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Boosting investment in Greece

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Mauro Pisu**

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ECONOMICS DEPARTMENT

BOOSTING INVESTMENT IN GREECE

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By Panagiotis Barkas and Mauro Pisu

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ABSTRACT/RÉSUMÉ**Boosting investment in Greece**

Aggregate investment has declined markedly over the crisis and has yet to recover. Reviving domestic and foreign investment is crucial to supporting the economic recovery, deepen Greece's integration into global value chains and raising living standards. This will hinge primarily on improving the business environment, by lifting barriers to product market competition and enhancing the quality of regulation. Other key policies involve fully implementing the recent insolvency reforms, building an innovation system, overcoming problems in the banking sector and enhancing the quality of public investment through a long-term strategy.

This Working Paper relates to the 2018 OECD Economic Survey of Greece. (<http://www.oecd.org/eco/surveys/economic-survey-greece.htm>).

Keywords: Investment, insolvency, innovation, financial markets, credit, competition, tax credits, intangible capital, foreign direct investment, bank lending, public investment.

JEL codes : E21, E22, G21, G23, G24, G28, G38, H20, H43, H54, O16.

Stimuler l'investissement en Grèce

L'investissement global a considérablement diminué pendant la crise, et il lui faut désormais remonter la pente. Redonner un coup de fouet aux investissements, intérieurs et étrangers, est une nécessité cruciale pour soutenir le redressement économique de la Grèce, mieux intégrer le pays dans les chaînes de valeur mondiales et rehausser le niveau de vie général. Tout dépendra au premier chef d'une amélioration du climat des affaires, qui passera par la levée des obstacles à la concurrence sur les marchés de produits et par une meilleure qualité du cadre réglementaire. Cette amélioration passera également par d'autres mesures essentielles parmi lesquelles la mise en œuvre, intégrale, des réformes du régime d'insolvabilité récemment adoptées, la constitution d'un système de l'innovation, la résolution des difficultés rencontrées dans le secteur bancaire et une meilleure qualité de l'investissement public, autant de mesures qui s'inscrivent dans une stratégie à long terme.

Ce Document de travail se rapporte à l'Etude économique de l'OCDE de la Grèce, 2018 (<http://www.oecd.org/fr/eco/etudes/etude-economique-grece.htm>)

Mots clés : Investissement, insolvabilité, innovation, marchés financiers, crédit, concurrence, crédits d'impôt, capital immatériel, investissements directs étrangers, prêts bancaires, investissements publics.

Codes JEL : E21, E22, G21, G23, G24, G28, G38, H20, H43, H54, O16.

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Boosting investment in Greece¹

By Panagiotis Barkas and Mauro Pisu²

Aggregate investment has declined markedly over the crisis and has yet to recover. Reviving domestic and foreign investment is crucial to supporting the economic recovery, deepen Greece's integration into global value chains and raising living standards. This will hinge primarily on improving the business environment by lifting barriers to product market competition and enhancing the quality of regulation. Other key policies involve fully implementing the recent insolvency reforms, building an innovation system, overcoming problems in the banking sector and enhancing the quality of public investment through a long-term strategy.

The collapse in investment during the crisis has reduced Greece's stock of productive capital. The fall in the productive capital stock is one of the main factors, along with lower total factor productivity (TFP), behind weak potential output growth. Potential GDP growth started declining in the early 2000s, due to diminishing TFP and employment growth (Figure 1 – Panel A). The collapse of investment in the wake of the crisis has been such that the productive stock capital is now shrinking as the capital's depreciation rate exceeds the investment rate, dragging down potential GDP growth. Weak capital accumulation is also holding back labour productivity growth, hurting living standards (Figure 1 – Panel B).

In Greece the fall in real investment was larger and more prolonged than in other euro area countries. This large fall is attributable to both residential and non-residential investment (Figure 2). In 2017 non-residential real investment was 35% below its 2003-2007 average while residential real investment was about 90% below it. The marked drop in residential investment reflects the disproportionate role it traditionally had in the Greek economy. Though Greece did not experience a housing boom in the years immediately preceding the crisis, residential investment (as a share of GDP) had been consistently higher than in most OECD countries for several decades before the crisis. Housing investment accounted for about half of total investment between 1995 and 2007, a much larger share than in other EU countries. The deep rooted perception of housing as a safe asset and the dearth of alternative investment opportunities in productive activities have contributed to this phenomenon, curbing the growth of the productive capital stock and labour productivity.

1.Note by Turkey: The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”. Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

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Figure 1 Low investment is dragging potential output and labour productivity growth

Source: OECD (2018), *OECD Economic Outlook: Statistics and Projections* (database).

Figure 2 Investment dropped more than elsewhere

1. Real gross fixed capital formation.

2. Includes Euro area countries that are OECD members.

Source: OECD (2018), *OECD Economic Outlook: Statistics and Projections* (database).

Greece also lags in investment in knowledge-based capital (KBC) including software and databases, new product development and organisational capital (Figure 3). In OECD countries, KBC accounts for up to a third of labour productivity growth and in some it has outpaced investment in physical capital (Andrews and Criscuolo, 2013; Corrado et al., 2012; Roth and Thum, 2013). Investment in KBC components, such as business processes and organisational capital, significantly contribute to productivity growth in many service industries (Dabla-Noris et al., 2015). Also, for a given level of research and development (R&D) expenditure, manufacturing companies investing heavily in software generate more patents (Branstetter et al., 2015).

Figure 3 Business investment in fixed and knowledge-based capital (KBC) is low

Note: KBC comprises computerised information, like software and databases; innovative property, including research and development (R&D) and new product development in financial services (among other things); and economic competencies, including firms' human and structural resources such as firm-specific training, brand equity, and organisational capital.

Source: OECD (2015), *OECD Science, Technology and Industry Scoreboard 2015: Innovation for growth and society*.

Greece faces several barriers to raise investment. A recent survey by the European Investment Bank (EIB, 2017) reports that the high level of uncertainty, complex business regulation and taxation, lack of finance and energy costs are the most significant obstacles to raise corporate investment (Figure 4). Also, Greek firms report more often than companies in other EU countries inadequate transport infrastructure as an important barrier to investment.

Figure 4 Obstacles to investment reported by businesses are high

Note: Based on the EIB Investment Survey 2017 that covers 12 500 firms including the whole range from small SMEs with more than 5 employees to larger corporates across the EU 28.

Source: EIB (2017), *The annual EIB Group Survey on Investment and Investment Finance (EIBIS)*.

Reviving investment will require policy actions spanning different areas. This paper focuses on policies to enhance competition and attract additional foreign direct investment – by lowering product market regulation and improving regulatory quality — to speed up the reorganisation of struggling but still viable firms and the liquidation of those that are not viable – by accelerating insolvency procedures and improving out-of-court mechanisms — to climb the value chains – by boosting innovation and investment in KBC – and to restart lending to firms – by overcoming problems in the banking sector. Finally, this paper focuses on ways to enhance public investment, especially the quality of infrastructure.

Easing product market regulation and enhancing regulatory quality

Encouraging competition by reducing regulatory barriers is key to strengthening incentives to invest. Ample empirical evidence shows that market competition fosters investment and productivity (Nickell, 1996; Blundell et al., 1999; Aghion et al., 2004). More competition also strengthens incentives to innovate and adopt better management practices, and invest in information and communication technologies (ICT) and knowledge-based capital (KBC) (Fuentes Hutfilter et al., 2016). As underlined in the previous OECD survey (OECD, 2016) and Arkolakis et al. (2015), product market reforms would also improve external competitiveness and promote exports by lowering production costs without requiring further downward wage adjustment.

Since the start of the crisis, cuts in barriers to entry, trade and investment and reduced state control have made Greece's product markets more open to competition (Figure 5). Between 2008 and 2013 reduced barriers to trade and investment contributed most to lessening product market regulations. A preliminary and conservative assessment of reforms implemented since 2013 suggests that product market restrictions have eased further. The drop in the PMR indicator might not fully reflect all of the progress made since 2013 as the PMR index covers mostly horizontal regulations while the product-market reforms passed in Greece concern mostly sector-specific regulations. Despite this progress, Greece's business environment is among the least friendly among OECD countries. This is corroborated by the World Bank Doing Business indicator.

Figure 5. Product market regulation has eased but remains above most OECD countries

1. Preliminary calculations of the product market reforms since 2013.

Source: OECD (2017), Product Market Regulation Database and OECD calculations.

