustment periods

Despite some slight improvements made in the average firm size, with respect to employment and turnover, and the average firm truck fleet size during 2010-2015 (Table 6.3), the Liberalisation Act concerning public road haulage services has not led to any considerable change in competition conditions –the given market has practically remained highly fragmented– and the renewal and technological upgrading of truck vehicle fleets. These unfavourable outcomes can largely be attributed to the economic

crisis in the country during the period under investigation (the truck traffic fell by almost 40% between April 2008 and April 2016, according to toll data on main toll-operated highways), the lack of liquidity and severe financing burdens on firms. Some changes can be only observed at the intrasectoral allocation of resources, e.g., in terms of the leasing of public-usage truck vehicles by private road freight transport or logistics firms. In addition, a significant increase in the technical efficiency of road freight transport firms was observed during the period 2011-2014, which can be attributed to the improvements in the regulatory framework and the increased maturity of firms in the given sector (IOBE, 2017a).

Table 6.3: Average firm size, average truck vehicle fleet size and average turnover of road freight transport firms in Greece, in 2010 and 2015

Year	Average firm size (wrt. employment)	Average firm size (wrt. turnover in €)	Average firm truck fleet size
2010	1.5	119,765	1.9
2015	1.7	131,504	2.0

Source: Own processing of Statistical Business Registries Tables of ELSTAT for 2010 and 2015.

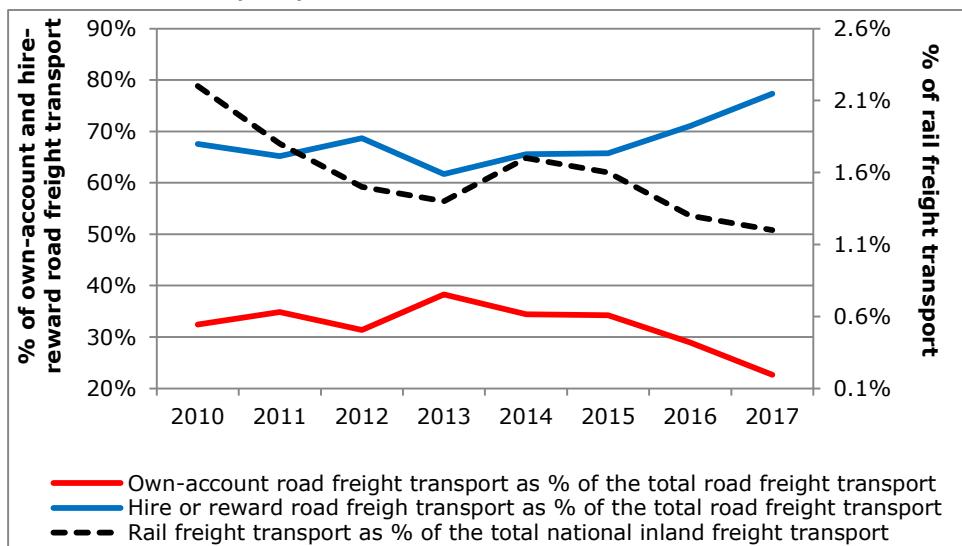
The percentage of road freight transport by hire or reward has basically remained the same during 2010-2015 and it showed a considerable increase during the years 2016 and 2017 (Figure 6.1). This increase can be attributed to the significant growth (by 172%, i.e., from 4.7 billion tkm in 2015 to 12.9 billion tkm in 2017) of the international road freight transport by hire or reward, in comparison to the moderate growth (by 9%, i.e., from 8.3 billion tkm in 2015 to 9.1 billion tkm in 2017) of the own-account road freight transport. In total, road freight transport presented a slight decrease by -4.8% during 2010-2017, i.e., from 29.8 billion tkm to 28.4 billion tkm.

In contrast, rail freight transport has been significantly hit by the crisis, namely, from 614 million tkm in 2010 to 335 million tkm in 2017. As a result, the rail share in the inland freight transport market was gradually reduced from 2.2% in 2010 to 1.2% in 2017 (Figure 6.1). Therefore, the rail industry did not capture the opportunity raised by the growing export orientation of the country during the last years. This is largely because institutional reforms were not accompanied by appropriate upgrading, expansion of connectivity (with ports and industrial/activity centres) and modernisation of physical infrastructure in the rail industry.

Greece has been a notable case of changes in transport network development and infrastructure investment, which rapidly increased its (mostly, transhipment) container traffic in TEUs by almost 300% during 2010-2017 (the largest increase in Europe and the second largest increase in the world after Libya) (Figure 6.2). This outcome is mostly due to the presence of China Ocean Shipping Company (COSCO) in Piraeus since 2009, which builds up a portfolio of port terminals, feeder operations, forwarding activities and other logistics and value-added services along the new maritime Silk Road, while it expands its investment beyond ports into hinterland (road and rail) connectivity for improving access to markets and facilitating door-to-door delivery. In this context, Piraeus port is projected to become the principal cargo hub of the

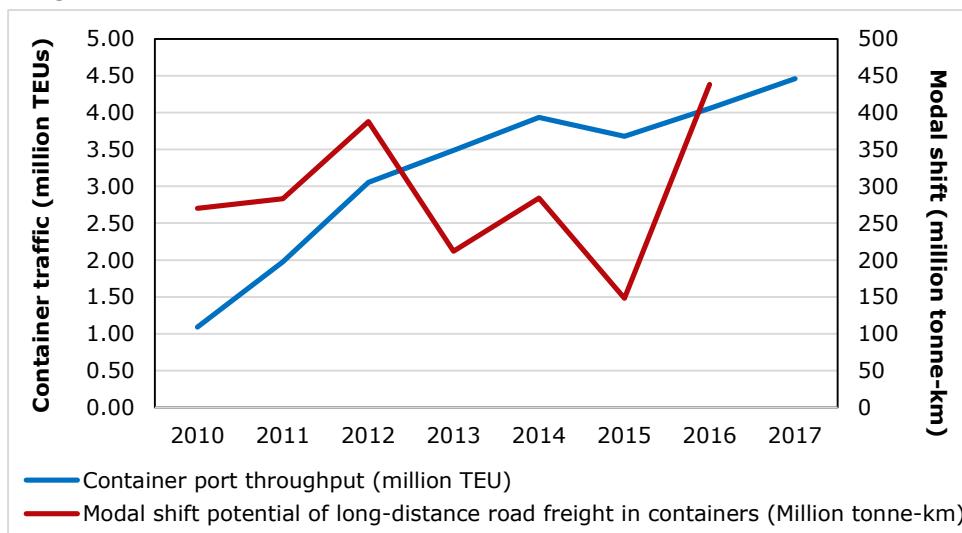
Mediterranean Sea in the next few years (it reached the second position in container throughput in 2018, with almost 4.9 million TEUs).

Figure 6.1: Share of road freight transport for own-account and hire/reward and share of rail freight transport to total inland freight transport in Greece, in terms of tonne-kilometre (tkm), 2010-2017



Source: Eurostat. Note: Rail freight share for 2017 is based on own processing of data from the Bank of Greece (for rail freight) and Eurostat (for road freight).

Figure 6.2: Container port throughput and modal shift potential of long-distance road freight in containers in Greece, 2010-2017



Source: UNCTAD for container port throughput and Eurostat for modal shift potential.

Despite this growth in container port throughput, the potential of the country for modal shift in road transport of containers to other transport modes over longer distances –more than 300 kilometres- has only recently (between 2015-2016) been improved (Figure 6.2). This hysteresis can be largely attributed to failures in the timely completion of combined transport infrastructure and institutional changes in transport support-related services. The increase of the modal shift potential and the additional transport infrastructure needs should be addressed by attracting more (foreign) investments, speeding up reforms related to the competition and planning of

transport support service activities, and the coordination of both private (port, road, rail) operators and government agents. This coordination should take place from the level of local street network to provide access to trade facilities, the level of regional and trunk highway/railway system, up to the level of TEN-T networks traversing the mainland Greek territory, emphasizing on the synchromodality of the national transport system and its cross-border interoperability with the transport system of neighbouring countries.

Table 6.4 presents the evolution of the indicators of market liberalisation and competition, referred to as Product Market Regulation indices (PMRs), in Greek transport network industries. The values of PMRs are ranging from 0 to 6; they denote a more competition-friendly environment as they diminish to 0 and vice versa. Regarding the railway industry, its overall PMR index improved only slightly during 2004-2013, due to the removal of some entry barriers and the separation between the management of railroad infrastructure and the provision of railway services (Table 6.2).

Table 6.4: Indicators of Product Market Regulation (PMR) on transport network industries in Greece, 2004-2013

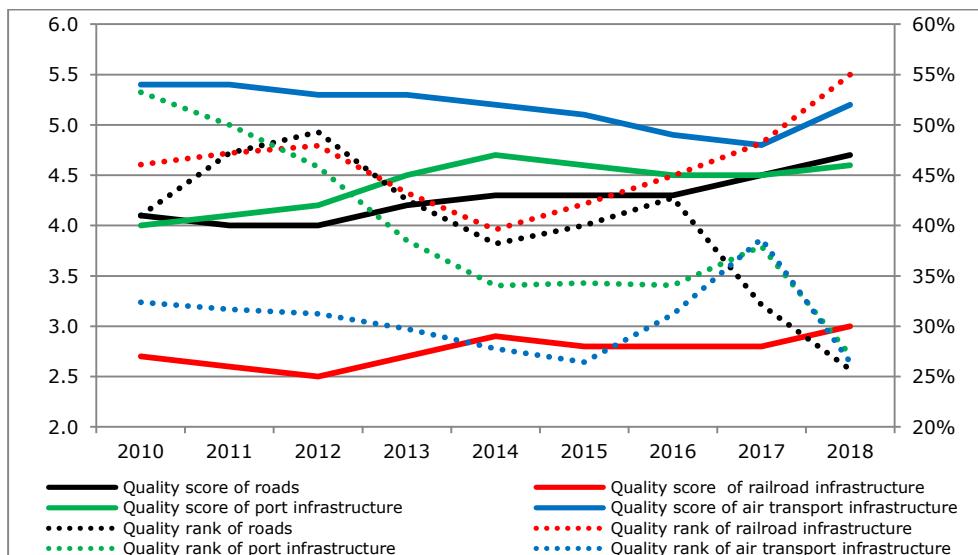
Industry	Year	Overall	Entry Barriers	Public Ownership	Vertical Integration	Market Structure	Prices
Rail	2004	5.63	6.00	6.00	4.50	6.00	
	2005	5.25	6.00	6.00	3.00	6.00	
	2006	4.50	3.00	6.00	3.00	6.00	
	2007	4.50	3.00	6.00	3.00	6.00	
	2008	4.50	3.00	6.00	3.00	6.00	
	2009	4.50	3.00	6.00	3.00	6.00	
	2010	4.50	3.00	6.00	3.00	6.00	
	2011	4.50	3.00	6.00	3.00	6.00	
	2012	4.50	3.00	6.00	3.00	6.00	
	2013	4.50	3.00	6.00	3.00	6.00	
Airlines	2004	4.00	2.00	6.00			
	2005	4.00	2.00	6.00			
	2006	4.00	2.00	6.00			
	2007	4.00	2.00	6.00			
	2008	3.00	0.00	6.00			
	2009	0.00	0.00	0.00			
	2010	0.00	0.00	0.00			
	2011	0.00	0.00	0.00			
	2012	0.00	0.00	0.00			
	2013	0.00	0.00	0.00			
Road	2004	6.00	6.00			6.00	
	2005	5.25	4.50			6.00	
	2006	5.25	4.50			6.00	
	2007	3.25	4.50			2.00	
	2008	3.25	4.50			2.00	
	2009	3.25	4.50			2.00	
	2010	3.25	4.50			2.00	
	2011	3.25	4.50			2.00	
	2012	3.25	4.50			2.00	

Sources: OECD, Koske et al. (2015).

Nonetheless, changes in public ownership took place just in 2017, while market structure has substantially remained the same, due to the monopolistic power of TRAINOSE, despite the entrance of two private service providers (the Greek-Austrian Rail Cargo Logistics - Goldair and the Chinese Pearl) in the domestic rail freight transport market. During the same period (2004-2013), air transport has been fully liberalised, after the complete removal of entry barriers in 2008 and the sale of the state-owned Olympic Airlines in 2009. In the road transport industry, the overall PMR index improved considerably during the previous decade, as the power of the government to limit industry capacity, through licences or otherwise, was reduced, and the provision of pricing guidelines by the government, as well as the specification or enforcement of pricing guidelines or regulations by professional bodies or representatives of trade and commercial interests was limited. However, the PMRs verify that the 2011 Act for the liberalisation of public road haulage services did not improve the actual conditions of competition in the market.

The competitiveness of the Greek transport industries is analysed on the basis of the WEF Competitiveness reports in the road, rail, port and aviation-airport sectors, and the relevant harmonised consumer prices indexes (HCPIs). Figure 6.3 shows that Greece, during the period 2010-2018, did substantially improve the quality of road and port infrastructures, as well as its global ranking in the corresponding markets, in terms of the distance from the best performer.

Figure 6.3: Score and global ranking of Greek transport industries, 2010-2018



Notes: Scores are ranging between 1-7. Ranking is expressed as the ratio between the ranking of Greece and the total number of countries included in the sample each year (sample size changes over time) so as to denote the distance from the best performer, in percentage terms. In 2018, the best-performing country in road, port and air transport infrastructure was Singapore, while the best-performing country in rail infrastructure was Switzerland.

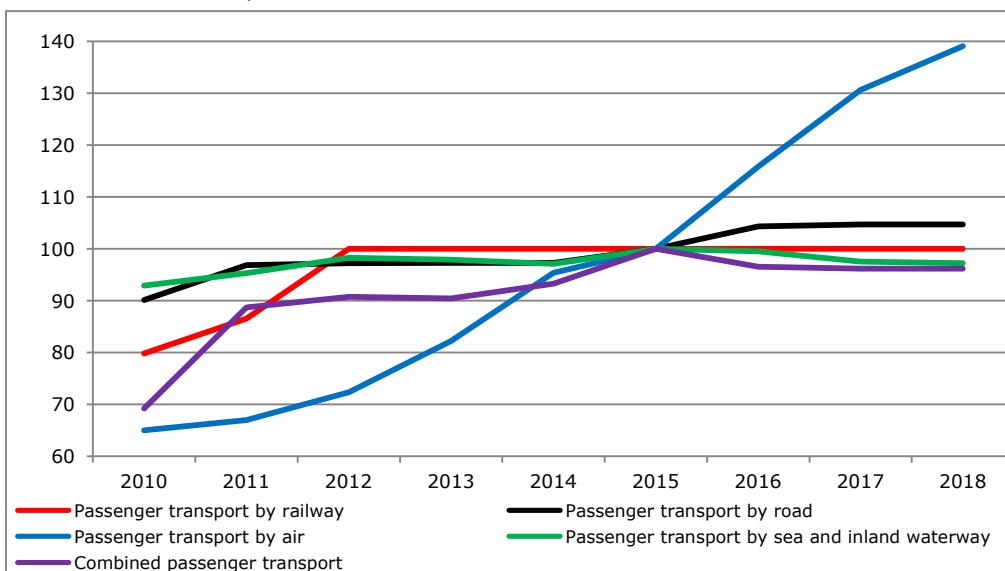
Sources: The WEF Global Competitiveness Reports 2010-2018.

The quality of rail infrastructure basically remained the same during 2010-2017 and succeeded to improve its score performance, but it increased its distance from the best performer, during 2014-2018. As far as the quality of air transport infrastructure is concerned, during 2010-2018, it showed a slight decrease in its score, but also a reduction of the distance from the best performer, especially between 2017 and 2018.

These results stress that improvements in the quality of transport infrastructure necessitate significant investments, such as those in highways and ports, especially in Piraeus, and that improvements in the quality of railway and airport infrastructure still require considerable investment in capacity and upgrading of services.

Figure 6.4 indicates that the HCPIs in the sea passenger transport and combined transport services have decreased during 2015-2017, in line with the improvements in the competitiveness of port services (Figure 6.3). Rail passenger transport prices have remained constant since 2012. The increase in the price of road passenger transport can be largely associated with the rise in motor vehicle fuel prices, a significant part of which refers to state taxes. The price for passenger transport by air has also significantly increased, particularly during 2015-2018.

Figure 6.4: Harmonised Consumer Price Indexes for main categories of transport services in Greece, 2010-2018



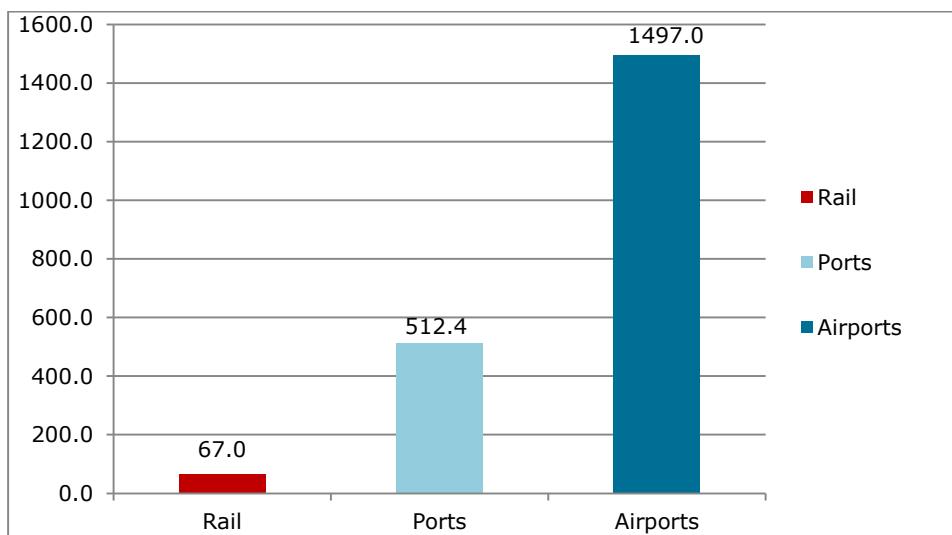
Source: Eurostat.

6.5 Empirical analysis of preliminary impacts of transport privatisations

Impacts on government revenues and GDP

Figure 6.5 indicates that airports are by far the main source of privatisation revenues, denoting their major role in the tourism economy of the country. In addition to the fixed price of concession (1,257 million euro) and the annual concession fee of 23 million euro, the additional cumulative, fiscal, social and other benefits resulting from the privatisation of regional airports are considered to amount to 4,600 million euro (HRADF, 2018).

Figure 6.5: Total government revenues (in million euro) originating from the sale or concession of different types of transport assets during 2016-2018



Notes: Rail sector includes TRAINOSE (100% sold for 45 million euro in 2017) and ROSCO (100% sold for 22 million euro in 2018). Port sector includes OLP (51% sold for 280.5 million euro in 2016, while another 88 million euro are expected to be given in order COSCO to obtain the 67% of OLP) and OLTH (67% sold for 231.9 million euro in 2018). Airport sector includes 14 regional airports conceded for 40+10 years for 1,257 million euro in 2017, while the total price up to the end of the concession period amounts to 2,150 million euro. The 20-year extension of the concession period for AIA was approved in February 2019 for 1,115 million euro, while the government revenues by 2046 may reach 6,000 million euro. The sale of 30% stake of the AIA is also scheduled by 2019 for more than 600 million euro.

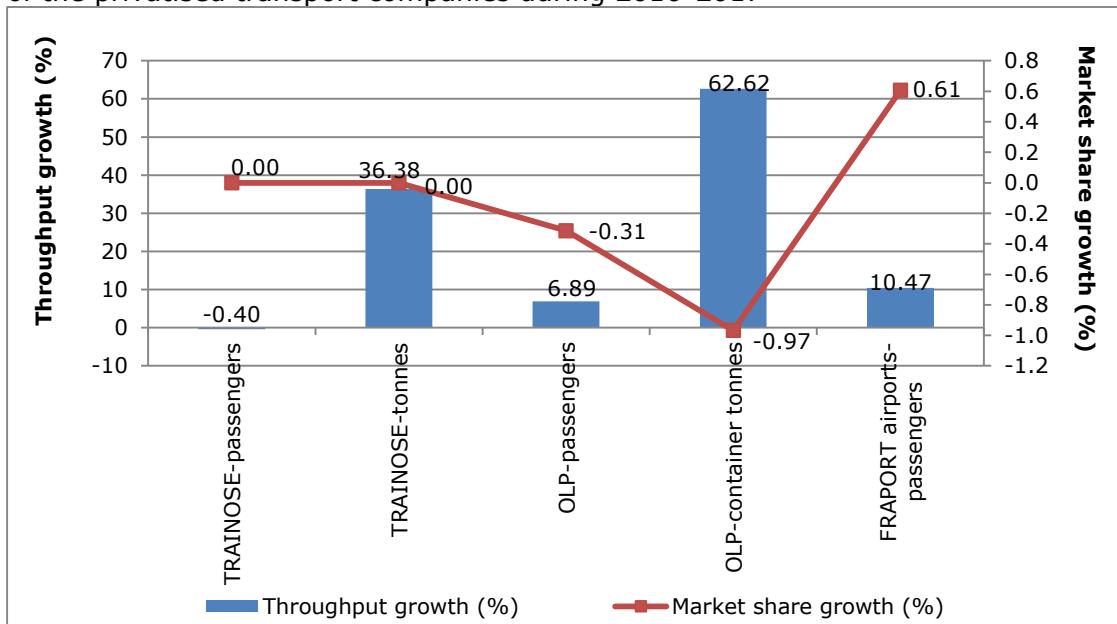
Sources: HRADF and Ministry of Finance.

The privatisation of OLP and OLTH resulted in total government revenues of 0.5 billion euro. The master plan of Piraeus port predicts by 2021 mandatory investments of 294 million euro and discretionary investments of 172 million euro. The cumulative benefits expected from the privatisation of OLP amount to 475 million euro by 2025, in net present value terms, contributing to the Greek economy an additional annual output which may reach 2.6 billion euro in 2025 (i.e., an increase of the annual GDP level by 0.8%) (IOBE, 2016a). The privatisation of OLTH is expected to increase the country's GDP level by an amount of 1.2-1.6 billion euro (of which 470-605 million euro refer to government revenues), in net present value terms, up to 2026, 80% of which will be absorbed by the region of Central Macedonia (IOBE, 2017b).

Preliminary impacts on transport output and relevant market share

As the privatisation of transport industries took place only recently, most emphasis is given here to the qualitative assessment of possible impacts, based on key figures before and after the launch of major reforms, such as the launch of private-sector operations. By and large, the transport industries after their privatisation have shown some improvements, in terms of their economic and operational performance. The market share of those industries has not substantially changed during the first year of privatisation (Figure 6.6). However, the full potential of each privatisation can only be realised several years later, when firms will be reorganised or restructured, scheduled investments will be realised, and the whole market will reach a new equilibrium state.

Figure 6.6: Growth (%) in the traffic throughput and the corresponding market share of the privatised transport companies during 2016-2017



Notes: TRAINOSE retained up to June 2018 the 100% of the rail market. Port passenger traffic includes coastal and ferry traffic. Seaport freight traffic refers to gross weight (tonnes) of goods in containers. The corresponding market share is calculated with respect to the throughput in all piers of PCT and OLP. Regarding the air freight transport (not shown in the Figure), the AIA dominates the specific market (about 84% market share in terms of tonnes, in 2016), with the Fraport-operated Thessaloniki airport to follow with 9%.

Sources: Data for rail traffic come from Eurostat, data for port traffic come from ELSTAT, and data for airport traffic come from the Civil Aviation Authority (CAA).

The privatised central port (OLP) and regional airports have already experienced a positive impact on their throughput (Figure 6.6) and are anticipated to have the largest benefits, as they refer to international markets (those of tourism and maritime freight transport) and are managed by large strategic operators-investors of those markets (Fraport and COSCO respectively). Particularly in the case of OLP (pier I), its privatisation has ended the adverse effect of intra-port, inter-terminal competition with the PCT (piers II and III) and gave the opportunity to create and expand synergies in the seaport and logistics freight services.

During 2018, the traffic throughput of PCT and COSCO was 4.4 million TEUs and 0.5 million TEUs, respectively. In the same year, the traffic throughput of OLTH was 0.42 million TEUs and 3.78 million tonnes of conventional (bulk) cargo, achieving an increase of 5.5% and 5%, respectively, compared to 2017. Moreover, passenger traffic in Fraport-operated airports grew by 8.9%, from 27.4 million passengers in 2017 to 29.9 million passengers in 2018, particularly due to the increase of international traffic by 11.5%, from 20.6 million passengers in 2017 to 22.9 million passengers in 2018.

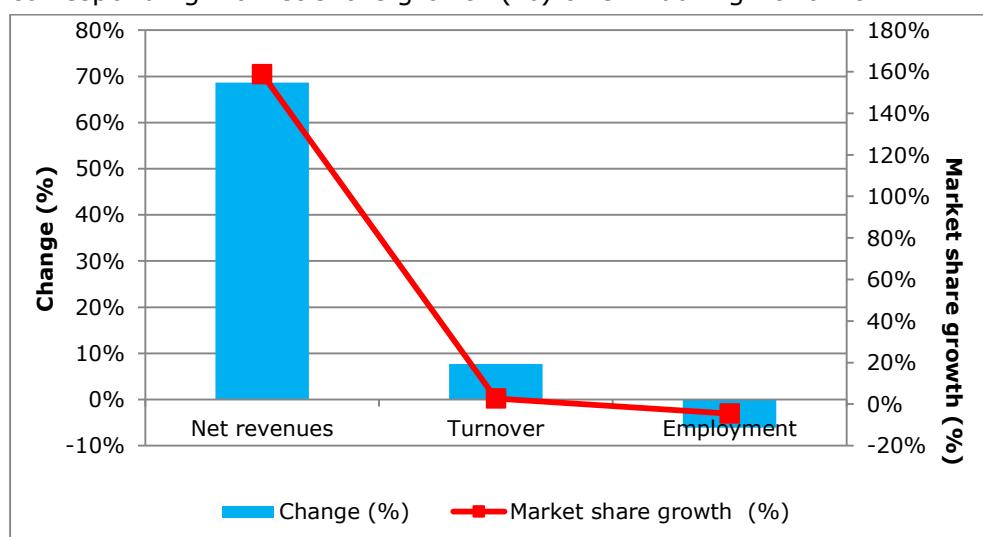
Regarding TRAINOSE, the international container transport by rail from Piraeus to Central Europe and Balkan destinations gradually rose from 68 trains (4,240 TEUs) in 2014 to 304 trains (20,818 TEUs) in 2018 (up to the end of October). Correspondingly, container transport by rail from Central Europe and Balkan countries

to Piraeus gradually rose from 25 trains (1,118 TEUs) in 2015 to 276 trains (14,965 TEUs) in 2018 (up to the end of October).

Preliminary impacts on financial performance and employment

The preliminary impacts of transport privatisations are also assessed in terms of the financial performance (turnover and earnings after taxes) and employment in the privatised transport companies. Regarding the Piraeus Port Authority (OLP), it has achieved a remarkable increase in net revenues (by 69%) (Figure 6.7), from 6.7 million euro in 2016 to 11.3 million euro in 2017. This increase entailed a growth by 159% in the corresponding share of OLP in the total net earnings of all port authorities (including PCT and regional port authorities, except for Elefsina), from 11.7% in 2016 to 30.3% in 2017. In 2018, the net revenues of OLP increased by 147% (reaching 27.9 million euro), and its turnover increased by 19% (reaching 132.9 million euro), compared to 2017, largely due to the concession exchange (12.2 million euro) and the revenues from PCT (5.1 million euro).

Figure 6.7: Growth (%) in net revenues, turnover and employment, and the corresponding market share growth (%) of OLP during 2016-2017



Source: Processing of data from financial accounts of Piraeus Port Authority (OLP), Piraeus Container Terminal (PCT-COSCO) and all the other port authorities (S.A.) (except for Elefsina), i.e., Thessaloniki, Patras, Heraklion, Volos, Igoumenitsa, Corfu, Alexandroupolis, Kavala, Lavrio and Rafina.

The number of employees in OLP slightly decreased from 1,092 in 2016 to 1,025 in 2017, which can be attributed to voluntary retirement programmes, leading to a small reduction of the significant share of OLP in the total employment in port authorities, from 56.3% in 2016 to 53.8% in 2017. However, this decrease in employment is smaller when considering both OLP and PCT (from a total of 1,362 employees in 2016 to 1,314 employees in 2017). According to IOBE (2016a), the construction and operation of new facilities planned in OLP will create more than 31,000 employment positions, particularly in the Attica region.

Regarding OLTH, in the first semester of 2018, it raised its gross revenues (profits) by 4.3%, reaching 29.2 million euro (4.7%, reaching 10.3 million euro), compared to the

corresponding period of 2017, largely due to the increase of productivity and earnings (by 11.6%) in the activity of the container terminal. At the end of June 2018, the number of employees in OLTH was 414, compared to 435 employees at the end of June 2017. The privatisation of OLTH is expected to increase wage income by 289-383 million euro (about 50% of which correspond to the region of Central Macedonia) and create 37,400-49,100 person-years of employment (about 80% corresponding to the region of Central Macedonia), up to 2026 (IOBE, 2017b).

In relation to the Fraport-operating regional airports, they achieved net earnings of 14.4 million euro in 2017, compared to net losses of 5.3 million euro in 2016. At the same time, these airports considerably increased the number of their employees from 56 in 2016 to 396 in 2017. In 2018, the total number of employees in Fraport Greece was about 650, 190 of whom were employed in the company headquarters in Athens. At the same time, about 2,500 employment positions are expected to be created (up to year 2021) in the construction industry for the upgrading and expansion of the 14 regional airports, while the indirect employment positions –mostly in service activities within and around regional airports– are expected to reach 12,000. It is also noted that the 1.5 billion euro investment for the development of the new airport of Heraklion (at Kastelli) is expected to create 1,500 employment positions during construction, 7,000-7,500 direct employment positions and 35,000-37,000 indirect employment positions.

Regarding TRAINOSE, the net revenues decreased from 3.6 million euro in 2016 to -2.2 million euro in 2017, mainly due to the increase of labour costs, through the implementation of private-law legal entity arrangements, as well as a rolling stock maintenance contract. However, the total revenues of TRAINOSE increased from 120.9 million euro in 2016 to 122.3 million euro in 2017, while the debt of TRAINOSE to OSE was cancelled. Although most revenues of TRAINOSE originate from (inter-urban and suburban) passenger transport operations, freight transport by rail constitutes a considerable and increasing revenue-generating source, from 12.3 million euro in 2016 to 13.5 million euro in 2017 (a further increase is estimated in 2018). Despite the decrease in the number of employees in TRAINOSE between 2016 and 2017 (from 677 to 637), the new business plan of the company is expected to create 400-500 employment positions over the next five years. The international freight transport by rail is expected to further grow and create more employment positions in Greece, due to the increase of competition (with the participation of Rail Cargo Logistics-Goldair and Pearl) and the enhancement of combined transport operations in Thessaloniki, after the privatisation of OLTH in March 2018. Relevant to the growth of rail freight transport is the development of logistics parks in the country. Especially, the logistics park in Thriasio Pedio is expected to create 700 employment positions during construction and around 3,000-5,000 employment positions in full operating conditions (by 2024), giving boost to both combined transport and logistics, servicing 50 rail wagons and 400 truck vehicles per day.

6.6 Conclusions, policy implications and recommendations

The findings of the present analysis can provide insights to identify factors that may hamper or facilitate a successful implementation and the positive impact of reforms, especially privatisations, undertaken by the Greek government in the transport industries so far examined. The reforms that took place in the first two economic adjustment programmes, as well as in the context of national and EU policies aiming to enhance market liberalisation and competition, paved the way for the current and prospective privatisations of transport industries. However, it can be regarded that these reforms had only a limited contribution to the expected effects of privatisations. This is because several of these reforms were not completed in the timeframe of these two programmes and were carried over to the third programme, while some of them are still ongoing. In addition, the economic crisis, financial burdens on firms, lack of fluidity and delays in the digitisation and timely completion of appropriate infrastructure did not allow the establishment and promotion of the interconnection and interoperability of transport services at the national system level, thus, failing to achieve strong intermodal complementarities and spillovers within the whole transport sector.

In particular, structural reforms to liberalise and institutionalise the public road haulage and logistics sectors have not had the expected outcomes in the freight transport market. The goods transport still heavily relies on truck vehicles, not only in the first-mile and last-mile delivery but also in the whole supply chain in the country. In turn, it can be considered that there is still significant potential to be unleashed from supplementary reforms in the logistics sector, in terms of their contribution to the impact that transport privatisations may have on the operational and economic performance of the rail, port and airport sectors.

Such reforms also encompass the expansion of PPP schemes for financing the development and managing transport and logistics infrastructure as well as the effective planning arrangements for the spatial organisation of logistics parks. Strategic investments and institutional reforms, especially as far as the development of logistics parks is concerned, should be coordinated to identify priorities and complementarities at the regional and national scale, beyond the narrow scope of individual industries and firms' business plans. For instance, the development of separate small-scale logistics centres at the ports of Piraeus and Thessaloniki should be coordinated with the development of large-scale logistics parks in Attica and Thessaloniki, respectively, by TRAINOSE. Furthermore, cross-asset management approaches should be introduced to allocate investments and execute maintenance programmes at the network level, allow projects to be bundled, respond to changing user demand and optimise infrastructure quality and maintenance cycles (OECD, 2018).

After their privatisation, transport industries have shown some improvements in both their economic and operational performance, with the privatised central port (OLP) and regional airports to experience the largest benefits, as they mostly refer to

international markets. Nonetheless, the full potential of each privatisation can only be unleashed after the pass of a few years. Regarding the privatisation of TRAINOSE, it signifies the long-term efforts for the consolidation of railway industry and its market-orientated operations. Despite the limited geographical coverage and intense competition of commercial rail services with those of other (air and road) transport modes, the significant upgrading and modernisation of the railway infrastructure and management systems create new opportunities for the profitability of the company and of other market players, particularly in the domestic and international freight transport market.

These prospects will be reinforced by the growing share of combined transport operations, especially with regard to the foreign transit cargo arriving at ports and moved by rail to/from the European hinterland. Strategic complementarities are not only limited within the transport sector to create value added and foster effective combined transport operations, but also across transport, energy and ICT network industries, particularly at the level of major trade hubs/clusters. Examples of intersectoral hubs/clusters under development constitute those at the prospective logistics park of Thessaloniki, with interconnections among highway, railway, seaport and energy (natural gas and oil) pipelines, and the port area of Alexandroupoli, including national and international connections between highway, railway, seaport, logistics and energy (Trans-Adriatic pipeline or TAP, and floating liquefied natural gas or LNG terminal) facilities. In this context, greater policy coordination should be achieved between the terms of privatisation of transport companies and the increase of energy efficiency and savings, and the digital transformation of the sector.

Potential problems related to the vertical separation of the rail market should be addressed, particularly due to the sale of ROSCO to TRAINOSE. These problems concern the relationship between the provision of competitive railway services, and the provision and maintenance/repair of rolling stock and the certification and training of related personnel to train operating companies by ROSCO. Other challenges refer to the exploitation of underused and unprofitable peripheral railway lines and the development of new ones in order to improve local economic performance and the subsidisation of the less profitable or unprofitable (state-owned) regional airports by the 14 most profitable FRAPORT-operated airports. Regulatory authorities should also ensure that logistics parks will operate in an open and competitive environment, avoiding potential conflicts between users and companies that act as both users and operators. Finally, transport regulatory authorities should ensure that the benefits obtained from the upgrading of capacity and level of service would outweigh any loss of consumer welfare, due to possible reduction of accessibility, following the (anticipated) rise in prices for use of improved rail, port and airport infrastructure.

7. UTILISATION OF PUBLIC REAL ESTATE ASSETS

7.1 *Introduction*

As part of the economic adjustment programmes, Greece adopted an ambitious plan for the privatisation and development of public real estate assets. The main aims of this plan were, first, the reduction of the Hellenic Republic's public debt by use of the proceeds generated from the sale/development of the assets and, second, the achievement of various economic benefits from the utilisation of the assets, including the attraction of foreign direct investment, the creation of new jobs and the enhancement of economic growth.

In 2011 and according to L. 3986/2011 (GG A 152/1.7.2011), the Hellenic Republic Asset Development Fund (HRADF) was established to promote the implementation of privatisations in Greece. The HRADF was set to be responsible for the execution of the country's privatisation and development plan, as defined in the Medium-Term Programmes. According to this plan, several state-owned assets were transferred to the HRADF, including a large number of real estate properties. In 2016, L. 4389/2016 (GG A 94/27.5.2016) established the Hellenic Corporation of Assets and Participations SA (HCAP). The ownership of all assets of HRADF was set to be transferred to the HCAP, with the exception of several real estate assets which remained in HRADF's portfolio.

The HRADF's programme includes a variety of properties for privatisation, which differ as to their size and uses and span various economic sectors. The processes followed for the privatisation of the assets, include conventional tender procedures as well as online auctions, with the support of financial advisors. For each property, privatisation procedures are subject to the asset's legal and technical maturity. For larger properties presenting high development opportunities, specific requirements and processes for maturity are set in L. 3986/2011. Such requirements may include a Strategic Environmental Impact Study and, subsequently, approval by Presidential Decree of a Special Zoning and Spatial Plan (ESHADA). Depending on the nature of the property, additional requirements for privatisation or for the subsequent development of the asset may apply, in terms of land or seashore uses, construction licences, other administrative approvals and completion of judgments of judicial authorities on applications for annulment. In addition, property development is in all cases subject to the provisions of the relevant legal framework for archaeological and environmental protection.

So far, while a number of privatisations of real estate properties have been completed, for several assets the privatisation process continues. Furthermore, for some of the properties already privatised, the projects for their development are still in waiting or in progress. In this context the analysis of this chapter aims to review and assess the real estate asset privatisation programme of the HRADF, as implemented from 2011 onwards. We discuss the privatisation programme by region for individual properties within the Greek territory, and we also briefly present the Sale & Leaseback A, B

packages of assets and the sale of real estate properties abroad. Particular emphasis will be given to the progress of the larger privatisation projects, with special reference to the development of Hellinikon (the Former Athens Airport), Astir Vouliagmenis (hotel and marina complex) and IBC-Golden Hall (block of buildings with large shopping mall). This discussion will provide the basis for an assessment of the privatisation programme in terms of proceeds received and procedures followed, and it will also provide indications of the economic benefits of privatisations for particular sectors or regions and for the economy in general, where possible and under the limitations imposed by the progress of privatisations and the related development projects.

7.2 *Overview of the real estate assets privatisation programmes*

Until now the HRADF has managed about 100 real estate assets/programmes. After the establishment of the HCAP, 91 real estate assets have remained in HRADF's portfolio. This section presents the main characteristics of these assets and the progress of their privatisation procedures, on the basis of information collected from various sources, including the HRADF (Summary Activity Report March - July 2018, Asset Development Plan of June 2018, financial statements, progress reports, other information), documents relevant to the programme and the legal and technical maturity of individual projects (Laws, Ministerial Decrees, Strategic Environmental Impact Studies, ESHADA), investor plans, and other information. The discussion is organised by geographical region, and includes references to key regional features relevant to the investments discussed (e.g. tourism activity, real estate market). Notably, the geographical dimension of the programme is of importance in assessing its scale and potential benefits, as some of the larger projects seem to be concentrated in geographical areas with characteristics that may enhance their prospects and economic results (e.g. prime tourism destinations, urban centres).

7.2.1 *Attica*

The region of Attica represents the economic and commercial centre of Greece. It encompasses the city of Athens, capital of Greece, and the port of Piraeus, one of the largest ports in Europe. Attica is the location of some of the most important historical and tourist attractions in Greece, including the Acropolis, other unique archaeological sites and museums, and the Athens Riviera, a superb coastline with a large number of bays and beaches stretching along the Saronic Gulf for some 70 kms.

Tourism in Attica has experienced rapid growth over recent years. International Arrivals at the Athens International Airport reached 5.7 million in 2018, up by 19.4% as compared to 2017 (INSETE, 2019). For the period 2013-2018, the total increase in arrivals amounted to 118.9%. Visits to Attica represented 17% of Greece's total, with the corresponding share in terms of overnight stays and revenues amounting to 14% and 15%, respectively (Lamprou & Ikkos, 2018). A total of 648 hotel units were recorded in Attica in year 2017, with the corresponding bed capacity amounting to 59,878 hotel beds (INSETE, 2018a). Attica features a relatively high percentage of 5* (21%) and 4* (28%) rated beds in its total capacity compared to most other Greek

regions, although there seem to be indications of undercapacity in the upper star rating categories (PWC, 2018). Employment in the tourism sector in Attica exceeded 91 thousand persons, representing 6.7% of total employment in the region.

The real estate market in Attica experienced rapid growth prior to the year 2008, and although both construction activity and prices were severely affected by the crisis, interest in real estate assets appears to be recovering more recently, particularly with respect to assets located in the historical and commercial centre of the city and in suburbs along the coastline. These positive trends are related to the increase in tourism and the related growth of short-term rental activity, as well as to the incentives provided to foreign investors via the Golden Visa programme⁴¹.

The HRADF's programme in Attica includes the flagship land development project of Hellinikon (the Former Athens Airport), the major asset of Astir Vouliagmenis, a luxury hotel and marina complex, the exploitation of the block of buildings of the International Broadcasting Centre (IBC), two major Olympic Games facilities (Markopoulo Olympic Equestrian Centre and Schinias Olympic Rowing Centre), two large adjunct land plots in the coastal area of Lavrio, one hotel located in the centre of Athens, 12 smaller properties (land plots and buildings) for residential and commercial uses and 3 Motorway Supporting Areas (Table 7.1). Total proceeds from the projects which have already been completed amount to €194,003,684 (32.5% of the total proceeds of HRADF's programme at the time of writing) (HRADF, 2018b).

7.2.1.1 Hellinikon

The Hellinikon project refers to the development plan of the former Hellinikon International Airport and the coastal Olympic zone of Agios Kosmas of Attica (former Agios Kosmas Olympic Sailing Centre and the National Youth Sports Centre of Agios Kosmas). Hellinikon is a seafront real estate asset, with a surface area of 6,205,667 m² and a coastline of 3.5 km. It is located within the Athens greater metropolitan area, in a distance of 8km from the Athens city centre, 27km from Athens International Airport and 11km from Piraeus port. By way of an indication of its size, the site is more than three times the size of Monaco, and more than two times the size of Hyde Park (London) and Central Park (New York). According to L. 4062/2012, the development of Hellinikon is considered as a project of great public interest with multiple expected benefits for the regional and national economy. Indicatively the project is aimed at contributing to the national budgetary and development goals, attracting investment and high value added activities, creating new jobs, and playing a major role in the emergence of Athens as cultural metropolis, a tourism pole of international appeal and a major centre of economic growth and entrepreneurship.

⁴¹ The Golden Visa Programme grants a five-year renewable residence permit to third country nationals who purchase -individually or through a legal entity - property in Greece valued at a minimum of €250,000, or who have taken out a minimum 10-year lease in hotel accommodation or tourism facilities. Through the scheme, investors gain both residency rights and instant access to the Schengen Area.