Regulatory restrictions in the service sector can be especially damaging. In Greece the service sector accounts for about 80% of GDP, above the OECD average (about 74%). Also, services account for about 40% of Greece's total exports in gross terms and more than 70% in value added terms. Regulated professions accounted for about 30% of total private sector employment in 2010. Close to 18% of all employees in

Greece were working in jobs that required a license, while about 13% of all employees were working in strictly regulated professions where regulations impose additional administrative licenses as well as entry and conduct restrictions (Athanassiou et al., 2015).

Since 2010 Greece has undertaken an extensive legislative reform to streamline regulation of and ease entry into a large number of regulated professions. The reform was complex and implementation followed the recommendations of the national competition commission (HCC) (OECD, 2013; Athanassiou et al., 2015). This resulted in opening up to competition about 5% of the 350 regulated professions in Greece, through various measures (e.g. increase in the allowed number of notaries and reduction in notary fees; elimination of unfair restrictions for access to the engineering profession; relaxation of rules for the establishment of new pharmacies).

An assessment of the reform of 11 regulated professions suggests it has had a positive effect on employment. Without the reform, the crisis would have caused a larger fall in employment in these regulated professions and the employment recovery would have started later. The reform had no clear impact on prices and the quality of services provided (Athanassiou et al., 2015).

As highlighted in previous Surveys (OECD, 2013b; OECD, 2016c), the liberalisation of regulated professions could go further. The OECD Service Trade Restrictiveness (STRI) index, which captures restrictions to international trade in services, shows that in Greece about half of the 22 sectors considered have higher restrictions than the OECD average (Figure 6). Relative to the OECD average, Greece performs especially well in telecommunications and postal services. Legal, construction and maritime transport services are instead the three sectors with the highest restrictions relative to the OECD average (Figure 6). For instance, in legal services EU nationality is required to obtain a license to practice domestic law, only licensed lawyers can own shares in law firms and board members and managers of law firms must be licensed lawyers. In construction services, there are discriminatory measures relating to public procurement processes against potential bidders – as only bidders registered in countries signatories to the WTO Public Procurement Agreement can participate in public tenders – and the State controls two major firms in this sector. In maritime transport services, foreigners cannot own more than 49% of local maritime transport companies. Moreover, majority ownership by Greek or EU nationals is a precondition for the registration of vessels under the national flag. Also, certain technical agreements are exempt from competition law while some services are reserved for specific entities at ports (OECD, 2016c). However, reforms have eased restrictions in the cruise ship sector. Between 2012 and 2014, the cabotage for cruise ships and the obligation for round trips were repealed.

The OECD is working with Greece to boost product market competition. Between 2013 and 2016, the OECD conducted, in cooperation with the Hellenic Competition Commission (HCC), three Competition Assessment Reviews that helped identify barriers to competition in selected sectors and ways to improve the overall regulatory framework (Box 1). The reviews covered 14 sectors, accounting for about 30% of GDP corresponding to 39% of employment, and they made 773 recommendations. The Hellenic Confederation of Enterprises estimates that 485 (63%) were implemented by December 2016 (Figure 7). The second review of the third ESM Stability Support Programme identified about 270 out of 356 reforms that should have been adopted by July 2017 (European Commission, 2017). Overall, progress has been uneven across sectors: it was larger in pharmaceuticals, manufacturing and wholesale trade; more limited in media, construction and e-commerce. Ownership of reforms has improved in some instances. On e-commerce the Greek government has worked with the OECD and the European institutions to transform a set of e-commerce specific recommendations into a far-reaching review of consumer protection legislation. This is expected to lead to the codification of the 1994 law on consumer protection; the new code has already been drafted.

Figure 6 Service trade restrictions can be lowered further
 OECD Services Trade Restrictiveness Index, scale from 0 to 1 (most restrictive), 2017

Note: The index includes regulatory transparency, barriers to competition, other discriminatory measures, restrictions on movement of people and restrictions on foreign entry. It is calculated on the basis of the Service Trade Restrictions Index (STRI) regulatory database over the 35 OECD Members, Brazil, China, Colombia, Costa Rica India, Indonesia, Lithuania, Russia and South Africa. The STRI database records measures on a most-favoured-nations basis. Preferential trade agreements are not taken into account. Air transport and road freight cover only commercial establishment (with accompanying movement of people).

Source: OECD (2018), "Service Trade Restrictions Index by services sector" in *OECD Industry and Services Statistics* (database).

As at January 2017, most of the recommendations of the three Competition Assessments have been legislated (Figure 7). Full implementation of these reforms, in the context of strong domestic ownership, would be an additional step to promote competition and strengthen incentives to invest. Reducing horizontal product market restrictions would also help. Greece is gradually moving in this direction as for instance the the role of one-stop shops is being expanded. This is welcome and international experience suggests one-stop shops can be effective tool to improve firms' performance by simplifying administrative procedures (e.g.: McLinden, 2013).

In Greece, one-stop shops now provide newly founded companies with electronic access to the tax authority's online platform and automatically make the founders' details available to the social security agency (EFKA) to speed up the social security registration process. The 2016 investment licencing law has introduced the registration of new companies remotely through the e-one-stop shop and simplified licensing procedures, replacing ex-ante licensing with simple notification. The electronic system for establishing new companies and licensing has been operational since June 2017 – covering selected sectors including beverage, coffee-shops, restaurants, bars, hairdressers, theatres and cinemas, logistics, mines and quarries and hotels. In January 2018 a new law set common rules for inspections in all sectors of the economy. By the end of 2018 a more complete version of the electronic system covering the licensing procedure is expected to be in place. The new system will also cover inspections and will allow for, among other things, the prioritisation of inspections based on risk assessments, the exchange of information among competent authorities and the creation of integrated and unique business profiles with inspections' histories and results. The e-one-stop shop services are expected to be provided free of charge during the first year of operation. The government should ensure one-stop shops have the resources and capabilities to perform their recently expanded tasks effectively.

To produce the expected benefits, the reforms concerning product markets and one-stop shops need to be complemented with others aiming at streamlining cumbersome regulation and improving the efficiency of the public administration. The "silence is consent" rule, whereby licences are automatically issued if the competent authority does not act within the statutory period, could also be expanded further.

Box 1 The OECD Competition Assessment Reviews for Greece

The OECD has developed the "Competition Assessment Toolkit" to conduct competition assessments and improve regulatory impact assessment relating to competition issues. One of the main elements of the Competition Assessments is a "Competition Checklist", which asks a set of questions to identify laws and regulations restricting competition.

In collaboration with the Hellenic Competition Commission (HCC) the OECD has conducted three competition assessments:

- **2013:** The Greek government asked the OECD to conduct an assessment of laws and regulations curbing competition in the sectors of tourism, retail trade, food processing and construction materials. The review used the OECD Competition Assessment Toolkit to structure the analysis and identify 555 problematic regulations and 329 provisions where changes could be made to foster competition. The OECD has estimated that implementing about 60 of these recommendations (those for which quantification was possible) would generate benefits (in the form of lower prices, higher expenditure and turnover) of about EUR 5 billion per year, or 2.5% of GDP.
- **2014:** The second competition assessment review identified competition-distorting rules and regulations in the following manufacturing sectors: beverages; textiles, clothing apparel and leather, machinery and equipment, and coke and refined petroleum products. The review made 88 recommendations on specific legal provisions taking into account EU legislation and relevant provisions in comparable countries, notably EU member states.
- **2016:** The OECD carried out an independent policy assessment concerning 5 sectors: construction, media, wholesale trade, e-commerce and manufacturing sub-sectors, namely pharmaceuticals, chemicals, rubber products, paper and paper products, printing and reproduction of recorded media, which were not examined in the earlier assessments. The review identified 577 potential restrictions to competition, leading to 356 recommendations. Estimates suggest that the implementation of these recommendations will have a positive impact on the Greek economy of around EUR 414 million.

Source: www.oecd.org/daf/competition/greece-competition-assessment-reviews.htm

As reported in the 2016 OECD Economic Survey, recent changes in competition policy and the Hellenic Competition Commission (HCC) have brought the legal framework closer to OECD best practices. The HCC has continued to show dedication and commitment to competitive markets by vigorously enforcing competition laws, despite severe resource constraints. In 2015, the HCC imposed the highest fine ever in Greece on a single undertaking (EUR 31.5 million) for abuse of dominance in the beer market. In 2016, it imposed fines for about EUR 11.5 million in high profile cases, which were upheld by courts. In 2016, a cartel settlement procedure was introduced in Greece, allowing the HCC to speed up decision making and free resources for other cases. This procedure has been applied in two cases in 2016, one of which (a cartel investigation in the construction sector) was the largest yet pursued by the HCC. The HCC's record also includes the imposition of procedural fines for submission of misleading data that obstructed investigations.

However, the lack of resources is hampering the work of the HCC. The budget of the HCC is financed through a levy on limited liability companies. Because of the lasting crisis, its budget has declined considerably, from EUR 9.7 million in 2011, to EUR 7.7 million in 2015 and EUR 5.4 million in 2017. Also, the HCC has to turn over 80% of its yearly saving to the central government. The tight budget constrains HCC's ability to perform its functions and carry out investigations. Moreover, scarce resources have weakened advocacy activities as law enforcement is understandably given priority. The 2015 ESM Stability Support Programme envisaged an increase of the HCC's advocacy unit by twelve additional posts. However, between 2014 and 2016, the staff of the HCC (excluding administrative support and IT experts) declined from 64 to 57 people (due to secondments to other parts of the public sector).

Figure 7 Implementation of OECD Competition Assessments' recommendations has progressed

2013-17

Note: The OECD's Competition Assessments aim to help governments to eliminate barriers to competition by providing a method for identifying unnecessary restraints on market activities and developing alternative, less restrictive measures that still achieve government policy objectives.

Source: EC (2017), "The ESM Stability Support Programme: Greece, First & Second Reviews July 2017 Background Report", Institutional Paper 064, November 2017; EC (2018), *Compliance Report of ESM Stability Support Programme: Third Review January 2018*, European Commission, DG ECFIN, available at www.esm.europa.eu/assistance/greece.

As the economic and fiscal situation improves, the government should make sure the HCC has the financial and human resources commensurate to its responsibilities. Eliminating the rule allowing the central government to claw-back 80% of the HCC's yearly savings would go in the right direction. Going forward Greek authorities could perform competition assessments regularly (such as for new legislation) so as to raise the profile and importance of competition issues in public and political debates and maintain the reform momentum.

Boosting foreign direct investment and integration in global value chains

Given the low level of savings, foreign direct investment (FDI) can play an important role in reviving investment in Greece. Also, FDI generates benefits that go well beyond the direct additional investment it engenders:

- With the right conditions, FDI can beget, technology spillovers and productivity gains to the host country (e.g. Iordanoglou and Matsaganis, 2017; OECD, 2015a; OECD 2010c, Lee, 2005).
- FDI can contribute to the export performance of the host country as foreign affiliates tend to be more export-oriented than domestic companies (e.g. Kneller and Pisu, 2004; OECD, 2000; Ahn et al., 2004).
- Finally, FDI is a building block of global value chains (GVCs). GVCs coordinated by multinational enterprises account for 80% of global trade (OECD, WTO and UNCTAD, 2013). Across countries integration in GVCs is positively associated with skills development and productivity growth (OECD (2017g). GVCs enable domestic firms to access world markets through MNEs' supply chains. The size of manufacturing as a share of GDP is positively associated with integration in GVCs, especially through backward engagement (i.e. imports of inputs used to produce final goods or intermediates to be exported) (OECD, WTO & UNCTAD, 2013).

Figure 8 Greece's inward FDI stocks are low but have improved recently

1. 2015 for Mexico.

2. EU25 for data between 2004 and 2006, EU27 for data between 2007 and 2012 and EU28 from 2013.

Source: OECD (2018), "FDI statistics according to Benchmark Definition 4th Edition (BMD4): Foreign direct investment: main aggregates", *OECD Globalisation Statistics* (database).

In Greece, foreign direct investment and integration in GVCs are low. Greece attracts little FDI and is poorly integrated in GVCs, thus missing out on the benefits from participating in international markets. The FDI stock started to increase in 2015 (Figure 8 – Panel B) but it remains low. In 2016, the Greek inward FDI stock was 15% of GDP, much lower than the OECD average and in other small open economies, such as Slovenia, Spain, Portugal (Figure 8 – Panel A). The low level of FDI stock predates the financial crisis, indicating structural obstacles to attracting FDI. Though improving, the degree of integration in GVCs is also lower than in peer countries (Figure 9). This is true especially for the share of domestic value added embodied in foreign final demand (i.e. the exports of value added) (Figure 9 – Panel A).

Figure 9 There is ample scope to deepen participation in global value chains

Source: OECD (2017), "TiVA Nowcast Estimates" in *OECD International Trade and Balance of Payments Statistics* (database).

The poor business environment hinders FDI and integration in global value chains

Overall, FDI regulatory restrictions are low compared to other OECD countries. Greece ranks 12th among 35 OECD countries on the OECD's FDI Restrictiveness Index (Figure 10). Between 2006 and 2016, Greece lowered FDI restrictions, though most progress took place before 2011. The most significant remaining restrictions concern foreign equity (for mining, quarrying and oil extraction), and screening and approval mechanisms (for fisheries, air and maritime transport, radio and TV broadcasting, accounting and audit, media, tertiary education and business services).

Attracting more FDI then hinges on improving the business environment by lowering product market restrictions, improving the quality of infrastructure and institutions as well as the efficiency of the public administration. These are also some of the main policy determinants of integration in GVCs (OECD, WTO and UNCTAD, 2013). As highlighted above, the business environment can be improved by lowering PMR restrictions. Also, according to the 2017-2018 Global Competitiveness Report Greece ranks 130th out of 137 countries on the burden of government regulation, 112th as regards to FDI and technology transfer and 61st on the protection of intellectual property rights (WEF, 2017b). Iordanoglou and Matsaganis (2017) underline the role of bureaucratic obstacles and hostile attitude against foreign investment at all levels of government in Greece as a factor holding back FDI. Acting on all these factors will improve Greece's attractiveness as FDI destination.

The ongoing privatisation programme presents an opportunity to attract FDI in key sectors such as transport, energy and tourism. Some positive results are already apparent from the privatisation of the Piraeus and Thessaloniki ports. The privatisation of the Piraeus port may increase GDP by 0.8% by 2025 and could contribute to long-term reduction of public debt by 2.3 percentage points of GDP (IOBE, 2016). Also, construction works and the operation of the port may create more than 31 000 new jobs overall.

Attracting FDI in sectors having a relative comparative advantage (RCA) would be especially beneficial for Greece. Empirical research suggests that FDI offers the potential of raising the quality of exports thereby enhancing RCA (Harding and Javorcik, 2012). Policies aiming at attracting FDI to sectors with a comparative advantage could then accelerate GVCs integration. Box 2 shows that Greece has a comparative advantage in the food sector, agricultural products, fuels, minerals and pharmaceuticals. Policies to attract FDI in these sectors could entail for instance incentives to participate in international fairs and fast track approval process.

Figure 10 FDI regulatory restrictions are low compared to other OECD countries

FDI regulatory restrictiveness index, scale from 0 (open) to 1 (closed)

Note: The index reports statutory restrictions on foreign direct investment across the four main types of restrictions: foreign equity limitations; discriminatory screening or approval mechanisms; restrictions on the employment of foreigners as key personnel; and, other operational restrictions. The overall restrictiveness index is the average of sectoral scores.

Source: OECD (2017), *OECD FDI Regulatory Restrictiveness Index Database*.

Recent legislation to attract FDI and promote strategic investment more broadly includes the 2010 law “Acceleration and Transparency of Implementation of Strategic Investments” (Fast Track Law) and the 2013 law “Creation of a Development Friendly Environment for Strategic and Private Investments”. These aim at simplifying licensing procedures and providing limited tax incentives. Enterprise Greece is the agency within the Ministry of Economic and Development with responsibilities over assessing project proposals and granting them fast track status if they meet certain criteria.

More recently, the 2016 law establishing state aid schemes for private investments introduced a range of financial incentives covering tangible and intangible capital with the aim of attracting FDI in addition to encouraging entrepreneurship, innovative SMEs and innovation clusters. Incentives for major investment projects include a fixed corporate income tax rate for 12 years, tax exemption equal to 10% of eligible expenditure (capped at EUR 5 billion) and fast-track licensing procedures.