Table 7.1: HRADF's real estate programme in the region of Attica

Asset	Description	Proceeds	Uses
Major Assets			
Hellenikon	Development of the former Hellenikon International Airport and the coastal Olympic zone of Agios Kosmas. Land plot area: 6,205,667 m ² .		Mixed uses
Astir Pallas Vouliagmenis	Hotel and marina complex. Land plot areas: a) 119,800 m ² ("Aphrodite" hotel), b) 190,000 m ² (Astir Palace hotel complex) and c) the Marina of Vouliagmeni.	€94,356,684 (27/10/2016)	Tourism
IBC - Golden Hall	The former International Broadcasting Centre (IBC). It includes an upmarket shopping mall (132,200 m ² .) and a vacant area (21,600 m ² .).	€81,000,000 (5/2/2013)	Mixed uses
Olympic Games facilities			
Markopoulo Olympic Equestrian Centre	Land plot area: 1,029,572 m ² (exploitable area: 305,514 m ²). Built area: 24,775 m ² (equestrian fields, training arenas, stables, veterinary clinic, etc.).		Sports-recreation
Schinias Olympic Rowing Centre	Land plot area: 2,002,000 m ² (750,000 m ² constitute water area). Built area: 7,937 m ² .		Sports-recreation
Other properties for tourist and commercial uses			
Hotel "Hniohos" in Athens city centre	3* hotel with a capacity of 134 rooms. Land plot area: 630 m ² . Built area: 4,915 m ² .		Tourism
Two adjacent land plots in Pounta-Zeza, Lavrio	Land plot areas: a) 38,554 m ² , b) 146,962 m ² .		Tourism-recreation-residential uses
Property in Athens city centre	64, Ermou str. & 17, Aiolou str. Built area: 289 m ² .	e-auction VIII	Office uses
Building in Neapoli, Athens	88, Ippokratous str. Built area: 746 m ² (+ basement 123 m ²).	e-auction VIII	Office uses
Land plot in Kalithea	292, Syggrou Av. & 1, Skra str. Land plot area: 347 m ² .		Urban uses
Land plot with 5 buildings in Tavros	28, Thrakis str. & Korizi str. Land plot area: 3,296 m ² , Built area: 1,514 m ² .		Commercial uses
Listed building in Athens city centre	14, Ktena str. & 33, Perikleous str., Land plot area: 122 m ² , Built area: 406 m ² .	€257,000 (27/2/2018)	Urban uses
Property in Tavros	24, Florinis str.	€1,800,000 (10/02/2017)	Urban uses
Property in Athens city centre	9, Evangelistrias str.	€1,720,000 (22/7/2015)	Urban uses
Property in Athens city centre	9 & 9A, Mitropoleos str.	€3.785.000 (1/6/2015)	Urban uses
Listed property in Neo Faliiron	4, Smolenski, str.	€434,000 (28/5/2015)	Urban uses
Property in Athens city centre	19, Ermou str.	5,900,000 (5/2/2014)	Urban uses
Listed property in Athens city centre	35, Anagnostopoulou str.	€1,100,000 (19/2/2014)	Urban uses
Property in Athens city centre	Tsakalof str.	€1,211,000 (23/7/2014)	Urban uses
Motorway Supporting Areas			
Motorway Supporting Area 8, Ano Chalandri	Land plot area: 4,196 m ² .	€28,530 p.a. (9/8/2017)	Sports uses
Motorway Supporting Area 9, Chalandri	Land plot area: 6,458 m ² .	€640,000 (10/8/2017)	Waste management, parking
Motorway Supporting Area 6, Neratziotissa		€1,800,000 (29/7/2015)	

Hellenikon will constitute the largest urban regeneration project in Europe, and will include a diverse range of residential buildings (about 10,000 residences), a complex of hotels and special tourism infrastructures (marina, casino, conference centre, exhibition centre, etc.), shopping centres, entertainment venues, museums and cultural venues, health and wellness centres, significant space for sports and recreation, a modern business park and an educational and R&D hub. Furthermore, the project will comprise the total regeneration of the existing marina and the entire coastal front, as well as the creation of a world class Metropolitan Park covering an area of 2,000,000 m², all fully accessible to the public.

The process for the privatisation of Hellenikon through an international tender started in 2011. The selected privatisation method was the sale of 100% of the shares of Hellenikon S.A., to a private investor. Hellenikon S.A. was established in March 2011 with its purpose being initially the management and development of the former Hellenikon International Airport, and following L. 4062/12 also the management and development of the coastal Olympic zone of Agios Kosmas.

According to the terms of the tender, the investor will have the right to develop (surface right) and manage 100% of the property for 99 years, and will also acquire full ownership of 30% of the area of the property (1,575,000 m² of the former Hellenikon International Airport and 227,000 m² of the coastal zone, excluding the seashore and the beach). In March 2014, and following an international tender process, the HRADF declared the preferred investor for the project, on the basis of a technical offer and a financial bid of €915,000,000. The contract for the transfer of Hellenikon S.A. was signed in November 2014 and according to the contractual preconditions for the commencement of the development of Hellenikon, the transfer of the shares and initiation of the project is subject to a series of prerequisites. So far, the Strategic Environment Impact Study was completed and submitted together with the Integrated Development Plan, which was approved in March 2018 by means of a Presidential Decree. Efforts are in progress to complete the remaining preconditions which concern (a) the approval of urban planning studies by means of joint ministerial decrees (b) the transfer from the Greek state to HRADF of full 'ab indiviso' ownership of 30% of the property (excluding the seashore and the beach) which will be subsequently converted into a full right of ownership of a specific part of land on the basis of a partition diagram that will be agreed between the investor and the HRADF (c) the completion of establishment and operation of Hellenikon Management Authority, a special body that will manage and operate all communal areas of Hellenikon, (d) the completion of relocation of public and private users from the site, (e) the award of the casino licence though a tender procedure, and (f) the completion of judgments of the Council of State on applications for annulment.

According to the investor's master plan for Hellenikon, the project will involve an investment of € 7.2 billion, which once initiated will be carried out in three phases within a timeline of 25 years. During the first development phase (1-5 years), the coastal front and the Metropolitan Park will be redeveloped, with plans including the upgrade of the marina, the construction of an aquarium, the construction of a 170-

room hotel and the modernisation of the Agios Kosmas sports facilities. The second development phase (6-10 years) will include the construction of the integrated tourist complex with casino, as well as hotels, buildings for commercial uses, office buildings, buildings for educational and research activities and a tall residential building (apartment complex) in the area of the marina. During the third development phase (11-15 years), all hotels, buildings for commercial uses, office buildings and buildings for educational and research activities will be completed, while from the 16th year onwards, additional commercial developments and residential buildings will be completed.

Given its scope and scale, the project will undoubtedly have a major a positive impact on the local, regional and national economy. However, given that the project, once initiated, will be implemented gradually over a long time period, it is very difficult to provide an accurate assessment of the magnitude and this impact on various economic aggregates, and the way that positive effects will be distributed along the time frame of the project's construction and operation. From the construction and operation of the project, positive effects are expected mainly in terms of a significant increase in investment, employment, tourism (including alternative forms) and business activity, a significant inflow of fiscal revenues from the direct and indirect taxation of the economic activity and wealth that will be generated from the project and operation of its facilities, and additional fiscal revenues from the proceeds for the acquisition of the shares of Hellenikon S.A.. Moreover, on a regional level the project is expected to reposition Athens as an international tourist destination and to improve the standard of living in Attica, while on a national level it is expected to provide positive signals to foreign investors, contributing to the enhancement of the overall investment climate in Greece.

An ex ante assessment of the economic impact from the construction and operation of project has been provided in a relevant study by IOBE (2016). According to this study, the turnover from the use of Hellenikon facilities is expected to reach €2.4 billion towards the end of the 25-year period, or €1.4 billion per year on average. Tax revenues from the construction activity and operation of the various facilities are expected to total €14.1 billion over the 25-year period (€563 million per year on average). At the end of the construction period, demand factors are estimated to drive the GDP up by 5.4 billion or 1.7%. New employment in the area is expected to exceed 25,000 in the mid-2030s, while with the gradual completion of the project the number of jobs maintained in the area is estimated at about 21,000. With respect to the direct impact of the project on investment, the investor's plan envisages a distribution of investment expenditure along the construction period, involving lower spending in the first and last years of the period (e.g. €161 million in year 1 and €90 in year 22) and a peak in spending in year 13 of the period (€ 752 million).

7.2.1.2 *Astir Pallas Vouliagmenis*

The Astir Vouliagmenis property is situated on Kavouri peninsula in Vouliagmeni, 20 km from Athens city centre and 25 km from Athens International Airport. The nearby area of Lemos Vouliagmenis is the highest priced residential area in Athens. The property under privatisation comprised (a) a surface area of 119,800 m² owned by the HRADF (exploitable area of 111,942 m²), including the "Aphrodite" hotel of a total built area of 12,080 m², which ceased operations in 2000, (b) the adjacent Astir Palace hotel complex ("Arion" and "Westin" -former "Nafsika"- hotels), on a land plot of 190,000 m² owned by the National Bank of Greece (NBG), and (c) the Marina of Vouliagmeni, on a land plot of 47,165 m², containing 102 berthing spaces for cruise boats and yachts.

The HRADF and the National Bank of Greece agreed to co-sell their rights to the property through an international open tender for the sale of 90% of Astir Palace Vouliagmenis S.A., to which the ownership rights of the HRDF had previously been contributed. The tender was launched in January 2013 and within its context the relevant ESHADA and the Strategic Environmental Impact Study for the development of the property were approved by Presidential Decree in October 2016 (GG AAP 191/4.10.2016). According to the ESHADA, the total area of the property was divided into the following zones: Zone IA for the enhancement of the natural environment (61,505 m²), where the renovation of existing constructions is allowed but new construction of buildings is forbidden; Zone IB for the protection of the natural environment (156,237 m²); Zone II (10,256 m²) comprising the archaeological sites of the property, where no construction is permitted and; Zone III (83,037 m²), for the renovation and development of hotel and other tourist infrastructures and for the construction of a maximum of 15 residences for tourism and leisure uses. The tender process was completed in October 2016, and 90% of the shares of Astir Palace Vouliagmenis S.A. were sold to the investor, for a total price of € 393,152,844. The proceeds received by HRADF (2018b) amounted to €94,356,684 (15.8% of the total proceeds of HRADF's programme at the time of writing).

The development of Astir Palace includes the complete renovation of both Arion and Nafsika hotels, the demolition of Aphrodite Hotel to construct up to 15 luxury villas, the creation of a new park and a significant upgrade of the marina and its vessel capacity. The Arion hotel will comprise 102 rooms and the Nafsika hotel will comprise of 132 rooms, including 22 suites. Works will include the remodelling of 58 bungalows, the upgrade of pool deck zones and outdoor spaces, the repositioning of meeting and conference facilities to a high-end standard, the expansion and redevelopment of the spa and fitness area, and the launch of new restaurant and bar facilities. Overall, the redevelopment plan aims to elevate Astir Palace to a world-class premium destination, while protecting its heritage and the property's natural environment.

The investment for the redevelopment of Astir Palace is currently in progress, and the Arion and Nafsika hotels and the bungalows are expected to operate in spring 2019 under the Four Seasons hotel brand. The total amount invested is expected to exceed

€600 million, representing one of the country's largest tourism development projects under way. Astir Palace will be a significant addition to the top-end hotel tourism infrastructure of the Attica region, which, as mentioned earlier, is characterised by an undercapacity in the upper star hotel rating categories. The upgraded facilities can be expected to attract high income tourists, and increase economic growth prospects locally but also at wider level, reinforcing Athens and Greece as international destinations for high-end tourism. As a result, positive direct and indirect effects are expected to arise in terms of new employment positions.

More generally, the Astir Palace redevelopment is part of a number of major projects which are expected to upgrade the infrastructures and image of the Athenian Riviera, having together a considerable effect on tourism growth.

7.2.1.3 IBC - Golden Hall

The International Broadcasting Centre (IBC) is a block of buildings that was constructed to accommodate the broadcasting facilities for the Athens 2004 Olympic Games. It is located in the Athens suburb of Maroussi, in a distance of 9km from Athens city centre, and is part of the wider land plot of the Olympic Athletics centre of Athens. A large part of the IBC building was already converted to house the upmarket shopping mall Golden Hall which opened in 2008, while a smaller part of the building has remained vacant. More particularly, out of a total built area of 153,800 m², an above ground area of 73,000 m² and a parking area of 59,200 m² are occupied by Golden Hall, while an above ground area of 14,300 m² and a parking area of 7,300 m² have remained unused. An advantage of the IBC asset was that most of the space available was already leased under a 40-year agreement expiring in 2047.

The tender process for the privatisation of the property referred to the acquisition of the right of exclusive use, management and exploitation of IBC for a period of 90 years. The tender was launched in March 2012 and the process was completed in February 2013 for a total price of €81,000,000 (13.6% of the total proceeds of HRADF's programme at the time of writing). The completion of the tender was followed by a long process for the approval of the environmental terms and spatial planning requirements for the project. The final permission necessary for the development of the asset was granted in May 2018, via a joint Ministerial Decree for the approval of the spatial planning of the project (GG AAP 88/10.5.2018).

The development plan for the asset refers mainly to the unused section of the IBC building and includes the creation of an Olympic Games Museum, an aquarium, family entertainment venues, restaurants and shops. According to the investor's plans, the total amount invested in the project will reach €25,000,000 and the benefits from the development of the asset are expected to include the creation of new jobs (300 jobs directly and a total of over 700 jobs including indirect effects), while also increasing visits to Golden Hall by over 500,000 per year, contributing to the full commercial exploitation of the property and adding value to both consumers and the tenants of the mall.

7.2.1.4 Other properties

Olympic Games facilities

The privatisation and development programme of the HRADF includes two major Olympic Games facilities, the Markopoulo Olympic Equestrian Centre and the Schinias Olympic Rowing Centre. The Olympic Equestrian Centre is located in the Municipality of Markopoulo Mesogaias, in a distance of 38km from the centre of Athens. The land plot area of the property is 1,029,572 m² (exploitable area 305,514 m², built area 24,775 m²) and includes open and enclosed equestrian fields, training arenas, a stables complex, a veterinary clinic, an office building and a heliport. The development concept for the property refers to sports and recreation uses and a tender process for the long-term concession of the right of use and exploitation of the property was initiated in June 2014. A need for an update of the ESHADA and the Strategic Environmental Impact Study emerged, mainly due to the existence of an archaeological site and forest land issues within the property. According to the HRADF's Asset Development Plan, next steps to move forward are subject to the completion of the necessary maturity requirements for the project.

The Olympic Rowing Centre of Schinias is located in the Municipality of Marathonas, 500m from the beach of Schinias and in a distance of 51km from the centre of Athens. The land plot area of the property is 2,001,997 m², of which 750,000 m² are water surface. The property is located within the Natura 2000 Network and the Schinias National Park and the HRADF only retains the right of use and exploitation of the property. The development concept for the property refers to sports and recreation uses, but no tender process for the property has been initiated thus far.

Given their size, infrastructures and location, the above Olympic Games facilities have considerable development potential, depending on the development plans and the uses that can be approved. Currently, the maintenance of these facilities involves significant costs, while unused infrastructures within them are gradually deteriorating. Hence, from a fiscal side their development will also contribute to savings of public resources, while preventing the assets' further depreciation.

Other properties for tourist and commercial uses

Other properties for tourist and commercial uses in Attica include a) Hnioshos, a leased 3* hotel in centre of Athens (built area of 4,915 m²) in which HRADF retained 66.67% of ownership and for which the process of sale has progressed as part of e-auction VIII, b) 2 large adjunct land plots in the Athenian Riviera coastal area of Pounta Zeza, in the Municipality of Lavreotiki (land plot areas of 38,554 m², and 146,962 m²), with archaeological restrictions in their wider area and some encroachments, c) 8 smaller properties in Athens sold between 2014 and 2018 for a total amount of €16,207,000, d) 4 properties in the centre Athens for which privatisation procedures are in progress, and e) 3 Motorway Supporting Areas, for which relevant procedures were completed between 2015 and 2017 for a total amount of €2,440,000 for the 2 properties sold and a rent of €28,530 per year for 30 years for the 1 property leased.

With the exception of the Pounta Zeza property for which, due to its size and location, a significant potential for development could arise, the benefits from the privatisation of the other properties above are mainly fiscal. However, since most of these properties are located in the centre of Athens, and some of them are listed, their privatisation may also have some positive effects at the local level, through their development/renovation and utilisation.

7.2.2 Central and East Macedonia

Central and East Macedonia in Northern Greece encompass, Thessaloniki, the second largest city in country, and several important tourist destinations, many of which are located in the Prefecture of Chalkidiki. Thessaloniki is the second major economic centre of Greece and a transportation hub for Greece and southeastern Europe, through the Port of Thessaloniki. Chalkidiki lies in the southeast of Thessaloniki and is known for its nature, exquisite beaches and sites of great archaeological and religious interest, bordering with the Monastic Community of Athos which is classified by UNESCO's catalogue as a Monument of World Cultural Heritage.

In 2017 Central Macedonia recorded 1,192 hotels and a corresponding bed capacity of 90,727, thus accounting for 11.3% of Greece's total bed capacity (INSETE, 2018a). Out of the total bed capacity of Central Macedonia, a share of 54% (48,887 beds) corresponds to the Prefecture of Chalkidiki, while another 16% corresponds to the Prefecture of Thessaloniki (14,402 beds). Chalkidiki and Thessaloniki feature a higher percentage of 5* and 4* rated beds in their total capacity (48.5% and 46.9%, respectively), compared to most other Greek regions.

Tourism in Thessaloniki and Chalidiki has experienced fast growth over recent years. International Arrivals at the International Airport of Thessaloniki "Makedonia" reached 2.2 million in 2018, up by 12.3% as compared to 2017 (INSETE, 2019). The total increase in arrivals over the period 2013-2018 reached 60.2%. In 2017, visits to Central Macedonia represented 23% of Greece's total, with the corresponding share in terms of overnight stays and revenues amounting to 19% and 13%, respectively (Lamprou & Ikkos, 2018). In 2017, employment in the tourism sector in Central Macedonia exceeded 48 thousand persons, representing 7.7% of total employment in the region.

HRADF's programme in Central Macedonia concerns various assets in the Prefectures of Thessaloniki and Chalkidiki and one asset in the Prefecture of Serres (Table 7.2).

More particularly, in the Prefecture of Thessaloniki, the programme includes 2 large assets, the Military Air Base SEDES and two land plots in the coastal areas of Mikra and Peraia, 2 rundown seashore camping sites, the Modiano market in the historical centre of the city of Thessaloniki, a listed building in the old town of Thessaloniki and 5 sets of small land plots (39 in total) located close to the city of Thessaloniki. Total proceeds for the two assets for which the privatisation process has been completed (the Modiano market and the old town listed building) amount to €2,440,000 (0.4% of the total proceeds of HRADF's programme at the time of writing).

In the Prefecture of Chalkidiki, HRADF's programme includes 2 major land plots, one in Monodendri-Azapiko and one in Agios Ioannis, and a set of 5 smaller land plots in Neos Marmaras, in the Municipality of Sithonia, two major adjacent land plots in the area of Sani, the Xenia hotel and camping in Paliouri and 2 camping facilities in the Municipality of Kassandra, and 2 large land plots in Nea Herakleia and a land plot in Agios Mammas in the Municipality of Nea Propontida. Total proceeds for the five assets for which the privatisation process has been completed were €29,541,700 (4.9% of the total proceeds of HRADF's programme at the time of writing).

In the Prefecture of Serres, one asset is included in HRADF's programme, that is the Sintiki County Court for which the relevant process was completed in November 2016 for a price of €132,000.

In East Macedonia, HRADF's programme comprises three assets all of which are located in the Prefecture of Kavala. These assets are a major land plot in the area of Nea Iraklitsa and a large land plot in the area of Touzla, in the Municipality of Paggao, and a smaller land plot in Kalamitsa, in the Municipality of Kavala.

Table 7.2: HRADF's real estate programme in Thessaloniki

Asset	Description	Proceeds	Uses
Military Air Base SEDES	Land plot area: 1,360,000 m ² .		Mixed uses
Two land plots in "Mikra" and "Peraia" areas	Land plot in Peraia: 760,812 m ² , Land plot in Mikra: 652,110 m ² .		Residential uses- Theme park
7 land plots in "Ano Scholari" area	Land plots areas ranging from 350-995 m ² .		Residential uses
10 land plots in "Neoi Epivates" area	Land plots areas ranging from 457 - 557 m ² .		Residential uses
Ten land plots in "Nea Anhialos" area	Land plots areas ranging from 399 - 582 m ² .		Residential uses
8 land plots in "Kardia" area	Land plots areas ranging from 788 - 1,011 m ² .		Residential uses
4 land plots in "Trilofos"	Land plots areas ranging from 229 - 277 m ² .		Residential uses
Asprovalta camping	Land plot area: 297,357 m ² .		Camping
Agia Triada camping	Land plot area: 123,793 m ² .		Camping
Listed property in Thessaloniki Old Town	13, Theofilou str.	€540,000 (18/5/2015)	Urban uses
Modiano market in Thessaloniki city centre	Sale of 43.64% of ownership of Modiano Market.	€1,900,000 (18/7/2017)	Commercial uses

7.2.2.1 Properties in the Prefecture of Thessaloniki

The Military Air Base SEDES, is situated about 15 km from the centre of the city of Thessaloniki, on a land plot area of 1,360,000 m². It contains existing buildings and facilities that are currently used by the Hellenic Air Force. The property has been characterised as a military area, whose use and competence belongs to Hellenic Air Force.

The two non-adjacent seaside land plots in Mikra and Peraia are situated between the International Airport of Thessaloniki "Makedonia" and the coastal suburb of Peraia. The total area of the land plots is 1,412,922 m², i.e. 760,812 m² for the land plot in Peraia

and 652,110 m² for the land plot in Mikra. The Peraia property contains old and abandoned premises and facilities of the Hellenic Broadcasting Corporation ERT (built area of 2,655 m²). The development concept for the properties according to HRADF's property list, includes a theme park and residential uses. For the Peraia property, preparations for privatisation have been initiated and the privatisation approach is to be decided, following the pre-marketing assessment of the optimum model of exploitation and the assignment of technical and legal advisors.

The first of two camping sites included in HRADF's programme for Thessaloniki, is Agia Triada camping, a seaside property of a total land plot area of 123,793 m² located in the Municipality of Thermaikos, close to the city of Thessaloniki. The property features a long coastline and direct access to the Thessaloniki-Nea Michaniona National Road, but its facilities are old and derelict. The second camping site, Asprovalta camping, is a seaside property of a total land plot area of 297,357 m² located in the Municipality of Volvi, 85 km from the city of Thessaloniki. The facilities of the camping are abandoned and poorly maintained. For both properties, the development plan includes the upgrade and enhancement of their camping facilities.

The Central Food Market of Thessaloniki, known as Modiano Market, is a listed building located in the historical centre of the city of Thessaloniki. It was constructed in 1925 and constitutes a landmark of the city, while it is also connected to the history of the Jewish Community. In July 2017 the HRADF completed the sale of 43.63% of the indivisible ownership of the property to the preferred investor, for a total price of €1,900,000. The development plan for the property includes the renovation and enhancement of the historical building. The expected benefits from the project include the rescue of the monument, the revival of the central market of the city and the generation of synergies at the local level.

The 5 sets of small land plots included in HRADF's programme are located around the city of Thessaloniki, in the settlements of Ano Scholari, Trilofos and Kardia of the Municipality of Thermi, in Neoi Epivates in the Municipality of Thermaikos and in Nea Anhialos in the Municipality of Chalkidona. The surface areas of the land plots range from 229 m² to 1,011 m², and they are suitable for the development of residential uses.

7.2.2.2 Properties in the Prefecture of Chalkidiki

Municipality of Sithonia

In the Municipality of Sithonia, the land plot in Monodendri-Azapiko is a beachfront property of a total area of 291,619 m². An archaeological site has been identified inside the property, while parts of the property are protected areas according to the current General Urban Plan (Table 7.3).

Table 7.3: HRADF's real estate programme in Chalkidiki

Asset	Description	Proceeds	Uses
Beachfront land plot in Monodendri-Azapiko	Land plot area: 291,619 m ² .		Tourism-recreation
Beachfront land plot in Agios Ioannis	Land plot area 261,000 m ² .	€9,610,000 (26/6/2015)	Tourism
5 land plots in Neos Marmaras	Land plot areas ranging from 1,124-5,454 m ²	€3,100,700 (27/7/2017)	Residential-tourism uses
2 Land plots in Sani	Land plot areas 643,260 m ² , 271,840 m ² .		Tourism-recreation
Xenia & Camping Paliouri	Land plot area 322,572 m ² , Xenia Hotel 3.978 m ² .	€14,000,000 (8/5/2014)	Tourism
Possidi Camping	Land plot area: 250,423 m ² .		Tourism - recreation
Kryopigi Camping	Land plot area: 120,044 m ² .		Camping
Seaside land plot in Nea Herakleia	Land plot area: 27,231 m ² .		Recreation
Seaside land plot in Nea Herakleia	Land plot area: 44,070 m ² .	€2,000,000 (15/5/2014)	Tourism
Seaside land plot in Agios Mamas	Land plot area: 26.238 m ² .	€831,000 (5/5/2017)	Tourism

The land plot in Agios Ioannis is a beachfront property of a total area of about 267,355 m². According to the Strategic Environmental Impact Study and the ESHADA for the property, approved in January 2015, the property is divided into three Zones: Zone I for tourism and recreation uses (64,802 m²), Zone II for vacation home uses (125,060 m²) and Zone III for mild recreation uses (50,952 m²). The privatisation process for the property was completed in June 2015 for a price of €9,610,000. The development plan for the site involves an investment of over €40,000,000 for the construction of a 467 bed, 5* hotel (an investment of about €25,000,000) and a vacation village. A long process for the necessary permits for construction of the hotel has been completed recently, and works have been initiated. At the current stage of its construction, the project has created 70 new jobs. The investment is expected to generate a significant number of new jobs in the future, particularly in tourism, and it will also contribute to the promotion and upgrade of tourism activity in the region.

The 5 sets of plots in the seaside resort of Neos Marmaras have surface areas ranging from 1,124 m² to 5,454 m² and they are suitable for residential and tourism uses. The process for the sale of four of these land plots, with a total area of 11,250 m², was completed in August 2018, for a total price of €3,100,700, while for the fifth land plot litigation is pending.

Municipality of Kassandra

In the Municipality of Kassandra, the two major adjacent land plots located in the area of the major tourist resort of Sani, feature a total area of 915,100 m² (643,260 m² and 271,840 m²). The property is subject to strict environmental and archaeological restrictions and the ownership rights of HRADF have been disputed at court by employees of the Prison Farm of Kassandra, which was the previous owner of the property.

The Xenia Hotel and Camping in the area of Paliouri are situated on a land plot of 322,572 m². The property has a coastline of 1,300m and its facilities were the first tourist units established by the Greek National Tourism organisation in Chalkidiki. The development plan for the property included the renovation and upgrade of the listed vacant Xenia Hotel (3,978 m²) to a luxury standard, as well as the construction of vacation homes and hotel villas. The ESHADA for the property was issued in February 2014 (GG AAP 16/12.2.2014) and in May 2014 the HRADF completed the privatisation of the property for a total price of € 14,000,000. The investment for the development of the site is expected to reach €80,000,000, and the process for the necessary construction and archaeological permits has progressed. The project will generate a significant number of new jobs and will be an important addition to the high standard tourism facilities of the region.

Possidi Camping is a beachfront land plot with an area of 250,423 m², with camping facilities and supporting buildings of a total built area of 3,467 m². Archaeological sites, as well as forest areas of absolute protection, are identified inside the property. The property is suitable for the development of vacation homes, high quality hotels, restaurants and recreation areas, subject to the revision of the ESHADA originally issued in June 2014. The tender process for the privatisation of the property was initiated in December 2014 and was cancelled in September 2017.

The Kryopigi Camping is situated on a land plot area of 120,044 m² with camping facilities of a total built area of 1,036 m². The property is leased and its development plan refers to the upgrading and enhancement of its facilities.

Municipality of Nea Propontida

In the Municipality of Nea Propontida, the two large land plots in Nea Herakleia comprise seaside land plot areas of 27,231 m² and 44,070 m². The process for the sale of the second land plot was completed in May 2014, for a price of €2,000,000, and thus far the development of the site concerns beach facilities. The Agios Mamas seaside land plot, has a total area of 26,238 m² and the process for its sale was completed in May 2017 for a price of €831,000.

7.2.2.3 Properties in the Prefecture of Kavala

In Kavala, the property in Nea Iraklitsa consists of two adjacent seaside land plots with a coastline of 600 m and surface areas of 44,593 m² and 105,141 m² (Table 7.4). The land plot in Touzla, in the Municipality of Paggaio, is a seaside property with an area of 85,668 m², and the property in Kalamitsa is also a seaside land plot with an area of 8,000 m². For the latter two properties, the sale procedure was completed in 2015 for a total price of €1,850,000.

Table 7.4: HRADF's real estate programme in Kavala

Asset	Description	Proceeds	Uses
Seaside land plot in Nea Iraklitsa	Land plot areas: 44,592.91 m ² , 105,140.52 m ² .		Tourism
Seaside land plot in Touzla Paggao	Land plot area: 85,668 m ² .	€1,450,000 (26/6/2015)	Tourism
Seaside land plot in Kalamitsa	Land plot area: 8,000 m ² .	€400,000 (06/4/2015)	Tourism

7.2.3 Thessaly

In region of Thessaly, important tourist destinations are located in the villages of Mount Pelion (e.g. Makrinitza, Portaria, Millies) and in the Sporades Islands, Skiathos, Skopelos and Allonisos, all of which belong to the Prefecture of Magnesia. In 2017, Thessaly recorded 570 hotels and a total of 29,333 hotel beds, accounting for 3.6% of Greece's total hotel bed capacity. More particularly the Prefecture of Magnesia registered 9,390 beds and the Sporades islands accounted for 10,747 beds (INSETE, 2018a). Arrivals at Skiathos Airport reached 185 thousand in 2018, increased by 1.4% compared to 2017 (INSETE, 2019). The total increase in arrivals over the period 2013-2018 reached 55.4%. In 2017, employment in the tourism sector in Thessaly amounted to about 26 thousand persons, representing 10.6% of total employment in the region.

The HRADF's programme in Thessaly refers to seven assets in the Prefecture of Magnesia, and more particularly the Xenia Hotel in the island of Skiathos, 2 seaside land plots in the areas of Mavri Petra and Kala Nera, three listed mansions in traditional villages of mount Pelion, and a property inside the Industrial Area (VI.PE.) of Volos (Table 7.5). Total revenues for the five assets for which the process has been completed were €4,563,000 (0.8% of the total proceeds of HRADF's programme at the time of writing).

Table 7.5: HRADF's real estate programme in Magnesia

Asset	Description	Proceeds	Uses
Xenia Skiathos	Land plot area: 66,608 m ² . Hotel: 2,550 m ² .	€2,628,000 (19/5/2015)	Tourism-vacation homes
Seaside land plot in Mavri Petra	Land plot area: 7,787 m ² .		Tourism - recreation
Kala Nera	Land plot area: 38,108 m ² .	€1,030,000 (22/7/2015)	Tourism
Xiradaki Mansion, Makrinitza	Land plot area: 453 m ² . Built area: 440 m ² .	€417,000 (27/9/2016)	Tourism
Mousli Mansion, Makrinitza	Land plot area: 738 m ² . Built area: 632 m ² .	€290,000 (27/9/2016)	Tourism
Evangelinaki Mansion, Milies	Land plot area: 510 m ² . Built area: 390 m ² .	€198,600 (29/7/2016)	Tourism
Property inside the Industrial Area (VI.PE.) of Volos	Land plot area: 21,600 m ² , 18 metal SILOS (capacity of 50,000 MT).	e-auction VIII	Industrial uses

The seaside Xenia Skiathos hotel was built in 1963 in the area of Koukounaries beach, which is one of the most famous beaches in the Sporades Islands. It is located in a land plot area of 66,608 m², and includes built area of 2,550 m² with a capacity of 64

beds. The hotel has been partially characterised as a listed building, due to its distinct architecture and historic interest. According to the ESHADA issued in January 2015 (GG AAP 1/14.1.2015), the property was divided into the following zones: Zone I ($30,700\text{ m}^2$) for the development of a vacation village and the renovation of Xenia hotel ($2,543\text{ m}^2$) and Zone II for the protection of the natural environment ($35,277\text{ m}^2$). The tender process for the property was completed in May 2015, for a total price of €2,628,000. The investment was initiated in March 2018, following a long process for acquiring the necessary construction permits and approvals from the authorities and Ministries involved.

7.2.4 Central Greece

The HRADF's programme in the region of Central Greece includes 7 assets (Table 7.6), 6 of which are thermal springs. In Prefecture of Fthiotida, all five assets are part of a potential thermal spring cluster, while in the Prefecture of Evoia, one asset is the Aedipsos Thermal Spring and the other asset is the Limni Evoias County Court, the latter being the only property for which the privatisation process has been completed (in 2016 for a price of €170,690).

The region of Central Greece has a rich endowment of thermal springs. In 2005 it came first among the regions of Greece in terms of hydrotherapy tickets (740,508, representing 37.4% of Greece's total at the time), a lead that was lost progressively in the subsequent years, partly due to the aging of its main thermal spring facilities (only 89,012 tickets were recorded in 2015, representing 9.6% of Greece's total) (EKKE, 2017).

Table 7.6: HRADF's real estate programme in Central Greece

Asset	Description	Proceeds	Uses
Kamena Vourla Thermal Spring	Land plot area: $474,524\text{ m}^2$. Built area of $22,200\text{ m}^2$ including "Galini" Hotel (operating), 2 listed hotels, and 2 listed hydrotherapy centres (one operating).		Spa tourism-recreation
Thermal Spring & Koniavitis Camping	Land plot area: $789,272\text{ m}^2$, with abandoned camping facilities		Spa tourism-recreation
Thermopylae Thermal Spring	Land plot area: $674,000\text{ m}^2$. Built area: $4,057\text{ m}^2$, including 1 hydrotherapy centre and 2 hotels. An archaeological site is located within.		Spa tourism-recreation, theme park
Ypati Thermal Spring	Land plot area: $700,326\text{ m}^2$. Built area: $11,098\text{ m}^2$, including 3 listed hotels and 1 hydrotherapy centre (operates seasonally).		Spa tourism-recreation
Platystomo Thermal Spring	Land plot area: $785,398\text{ m}^2$. Built area: $11,194\text{ m}^2$, including 2 hotels and 1 hydrotherapy centre.		Spa tourism-recreation
Aedipsos Thermal Spring	Land plot area: $22,115\text{ m}^2$. Built area: $9,446\text{ m}^2$, including 1 listed hydrotherapy centre and 1 hydrotherapy complex.		Spa tourism-recreation
Property in Limni Evoias	Limni Evoias County Court.	€170,690 (9/11/2016)	Urban uses

The natural thermal springs of Central Greece have long been recognised for the therapeutic properties of their waters, which are recommended for the treatment of various medical conditions. The springs are located in areas of natural beauty and

historical interest, and in the past, they represented very popular destinations mainly for internal health tourism. The thermal spring assets include large land plot areas with hotel and hydrotherapy facilities that are mostly dated or abandoned. The development of most facilities seems to have been neglected over recent decades, but given their features and the increasing international interest for health and spa tourism, the properties present considerable potential for development.

Procedures for the development of Kamares Vourla Thermal Spring, the Thermal Spring & Koniavitis Camping and the Thermopylae Thermal Spring are expected to be launched in the following months. The HRADF has drafted proposed investment plans for the properties, which include the construction of 5* hotels and vacation homes, the development of luxury spa facilities, and the construction of a thematic historical park.

7.2.5 West Greece and Peloponnese

The regions of West Greece and the Peloponnese encompass important tourist destinations and sites great of archaeological and historical interest such as Olympia in the Prefecture of Ileia, Mycenae and Epidaurus in the Prefecture of Argolida and Mystras and Monemvasia in the Prefecture of Lakonia. In 2017 West Greece recorded 270 hotels and a corresponding bed capacity of 18,851 beds, out of which 8,220 beds (43.6%) were located in the Prefecture of Ileia (INSETE, 2018a). In Peloponnese, 659 hotels and 37,733 beds were recorded, respectively, with 10,816 beds (28.7%) located in the Prefecture of Argolida and 5,861 beds (15.5%) located in the Prefecture of Lakonia. West Greece and the Peloponnese have experienced considerable growth over recent years. International Arrivals at the Kalamata Airport reached 126.7 thousand in 2018, up by 4.2% as compared to 2017 (INSETE, 2019). The total increase in arrivals over the period 2013-2018 reached 118.7%. In 2017, visits to West Greece and Peloponnese represented 4% of Greece's' total, with the corresponding share in terms of overnight stays and revenues amounting to 3%, respectively (Lamprou & Ikkos, 2018). In the same year, employment in the tourism sector in West Greece and the Peloponnese amounted to about 18.0 and 20.5 thousand persons, respectively, representing 8.5% and 10.0% of the corresponding total employment of these regions.

The HRADF's programme in the regions of West Greece and Peloponnese consists of 14 properties located in the Peloponnese peninsula (Table 7.7). More particularly, it includes five large seaside land plots, in the areas of Vartholomio, Porto Heli, Kato Glykovryssi, Karathona and Sampariza, the Thermal Springs of Kyllini, a land plot next to the Rio-Antirrio Bridge, three properties in the cities of Patras, Kalamata and Nafplio, three County Court buildings in the settlements of Kleitoria, Andritsaina and Messini, and a 50-year lease of a land plot in Gortynia. Privatisation procedures have been completed for six of the properties, out of which the properties in Kalamata and Messini were sold for a total price of €1,280,000, the property in Gortynia was leased for 50 years for a rent of €16,600 per year, and the properties in Patra, Sampariza and Nafplio were sold via e-auction VIII, the total proceeds of which amounted to

€8,821,700 (including the proceeds from the above mentioned properties of VI.PE. of Volos and Hnioshos hotel).

Table 7.7: HRADF's real estate programme in West Greece and Peloponnese

Asset	Description	Proceeds	Uses
West Greece			
Seaside land plot in Vartholomio	Land plot area: 952,173 m ² .		Tourism-recreation-golf course
Kyllini Thermal Spring	Land plot area: 1,380,000 m ² . Built area: 77,763 m ² . Leased until 2050.		Spa tourism-recreation
Land plot in Antirrio	Land plot area: 189,544 m ² (exploitable area: 145,897 m ²).		Conference centre - logistics
Partially listed property in Patras	8, Ag. Nikolaou str, Patras.	e-auction VIII	Urban uses
Property in Kleitoria	Former local Court.	e-auction VIII	Residential-commercial uses
Property in Andritsaina	Former local Court.	e-auction VIII	Residential-commercial uses
Peloponnese			
Seaside land plot in Porto Heli	Land plot area: 627,418 m ² .		Tourism-recreation
Seaside land plot in Kato Glykovryssi	Land plot area: 600,000 m ² .		Tourism-recreation
Seaside land plot in Karathona	Land plot area: 425,211 m ² .		Tourism-recreation
Seaside land plot in Sampariza	Land plot area: 171,043 m ² (two land plots of 157,753 m ² and 13,290 m ²)	e-auction VIII	Tourism-recreation
Property in Nafplio	Old Town of Nafplio.	e-auction VIII	Urban uses
Property with listed buildings in Kalamata	11-13, Aristomenous str. & Kolokotroni str.	€1,050,000 (15/12/2017)	Urban uses
Property in Messini	Messini County Court.	€230,000 (15/04/2016)	Residential-commercial uses
Land plot in Gortynia	Next to Sanatorio Mana listed building.	e-auction VIII €16,600 p.a. (21/5/2015)	Tourism

The land plot in Vartholomio is a beachfront property with a surface area of 952,173 m² and a coastline of 2,000 m. The property is located in the west coast of the Peloponnese, in a distance of 11km from the port of Kyllini, and 35km from the port of Katakolon, a popular cruise destination due to its close proximity to the archaeological site of Olympia. A large part of the property is covered by sand hills, while parts of the property have been characterised as forest and reforestation areas. The suggested uses for the property include vacation homes, a hotel and an 18-hole golf course of international standards. The development of the property would be expected to make a major contribution to the supply and quality of tourism facilities and infrastructures in the area.

The land plot in Porto Heli is a seaside property with a surface area of 627,418 m² and a long coastline. The property is located in Ververonta area of Porto Heli, in the Prefecture of Argolis. Porto Heli is a popular and cosmopolitan tourist destination and has highly developed tourism infrastructures and yachting facilities. The suggested uses for the property are its development in two separate zones, a zone suitable for tourism and leisure facilities (hotel, 9-hole golf course), and a zone that may include a

type B Airport. A tender procedure for the exploitation of the property was initiated by the HRADF in December 2015, but it was subsequently suspended in May 2016.

The land plot in Sampariza is a seaside property of 171,043 m², situated in the Prefecture of Argolis, in close proximity to the area's tourist resorts. The tender process for the sale of the property was launched in June 2014 and was completed in March 2018. The development concept for the project was the construction of vacation homes. The land plot in Karathona is situated in a unique location, next to the main beach of the city of Nafplio, a major tourist destination in the Prefecture of Argolis. The land plot features a surface area of 425,211 m² with a coastline of 1,480 m and a panoramic view to the bay of Argos. The land plot in Glykovryssi has an area of 600,000 m² and a coastline of 1,600 m, and is situated in the south of the Peloponnese, in the Prefecture of Lakonia.

Given their size and location, the above properties present great potential for the development of tourist facilities. However, procedures for their privatisation have been completed recently only for the property in Sampariza.

The Kyllini Thermal Spring property is situated on a land plot area of 1,380,000 m². The property is leased until 2050 and includes a prime tourist complex with 4 hotels, a hydrotherapy centre, a conference centre and sport and other supporting facilities of a total built area 77,763 m². The ownership of the thermal natural source and the forest areas inside the property are excluded from privatisation.

The property in Antirrio is a land plot of 189,544 m² (exploitable area: 145,897 m²), located next to the Rio-Antirrio bridge. Its development concept includes a conference centre and logistics facilities.

7.2.6 Ionian Islands

The Ionian Island region includes some of the most important tourist destinations in Greece, many of which are located in the islands of Corfu, Kefallonia and Zakynthos. The region is known for its beaches, traditional villages and cultural heritage. The Old Town of Corfu has been listed as an UNESCO World Heritage Site since 2007. In 2017, visits to the Ionian Islands represented 10% of Greece's total, with the corresponding share in terms of overnight stays and revenues amounting to 12% (Lamprou & Ikkos, 2018). Employment in the tourism sector in the Ionian Islands reached 19.4 thousand persons in 2017, representing 26.5% of total employment in the region. In the same year, the Ionian Islands registered 933 hotels and 93,440 hotel beds, thus accounting for 11.6% of Greece's total hotel bed capacity (INSETE, 2018a). Out of the total hotel bed capacity of the Ionian Islands, a share of 49.2% (45,952 beds) corresponds to the island of Corfu. Tourism in Corfu has experienced fast growth over recent years, with International Arrivals at the Corfu Airport reaching 1.5 million in 2018, up by 15.6% as compared to 2017 (INSETE, 2019). The total increase in arrivals over the period 2013-2018 reached 58.4%.

The HRADF's programme in the Ionian Islands includes 4 properties in the island of Corfu, and more particularly a large set of smaller seaside properties in the area of Erimitis in Kassiopi, the monument and surrounding land plot area of Castello Bibelli and a large seaside land plot in Lefkimmi (Table 7.8).

Table 7.8: HRADF's real estate programme in the Ionian Islands

Asset	Description	Proceeds	Uses
Corfu			
Seaside land plot in Kassiopi	Land plot area: 438,229 m ² .	€23,000,000 (29/12/2016)	Tourism-recreation
Seaside land plots in Kassiopi	15 smaller properties within the Kassiopi estate.	€2,050,000 (18/04/2018)	Tourism
Seaside land plot in Lefkimmi	Land plot area: 90,858 m ² . Only part of the property is buildable (two non-adjacent parts of 9,700 m ² and 5,000 m ²).		Tourism-recreation
Castello Bibelli	Land plot area: 83,844 m ² (area to be developed: 77,019 m ²). Built area: the monument of Castello (1,835 m ²) and 4 auxiliary buildings (458 m ²).		Tourism-recreation

The large estate in the area of Erimitis in Kassiopi consists of a seaside land plot of about 438,229 m², located 38 km north east of the city of Corfu, in a coastal area of particular natural beauty. According to the ESHADA issued in November 2013 (GG AAP 406/15.11.2003), the property is divided into two zones of uses: Zone I (about 182,000 m²) for the development of a hotel and vacation village and Zone II (265,000 m²) for the protection of the natural environment. The tender process for the property was launched in March 2012 and was completed in December 2016, for a total price of €23,000,000. An additional tender for the sale of smaller properties within the Kassiopi estate was completed in April 2018, for a price of €2,050,000. The development plan for the properties includes construction of a mixed-use tourist resort in two phases, involving a total investment of over €100,000,000. The first phase of the project will include the construction of a luxury hotel with 90 rooms, expected to be completed in 2021, while the second phase will include the construction of 40 vacation homes. The project is expected to be initiated in the first half of 2019, following completion of the licensing procedures, which were delayed due to litigations. The expected economic benefits from the project include the creation of new jobs, the upgrade of tourism infrastructures and the encouragement of sustainable tourism growth in the region.