Box 2. Identifying sectors with comparative advantage in the Greek economy

As an indicator of sectoral competitiveness, the revealed comparative advantage (RCA) or Balassa Index (Balassa, 1965) is used. It is calculated for fourteen commodities exported from Greece to the rest of the world using the following formula:

$$RCA_{ij} = \frac{X_{ij} / \sum_i X_{ij}}{\sum_j X_{ij} / \sum_i \sum_j X_{ij}}, \quad (1)$$

Where X_{ij} is the value of country's j exports of commodity i . The numerator calculates the share of exports of a specific commodity over total exports for Greece. The denominator calculates the share of exports of a specific commodity over total world exports.

An RCA index value larger than one means that the value of the specific commodity exports as a share of the country's total exports is larger than the corresponding ratio for the rest of the world. Based on the historical values of RCA index, commodities can be grouped in three categories: 1) Products and services on which Greece has historically had a comparative advantage and RCA indices constantly well above 1; 2) Commodities with RCA indices around 1, i.e. products which Greece has been exporting with a slight comparative advantage; 3) Commodities with very small shares in Greece's exports compared to the rest of the world, and RCA indices constantly below 1. The chart below shows the 2006-2007 and 2014-2015 average value of RCA of Greek industries (Figure 11).

Figure 11 Revealed comparative advantage in Greece

A higher value of the index indicates a greater comparative advantage

1. Unweighted average.

Source: Authors' calculations based on data on merchandise trade by commodity in the annual macro-economic database of the European Commission (AMECO).

Integrating Greek SMEs in global value chains

The Greek economy is largely based on SMEs and micro enterprises. Helping these firms to integrate into global value chains (GVCs) would require addressing financing constraints and ensuring they can meet the required international quality standards, such as ISO 9000 series, as well as adopt responsible business conduct (OECD, WTO and UNCTAD, 2013; OECD and World Bank, 2015). However, compliance with international quality standards and technical regulations can also increase cost significantly for SMEs. The problem is aggravated when these firms have to adhere to an increasing number of private standards set by customers (OECD, 2008).

Policies have an important role to play to support certification and compliance with standards by SMEs through for instance building national platforms to increase awareness of international certification, sharing experiences and best practices, and facilitating matching between potential partners. For instance, in Mexico some first-tier suppliers of Volkswagen have helped second-tier suppliers to improve quality – by aiding them to gain quality certification specific to the automotive sector based on ISO 9001 – so as to enter or remain in Volkswagen GVCs. Mexico's National Network of Productive Associations promotes horizontal and vertical links between SMEs, governments, institutions and intermediate organisations. Also, initiatives such as group certification for SMEs in geographical regions might be useful, if trust could be built in effective control mechanisms (OECD, 2008).

In Greece, recent initiatives to help SMEs to grow and integrate in GVCs have focused on easing financial constraints through national and European programmes. For instance, the recently established EquiFund will invest in private-sector venture capital and private equity funds across Europe focusing on Greek companies with the aim of supporting technology transfer funds and unlocking equity investment in Greece.

Streamlining insolvency procedures and strengthening contract enforcement

Investment and entrepreneurship heavily rely on the ability of capital to freely and quickly move between profitable market opportunities. The role of insolvency frameworks becomes crucial in restructuring companies that are still viable and liquidating those that are not. An efficient insolvency regime should deliver the largest recovery rate for creditors with the least direct loss in the value of the insolvent firm as a going concern. If creditors are not protected or allowed to participate in insolvency proceedings, they will have less incentive to lend in the future. That leads to a less developed credit market and lower investment (Claessens and Klapper, 2002).

Long and costly insolvency procedures trap capital and other resources in low productivity firms, reducing allocative efficiency and depressing domestic investment. Evidence suggests that a nontrivial share of the collapse in aggregate business investment in Greece is attributable to the survival of firms having persistent problems meeting interest payments, the so-called zombie firms (Adalet McGowan et al., 2017). As of 2013, Greece had the highest share of capital and employment trapped in zombie firms. This was true also in 2003, suggesting persistent problems in restructuring insolvent firms or making them exit the market (Figure 12). A high share of capital and employment trapped in zombie firms signals high resource misallocation, lowering productivity. Moreover, it weakens incentives for non-zombie firms and financial institutions to invest and innovate (congestion effect), while also raising the cost of capital and labour through their artificial scarcity. Empirical evidence from OECD countries indicate that reducing barriers to corporate restructuring can contribute to significantly reduce the share of capital sunk in zombie firms (Adalet McGowan et al., 2017), thus directly reducing resource misallocation and increasing productivity. Such reforms can also raise investment by non-zombie firms through reducing congestion.

The market congestion generated by zombie firms can also create barriers to entry, thus lowering investment from potential market entrants. Simulations suggest that lowering the share of capital trapped in Greek zombie firms from nearly 30% to 5% would increase investment for a typical non-zombie Greek firm by nearly 5%. According to Adalet McGowan et al. (2017), Greece could benefit more than any other country analysed in the sample from insolvency reforms.

Greece's Bankruptcy Code governs the legal framework of insolvencies (Table 1). Currently there are four types of insolvencies: pre-bankruptcy rehabilitation; bankruptcy-liquidation; bankruptcy-reorganization; special administration (fast track liquidation; if the procedure does not succeed within 12 months, a standard bankruptcy procedure follows). Numerous changes to the insolvency framework during the crisis have aimed at accelerating bankruptcies, enhancing pre-bankruptcy rehabilitation and plans as well as facilitating the discharge of entrepreneurs (i.e.: so-called "second chance") (Table 1; Box 3). These changes are consistent with the 2016 EU directive on Preventive Restructuring, Second Chance and Efficiency Measures and the 2014 EC recommendation on A New Approach to Business Failure and Insolvency.

Also, in 2017 the Greek Parliament passed a law to facilitate out-of-court dispute resolutions and accelerate the settlement of debt of non-financial corporations and professionals. The new law is debtor friendly and is initiated by the debtor by submitting a proposal for settling her/his debts. Enterprises cannot apply for this mechanism when a single creditor accounts for at least 85% of the total claims. The debt settlement agreement needs to be ratified by the court. If the court decides not to ratify the out-of-court agreement, the agreement is no longer valid and initial claims are restored. Also, electronic auctions finally started in November 2017 and are expected to take-over from physical auctions by mid-February 2018 (EC, 2017; EC, 2018). An unimpeded flow of electronic auctions will accelerate enforcement procedures and support a thriving secondary market for distressed assets.

Figure 12 Large shares of employment and capital are trapped in zombie firms

Note: Zombie firms are defined as firms aged 10 years or older and with an interest coverage ratio less than 1 over three consecutive years. Capital stock and employment refer to the share of total capital and labour that are in zombie firms. The sample excludes firms that are larger than 100 times the 99th percentile of the size distribution in terms of capital stock or number of employees.

Source: Adalet McGowan, M., D. Andrews and V. Millot (2017), "Insolvency regimes, zombie firms and capital reallocation", *OECD Economics Department Working Papers*, No. 1399, OECD Publishing, Paris.

Table 1 Main elements of Greece's insolvency framework

Law 3588/2007	Bankruptcy Code (BC) regulates rehabilitation (pre-bankruptcy), liquidation and re-organisation proceedings; amended several times during the crisis;
Law 3858/2010	Cross-border insolvency proceeding (consistent with EU regulation);
Law 3869/2010	Protection of over-indebted households (or individuals)" (i.e., those that do not fall under the scope of the BC).
Law 4307/2014	Special administration procedure; this is a fast-track liquidation procedure aiming at facilitating the sale of the debtor's business as a going concern, or the sale of individual functional group of assets or individual assets; if the procedure does succeed within 12 months, a standard bankruptcy procedure follows.
Law 4354/2015	Legal framework for handling the sale and management of non-performing loans.
Law 4336/2015	Amends the BC by streamlining the pre-bankruptcy rehabilitation procedures and introduces an early warning system allowing debtors facing the likelihood of insolvency to apply for an early stage pre-bankruptcy rehabilitation process; it also raises the requirements of insolvency administrators by introducing the licensed profession of insolvency professionals.
Law 4446/2016	Extensive modification of the BC to speed up insolvencies through accelerating and simplifying bankruptcy procedures, introduction of "second chance" mechanism, enhancement of pre-bankruptcy rescue mechanisms.
Law 4472/2017	Simplified procedures for bankruptcies of small enterprises; it expedites sales of movable and immovable property of bankrupt companies and faster termination of bankruptcies.

Source: OECD compilation.