The Castello Bibelli property in Kato Korakiana is situated 14 km from the city of Corfu, on a land plot of 83,844 m² (exploitable area 77,019 m²). The asset includes the listed historical monument of Castello (1,968), built in 1900, and 4 auxiliary buildings (458 m²), three of which are listed. The development of the property will be realised through the sale of the rights of ownership of part of the property and a surface right on Castello. According to the ESHADA issued in August 2017 (GG AAP 186/21.8.2017), the property is divided into two zones of uses: Zone I (16,610 m²) for tourism and recreation uses and Zone II (60,409 m²) for the construction of vacation homes. The project will include the restoration of the historical monument. The tender process for the property was launched in June 2017 and is currently in progress.

The property in the area of Agios Eleftherios in Lefkimi, is located in the south end of the island of Corfu and consists of a land plot area: of 90,858 m². Only part of the property can be built (two non-adjacent parts at its edges, of 9,700 m² and 5,000 m² each).

7.2.7 South and North Aegean

The Aegean Islands comprise some of the most emblematic tourist destinations in Greece, such as Mykonos and Santorini in the Cyclades island complex, and Rhodes in the Dodecanese island complex. The islands are known for their beaches, architecture, archaeological and historical sites and characteristic natural environment. The Old Town of Rhodes has been listed by UNESCO as World Heritage Site since 1988.

In 2017, visits to the South Aegean islands represented 19% of Greece's total, with the corresponding shares in terms of overnight stays and revenues amounting to 22% (first position among Greek regions) and 26%, respectively (Lamprou & Ikkos, 2018). Employment in the tourism sector in the South Aegean exceeded 32 thousand persons, representing 25.3% of total employment in the region. In the same year, the South Aegean Islands registered 2,097 hotels and 205,073 hotel beds, thus accounting for 25.4% of Greece's total bed capacity (INSETE, 2018a). Out of the total bed capacity of the South Aegean Islands, a share of 44.3% (90,940 beds) corresponded to the island of Rhodes. Tourism in South Aegean islands has experienced considerable growth over recent years, with International Arrivals at the Rhodes Airport reaching 2.4 million in 2018, up by 7.3% as compared to 2017 (INSETE, 2019). The total increase in arrivals over the period 2013-2018 reached 30.9%

The HRADF's programme in the South Aegean includes five properties, the major property in Afandou, the large property in Koskinou and the former Sanatorium of Agia Eleousa in the island of Rhodes, the Thermal Springs of the island of Kythnos and the 4*hotel Leto in the island of Mykonos (Table 7.9).

Table 7.9: HRADF's real estate programme in South and North Aegean

Asset	Description	Proceeds	Uses
Rhodes			
Afandou	Land plot area: 1,527,000 m ² and 323,000 m ² .		Tourism- recreation
Two adjacent land plots in Koskinou	Land plot area: 213,000 m ² .	€4,242,000 (25/6/2018)	Tourism- recreation
Former Sanatorium of Agia Eleousa	Land plot area: 2,589 m ² , Built area: 1,325 m ² .		Tourism
Cyclades			
Xenia Hotel & Thermal Spring, Kythnos	Land plot area: 7,200 m ² . Built area 4,685 m ² .		Spa tourism
Hotel in Mykonos	Leto 4* hotel.	€16,901,123 (04/5/2017)	Tourism
North Aegean			
Katsaneio, Lesvos		€405,000 (30/12/2016)	

The Afandou asset consists of two neighbouring beachfront land plots (North Afandou or Afandou Golf and South Afandou) located in the Afandou area of the Island of Rhodes. The combined surface of the land plots is 1,858,000 m² with a coastline of approximately 7km. Part of the asset (450,000 m²) encompasses an 18-hole Golf course operating since 1973. The asset is very close to the main highway of the island and in close proximity to important tourist destinations, while its distance from Rhodes International Airport and the City of Rhodes is 20km. Currently, only one 5* and one 4* Hotel are operating in the Afandou beach area, while the majority of the tourist accommodation is provided by guest rooms, villas and studios.

The tender process for the sale of the Afandou asset was launched in February 2013 and the preferred investors were declared in July 2014 on the basis of offers of €26,900,000 for North Afandou and €15,023,000 for South Afandou. The ESHADA for the asset was published in September 2016 (GG AAP 180/14.9.2016) and divided North Afandou into five Zones: Zone I for tourism and recreation uses (899,717 m²), Zone II for the development of a vacation village (142,286 m²), Zone III for the protection of the natural environment (66,051 m²), Zone IV for the protection of a wetland (10,540 m²) and Zone V for the protection of an archaeological site (209,400 m²). Furthermore, the ESHADA divided South Afandou into two Zones: Zone I for tourism and recreation uses (196,099 m²) and Zone II for the development of a vacation village (59,664 m²). However, according to a ministerial decree issued in April 2016 (GG AAP 70/21.4.2016) the whole property and its wider area were characterised as an archaeological site. In an effort to resolve the issue and move forward with the completion of the tender, a Memorandum of Cooperation and Understanding between the HRADF and the Ministry of Culture was signed in December 2017, with a view to performing cuts and incisions on the site. The cuts and incisions were completed in August 2018, and in October 2018 it was announced that the findings do not compromise the investment plans for the site. Thus, procedures for the completion of the remaining requirements for the closure of the transaction (including an administrative act for the concession of the coastal area and use of the coastal area) are currently under way.

The development plan for Afandou includes large scale investments for the construction of 5* hotel units, villas, a marina and a heliport, as well as the renovation and upgrade of the existing golf facilities. The investment is expected have major benefits in terms of the creation of new jobs, the attraction of high-income tourists and the extension of the tourist season, more so because golf facilities attract visitors out of the peak summer months.

The property in Koskinou consists of two adjacent land plots of a total area of 213,000 m² with easy access to the beach and excellent view to the eastern beaches of the island. The privatisation procedure for the property was completed in June 2018, for a price of €4,242,000.

The Xenia hotel and Thermal Springs of Kythnos island are situated on seaside land plot area of 7,200 m², with a total built area of 4,685 m². The hotel has a capacity of

96 beds and the facilities of the property include a listed hydrotherapy centre and an old unfinished two-storey building. The ownership of the thermal natural source remains with the Greek State and has not been transferred to HRADF. Investment plans for asset include the renovation and upgrade of the property, which will contribute to the development of tourism in the island. The tender process for the privatisation of the property is ongoing.

7.2.8 Crete

The island of Grete has rich cultural heritage and dynamic economic presence in several sectors, including tourism and the agro-food industry. Crete is the location of many important tourist destinations and sites of great historical and religious interest, including the archaeological sites of Knossos and Phaestos in the Prefecture of Heraklion. In 2017 Crete registered 1,577 hotels and a corresponding bed capacity of 174,275 beds, representing 21.6% of the total bed capacity of Greece (INSETE, 2018a). More particularly, in the same year the Prefecture of Heraklion accounted for 70,900 beds (40.7% the island's total). Crete has experienced considerable tourism growth over recent years, with International Arrivals at Heraklion and Chania Airports in 2018 reaching 3.4 million and 1.2 million, respectively (INSETE, 2019). The total increase in arrivals over the period 2013-2018 reached about 37% in both Airports. In 2017, visits to Crete accounted for 15% of Greece's total, with the corresponding share in terms of overnight stays and revenues amounting to 19%, and 23%, respectively (Lamprou & Ikkos, 2018). Employment in the tourism sector in Crete exceeded 35.1 thousand persons in 2017, representing 14.9% of total employment in the region.

The HRADF's programme in Crete includes the Former American Base in Gournes, in the Prefecture of Heraklion, and land plots in Koutsounari area, near Ierapetra in the Prefecture of Lasithi.

Table 7.10: HRADF's real estate programme in Crete

Asset	Description	Proceeds	Uses
Former American Base in Gournes, Heraklion	Gouves area, Hersonissos Municipality, Land plot area: 738,000 m ² . Exploitable area: 349,792 m ² .		Mixed uses
Land plots in Koutsounari, Ierapetra	Land plot areas: 4,994m ² , 7,782 m ² , 4,284 m ² . The properties are located inside an Area of Special Protection.		Tourism-recreation

The property of the Former American Base in Gournes is situated in the Municipality of Hersonissos and consists of two land plots, a beachfront land plot of approximately 316,000 m² and one more land plot of approximately 30,000 m². The surrounding area of the properties has a significant growth potential for tourism and residential development, concentrating several infrastructures in its vicinity, such as the International Exhibition Centre, the Cretaquarium, the University of Crete, the Science and Technology Park of Crete, the International Airport "Nikos Kazantzakis", luxury hotels and a golf course. A tender procedure for the privatisation of the asset was launched in August 2014, and was subsequently cancelled. An update of the ESHADA for the property was completed in 2018 and will be finalised following a process of

public consultation. The ESHADA provides for the development of mixed uses in two zones: Zone I (29,113 m²) for the construction of a theme park, a shopping mall and recreation facilities and Zone II (316,454 m²) for the development of tourism and recreation facilities, including the construction of luxury hotels, vacation homes and tourist infrastructures.

The properties in the area of Lake Louridi in Ierapetra are three seaside land plots with surfaces of 4,994 m², 7,782 m² and 4,284 m². The properties are located inside an Area of Special Protection.

7.2.9 Other real estate properties

Sale & Leaseback A, B

The *Sale & Leaseback A, B* programmes referred to the sale of a portfolio of 28 public properties (total area of 382,649 m²), housing 8 Ministries and General Secretariats (Ministry of Culture-2, Ministry of Internal Affairs Main Building, Ministry of Justice, Ministry of Health, Ministry of Education, General Secretariat of Information Systems, Secretariat General of Mass Media), 13 tax offices (Athens A', IZ', IO, Korinthos, Chalkida B', Stavroupoli, Alexandroupoli, Ag. Anargiroi, Pallini, Glyfada, Cholargos, Kifissia, Xanthi A & B), Xanthi Chemical Laboratory, 4 police headquarters (Hellenic Police Forensic Science Division, Police Headquarters Thessaloniki, Serres Police Headquarters, Police Headquarters Attika), ELSTAT, Immigration Attica and Greek General Chemical Laboratory. The properties were sold and leased by the Greek Government for 20 years. The total proceeds from the sale amounted to €261,310,000 (43.8% of the total proceeds of HRADF's programme at the time of writing). However subsequently, a dispute emerged as to whether this transaction was to the best interests of the Hellenic State, and the issue was brought to court. Reasons for the dispute, were related to the higher objective (tax) value of the assets, the duration of the lease period and the obligations undertaken by the Greek State for the 20-year lease (amount of rent and obligation to cover maintenance expenses), and the fact the Greek State was only granted an option to buy back the assets at market value at the end of the 20-year lease period.

Real estate properties abroad

Ten public buildings in London, New York, Washington, Rome, Brussels, Belgrade, Dusseldorf, Tashkent, Erevan and Ljubljana, were sold for a total of €194,003,684€ (9.2% of the total revenues) and one more property in Pretoria is included in HRADF's programme.

7.3 Assessment – expected results

7.3.1 Revenues from real estate assets privatisation programmes

On the basis of a recent Summary Activity Report of the HRADF (March 2012-July 2018), total proceeds from real estate asset privatisations have reached the amount of €596.9 million.

From the categorisation of proceeds according to the region/type of privatisation programme (Table 7.11), it is evident that a large share of the total proceeds was contributed by the Sale & Leaseback programmes A, B (43.8%) and the privatisation of properties in the region of Attica (32.5%). Furthermore, significant contributions to the proceeds came from the sale of real estate properties abroad (9.2%) and the privatisation of properties in the regions of Central Macedonia (5.4%), the Ionian Islands (4.2%) and the South Aegean (3.5%).

Table 7.11: HRADF's real estate privatisation assets/programmes by region

	Region/programme	Number of assets/programmes		Proceeds	
		Planned	Completed	(€)	% of total
1	Attica	18	10	194,003,684	32.5
2	Central Macedonia	22	8	32,113,700	5.4
3	East Macedonia & Thrace	3	2	1,850,000	0.3
4	Thessaly	7	5	4,563,600	0.8
5	Central Greece	7	1	170,690	0.0
6	West Greece	6	-	-	-
7	Peloponnese	7	2	1,280,000	0.2
8	Ionian Islands	4	2	25,050,000	4.2
9	South Aegean	5	2	21,143,123	3.5
10	North Aegean	1	1	405,000	0.1
11	Crete	2	-	-	-
12	Epirus	1	1	210,000	0.0
13	Sale & Leaseback A, B	2	2	261,310,000	43.8
14	Real estate properties abroad	11	10	54,840,317	9.2
	Total	99	48	596,940,114	100.0

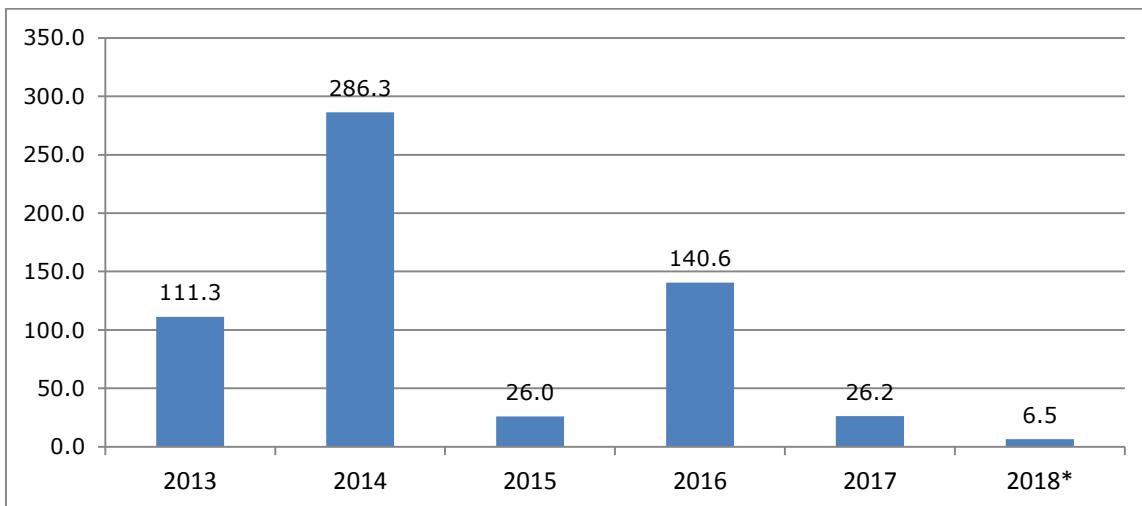
*Motorway Supporting Area 8: lease, 28,530.34€ per year (30years), Sanatorio Mana Boutique Hotels 16,600€ per year (50 years) not included

Source: Hellenic Republic Asset Development Fund. Summary Activity Report March 2012-July 2018.

With respect to the distribution of proceeds across the period of implementation of the privatisation programme, large variations were recorded from year to year, with the highest amount of revenues thus far observed in year 2014. More particularly, as illustrated in Figure 7.1, a share of 18.7% of the total proceeds of the period were registered in 2013, mainly due to privatisation of IBC-Golden Hall, 48.0% of the proceeds were realised in 2014, as a result of the completion of the Sale & Leaseback programmes A and B, while 23.6% of the proceeds were recorded in 2016, the year of privatisation of Astir Vouliagmenis and the land plot in Kassiopi in Corfu.

According to the State budget for 2019, the revenues of the real estate privatisation programme are projected to reach €334.6 million, out of which €300 million refer to the project of Hellinikon.

Figure 7.1: HRADF's real estate privatisation proceeds by year



*Up to July 2018

*Motorway Supporting Area 8: lease, 28,530.34€ per year (30years), Sanatorio Mana Boutique Hotels 16,600€ per year (50 years) not included

Source: Hellenic Republic Asset Development Fund. Summary Activity Report March -July 2018.

7.3.2 Assessment of the privatisation process

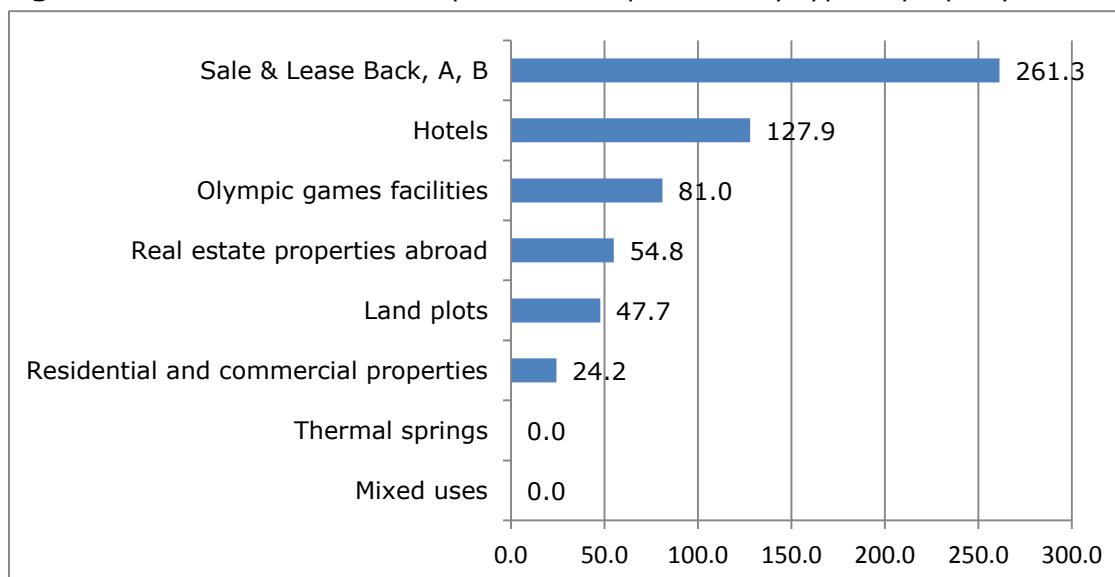
As it may be evident from the above overview of the privatisation process, the progress achieved thus far is related to the nature and size of the real estate properties comprising HRADF's portfolio. More particularly, according to their characteristics, the properties can be distinguished in the following eight categories: 1) Large land plots for mixed-use development, 2) Land plots for the development of tourism, recreation and residential uses, 3) Hotels, 4) Thermal springs, 5) Olympic Games facilities, 6) Smaller properties for urban, residential, tourism and commercial uses, 7) Assets of the Sale & Leaseback programmes A, B and 8) Real estate properties abroad.

1) Land plots for mixed-use development

This category refers to the property of Hellinikon and the large land plots of the Military Air Base SEDES and the Former American Base in Gournes. The procedures for the privatisation and development of properties of this scale has proved particularly challenging for many reasons which rendered very complex the achievement of their legal and technical maturity. As illustrated by the case of the asset of Hellinikon, the completion of the tender procedures for such assets can take a long period of time and is subject to various conditions and decisions from different authorities. Furthermore, even after the completion of tender procedures, the actual initiation of investments for the development of such assets can take even longer, due to additional requirements for the technical maturity of the projects, the acquisition of necessary licences, and the completion of judgments of judicial authorities on applications for annulment. Given these difficulties, and despite the fact that, aside from the asset of the Military

Airbase of SEDES, the other two assets in this category did not present fundamental legal obstacles to their development, thus far no revenues have been registered from their privatisation (see Figure 7.2). According to the Government budget for 2019, the economic closure of the privatisation of Hellinikon is expected in 2019 and the first instalment of the proceeds, amounting to €300 million, is expected to be received in the fourth quarter of the year.

Figure 7.2: HRADF's real estate privatisation proceeds by type of property



*Motorway Supporting Area 8: lease, 28,530.34€ per year (30years), Sanatorio Mana Boutique Hotels 16,600€ per year (50 years) not included

Source: Hellenic Republic Asset Development Fund. Summary Activity Report March -July 2018.

2) Land Plots for the development of tourism, recreation and residential uses

This category refers to land plots located in major tourism destinations in Greece, most notably in Chalkidiki, Corfu, Rhodes and Peloponnese. Most of these properties are large in size and are located on the seaside, while many of them include areas of archaeological interest, forest land and other areas of protected natural environment. Consequently, their privatisation and development have been subject to lengthy procedures and delays associated with the completion and finalisation of the relevant Strategic Environment Impact Studies and ESHADA, inspections and clearance by archaeological authorities, completion of judgements of judicial authorities on applications for annulment, etc. As a result, out of the 32 assets which can be identified in this category, privatisation procedures have been completed only for 12 assets, with corresponding total proceeds of €47.3 million. Works for the development of these assets have been initiated in a small number of cases.

3) Hotels

This category refers to the property of Astir Vouliagmenis and 4 hotels in Athens, Chalkidiki, Skiathos and Mykonos. Given that these properties included buildings with pre-existing construction licences, the requirements for their privatisation were less demanding, with the exception of Astir Vouliagmenis where due to the size and characteristics of the property and its development plan, the process included issuing

of an Environmental Impact Study and ESHADA. Overall, privatisation of all 5 properties in this category was successful, with corresponding total proceeds amounting to of €127.9 million.

4) Thermal springs

This category refers to 8 properties with Thermal Springs, six of which constitute a potential Thermal Spring cluster in Central Greece. Procedures for the preparation of necessary legal and technical requirements in view of a future initiation of tenders for 3 of the assets in Central Greece are progressing, but given the characteristics of these properties (large land plot areas, listed buildings, forest areas, archaeological zones), issues similar to those encountered in the case of large land plot privatisations are likely to arise. Moreover, the success of any tenders launched in the future for these assets, will depend on investor interest. Overall, so far, a tender process for privatisation in this category of assets has been launched only for the Xenia Hotel & Thermal Spring in Kythnos island.

5) Olympic Games facilities

This category refers to 3 large facilities in the region of Attica, constructed for the Athens 2004 Olympic Games, that is the IBC, the Markopoulo Olympic Equestrian Centre and the Schinias Olympic Rowing Centre. Tender procedures for the privatisation the IBC property progressed rapidly, as legal and technical maturity requirements for its sale were minimal, since the property was an existing building complex already housing a large shopping mall. Nevertheless, a long process for the approval of environmental terms and spatial planning requirements for the project was to follow, representing one more example of the legal and administrative difficulties encountered in the development of large assets. For the other two Olympic Games assets, challenges for fulfilling the necessary legal and technical maturity requirements for launching privatisation procedures lie ahead, given the large size of their land plots and environmental and archaeological issues. So far privatisation revenues in this category equal the proceeds of €81.0 million from the privatisation of IBC.

6) Smaller properties for urban, residential, tourism and commercial uses

This category refers to a total of 37 assets comprising buildings in urban centres or smaller settlements, some of which are listed, small land plots, the Modiano food market in Thessaloniki, land plots next to motorways and the Rio-Antirrio bridge, and a land plot in VI.PE. Volos. Procedures for the privatisation of these assets were generally easier to implement given their size and legal status, and hence, given high investor interest, privatisations have been completed for 25 of these assets, yielding a total of €24.2 million in proceeds.

7) Assets of Sale & Leaseback programmes A, B

The *Sale & Leaseback A, B* programmes were completed within a short time frame, since they comprised the sale of 28 public buildings occupied by public authorities. The total proceeds from this programme amounted to €261.3 million, but whether this transaction was to the best interests of the Hellenic Republic was subsequently disputed, and the issue was brought before court.

8) Real estate properties abroad

The procedures for the sale of 11 buildings abroad progressed since 2013 and 10 assets have been sold so far for a total of €194.0 million

7.3.3 Assessment of the expected impacts

As already discussed in the overview of the asset privatisation and development plan provided in this chapter, for a large share of the properties included in HRADF's programme, privatisation procedures are either pending or in progress. Furthermore, for the larger assets for which tender procedures have been concluded the development of the properties has either not started or has not been completed. Hence, thus far, the only obvious effects of the privatisation programme concern the revenues received, as presented above. Nevertheless, and as discussed in more detail in the previous description of individual assets, the development plans, particularly for the larger assets, can be expected to have significant positive economic effects, both during the period of construction of infrastructures and facilities, and more so, during their operation.

More particularly, since the larger part of the programme consists of assets and projects related to the tourism sector, with the majority of these assets being located in prime locations and main tourism destinations, it can be expected that the programme will contribute to the development of superior tourism facilities that will attract visitors to Greece and will generate a significant amount of income and new jobs in tourism and related activities. Notably, for some projects, the creation of integrated tourism resorts including specialised facilities (e.g. golf courses, conference centres, theme parks, villas, casino etc.) may be particularly helpful in attracting high income new visitors and extending the tourist season. Furthermore, investments in neglected Thermal Spring assets can help to reverse the downward trend in Thermal Spring services in Greece and take advantage of the increasing international interest for health and spa services.

The benefits from the tourism development projects, can be identified both at the local level, through synergies with other local facilities and businesses, and for the larger projects, at the national level, through the enhancement of the image of Greece as a tourist destination. Benefits at the local/regional level can be identified both for the assets located in already developed tourist destinations, and for projects in regions with less developed tourism activity (e.g. Central Greece) where the impact for local communities can be very visible. According to Athanassiou et al (2014), an increase of

€1 million in the demand for hotel and restaurant services in Greece, can generate total direct and indirect benefits of €2.5 million for the GDP and 33 new jobs for employment. Of course, the actual effects of individual projects on regional and national growth and employment will depend on their scale, as well as on the extent to which new hotels and tourism facilities will hire locally and will develop links with local suppliers from a wide range of economic sectors incorporated in the tourism value chain.

The fixed capital investment required for the development of the real estate assets included in the privatisation programme, can make a substantial contribution to investment growth in Greece, while at the same time will help in enhancing the overall investment climate in the country. Since in most cases, large projects will be funded partly or entirely through Foreign Direct Investment (FDI), the projects may also yield benefits that can be generated through FDI. Indicatively, in the case of FDI for projects in tourism, such benefits may include improved branding and networking with tour operators, diffusion of skills, product diversification, and better environmental and financial management (UNCTAD, 2007).

Further to the above, the development of the assets included in the privatisation programme in some cases involves the maintenance or rescue of historical buildings or facilities that remain unused and are gradually deteriorating. Such projects may have positive effects at the local level, through the development/renovation and utilisation of the relevant assets, as well as benefits from the fiscal side, through savings of public resources for their maintenance and through the prevention of the assets' further depreciation.

Finally, to the main benefits from the development of the privatised assets, one should include the fiscal revenues from the direct and indirect taxation of the economic activity and wealth that will be generated from the projects and the operation of the relevant facilities.

Of course, apart from benefits, it must be noted that privatisations may also give rise to risks and costs. Notably, constructions or other interventions, particularly in unspoilt locations, may generate environmental risks or a deterioration of the natural environment, or may compromise archaeological sites. This concern highlights the importance of careful spatial planning of the assets and environmentally responsible development and operation of the relevant projects.

7.3.4 Policy implications

Given the progress of privatisations to this date, and the important benefits expected to arise from the development of the real estate assets included in HRADF's programme, it is evident that intense efforts must continue in the direction of completing necessary procedures and overcoming obstacles which stand in the way of the larger privatisation projects.

More particularly, for projects for which privatisation procedures have not been initiated, adequate preparation to secure legal maturity and provide and a clear and final spatial delineation of property uses, seems to be an important prerequisite for successful completion of tenders and transactions. For projects for which privatisations have been completed but additional administrative approvals are required for their development, overcoming challenges related to remaining structural inefficiencies of the public administrative mechanism and delays in the administration of justice can play a key role in expediting the initiation of the related investments. Although it is understandable that the planning and licensing procedures for complex and environmentally challenging projects can be time consuming, higher prioritisation of these projects and improved co-ordination on the part of the authorities responsible for granting relevant permits and approvals (e.g. urban planning, environmental, archaeological, judicial authorities) can be very helpful in avoiding unnecessary delays.

8. PRODUCT MARKET LIBERALISATION OF UPSTREAM SECTORS

8.1 *Introduction*

Recent decades have seen a remarkable increase in the number of product market reforms in the European Union. Such reforms have been carried out in many countries albeit from a different starting point and to a different degree. The main reason for promoting changes in product markets has been the strengthening of competition and further boost of productivity and competitiveness of countries. Economic theory suggests that competition in product markets results in higher productivity through reallocation of market shares to most efficient businesses. This can be accomplished by forcing exit of less productive firms and by allowing more efficient ones to enter the market. In addition, recent models predict that long run economic growth is primarily driven by innovation, which in turn is strongly influenced by low market regulation (Alesina et al., 2005; Aghion et al., 2005).

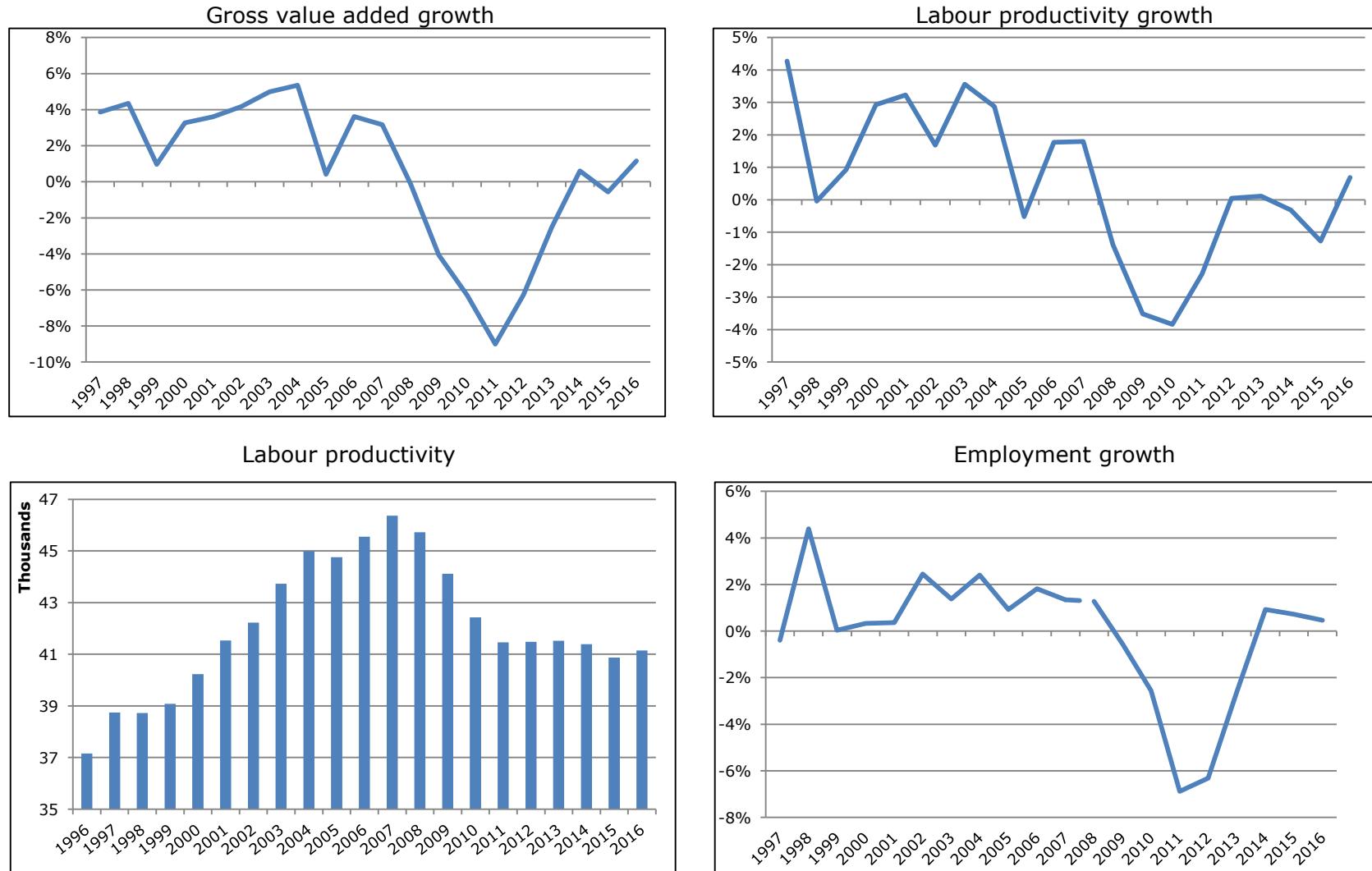
The key question that arises is whether and to what extent have such changes been successful in member countries. Although it is a common belief that policies favouring competition raise productivity, the influence of lower regulation is still an open issue which depends on country specific characteristics and may be subject to non linearities. In fact, there has been little attempt to study whether the effects of market regulation differ among countries with different economic and institutional background.

Motivated by these considerations, we try to fill this gap by exploring the total factor productivity (TFP) growth impact of upstream regulation across industries of the Greek economy. Greece constitutes a particularly interesting case study. Though it belongs to the group of developed economies, many of its institutional aspects resemble those of middle-income economies, while its levels of productivity lag significantly behind those of leading EU economies. Figure 8.1 illustrates the evolution of value added growth, labour productivity, labour productivity growth and employment growth of the Greek economy in the last twenty years. The outbreak of the crisis in 2008-09 resulted in a deep and prolonged recession and a deterioration of future prospects. The recent recession in turn led to a de facto fiscal adjustment and implementation of structural reforms whose impact remains largely unexplored. In this context, it is deemed necessary to look into the influence of regulation on productivity of Greek industries.

This study is based on a model of TFP convergence, in which Germany is the leader country and Greece is the follower economy.⁴² Within this specification, TFP growth of an industry in the follower country is modelled as a function of TFP growth of the same industry in the leader country, as well as of technological catch-up and market regulation. We choose to model the impact on TFP by using the measure of upstream regulation in the network industries of transport, energy and communications.

⁴² We justify the choice of Germany as the leader economy, since, aside of being a technological leader in the euro area, it is also a major trading partner of these three countries.

Figure 8.1: Developments in value-added, labour productivity and employment



Source: National accounts (ELSTAT 2018) and own calculations.

While most of the existing studies explore the direct effects of regulation within the same sector, we focus on the influence of anti-competitive regulations in the upstream sectors of energy, transport and communications, whose output is used as an intermediate input in downstream industries. Upstream regulation may be harmful for the efficiency of sectors which use their services, as part of the expected efficiency gains may be captured by intermediate input providers (Bourles et al. 2013). We also analyse the TFP growth impact of entry barriers and public ownership in upstream sectors.

The TFP growth impact of upstream regulation is estimated for the period 1996-2015 by using the fixed effects and the GMM panel data econometric estimators. The empirical results indicate that a decrease in the degree of upstream regulation is not significantly associated with TFP growth of Greek industries. A strong and robust technological catch-up effect is estimated, which indicates that technological convergence plays a major role for TFP growth of Greek industries. Upstream regulation exerts an indirect negative effect on TFP growth of less productive industries indicating that its harmful effects are manifested in the laggard sectors of the Greek economy. Our estimates are also in favour of a weakly positive impact of TFP growth of German industries, suggesting that technology transfer could exert a beneficial impact on TFP growth of Greek sectors.

8.2 Theoretical framework

Economic theory suggests that competition in product markets results to higher productivity and higher efficiency through the reallocation of markets shares to most efficient firms. This is usually accomplished by the exit of less productive firms and by the entrance of more efficient ones in the market (Melitz, 2003). Parente and Prescott (1994) predict that product market regulation can influence productivity by altering the incentives of firms to invest in technology. Their model admits that firms' decision to invest in technology depends on the extent of legal and regulatory barriers which in turn impact strongly the cost of technology adoption. Therefore differences in regulatory barriers account for a major part of observed income disparities across countries.

Similarly, Alesina et al. (2005) argue that fewer regulations lower the cost of expanding capital stocks of firms. This is because lower regulation brings about higher competition in the market, which in turn impacts negatively profit margins and also lowers the shadow price of capital. In addition, the cost of reorganisation of the production process after adoption of a new technology lessens when the extent of regulation in the market is low.

Acemoglu et al. (2006) argued that limits on competition may encourage investment and growth in backward economies. In these countries market regulation may be beneficial as they are still at the early stages of development and rely mainly on imitation and physical capital accumulation. However, such policies are harmful for middle-income economies. At these stages of development innovation is the main driver for growth. Therefore, as a country approaches the world technology frontier

competition friendly policies that favour innovation are of essential importance for convergence towards the frontier.

Early Schumpeterian models of endogenous growth predict that innovation is adversely affected by competition, as it lowers the expected profits of firms (Romer 1990; Aghion and Howitt 1992). However, recent neo-Schumpeterian models question this view by demonstrating that competition in the market forces the incumbent firms to engage in innovation as a way to preserve their market shares. Aghion et al. (2005) illustrate that an inverse U relationship exists between competition and innovation. An increase in competition in a concentrated market favours innovation, since the escape competition effect dominates the Schumpeterian influence and pushes firms to innovate in order to preserve market shares. At higher levels of competition, the Schumpeterian effect dominates as the post innovation rents lower.

When regulation in upstream sectors is heavy, investment is discouraged as a part of the expected rents is extracted from oligopolistic firms which operate in network industries. Services produced in electricity, transport and communications constitute an essential input for most sectors of the economy and therefore high regulation in these industries affects the cost and productivity of linked sectors through higher prices (Bourles et al., 2013). High regulation results in oligopolistic upstream sectors making search for intermediate input providers time consuming and costly. Such costs provide market power to upstream input suppliers, create barriers to entry in downstream sectors and finally reduce the number of firms. They also distort incentives of incumbent firms to improve efficiency through the proper allocation of factor inputs.

8.3 *Empirical literature*

The majority of the existing empirical literature has established a strong influence of lower product market regulations on growth and productivity. Early studies of Nickell (1996) and Nickell et al. (1997) demonstrate that higher competition exerts a positive impact on UK firm-level Total Factor Productivity (TFP). Similarly, Blundell et al. (1999) showed that policies in favour of competition are an important factor for the improvement of productivity. Nicoletti and Scarpetta (2003) explored the influence of product market regulations on productivity growth of manufacturing and services of OECD countries, during 1984-1998. Their results demonstrate that product market regulation on its own had no impact on productivity. However, when interacted with the technology gap, their estimates indicated that lower regulation helps industries catch up with the frontier.

Aghion et al. (2003) looked at the effect of removing entry barriers on productivity of UK firms. They provided evidence that lower entry barriers exert a positive impact on economic performance of firms which are close to the technology frontier, as they can survive competition through innovation. By contrast, a negligible or even negative effect was established for firms which are far from the frontier, as they are in a weaker position to fight entry. Alesina et al. (2005) showed that market regulation slows down economic growth as it acts as a deterrent for investments in physical

capital and diffusion of technology. Conway et al. (2006) suggested that the productivity gains from lowering product market regulation could be high for countries that lag behind the frontier. They also indicated that strict regulations in product markets have affected negatively diffusion of information technology, which in turn had a strong impact on the widening of the productivity gap between the US and the EU and between individual EU countries.

Inklaar et al. (2008) showed that entry liberalisation has affected favourably productivity growth of telecommunication industries in Europe. However, such effects are absent for the remaining service sectors. Aghion et al. (2009) argued that market rigidities are particularly harmful for the TFP growth of countries which are close to the productivity frontier. Amable et al. (2009) demonstrated that the influence of regulation on innovation, though negative when being far from the frontier, alters to increasingly positive when approaching the technological frontier. Barone and Cingano (2011) showed that lower regulation in service sectors has resulted to higher productivity growth of manufacturing industries that use services intensively. Rincón-Aznar and Robinson (2011) demonstrated that anti-competitive regulation affects more the productivity of sectors which use ICT technologies.

Bartelsman et al. (2013) use firm level data to show that market distortions result in misallocation of resources, leading in turn to higher productivity divergence. Bourles et al. (2013) provide clear evidence that anticompetitive regulation in upstream sectors slows down productivity growth of OECD industries that use their services as inputs. Buccrossi et al. (2013) establish a strongly positive effect of competition policies on TFP growth of OECD industries. Dimelis and Papaioannou (2016) clearly indicate that increases in the degree of entry regulation are negatively associated with industry level TFP growth of south European countries. Cette et al. (2017) show that upstream regulation in the network industries of transport, energy and communications slows down TFP growth of OECD industries.

8.4 Econometric specification

Relying on Nicoletti and Scarpetta (2003) and Aghion and Howitt (2006), we can express TFP growth for each industry i with the following model:

$$\Delta \ln TFP_{i,t} = \alpha \Delta \ln TFP_{i,GER,t} + \beta TG_{i,t-1} + \gamma REG_{i,t-1} + \delta REG_{i,t-1} * TG_{i,t-1} + c_i + d_t + e_{i,t} \quad (1)$$

where indices i and t denote industry and year, respectively. $\Delta \ln TFP_{i,t}$ measures total factor productivity growth of industry i while $\Delta \ln TFP_{i,GER,t}$ is TFP growth of the industry i of the leader country. We consider that Germany is the leader economy as its levels of productivity are amongst the highest in the Eurozone, while at the same time it is one of the major trading partners of Greece. Through trade linkages, productivity growth of an industry in the leader country may influence productivity growth of industries in the follower economies. The term of the lagged technology gap ($TG_{i,t-1}$) is the ratio of the level of TFP in each industry i of the leader country (Germany) to the level of TFP in the same industry of the follower country (Greece). If coefficient β is positive and

statistically significant, it implies the existence of high potential for technological convergence.

By including the term REG variable in equation (1), we try to account for the impact of regulation in the sectors of energy, transport and communications on industry level TFP growth. It bears noting that as services provided by these network sectors are essential inputs to other industries, we assume that the impact of regulation is growing in importance with the amount of intermediate input flows from these sectors. Thus, we weigh the index of regulation with a variable reflecting the intensity in the use of intermediates from the regulated sectors. We use the OECD input output tables and consider as a weight the ratio of intermediate inputs of the sectors of energy, transport and communications over value added.

Besides the impact of the main index of upstream regulation, we also consider the influence of entry barriers in network sectors and the effect of public ownership. We also allow for an indirect impact of regulation, as captured by its interaction term with the level of the technology gap ($REG_{i,t-1} * TG_{i,t-1}$). A negative coefficient on δ implies the existence of indirect negative effects on TFP growth by slowing down the catch-up process of laggard industries. Industry effects (c_i) and year effects (d_t) are also considered in this model to control for the presence of unobserved industry specific effects, as well as for the existence of common productivity shocks.

8.5 Data and construction of variables

8.5.1 TFP estimates

In order to derive estimates of TFP, we rely on the following standard constant returns to scale Cobb Douglas production function:

$$Y_{it} = A_t (K_{it})^\alpha (L_{it})^{(1-\alpha)} \quad (2)$$

Y_{it} represents value added for industry i , K is the capital stock of each industry and L is the labour input, measured in total number of persons employed (employees and self-employed). Furthermore, A is a labour and capital neutral technology parameter, associated with TFP, t is a time index and α is the elasticity of capital with respect to output, which varies across industries and time. Reformulating equation (1) yields the following expression for TFP:

$$TFP_{it} = \frac{Y_{it}}{K_{it}^{\alpha} L_{it}^{(1-\alpha)}} \quad (3)$$

We estimate TFP for a number of Greek industries on an annual basis for the period 1996-2015. The list of industries for which we have derived measures of TFP is shown in Table 8.1. The data for value added, persons employed and for physical capital stocks in each industry were taken from the OECD STAN Industrial Database (2018).⁴³

⁴³ https://stats.oecd.org/Index.aspx?DataSetCode=STANI4_2016#

Value added and capital stocks are in 2010 prices and expressed in international prices with the use of aggregate Purchasing Power Parities (PPPs).