Overall, these changes to the insolvency framework and out-of-court business dispute resolution mechanism go in the right direction. The cross-country OECD policy indicator of insolvency regimes (Box 4) shows a marked improvement in Greece from 2010 to 2016 to below the OECD average (Figure 14). Greece is the country that along with Chile, Germany, Japan, Portugal and Slovenia made the largest progress

on insolvency procedures. The sub-components of the index show progress in all of the three areas covered by the index: personal costs to failed entrepreneurs, lack of prevention and streamlining and barriers to restructuring (Figure 15). The insolvency framework index included in the World Bank's Doing Business database corroborates these improvements as Greece's distance to the best-performing countries decreased between 2010 and 2017.

Box 3. Main recent changes in Greece's insolvency framework

In the last three years, especially through Law 4336/2015 and Law 4446/2016, Greece insolvency framework has undergone substantial changes. These can be grouped in three main areas:

1. Speeding up bankruptcies by :
 - Limiting the role of courts in insolvency proceedings by transferring many of their duties to insolvency professionals (a newly established licensed profession);
 - Abolishing the creditors' committee as this has proven to hinder rather than facilitate insolvencies (e.g.: in the previous regime the creditor committee could successfully oppose any settlement reached by the insolvency administrator with debtors);
 - More flexible procedures in case of "small" bankruptcies (estate less than EUR 100 00);
 - Shortening of certain deadlines (e.g.: convocation of the creditors' meeting; delayed submission of a creditor's claim; submission of the reorganisation plan and its acceptance);
 - Cancelling the court pre-judgement of the reorganisation plan (in the previous regime, the court had to examine the reorganisation plan before creditors voted on it and could in certain cases dismiss the plan).
2. Enhancing pre-bankruptcy rehabilitation plans by:
 - Consolidating three different pre-bankruptcy rehabilitation plans into the pre-pack rehabilitation plan; this is similar to the pre-pack arrangements already present in the United Kingdom and United States; rehabilitation procedures can start only if a pre-agreed rehabilitation is in place so as to avoid courts being overloaded with plans aiming only at strategically delaying bankruptcy and unlikely to succeed; the debtor and creditors (representing 60% of total claims, including 40% of secured claims) must agree on the rehabilitation plan, which needs be ratified by the court; ratification binds all creditors even those that have dissented or did not participate;
 - Introducing creditor-driven rehabilitation; creditors (representing 60% of total claims, including 40% of secured claims) can agree on a rehabilitation plan without the participation of the debtor and submit the plan to the court for ratification, provided that the debtor is unable to meet overdue financial obligations in a general and permanent way (i.e. cessation of payments); the opposition of the debtor does not preclude the ratification of the plan as the court will base its decision mainly on the opinion of the financial expert accompanying the plan;
 - Introducing new procedures to deal with non-cooperating shareholders;
3. Facilitating the discharge of entrepreneurs ("second chance") by:
 - Shortening the period from 10 to two years, starting from the start of bankruptcy proceedings, after which the entrepreneur can be fully discharged from any of the creditors' claims that have not been fully satisfied; the entrepreneur is discharged any time after bankruptcy ends; entrepreneurs have the right to this discharge only once.

Source: Karatzas, C.M., V. Salaka and A.S. Tsatsi (2017), "Insolvency Proceedings in Greece after Recent Reforms", *Emerging Markets Restructuring Journal*, Vol. 3; "Insolvency and Directors' duties in Greece: Overview", available at www.ukpracticalw.thomsonreuters.com accessed in August 2017; "Restructuring & Insolvency in Greece" available at www.lexology.com accessed on August 2017.

Box 4. The OECD questionnaire on insolvency regimes

In April 2016, a questionnaire aimed at collecting specific information about personal and corporate insolvency regimes was circulated to 35 OECD member and 11 non-member countries.

The questionnaire was designed to capture 13 key features of insolvency regimes (Figure 13). In order to get a better understanding of reforms over time, countries were also asked to indicate the state of play with respect to the different features of insolvency regimes at five year intervals since 1995 (i.e. 1995, 2000, 2005, 2010 and 2016), but the final responses only allowed the construction of indicators for 2010 and 2016.

Figure 13. Components of the OECD insolvency index

Key design features of corporate and personal insolvency regimes

Source: Adelet McGowan, M., D. Andrews and V. Millot et al. (2017), "Insolvency Regimes, Zombie Firms and Capital Reallocation", *OECD Economics Department Working Paper*, No. 1399, OECD Publishing: Paris; Adelet McGowan, M. and D. Andrews (2016) "Insolvency Regimes And Productivity Growth: A Framework For Analysis", *OECD Economics Department Working Paper*, No. 1309, OECD Publishing: Paris.

Figure 14 Greece's insolvency framework has improved

Note: The indicator is a composite that aggregates 13 insolvency indicators across 4 dimensions: treatment of failed entrepreneurs; prevention and streamlining; restructuring tools; and other factors. Calculations are based on the OECD questionnaire on insolvency regimes which collected specific information (mostly in the form of Yes/No questions and numbers) about personal and corporate insolvency regimes for 35 OECD member and 11 non-member countries.

Source: Adelet McGowan, M., D. Andrews and V. Millot (2017), "Insolvency regimes, zombie firms and capital reallocation", *OECD Economics Department Working Papers*, No. 1399, OECD Publishing, Paris.

Figure 15 Greece has improved across all areas of the OECD insolvency regime indicator

Note: Calculations based on the OECD questionnaire on insolvency regimes.

Source: Adalet McGowan, M., D. Andrews and V. Millot (2017), "Insolvency regimes, zombie firms and capital reallocation", *OECD Economics Department Working Papers*, No. 1399, OECD Publishing, Paris.

Despite this progress, recovery rates remain low and insolvency proceedings slow compared to most OECD countries (Figure 16). For the stylised insolvency case considered by the World Bank's Doing Business index, the average recovery rate is just 35.6%, about half the level of the OECD average. Also, insolvencies last on average 3.5 years, more than double the time of an average OECD country.

Figure 16 Insolvency proceedings in Greece are slow and the asset recovery rate is low

Note: Time for creditors to recover their credit is recorded in calendar years and the period of time is measured from the company's default until the payment of some or all of the money owed to the bank. Potential delaying tactics by the parties, such as the filing of dilatory appeals or requests for extension, are taken into consideration. The cost of the proceedings is recorded as a percentage of the value of the debtor's estate. The cost is calculated on the basis of questionnaire responses and includes court fees and government levies; fees of insolvency administrators, auctioneers, assessors and lawyers; and all other fees and costs. The recovery rate is calculated based on the time, cost and outcomes of insolvency proceedings and is recorded as cents on the dollar recovered by secured creditors. The calculation takes into account whether the business emerges from the proceedings as a going concern or the assets are sold piecemeal. The costs of the proceedings are deducted. The value lost as a result of the time the money remains tied up in insolvency proceedings is also deducted. The recovery rate is the present value of the remaining proceeds.

1. Reference year of database. The 2018 database reports the data collection completed in June 2017.

Source: World Bank (2018), *Doing Business 2018* (database).

The government should ensure the legislated reforms are fully and timely implemented. For instance, the first electronic auctions started only in November 2017, though the legislation and a pilot version of the platform had been ready long before. Electronic auctions need to proceed unimpeded. The results of the first electronic auctions show they have the capacity to push strategic defaulters to repay loans. Besides, the government should ensure sufficient well-trained insolvency professionals are available soon. The first cohort of insolvency professionals is expected to assume tasks only by the end of 2017 after completing training and examinations. Training should cover not only insolvency laws and regulations but also finance and economics so that insolvency professionals can effectively and efficiently steer liquidation and restructuring processes. The government also needs to make further progress on establishing an insolvency registry, following international best practices. This initiative is part of the National Strategic Reference Framework (NSRF) 2014-2020.

The efficiency of the insolvency regime is intertwined with that of the judicial system. This is especially important in Greece as the new insolvency framework passed in 2016 applies only to proceedings started after 22 December 2016. This means that the large backlog of insolvencies (more than 200 000) falls outside the remit of the new insolvency regime. Greece is among the countries with the lengthiest trials and highest litigation rates (OECD, 2013b). In addition, the World Bank's *Doing Business* Indicator also suggests that enforcing contracts is difficult in Greece (Figure 17). The relative position of Greece has actually declined since 2010.

In countries displaying high litigation rates such as Greece, policies should primarily aim at shortening court cases. The digitalisation of the justice system is an important and thus far an underutilised tool in Greece. Across countries, the budget devoted to digitalisation is associated with a shorter trial length (Palumbo et al., 2013). The National Strategic Reference Framework 2014-2020 envisages the digitalisation of judicial files and records. Digital technologies can support case-flow management through creation and maintenance of records concerning case processing and schedules, structuring management of pre-trial, trial,

conferences, and hearings; flagging cases for staff and judge attention, enabling verbatim records of court proceedings, and providing needed management information and statistics. Finland's Insurance Court provides a successful example of applying case-flow management along with an advanced time-frame alarm system enabled by digital technologies (Pekkanen et al. 2015).

Figure 17 Enforcement of contracts is weak

Note: The index reports the distance of each economy from the best performance observed on each of the indicators across all economies.

1. Reference year of database. The 2018 database reports the data collection completed in June 2017.

Source: World Bank (2018), *Doing Business 2018* (database).

Building an innovation system

According to the European Innovation Scoreboard 2017, Greece is a moderate innovator. Greece lags behind the OECD average both in business and government spending on R&D activities, which amount to 0.28% and 0.54% of GDP respectively (Figure 18 – Panel A). Funding from abroad accounted for 13.2% of gross domestic expenditure on research and development in 2014, with the EU being the most important external funder of R&D activities. The number of researchers in Greece is above the OECD average (Figure 18 – Panel B). Thus, research productivity in terms of the number of patents per researcher and per R&D spending is low (Figure 19).

Figure 18 Research and development expenditure is among the lowest in the OECD

Source: OECD (2016), *OECD Main Science and Technology Indicators* (database) and OECD (2017), *OECD Science, Technology and R&D Statistics* (database).

Connections between research centres and industry remain a challenge in Greece (Figure 20). Co-operation and financing of, mostly, public research centres and universities by the private sector face stiff resistance. In general, systematic data on scientific research are missing. The National Research and Innovation Strategy for Smart Specialisation 2014-20 was introduced in 2014 as the successor of the National Strategic Plan for Research and Development 2007-13. The new strategy aims at promoting links between research and industry and accelerating the dissemination of innovation. According to the strategy, gross expenditure on research and development is expected to amount to 1.2% of GDP by 2020. The 2016 law establishing state aid schemes for private investments provides financial incentives to boost R&D and foster collaboration between industry and R&D centres. This might go towards bridging the gap between the many Greek SMEs and research centre (Nassr, et al., 2016). Greece's SMEs have lower capacity than their European peers to upgrade their technology (NBG, 2016).

Figure 19 Research productivity is low

A. Patent applications to the EPO¹ per 1000 researchers
2014 or latest year available²

B. Patent applications to the EPO¹ per billion euro of expenditure on R&D
2014 or latest year available

1. European Patent Office (EPO).

2. 2013 for Latvia, Iceland and the Slovak Republic, 2013 for Canada and Mexico and 2012 for Israel for the number of researchers. For Switzerland, the number of researchers in 2014 is estimated based on available data in 2012 and 2015.

Source: OECD (2017), *OECD Main Science and Technology Indicators* (database) and Eurostat.

Figure 20 Co-operation with higher education or research institutions in innovation is low

The share of firms cooperating in research in all product and/or process-innovating firms, 2012-14

Note: International comparability may be limited due to differences in innovation survey methodologies and country-specific response patterns.

Source: Eurostat (2016), Community Innovation Survey (CIS) 2014.

The institutional setting of Greece's innovation policies is fragmented. Responsibilities, design and implementation of innovation strategies rest with many institutions and agencies:

- The National Council of Research and Innovation (NCRI) is the highest advisory body of the government for the formulation and implementation of national policies on research, technology and innovation. The NCRI is appointed by and reports directly to the Minister of Education and Religious Affairs.
- The Ministry of Rural Development and Food supervises the National Agricultural Research Foundation (NAGREF), which undertakes research and technology in agricultural, forest, animal and fish production and other related areas.
- In 2016, Greece established a new science and research financing institution, the Hellenic Foundation for Research and Innovation (HFRI), following the example of the National Science Foundation (NSF) of the United States or Germany's Deutsche Forschungsgemeinschaft. The results of the research it funds will be collected and documented by the National Documentation Centre (EKT), which is also responsible for documenting all the publicly funded research output produced in Greece.

Overall, the high level of fragmentation lowers transparency and accountability as research centres are overviewed by different ministries. Moreover, existing agencies are not closed or consolidated into new ones, such as the HFRI. This can lead to overlapping responsibilities and inefficiencies in the management of funds and research programmes. The National Strategic Plan for Research and Development 2014-2020 acknowledges this problem.

Government-funded research should be consolidated into one framework. Agencies should be merged and lines of responsibilities and accountabilities simplified. Simplification will help identify strengths and weaknesses of research centres and projects, and improve the allocation of funds.

The use and effective enforcement of intellectual property rights (IPRs) is another important policy measure to encourage innovation. Evidence from six case studies on major innovations suggests that IPRs contribute at least partially to R&D appropriation (WIPO, 2015). IPRs encourage disclosure (unlike trade secrets) by allowing innovators to share technologies on terms they choose. As such, IPRs enable the development of technology markets. International bodies such as the World Trade Organisation (WTO) and World Intellectual Property Organisation (WIPO) require their members to undertake binding commitments to protect IPRs. The OECD has also developed guidelines on specific aspects of IPRs, such as access to research data from public sources and licensing of inventions (OECD, 2007).

The IPRs regimes concern not only large and multinational enterprises but also innovative start-ups and SMEs. Yet, in OECD countries, SMEs tend to underutilise IPRs (OECD, 2015a). This is especially problematic in Greece given the large share of micro firms and SMEs, which lack resources and capacity to file for patents. In this area recent important progress has involved the creation of the profession of patent attorney, which will extend considerably the pool of professionals who, after having obtained the required accreditation, can represent clients filing for patents. This change is expected to accelerate and improve the quantity and quality of patent applications.

Public procurement is another tool that could be used to develop the innovation capacity of the country. Good practices from OECD countries show that public procurement can be used to foster innovation. For example, by specifying functional rather than technical criteria in calls for tenders, the government could foster competition among firms that wish to provide services in the most cost effective and innovative way. In a recent survey among OECD countries (OECD, 2017h) almost 80% of responding countries reported to support innovation through the procurement process; also half of them have developed an action plan for innovation procurement. Greece is taking the first steps towards an action plan to support innovation through public procurement. Its smart specialisation strategy 2014-2020 includes a programme on Pre-commercial

Procurement, conducted by the General Secretariat for Research and Technology (GSRT) and the Ministry of Education, Research and Religious Affairs. A pilot programme is under preparation.

The measurement and impact assessment of actions related to procurement for innovation needs to be established. There is currently no formalised system in place for doing so and there are no quantified targets for procurement for innovation in Greece. Impact assessments, evaluation studies and/or studies of state-of-play regarding procurement for innovation do exist, but their recommendations are underused.

Reviving bank lending to firms

Bank lending interest rates have declined to pre-crisis levels after peaking in 2011. However, their reduction was more moderate than in other Eurozone countries. To date, Greek lending rates remain well above those in other EU countries and Greek banks' interest rate differential with EU countries is higher than in the pre-crisis period (Figure 21).

Figure 21 Bank lending rates in Greece have declined but remain higher than in other Eurozone countries

Source: ECB (2018), "MFI interest rate statistics", Statistical Data Warehouse, European Central Bank.

Despite the gradual fall in lending rates, bank credit to non-financial corporations remains low, though it has stabilised (Figure 21 and Figure 22 – Panel A). At mid-2017, bank credit was at the same level as in 2006 or 30% below the 2009 peak. The 2015 uncertainties relating to the ESM Stability Support Programme halted the recovery of bank credit that had started in 2014 (Figure 22 – Panel A). Confidence collapsed, derailing the recovery in the demand for loans (Figure 22 – Panel B). The demand for loans started to increase again only in late 2016. However, fixed investment projects are still a weak contributor to the demand for loans, which are mainly driven by debt refinancing, restructuring and renegotiation needs and, to a lesser extent, inventories and working capital (Figure 22 – Panel C). On the supply side, the tightening in credit standards of 2015 and previous years has yet to unwind (Figure 22 – Panel C).