The income shares of capital and labour, α and $1 - \alpha$, respectively, can be measured directly with the use of National Accounts' data. However, in Greece the degree of self-employment is relatively high. So, deriving the income share of labour as the ratio of total compensation of employees to value added in each industry would introduce a measurement bias.

Therefore, we try to proxy for an imputed income of self-employed by deriving a compensation rate per employee (calculated as total compensation of employees to the number of employees) and then multiplying this with the number of self-employed persons. Then we add total compensation of employees and imputed total compensation of self-employed and divide this sum with value added at factor prices (total value added minus indirect taxes) to derive the final share of labour.

Table 8.1: List of industries (ISIC REV.4, SNA08)

1. Agriculture, forestry and fishing
2. Mining and quarrying
3. Food products, beverages and tobacco
4. Textiles, wearing apparel, leather and related products
5. Wood and products of wood and cork, except furniture
6. Paper products and printing
7. Coke and refined petroleum products
8. Chemical and pharmaceutical products
9. Rubber and plastics products
10. Other non-metallic mineral products
11. Basic metals
12. Fabricated metal products, except machinery and equipment
13. Computer, electronic and optical products
14. Electrical equipment
15. Machinery and equipment n.e.c.
16. Motor vehicles, trailers and semi-trailers
17. Other transport equipment
18. Furniture; other manufacturing; repair and installation of machinery and equipment
19. Electricity, gas and water supply; sewerage, waste management and remediation activities
20. Construction
21. Wholesale and retail trade, repair of motor vehicles and motorcycles
22. Transportation and storage
23. Accommodation and food service activities
24. Publishing, audiovisual and broadcasting activities
25. Telecommunications
26. IT and other information services
27. Financial and insurance activities
28. Real estate activities
29. Professional, scientific and technical activities; administrative and support service activities
30. Arts, entertainment and recreation and other service activities

The income share of capital is then calculated as 1 minus the income share of labour. These income shares, combined with the available data on capital, labour and value added, allow us to estimate TFP levels of each industry.⁴⁴

In this empirical study, Germany is considered as the frontier economy with Greece following. Therefore, the technology gap for each industry i in Greece is expressed as the level of TFP in each German industry i relative to the level of TFP in the same industry of Greece:

$$TECHNOLOGY\ GAP_{it} = \ln \frac{TFP_{GER,t}}{TFP_{i,t}} \quad (4)$$

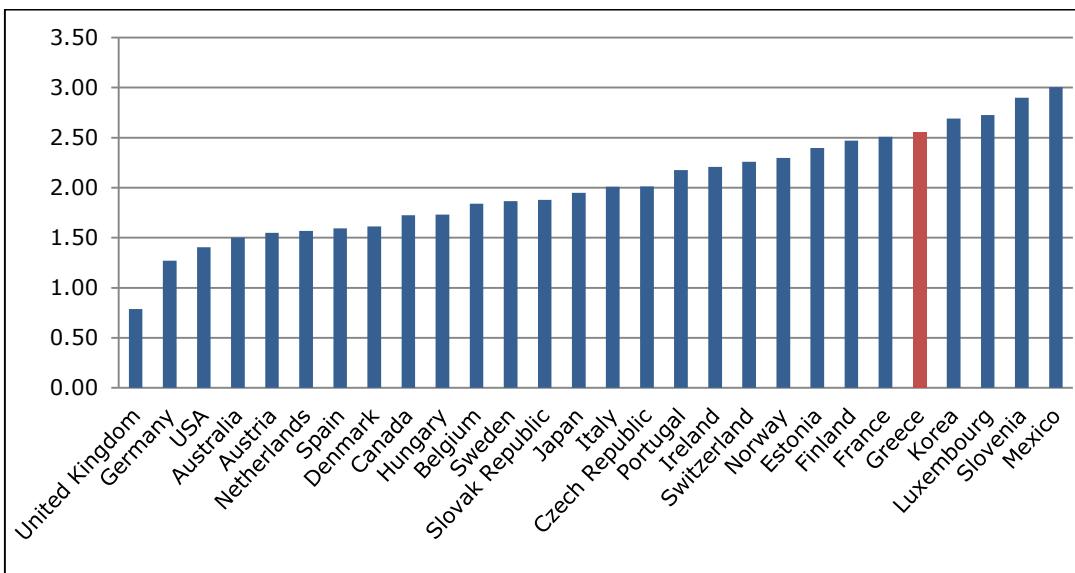
A high value of the technology gap indicates that an industry remains far away from the technology frontier, while a low value suggests that it operates close to the frontier.

8.5.2 Measures of regulation

As a measure for the degree of regulation we utilise the OECD indicator for upstream regulation in the network industries of energy, transports and communication (Koske et al. 2014), which is available up to 2013. This index includes a wide array of regulatory provisions in seven network service industries which are: telecommunications, electricity, gas, post, rail, air and road transports. It covers the extent of entry limitations, state control, price control, market concentration and public ownership in these industries and takes values from 0 to 6, with higher values reflecting a higher degree of regulatory burden. Its main advantage is the inclusion of sectors in which much anti-competitive regulation is concentrated and therefore can be used as a measure for the economy wide regulatory environment (Conway et al., 2006). Figure 8.2 demonstrates that Greece was in 2013 one of the most regulated economies among OECD countries in the network sectors of energy, transport and communications. It bears noting however that a number of reforms have been initiated during the last years, as discussed in sections 8.5 and 8.6, which have resulted in the reduction of the relative index (Figure 8.3).

⁴⁴ We have assumed that inputs are paid according to their marginal products, so that the income shares of labour and capital income sum up to 1.

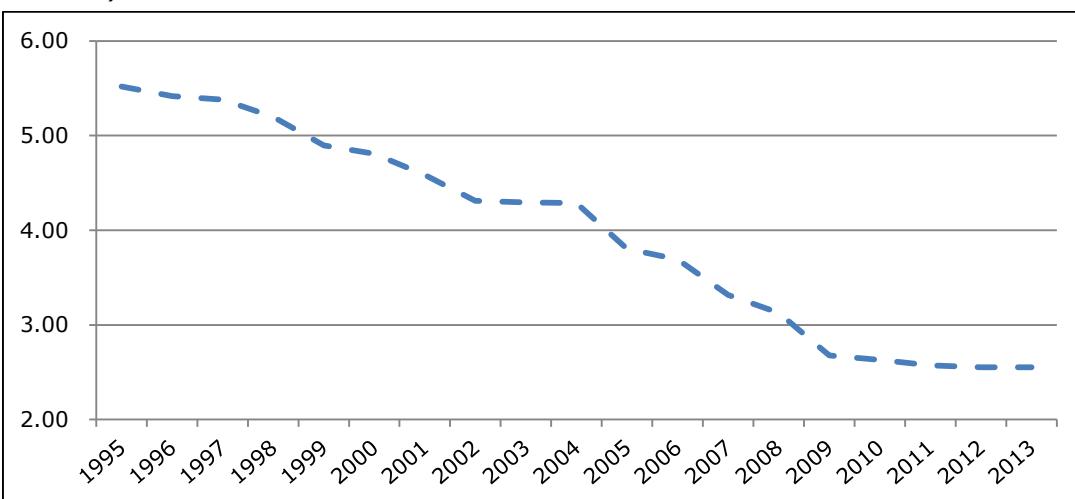
Figure 8.2: Regulation in energy, transport and communications (Index*, OECD countries, 2013)



*Index values range between 0 and 6, from low to high degree of regulation.

Source: OECD, Product Market Regulation Database.

Figure 8.3: Regulation in energy, transport and communications (Index*, Greece, 1995-2013)



*Index values range between 0 and 6, from low to high degree of regulation.

Source: OECD, Product Market Regulation Database.

8.6 Econometric estimates

Table 8.2 reports fixed effect econometric estimates of equation (1). All variables that enter the regressions are in five year averages to reduce the influence of the business cycle. In the first column, we estimate whether a change in the degree of upstream regulation has a direct impact on TFP growth of Greek industries. However, coefficient estimates of Column 1 indicate that regulation in network industries does not exert any important influence on productivity, as its coefficient estimate though negative is statistically insignificant. Next, we introduce in our estimates the variable of the technology gap. As shown in estimates reported in Column 2, its lagged term enters

the regression with a positive and statistically significant estimate, suggesting that industries that are lagging behind the technology frontier experience higher TFP growth rates. Therefore, the larger is the distance of an industry from the technology frontier, the larger is the scope for further productivity convergence. This finding is consistent with recent theoretical views, arguing that productivity growth is a positive function of the technology gap between the followers and the frontier countries.

In Column 3, we extend our model to explore the heterogeneous impact of regulation subject to different levels of the technology gap. We do this by including in the regression an interaction term between the technology gap and upstream regulation. Its coefficient estimate is negative and statistically significant and provides us with evidence that upstream regulation exerts an indirect negative effect on TFP growth of Greek industries which is more acute in industries that lag significantly behind. Estimates of Column 4 show that TFP growth of industries in the leader country exerts a positive and significant (at 10%) effect on TFP growth of Greek industries. The estimated parameter indicates that a 1% rise on TFP growth in German industries results in an increase by 0.43% on TFP growth of Greek industries. This implies that outward shifts in the technological frontier influence the productivity of industries in backward economies. In Columns 5 and 6 of Table 2, we estimate whether entry regulation or public ownership, respectively, exert an impact on TFP growth of Greek industries. Since these two measures of upstream regulation may be highly correlated, we chose to estimate separately their influence on productivity. The estimates of both columns 5-6 are not in favour of a significant influence of either entry regulation or public ownership on TFP growth. However, we confirm that they exercise an indirect negative influence on industries which are comparatively less productive.

When estimating model (1), a possible source of bias could be the existence of unobserved industry specific factors which impact TFP growth and are also related to market regulation. Also, the possibility of reverse causality cannot be ignored as the causal effect could stem from lower TFP to policy choices regarding liberalisation. In this case the econometric estimates are subject to endogeneity. We have chosen to use the system GMM panel data estimator (Arellano and Bover 1995; Blundell and Bond 1998) which is the augmented version of the first differenced panel data estimator (Arellano and Bond 1991). This estimator eliminates industry specific effects and corrects for endogeneity in the covariates included in equation (1). It has been designed for panel datasets with many panels and few periods, as is the case with our model. Instead of the one-step estimator, we choose the two-step estimator, since it is asymptotically more efficient and its standard covariance matrix is robust to panel specific autocorrelation and heteroskedasticity. We prefer to use its robust version to get the corrected covariance matrix, as the standard errors are downward biased in the two step GMM estimator.

Table 8.2: Fixed effects econometric estimates

Dependent variable: TFP growth						
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.019 (0.103) [†]	-0.097 (0.098)	-0.164*** (0.037)	-0.182*** (0.033)	-0.143*** (0.027)	-0.210*** (0.043)
Regulation (t-1)	-0.208 (0.190)	-0.068 (0.190)	0.039 (0.072)	0.061 (0.065)		
Entry Regulation(t-1)					0.005 (0.075)	
Public ownership(t-1)						0.082 (0.064)
Technology gap(t-1)		0.158** (0.060)	0.140** (0.067)	0.154** (0.070)	0.172** (0.067)	0.148** (0.072)
Technology gap (t-1)* Regulation (t-1)			-0.464** (0.202)	-0.443** (0.181)		
Technology gap (t-1)* Entry Regulation (t-1)						-0.352* (0.213)
Technology gap (t-1)* Public ownership (t-1)						-0.472*** (0.158)
TFP growth Germany				0.438* (0.262)	0.506* (0.305)	0.415* (0.257)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	120	120	120	120	120	120
F test (p-value)	11.67 (0.00)	9.68 (0.00)	8.06 (0.00)	7.47 (0.00)	7.72 (0.00)	7.16 (0.00)
R-squared	0.134	0.269	0.329	0.343	0.327	0.348

† Robust standard errors are reported in parentheses. ***Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Table 8.3 shows the initial GMM estimates of model 1 which encompass only the influence of regulation on TFP growth. The system GMM estimator uses as instruments the lagged levels and lagged differences of the endogenous variables that enter in the regression. The selection of the number of lags is based on the criterion that all diagnostic tests should satisfy the condition of validity of the chosen instruments. In addition, we choose to keep the number of instruments lower than the number of cross sections, as otherwise the Hansen test would produce weak diagnostics. Therefore, the regulatory covariates of the estimates shown in Table 8.3 were instrumented with their once lagged levels and differences. All econometric results of Table 8.3 are in favour of a negative and statistically significant TFP growth effect of upstream regulation (column 1). In fact, the estimates indicate that a unit decrease on the degree of regulation results in a 3.7% increase of TFP growth. This finding is confirmed when public ownership (column 2) or entry regulation (column 3) enter in the regression as explanatory covariates. As these two measures of regulation may be highly correlated, we choose to estimate separately their influence on productivity. All econometric estimates of Table 8.3 include year dummies to control for the influence of common aggregate productivity shocks.

Table 8.3: Initial GMM estimates**Dependent variable: TFP growth**

	(1)	(2)	(3)
Constant	-0.129*** (0.041) [†]	-0.125*** (0.042)	-0.141*** (0.040)
Regulation (t-1)	-0.037** (0.018)		
Public ownership(t-1)		-0.034** (0.017)	
Entry Regulation(t-1)			-0.047** (0.022)
Industry Fixed Effects	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes
Observations	120	120	120
AR(2) Test (p-value) ^{†††}	1.56 (0.118)	1.57 (0.117)	1.56 (0.120)
Hansen test (p-value) ^{††}	0.36 (0.836)	0.36 (0.837)	0.36 (0.836)

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

[†] Robust standard errors are reported in parentheses.

^{††} The null hypothesis is that the instruments used in the regression are valid.

^{†††} The null hypothesis is that the error in the first differenced regression does not exhibit second order serial correlation.

The system GMM panel data estimator reports several diagnostic tests. The first one is the Hansen J test which tests for the validity of instrumental variables. This test is robust to the presence of heteroskedasticity or autocorrelation. The hypothesis being tested is that the instruments used in the regression are uncorrelated with the residuals. The GMM estimator also reports a test for autocorrelation (AR(2)), which is applied to the first differenced residuals. If the null of no autocorrelation is rejected, then the test indicates that lags of the used instruments are in fact endogenous and thus are considered as weak instruments. Both statistical tests produce insignificant diagnostics indicating that the lags used to instrument the endogenous covariates are valid and therefore there is no evidence of model misspecification.

We proceed with the estimates of Table 8.4 which encompass the influence of the technology gap and control for TFP growth effects of industries in Germany. All explanatory variables are treated as endogenous and are instrumented with their once lagged differences and levels. Unlike regression results of Table 8.3, coefficient estimates of upstream regulation, entry barriers and public ownership are not statistically significant. The technology gap variable enters the regression with a positive and highly significant coefficient estimate, suggesting that industries that are lagging behind the technology frontier experience higher TFP growth rates. This is consistent with the conventional view that the larger the distance of an industry from the technology frontier, the larger the scope for further productivity convergence. TFP growth of an industry in the leader country (Germany) exerts a positive and significant effect on TFP growth of Greek industries. This implies that outward shifts in the technological frontier influence the productivity of industries in laggard economies.

Table 8.4: Endogeneity of all explanatory variables

Dependent variable: TFP growth	(1)	(2)	(3)
Constant	-0.170*** (0.034) [†]	-0.136*** (0.039)	-0.185*** (0.032)
Regulation (t-1)	0.024 (0.066)		
Entry Regulation(t-1)		0.043 (0.086)	
Public ownership(t-1)			0.012 (0.046)
Technology gap(t-1)	0.121*** (0.032)	0.182*** (0.058)	0.102*** (0.026)
Technology gap (t-1)* Regulation (t-1)	-0.491** (0.228)		
Technology gap (t-1)* Entry Regulation (t-1)		-0.442* (0.281)	
Technology gap (t-1)* Public ownership (t-1)			-0.485*** (0.183)
TFP growth Germany	0.781** (0.379)	0.750** (0.350)	0.739** (0.374)
Industry Fixed Effects	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes
Observations	120	120	120
Hansen test (p-value) ^{††}	15.47 (0.562)	14.95 (0.599)	15.82 (0.536)
AR(2) Test (p-value) ^{†††}	1.10 (0.271)	1.18 (0.237)	1.10 (0.271)

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

† Robust standard errors are reported in parentheses.

†† The null hypothesis is that the instruments used in the regression are valid.

††† The null hypothesis is that the error in the first differenced regression does not exhibit second order serial correlation.

The coefficient estimate of the interaction between the technology gap and upstream regulation is negative and statistically significant and confirms that upstream regulation exerts an indirect negative effect on TFP growth of Greek industries which is more acute in industries that lag significantly behind. This finding is confirmed when considering the interaction of the technology gap with public ownership in upstream sectors. It is also weakly verified when its interaction with entry barriers enters in the regression as its coefficient estimate is statistically significant at 10%.

It could be that coefficient estimates of Table 8.4 are driven by the selection in the number of lags that are used as instruments for the endogenous covariates. To mitigate this concern, Table 8.5 repeats regression estimates of Table 8.4 by employing a higher number lags for instruments of the endogenous covariates. Columns 1-3 report GMM estimates that use 1 and 2 lags to instrument the endogenous variables and Columns 4-6 show estimates that specify one and longer number of lags. Most estimates of Table 8.5 confirm our initial finding that upstream regulation on its own does not exert any significant influence on TFP growth of Greek industries.

Table 8.5: Higher number of lags**Dependent variable: TFP growth**

	lags: 1 and 2			lags: 1 and longer		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.137*** (0.030) [†]	-0.128*** (0.034)	-0.145*** (0.031)	-0.150*** (0.029)	-0.145*** (0.034)	-0.159*** (0.028)
Regulation (t-1)	0.016 (0.041)			0.008 (0.033)		
Entry Regulation(t-1)		0.021 (0.063)			0.017 (0.045)	
Public ownership(t-1)			0.009 (0.034)			0.004 (0.030)
Technology gap(t-1)	0.122*** (0.021)	0.153*** (0.040)	0.109*** (0.021)	0.126*** (0.027)	0.136*** (0.041)	0.113*** (0.024)
Technology gap (t-1)* Regulation (t-1)	-0.524*** (0.180)			-0.453** (0.205)		
Technology gap (t-1)* Entry Regulation (t-1)		-0.358* (0.222)			-0.304 (0.258)	
Technology gap (t-1)* Public ownership (t-1)			-0.528*** (0.155)			-0.498*** (0.176)
TFP growth Germany	0.333 (0.268)	0.344 (0.245)	0.331 (0.256)	0.312* (0.180)	0.301 (0.213)	0.310* (0.179)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	120	120	120	120	120	120
Hansen test (p-value) ^{††}	21.10 (0.575)	22.75 (0.475)	21.60 (0.544)	22.25 (0.675)	20.68 (0.758)	21.63 (0.709)
AR(2) Test (p-value) ^{†††}	1.16 (0.248)	1.34 (0.181)	1.15 (0.252)	1.18 (0.240)	1.34 (0.179)	1.12 (0.264)

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

† Robust standard errors are reported in parentheses.

†† The null hypothesis is that the instruments used in the regression are valid.

††† The null hypothesis is that the error in the first differenced regression does not exhibit second order serial correlation.

However, it exerts an indirect negative effect which is stronger for the sectors that are lagging behind the frontier. We also validate that the technology gap variable exerts a considerable effect on TFP growth. However, most estimates of Table 8.5 do not confirm that TFP growth of industries in Germany affects productivity of Greek sectors, as most of its coefficient estimates are statistically insignificant. To control for persistence in the dependent variable, estimates of Table 8.6 report regression results which encompass the influence of lagged TFP growth. We confirm that upstream regulation exerts a negative impact on TFP growth of laggard sectors. The lagged dependent variable enters the regression with a statistically significant coefficient estimate implying that persistence characterises the evolution of TFP growth.

Table 8.6: Lagged dependent variable

Dependent variable: TFP growth						
	lags: 1 and 2			lags: 1 and longer		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.104*** (0.031)	-0.088** (0.041)	-0.112*** (0.030)	-0.124*** (0.026)	-0.117*** (0.029)	-0.130*** (0.028)
Lagged TFP growth	-0.541*** (0.120)	-0.579*** (0.125)	-0.528*** (0.122)	-0.494*** (0.112)	-0.556*** (0.113)	-0.493*** (0.116)
Regulation (t-1)	0.048 (0.049)			0.023 (0.049)		
Entry Regulation(t-1)		0.071 (0.066)			0.032 (0.054)	
Public ownership(t-1)			0.031 (0.042)			0.022 (0.042)
Technology gap(t-1)	0.115*** (0.036)	0.155*** (0.042)	0.107*** (0.041)	0.115*** (0.039)	0.130*** (0.038)	0.109*** (0.043)
Technology gap (t-1)* Regulation (t-1)	-0.318** (0.138)			-0.290* (0.186)		
Technology gap (t-1)* Entry Regulation (t-1)		-0.227 (0.281)			-0.107 (0.255)	
Technology gap (t-1)* Public ownership (t-1)			-0.291** (0.151)			-0.307** (0.156)
TFP growth Germany	0.115 (0.429)	0.155 (0.386)	0.128 (0.366)	-0.007 (0.402)	-0.121 (0.419)	0.006 (0.422)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	90	90	90	90	90	90
Hansen test (p-value) ^{††, †††}	19.63 (0.417)	21.18 (0.327)	20.18 (0.384)	22.69 (0.419)	25.97 (0.253)	22.01 (0.459)

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

† Robust standard errors are reported in parentheses.

†† The null hypothesis is that the instruments used in the regression are valid.

††† For the set of results shown in Table 8.6, the econometric software output does not report the AR(2) test.

8.7 Conclusions

We used a model of TFP convergence to study the influence of upstream regulation on TFP growth of Greek industries. Our estimates cover the period 1996-2015 and were performed with the use of fixed effects and GMM panel data econometric estimators. The empirical results illustrate that upstream regulation is not significantly associated with TFP growth of Greek industries. However, it exerts an indirect negative effect on TFP growth of less productive sectors. This indicates that the harmful effects of regulation are manifested in the laggard industries of the Greek economy. A strong and robust technological catch-up effect is estimated, which indicates that technological convergence plays a major role for TFP growth of Greek industries. Our estimates provide weak evidence that TFP growth of German industries affects favourably TFP growth of Greek sectors.