The Greek banking sector is undergoing deep reforms to enhance its resilience to shocks and to support sustainable lending to firms and households. Reforms have centred on rationalisation of operations, consolidation, recapitalisation, and more recently improving banks' governance. The restructuring of the banking sector has already yielded results:

- Through consolidation, the share of banking assets held by the largest 5 banks increased from 70% in 2007 to more than 97% 2016. This high concentration does not seem to have obstructed competition so far and the competition commission has not opened cases on the banking sector.

Figure 22 Bank credit's standards have yet to ease and demand for bank loans is still weak

Note: Net percentages for credit standards are defined as the difference between the sum of the percentages of banks responding “tightened considerably” and “tightened somewhat” and the sum of the percentages of banks responding “eased somewhat” and “eased considerably”. Net percentages for the questions on demand for loans are defined as the difference between the sum of the percentages of banks responding “increased considerably” and “increased somewhat” and the sum of the percentages of banks responding “decreased somewhat” and “decreased considerably”.

Source: ECB Bank Lending Survey.

- The cost-to-income ratio decreased by about 60% from late 2014 to less than 50% in mid-2017, one of the lowest in the EU. In 2016 the number of bank branches per 1 000 people was one-third lower than EU average after having decreased by 40% since 2007. In parallel, the number of bank employees per 1 000 people also declined – through voluntary exit schemes – by nearly 35%, to about 60% the EU average. Greek banks have divested from many foreign subsidiaries and other non-core activities.
- Following three recapitalisation rounds between 2012 and 2015 (for EUR 51.7 billion), banks' capital ratio rose well above regulatory thresholds; in 2017Q2 the Tier1 capital ratio was 17% (Figure 23 – Panel A). The latest bank recapitalisation in 2015 amounted to about EUR 15 billion and followed the ECB's asset quality review and stress tests with higher capital hurdles than in other EU countries.

As a result of these reforms, confidence in the banking sector is starting to recover. From 2016, major credit rating agencies have upgraded the rating of Greek banks (e.g.: Moody's, 2016), on the back of improving profitability and loan quality.

The Hellenic Financial Stability Fund (HFSF) has played a central role in this reform process, having participated in bank recapitalisation and, currently, steering the implementation of governance reforms. The HFSF, founded in 2010, is owned by the Ministry of Finance as a private legal entity but is not part of the public sector. Its role is to contribute to the maintenance of the stability of the Greek banking system, (HFSF, n.d.). According to its statute, the HFSF will wind down in 2020. HFSF holds equity in the four systemic banks: 40% of National Bank of Greece, 26% of Piraeus, 11% of Alpha and 2% of Eurobank's equity. Banking supervision rests with the Bank of Greece and the Single Supervisory Mechanism.

Yet, the banking sector still faces several challenges. Banks' return on assets is improving but still lower than other OECD countries (Figure 23 – Panel B) and banks' assets are declining, also because of disinvestment of foreign subsidiaries. Moreover, banks are well capitalised but about half of their capital consists of deferred tax assets (or 7% of total assets) (Moody's, 2017). According to Basel III capital rules, from 2018 deferred tax assets that rely on banks' future profitability will have to be deducted from Common Equity Tier 1 (CET1), which will lower bank capital ratios. The Greek government has amended the tax code – in line with other European countries such as Italy, Portugal and Spain – to allow banks to turn deferred tax assets into deferred tax credits (i.e. direct claims on the government that will have to be honoured in case of liquidation or insolvency) – so that they need not be deducted from CET1. The carry-forward period was lengthened from 5 to 20 years. These changes have received a positive assessment by the ECB (ECB, 2017). Transforming deferred tax assets into deferred tax credits might in the long-term aggravate the adverse feedback loop between bank and government financial health.

Banks' funding is improving, though it still constrains lending. The bulk of bank deposits lost during the crisis have yet to return. Bank deposits dropped by 27% from late 2014 to mid-2015, for a cumulative loss of about 50% from their 2009 peak (Figure 24). The capital controls imposed in mid-2015 halted the deposit outflows and they are being gradually relaxed, although they still contribute to tight financial constraints. The central bank funding is diminishing rapidly and is now at levels of 2009. Access to the interbank market is improving but is still low (Figure 24). The government has issued a roadmap to lift capital controls, as banks' funding conditions improve, while preserving financial stability.

Banks have also a large stock of non-performing loans (NPLs), constraining credit supply, especially towards more risky borrowers such as SMEs. In 2017Q3, the gross value of NPLs stood at EUR 106 billion, about 46% of total loans or 58% of GDP (Figure 25 – Panel A and B). The size of non-performing exposures (NPEs, which in addition to loans and advances include debt securities other than those held for trading) is similar to that of NPLs as in Greece the amount of debt securities is not large compared with loans. According to the European Banking Authority, in Sept 2017 the NPE ratio was 42% in Greece, against 14% in Portugal and 10% in Italy and in Ireland (EBA, 2017). The analysis below refers to either NPEs or NPLs depending

on which data are available. Provisions amount to 49% of NPLs' gross value, higher than the EU average. The net value of NPLs (gross value minus provisions) amounts to about 175% of banks' capital (Figure 25 – Panel C). NPEs are spread across loan types (Table 2). Business loans account for over half of total NPEs. Considering business lending, NPEs are concentrated among SMEs, though the share of loans that are non-performing is larger for sole proprietors.

Figure 23 Capital ratios exceed thresholds but return on assets remains negative

1. % of the total risk exposure.

2. The ratio is calculated by dividing annual profit or loss by total assets.

Source: European Banking Authority (2018), "Risk Dashboard, Data as of Q3 2017".

The prolonged crisis has led to the rise in NPLs in combination with structural and bank governance problems. Private debt relative to GDP and the share of loans to non-financial corporations remain low compared to other OECD countries but the long crisis has eroded the capacity of households and businesses to pay their debts. Also, even before the onset of the crisis the NPL ratio in Greece was 4.5% (in 2007) higher than the 3% average for the euro area (HBA, 2017). This suggests bank governance problems and deficient risk management contributed to misallocate credit. Already back in 2006, the IMF Financial Stability Report (IMF, 2006) underlined the limited capabilities and lack of data across banks for performing effective risk management, provisioning policies not aligned with risk exposures, and high level of NPLs compared with other euro area countries.

Figure 24 Bank deposits have levelled off and reliance on the central bank's funding is decreasing

Note: Deposits include deposits and repos of non-monetary and financial institutions (non-MFIs). Central bank funding includes ELA provided by the Bank of Greece and financing provided by the ECB.

Source: Bank of Greece.

Figure 25 The stock of non-performing loans is large

Source: European Banking Authority (2018), "Risk Dashboard, Data as of Q3 2017" and IMF (2018), *IMF Financial Soundness Indicators Database*.

Table 2 Share of NPEs for different types of loans

June 2017

Type	% NPEs in total gross loans ¹ by category	% of category NPEs in total NPEs
Residential mortgages	43.3	30.2
Consumer loans	53.2	14.9
Business loans	43.6	52.8
Sole proprietors	66.5	10.1
SMEs	59.0	31.5
Large corporates	24.5	12.8

1. Includes loans, advances and debt securities. NPEs are non-performing exposures according to the European Banking Authority definition and computed by the Bank of Greece. NPEs include either of the two criteria: a) material exposures which are more than 90 days past due; b) unlikely to pay in full without realisation of collateral, regardless of the existence of any past due amount or of the number of days past due.

Source: OECD computations and Bank of Greece (2017), Report on Operational Targets for Non-Performing Exposures, December.

Bank governance framework has improved

To reap the full benefits of the banking sector reforms banks' governance will have to improve. Poor corporate governance has skewed lending decisions, contributing to the rise in NPLs. Eligibility criteria for banks' boards were weak, resulting in poor management. Credit risks were not properly assessed due to insufficient risk controls, lack of data and uneven use of credit-scoring methodologies (IMF, 2006).

The Single Supervisory Mechanism and the Bank of Greece as banks' supervisors oversee banks' corporate governance. The Hellenic Financial Stability Fund (HFSF) as a shareholder of banks plays an important role in implementing corporate governance reforms and recommending changes. Banks' corporate governance reforms have made progress since the banks were consolidated and recapitalised in 2015. In 2016, the four systemic banks replaced many members of their boards to conform to the new strict fit-and-proper criteria. The HFSF is leading an in-depth review of the governance and performance of the four systemic banks' boards of directors and their committees, which aims to establish at the board level a culture of evaluation and a focus on managing NPLs. Building on the board assessment already undertaken in 2016, the new review aims at establishing an evaluation culture and discipline at the board level, and evaluating risk- and audit-board committees with particular focus on non-performing loan management.