9. CONCLUSIONS AND POLICY IMPLICATIONS

The study presented and analysed a wide range of structural reforms pursued by Greece since 2010, in the framework of the requirements of the first and second economic adjustment programmes. The reform categories and issues examined in the study refer to the facilitation of new business entry, the liberalisation of professions/economic activities, energy market reforms and privatisations, privatisations in the transport sector, the utilisation of public real estate assets and product market liberalisation of upstream sectors. The study provided a screening of the relevant reforms agreed and implemented, evaluated their progress with respect to original goals and assessed their potential impact and actual results during the period 2010-2018. For each of the individual reform categories falling in its scope, the study conducted a more or less self-contained analysis, employing both qualitative and quantitative methodologies. The methodologies used were adapted to the nature of the issues examined and were selected so as to overcome, as far as possible, the objective difficulties relating to the timing of the reforms, the effects of the crisis and the availability of data. The analysis was based on detailed and in many cases non-publicly available data and information from a wide range of official national sources. The present chapter summarises the main conclusions and policy implications of the study for each of the individual reform areas examined.

The pre-programme period

Greece's EMU entry in 2001 provided the country with a window of opportunity for closing its institutional gaps with its European trading partners. High economic growth rates and rising incomes, positive economic sentiment, constitutionally strong governments and a pro-Europe public opinion represented ideal conditions for the enactment and implementation of structural reforms.

However, Greece did not take advantage of this exceptionally positive conjuncture. Despite a number of successful social, state and economic reforms, the process of adopting and implementing market-supporting institutions during the period up to 2010 was at best slow and gradual. The prevailing political culture, the reluctance of the political establishment to deal with the resistance of employers' associations, labour unions and lobbies, along with the poor collective understanding about cause-and-effect relationships between institutions and growth, all acted against reforms, thereby leading to institutional inertia.

Business entry reforms

Greece undertook from 2010 onwards a wide spectrum of measures aimed at facilitating new business entry. The main reforms implemented in this direction concerned the simplification of the procedures for establishing new businesses, the introduction of the Private Company (PC) and the reduction of costs/capital requirements for establishing a new business. Furthermore, other related or consecutive measures were put in place over the same period, notably the activation

of the General Electronic Commercial Registry (GEMI) and electronic start-up notification, the latter allowing business activities to start operating without a need for ex ante administrative checks and operational licensing.

One-stop-shops, in conjunction with GEMI, reduced bureaucratic procedures, improved the monitoring mechanism of commercial enterprises and promoted transparency. The PC, served as an attractive alternative form of business for entrepreneurs, offering several advantages including limited liability status, flexibility, ease of establishment, lower social security contributions and a one(1) euro minimum capital requirement. The reforms brought about major reductions in the costs involved in setting up new businesses, and reduced drastically the minimum capital requirements for setting up new capital companies. Furthermore, the electronic start-up notification system simplified the operational licensing procedures for businesses.

International business environment indicators point to an improvement of Greece's competitive position with respect to the ease of starting a business, although the methodological limitations of these indicators (standardised dimensions and approach across countries) do not allow for an adequate reflection of the effects of important reforms implemented in Greece. The cost of starting a business in Greece is currently lower than the corresponding average of EU countries while the time to start a business lies above the EU average. Business opinion surveys suggest that businesses in Greece have a very positive opinion of the reforms, with a high degree of satisfaction recorded in the case of GEMI.

Overall, the qualitative analysis of the reforms indicated great progress in the easing of procedures and requirements for starting new business activity, and identified margins for further policy action in the direction of (i) codification of legislative acts and the creation of a simple up-to-date guide for businesses, (ii) improvement of the operation and interoperability of GEMI, (iii) further reduction in the costs and procedures, (iv) improvement in other related requirements for starting new businesses (e.g. simplification of various licensing procedures and requirements, introduction of a spatial plan for the country with a clear and rational delineation of land uses) and (v) improvement of the system of monitoring and sanctions.

The quantitative analysis of trends in business entries and exits suggested that there has been a shift of new businesses towards PCs and away from Limited Liability Companies (LLCs) and General Partnerships (GPs), and to a lesser extent Limited Partnerships (LPs). As expected on the basis of its many advantages, the PC was considered by many entrepreneurs as more attractive form of business compared to the LLC and partnerships. PCs display a relatively low mortality rate, showing that these businesses are viable and enter the market having the potential to survive. A significant share of new business entries after the reforms came from the sector of wholesale and retail trade, while professional, scientific and technical activities and accommodation and food services also recorded large numbers of new entries. The

share of PC entries corresponding to these sectors accounted for more than 50% of total PC entries in 2017.

With respect to the effects of electronic start-up notification, data for the period from July 2017 until December 2018 pointed to over 58 thousand entries to the Notify Business platform. Out of these notifications, almost 74% referred to sanitary interest activities, while 19.7% were in tourism accommodation. The magnitude of notifications indicates success of the reform, although figures must be considered with caution due to issues of double counting.

The empirical analysis on the basis of the Difference-in-Differences methodology indicated that in selected sectors of the economy the implementation of one-stop-shops brought about changes in the observed rates of business entry for legal entities affected by the reform. In specific cases, the reforms contributed positively to the creation of new capital companies and partnerships. With regard to the reduction of minimum capital requirements for capital companies, a positive impact on business entries was found. More specifically, the DID estimation showed that not only did capital companies not follow the decreasing trend of business entries of partnerships, but they also exhibited an increasing trend in entries. This result can be attributed mainly to the introduction of PCs. If the bookkeeping system used is incorporated, the results become more robust and show that entrepreneurs chose to establish capital companies that use the double-entry booking system. With respect to the effect on new business entries from changes in the taxation of businesses according to their bookkeeping system, the results indicate that –on average- more businesses using double-entry bookkeeping enter the market than those with single-entry. After the reform, entrepreneurs establish more partnerships and capital companies that keep double-entry books.

The liberalisation of professions and economic activities

In 2011, Greece introduced a framework Law establishing the principle of professional freedom and eliminating unjustified restrictions to the access and exercise of professions/economic activities. Following a long and complex process, including several subsequent legislative acts, recommendations from the Hellenic Competition Committee, and interpretative circulars, the implementation of the reforms has been completed for the vast majority of professions/economic activities under liberalisation.

The reforms brought about the abolition or drastic reduction of restrictions in a wide range of professions/economic activities. The need for an administrative licence to exercise a profession/economic activity was replaced by an announcement of intent to practice the profession or to open a business, maintaining all the necessary requirements of a degree, practice, examinations and other supporting credentials. Quotas on the number of practitioners, geographical restrictions and restrictions on the establishment of branch offices were abolished for the majority of professions/economic activities, with the exception of a small number of professions

on grounds of public interest. Restrictions on maximum/minimum prices and fees have been abolished, and in some cases reference prices were introduced for the case when there is no written agreement between the professional and the consumer. The prohibition of a natural or legal person who was not a practitioner to enter the market was abolished for the majority of economic activities, subject to the recruitment of a qualified person authorised to exercise the profession. Pre-existing compulsory membership in chambers and professional associations was maintained, while, at the same time, the public authorities created Registries for professions and economic activities.

The screening of the legislative framework for 260 professions/economic activities of the services sector has shown that 41 of these professions can currently be characterised as being regulated, 70 as being subject to minor regulations and 149 as needing an announcement/licensing procedure either accompanied by specific qualifications or not. Apart from licensing/qualifications, the main remaining regulations in the group of regulated professions refer to compulsory chamber membership, reference fees/prices when a written agreement has not been signed and exclusive or shared rights. Remaining regulations have been maintained on the grounds of public interest, public safety and consumer protection, and concern mainly scientific professions. Most professions for which major regulations remain also had a high intensity of regulations prior to the reform. Notably, many of these professions are characterised by high educational qualifications, a high degree of specialisation and a sensitive nature of services provided. These characteristics justify to a certain extent the higher intensity of existing regulations, a pattern which is also observed internationally.

The calculation of regulation indices for a sample of professions and economic activities before and after the liberalisation, based on the methodology of the European Commission, suggested that the degree of regulation decreased for nearly all professions and economic activities under consideration after the implementation of the reforms. The conduct regulation index presents higher reductions compared to the entry regulation index. Reductions in the conduct regulation index were due, mainly, to the abolition of restrictions on corporate structure and minimum/maximum prices and fees. The entry regulation index declined for the majority of professions, mainly due to the abolition of geographical restrictions, minimum distances and quotas on the number of licences. The qualification requirements and compulsory membership were not amended by the law for the majority of the professions and economic activities and, thus, they contribute less to the reduction of the total regulation index. Overall, the improvement in index values seems to be lower compared to the earlier approaches, mainly due to the higher weight placed by the European Commission approach on reserved activities.

The total net balance of new registrations for a sample of 23 regulated professions and economic activities included in the relevant database of the Ministry of Finance was found to be positive throughout the period examined. This could be an indication of a

positive effect of the reforms due to the elimination of entry restrictions. Outcomes differ between professions, as the impact of the reforms and the effects of the crisis and other factors (e.g. pension system reforms) vary among sectors. Indicatively, in the case of tourist agents the data provide indications of positive effects of the reform on new entries, with the positive trend in new entries being also partly related to the improving performance of Greece's tourism sector.

The results from empirical analysis of the reform on prices, suggested that the reform had an impact on the consumer price index of the treatment group (professions influenced by the reforms) in the sense that, as suggested by the data, prices in the treated group decreased at a higher rate compared to the control group for the period 2013-2016, while in 2017 and 2018 the rise in prices was slower for the treated group as compared to the control group. The empirical analysis of employment data did not provide statistically significant results of an impact of the reforms on self-employment in the treated group as a whole. A further analysis of selected professions identified a positive impact on employment in the cases of engineers and street salespersons and a negative impact in the cases of architects and agents.

Professional qualifications recognition

The professional qualifications recognition Directive 2005/36/EC was integrated to the Greek legislative framework in 2010, establishing also the Council for the Recognition of Professional Qualifications (SAEP). SAEP is not the only competent authority to process the applications for recognising professional qualifications, raising questions with respect to the application of equal standards for all. Long delays are often reported in the process of professional qualifications recognition, mostly by SAEP.

Assessing the impact of the reform is difficult due to data limitations. The limited data available suggest that the reform facilitated the movement of professionals who acquired their qualifications abroad. Most of those applying for recognition of professional qualifications are Greek and since economic conditions in Greece at the moment are unfavourable, no great inflows of professionals from EU+ member states are expected. The directive has probably proven useful for Greeks who wish to migrate and look for a job abroad. The reform is also useful, although that is not necessarily desirable, as a bypass of the Greek constitution for those who get a degree from a foreign institution operating in Greece.

Energy market reforms and privatisations

The first and second adjustment programmes defined a number of policy targets for the liberalisation of the energy sector and the enhancement of competition in energy markets. These targets were to unbundle network from supply activities, to enable the effective liberalisation of the electricity market, to reform renewable energy support schemes and to proceed with the privatisation of state-owned enterprises. Until now a number of important reforms were implemented in these areas, whereas many other

reforms are still in progress or at an early stage. Therefore, only initial impacts can be assessed.

Regarding already implemented reforms, an important step for the liberalisation of the Greek electricity market was the unbundling of the operator of the market, the power transmission operator and the distribution system operator in 2011. Additionally, in 2016, the Forward Electricity Products Auctions System (NOME auctions) was established as a temporary mechanism, in order to promote competition and decrease the relative market shares of the Public Power Corporation (PPC). The analysis showed that these primary reforms had a positive effect on the market, reducing the PPC share in the retail market and increasing competition. Notably, competition seems to have had an effect on prices.

Another important step was the reform of the Renewable Energy Sources (RES) support mechanism. In order to increase the share of RES, Greece implemented before the reforms a "Feed-In Tariff" support scheme according to which RES production stations did not participate in the competitive process of the wholesale electricity market. Instead, each RES producer signed a 20-year contract with the Operator of the Greek Electricity Market (LAGIE) for the sale of electricity and received a fixed guaranteed price per MWh for the total period of the contract. This system, led to many problems and distortions, including high RES prices and a high deficit of the Specific Account for RES financing. In 2016, the RES support system was restructured by changing the "Feed-In Tariff" into a "Sliding Feed-In Premium" mechanism. According to this scheme, all new RES and Co-generation power stations would be able to sign a 20-year contract with LAGIE, in order to receive an operating aid in euro per MWh of production. However, they would be obliged to participate in the wholesale electricity market and the operating aid would be offered to them as a Premium on the wholesale market price and would not cover the total cost of energy produced. Even if there are only preliminary results, it is already clear that this new mechanism resulted in reducing the RES prices, while, the planning for 2019 is to adopt changes of the relevant legislation, in order to re-enforce competition.

Nowadays, the energy market gradually moves from the state-controlled centralised model to more competitive market conditions and a large part of statutory changes is expected to be completed by the end of 2019. In this context, an important target is the launch of the EU Target Model into the Greek electricity market. Up to now, all Codes for the Day-Ahead, the Intra-Day and the Balancing market have already been published. Moreover, the Hellenic Energy Exchange S.A. (HENEx) and the Energy Exchange Clearing House S.A. (EnExClear) have been founded.

Regarding privatisations of energy corporations and energy infrastructures, it seems that after a long delay, most of the procedures have begun. In particular, in December 2018, the sale of the 66% stake of Hellenic Gas Transmission Operator (DESFA) shares has been successfully completed. This was the first successful privatisation process for the energy sector that brought revenue of €251.28 million for the

privatisation programme and is expected to bring a dynamic investment plan for DESFA. Regarding the other ongoing cases, the legislation for the required split of the Public Gas Corporation (DEPA) into two companies, DEPA Trade and DEPA Infrastructures, is expected to be voted by the Greek parliament in March 2019, in order to begin the procedure for the sale of the 50% plus one of the shares of DEPA Trade. Regarding the privatisation of Hellenic Petroleum (ELPE), the procedure runs the second phase of the tender process and the binding offers are expected to be submitted within the first quarter of the year. As for the privatisation of 17% of PPC's shares, owned by the Hellenic Republic Asset Development Fund (HRADF), it is considered as the next step after the bailout-required disinvestment procedure of the PPC's lignite units in Meliti and Megalopoli. However, the previous tender procedure did not deliver the anticipated results and it was considered as unsuccessful. Nowadays, the PPC together with the government are planning to repeat the auction under new more favourable terms. Otherwise, they will be obliged to find another way to achieve the obligatory decrease of PPC's share in generation. Additionally, this might also delay the phase out of the NOME auctions mechanism.

Privatisations in the transport sector

In the last decade and, particularly, during the first two economic adjustment programmes, several reforms took place in the rail, port and airport sectors to enhance market liberalisation and strengthen competition. Furthermore, during the third adjustment programme, the HRADF placed emphasis on the transfer of major transport assets to private investors/operators.

Concerning the liberalisation and enhancement of competition in the transport sector, the companies providing commercial services in the rail, maritime and air transport sectors were reorganised and separated from those providing administrative/regulatory services, and independent regulatory authorities were established. Furthermore, an act for the liberalisation of public road haulage services was introduced in 2011, while new legislation was enacted in 2014 towards the institutionalisation and modernisation of logistics industry.

The above reforms occasionally enhanced market liberalisation and competition and paved the way for the privatisation of transport industries. However, their contribution to the expected effects of privatisations can be considered as limited. This is due to both delays in their completion (either they were postponed or they are still ongoing) and a lack of appropriate investment to ensure the connectivity and interoperability of transport services at the national system level. Strategic complementarities should be achieved within the transport sector and across transport, energy and ICT network industries, at major trade hubs/clusters, beyond the narrow scope of individual industries and firms' business plans.

With respect to the privatisation of state-owned enterprises in the transport sector, transactions completed thus far refer to railways, ports and airports. More particularly they concern the sale of TRAINOSE to the Italian State Railways (FS Group) and the

sale of the Hellenic Company for Rolling Stock Maintenance (ROSCO S.A.) to TRAINOSE; the Sale of 51%+16% of Piraeus Port (OLP) to COSCO and the sale of Thessaloniki Port (OLTH) to a multi-national consortium; and the 40-year concession of 14 major peripheral airports to Fraport. Furthermore, the 20-year extension of the current concession of AIA was recently signed.

By and large, the airport, port and rail industries after their privatisation have shown some improvements in economic and operational performance terms. Nevertheless, the market share of these industries has not yet substantially changed, as the full potential of each privatisation can only be realised after a few years. The privatised port of Piraeus, which is turning into the largest cargo hub in the Mediterranean Sea, and the 14 regional airports have experienced the largest benefits, as they refer to international markets and are managed by large strategic investors-operators. Moreover, the consolidation and expansion of railway and combined (sea-rail) transport services, in conjunction with the development and modernisation of the relevant infrastructure, including logistics parks, create new opportunities for the profitability of TRAINOSE and of other market players.

In terms of policy implications, the analysis pointed to a need to expedite reforms and attract investments to ensure the connectivity and interoperability of transport services. The scope for further reforms includes the expansion of Public Private Partnership (PPP) schemes for financing the development and managing transport and logistics infrastructure and the effective planning arrangements for the spatial organisation of logistics parks. Potential problems related to privatisations must also be addressed and transport regulatory authorities must ensure that benefits obtained from enhanced transport capacity/level of service will outweigh any adverse effects from tariff increases on consumer welfare.

Utilisation of real estate assets

As part of the economic adjustment programmes, Greece adopted an ambitious plan for the privatisation and development of public real estate assets. The processes followed for the privatisation of the assets, include conventional tender procedures as well as online auctions. For each property, privatisation procedures are subject to the asset's legal and technical maturity. For larger properties presenting high development opportunities, specific requirements and processes for maturity are set in Law (e.g. a Strategic Environmental Impact Study, a Special Zoning and Spatial Plan-ESHADA). Depending on the case, additional requirements for privatisation/development of the assets may apply, in terms of land or seashore uses, construction licences, other administrative approvals and completion of judgments of judicial authorities on applications for annulment. In all cases property development is subject to archaeological and environmental protection legislation.

Until now the HRAFD has managed about 100 real estate assets/programmes. After the establishment of the Hellenic Corporation of Assets and Participations (HCAP), 91

real estate assets have remained in HRADF's portfolio. Real estate properties in HRADF's privatisation programme comprise land plots for mixed-use development, land-plots for the development of tourism, recreation and residential uses, hotels, thermal springs, Olympic Games facilities, smaller properties for urban, residential, tourism and commercial uses, the assets of Sale & Leaseback programmes A, B and real estate properties abroad. The regional distribution of the assets indicates a high degree of concentration in specific geographical areas, most notably in the regions of Attica, Central Macedonia, the Peloponnese and the islands of Corfu, Rhodes and Crete.

Particularly in the case of larger assets, privatisation procedures have proved very challenging for many reasons which rendered complex the achievement of the projects' legal and technical maturity. Furthermore, even after the completion of tender procedures, the actual initiation of investments for the development of such assets has been delayed, due to additional requirements for the technical maturity of the projects, the acquisition of necessary licences, and the completion of judgments of judicial authorities on applications for annulment. Thus, for a significant share of properties in the programme, privatisation procedures are either pending or in progress, while for many assets for which tender procedures have been concluded, the development of the properties has either not started or has not been completed.

Hence, thus far, the only obvious effects from the privatisation programme concern the proceeds received, which so far amount to €596.9 million. Nevertheless, development plans, particularly for the larger assets, can be expected to have significant positive economic effects, both during the period of construction of infrastructures and facilities, and even more so, during their operation. Such effects can be identified particularly with respect to the growth of the tourism sector and the generation of income and new jobs in tourism and related activities, the expected boost in fixed capital investment, including the attraction of FDI, the maintenance or rescue of historical buildings or facilities that remain unused and are gradually decaying, and the fiscal revenues from the direct and indirect taxation of the economic activity and wealth generated from the development of the assets. Of course, apart from benefits, privatisations may also give rise to risks and costs, particularly in terms of deterioration of the natural environment or compromise of archaeological sites. This concern highlights the importance of careful spatial planning of the assets and environmentally responsible development and operation of the relevant projects.

Given the progress of privatisations to this date, and the important benefits expected to arise from them, intense efforts must continue in the direction of completing necessary procedures and overcoming obstacles which stand in the way of the larger projects. Adequate preparation to secure legal maturity and provide a clear and final spatial delineation of property uses seems to be an important prerequisite for successful completion of tenders and transactions. For complex and environmentally challenging projects, overcoming challenges related to remaining structural inefficiencies of the public administrative mechanism and delays in the administration

of justice can play a key role in expediting the initiation of the related investments. Higher prioritisation of key projects and improved co-ordination on the part of the authorities responsible for granting relevant permits and approvals (e.g. urban planning, environmental, archaeological, judicial authorities) can be very helpful in avoiding unnecessary delays.

Product market liberalisation of upstream sectors

The main reason for promoting product markets reforms has been to strengthen competition and boost productivity and competitiveness. A key question is whether and to what extent such changes have been successful in the case of Greece. Greece constitutes a particularly interesting case for study, since, although it belongs in the group of developed economies, many of its institutional aspects resemble those of middle income economies, while its levels of productivity lag significantly behind those of leading EU economies.

Motivated by these considerations, we explored the impact of upstream regulation on total factor productivity (TFP) growth across industries of the Greek economy. We estimated a TFP growth model on 30 two-digit industries of the Greek economy. Our estimates cover the period 1996-2015 and were performed with the use of fixed effects and GMM panel data econometric estimators for the period 1996-2015. As a measure of the degree of regulation, we utilised the OECD indicator for upstream regulation in the network industries of energy, transport and communications, which is available up to year 2013.

The empirical results illustrate that upstream regulation is not significantly associated with TFP growth of Greek industries. However, it exerts an indirect negative effect on TFP growth of less productive sectors. This indicates that the harmful effects of regulation are manifested in the laggard industries of the Greek economy. A strong and robust technological catch-up effect is estimated, which indicates that technological convergence plays a major role for TFP growth of Greek industries. Our estimates provide weak evidence that TFP growth of industries in Germany (the leader country) affects favourably TFP growth of Greek sectors.

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