Fully implementing and entrenching corporate governance reforms is a precondition for HFSF to divest its equity holdings in banks by 2020. After the conclusion of the in-depth review of the governance framework and performance of the banks' boards of directors, the HFSF should pursue its recommendations and continue to align corporate governance standards with international best practices. The government should ensure HFSF's continued independence and authority to fully implement the compulsory corporate governance standards. In the last two years, director and senior executive turnover at HFSF was high. This may have hampered HFSF's regular reporting and operations. More stability in HFSF's senior management, while ensuring that senior managers meet strict fit-and-proper criteria, will enhance its operations.

Reducing non-performing loans

Reducing NPLs is paramount to restore the banking sector to health and to revive bank credit. NPLs restrict credit supply through two main channels: lowering profitability and tying up capital as impaired assets carry higher risk weights (Ayira et al., 2015).

Accelerating their disposal hinges on complementary policies (Aiyar et al., 2015; Liu and Rosenberg, 2013): (i) tightening regulatory policies; (ii) developing a market for distressed debt. Improving insolvency and debt restructuring proceedings is also important as discussed in a separate section in this paper. Urgency is needed as lowering NPLs to pre-crisis levels will take considerable time. The recent experience of Ireland

and Spain shows that NPLs start declining only two to three years after the first decisive actions have been taken.

Tightening regulatory policy

Banks' supervisors have taken several steps to improve the regulatory framework of NPLs. Initial improvements by the BoG were informed by diagnostic studies commissioned in 2013 and 2015 to a private sector firm to assess the quality of the loan portfolio of Greek banks, review existing forbearance measures and foreclosure solutions and assess the capacity of banks to deal with impaired loans in an effective way (NBG, 2014; Plaskovitis, 2016). The main findings pointed to the predominance of forbearance measures, limited use of foreclosures, delays in handling denounced loans (i.e. loans where the contract has been terminated), and insufficient portfolio segmentation.

Following this assessment, the BoG has issued new and detailed supervisory guidance on NPLs, including a new reporting framework which goes well beyond the European Banking Authority's guidelines (ECB, 2016; BoG 2017). In line with the ECB's guidance (ECB, 2017), it requires banks to develop NPL reduction strategies, including quantitative targets (Table 3), and to establish dedicated units to manage NPLs.

Table 3 Operational targets to reduce non-performing exposures

	Target	Measurement	Rationale
1	NPE	Gross value	Overall target
2	NPL	Gross value	Overall target
3	Cash recoveries (collections, liquidations and sales) from NPEs	As a share of total NPEs.	Monitoring collection efforts, collateral sales and liquidations. Targets point to rising cash recoveries (from 3% of NPEs in 2017, to 4.5% in 2018 and 6.1% in 2018) based on increasing liquidation proceeds.
4	Restructured loans (long term modifications)	As a share of NPEs plus forbore restructured loans.	Monitoring modification solutions offered to distressed borrowers. Banks are aiming at increasing the share of restructured loans to 27%-61% in 2019 from 15%-19% in 2016Q2. Restructuring involves long-term modifications of the loan agreement for a period longer than two years. It is expected this will lead to the transition of borrowers into viability status and finally into a cured status
5	NPEs that are 720 days past due and not denounced	As a share of total NPEs that are 720 days past due either denounced or not denounced.	Monitoring the start of legal efforts to resolve NPEs. Banks are aiming at lowering the share of not denounced loans from 6%-26% in 2016Q2 to 1%-7% in 2019 for SMEs and from 12%-34% to 2%-24% for large corporates.
6	Denounced loans for which legal action has been initiated	As a share of total denounced loans.	Monitoring legal efforts to resolve NPEs. The target is 87-100% in 2019.
7	NPEs of SMEs for which a viability analysis has been conducted in the last 12 months	As a share of total NPEs of SMEs.	Monitoring efforts to offer appropriate restructuring solutions to SMEs. The 2019 target is 80-97% in 2019.
8	NPEs of SMEs and corporates involving multiple banks for which a common restructuring solution has been implemented.	Gross value.	Monitoring efforts to implement common restructuring solutions by multiple banks
9	NPEs of corporates for which a specialist for restructuring companies was hired	Gross value.	Monitoring efforts to implement corporate restructuring solutions. The target is for doubling the amount of loans for which such solutions have been proposed between 2016Q2 and 2019.

Source: BoG (various issues), *Report on Operational Targets for Non-Performing Exposures*, available at www.bankofgreece.gr/Pages/en/Publications/ReportNPE.aspx.

The introduction in 2016 of quantitative targets to dispose of NPLs and NPEs was an important step forward. Setting and enforcing targets is the approach followed by Ireland and Cyprus after the crisis and Japan in the late 1990s and early 2000s. According to Greek banks' current targets, the stock of NPEs should drop by nearly 40% between June 2017 and December 2019, (BoG, 2017). Banks expect that a large share

of NPEs will be cured as the economy improves (i.e. they will become performing loans). Cured loans should reduce NPEs by EUR 33 billion and marginally exceed the generation of new NPEs. Sales, liquidations and write-offs are also expected to play an important role, reducing NPEs by EUR 33 billion in total.

So far banks have been able to meet NPL disposal targets. The targets become more ambitious from 2018 and banks expect NPL inflows to remain high. Supervisors should provide robust and proactive supervision to ensure prudent NPL recognition and provisioning as well as strong capital buffers. Non-compliance with NPL targets should trigger additional supervisory measures, speeding up bank restructuring. Moreover, efforts should be pursued to enhance the capacity of banks to manage NPLs internally, which is still low. Supervisors need to ensure that the established independent internal units specialising in the management and recovery of NPLs in all major banks are well resourced.

In cases where debtors are in arrears with multiple creditors – banks and the public sector – more coordination among creditors will help to expedite NPL resolutions. The lack of consultation between creditors has prevented the development of broad agreements on debt restructuring. Some improvements have recently been made with the introduction of regular meetings among the four significant Greek banks to discuss cases involving common borrowers. The new out-of-court dispute resolution (discussed below) also allows for a faster restructuring of debt with multiple creditors including public agencies. The government should make sure public agencies actively participate in these procedures to facilitate debt restructuring.

Supervisors (the Bank of Greece and the Single Supervisory Mechanism) should ensure that as the disposal process of NPLs gathers pace banks remain well capitalised. As highlighted by a recent ECOFIN report on NPLs (ECOFIN, 2017), robust, proactive and intrusive supervision is key to ensuring prudent NPL recognition and provisioning as well as strong capital buffers. Banks need to be able to realistically project the effect of their NPL disposal plan on their capital under different economic assumptions. The banks' stress tests to be conducted in 2018 should be able to identify potential capital shortfalls before the end of the ESM Stability Support Programme. In the event capital shortfalls arise that cannot be covered by the private sector, ESM Programme funds should be used to ensure banks remain well capitalised.

Developing a market for distressed debt

The lack of a distressed debt market and weak demand for distressed debt explain why to date there have been only few non-performing loan sales in Greece. In the second half of 2017, there were the first two NPL sales by Greek banks; additional NPL sales are expected to be completed in 2018. Regulation and lack of competition has severely hindered the development of a loan servicing (i.e. loan administration) industry in Greece. A new law regulating non-bank loan servicers was approved only in 2015 (Law 4354/2015) and the BoG issued implementing regulation in 2016. This is the first attempt in Greece to foster a secondary market for distressed debts (Sakkas and Bazinas, 2016). The new law and implementing regulation follow international best practices as they allow for the licensing of loan servicing activities to nonbank entities, thus lowering entry barriers into this industry (IMF, 2015). The BoG is responsible for issuing licences, based on pre-defined criteria, and revoking them in the case of infringements. Licensed servicers will have to abide by the supervisory framework for NPLs issued by the BoG. They will be able to operate in three areas: management, transfer (i.e. purchase) and refinancing of loans. Refinancing will require an additional license from the BoG. The possibility of restructuring and refinancing non-performing loans is a key aspect of the reform as it enables licensed servicers to turn around distressed borrowers by offering new loans. This possibility can then help enlarge non-bank sources of finance and improve access to finance by distressed borrowers. However, the legislation on loan servicing only concerns large corporate loans and does not apply to SME loans, consumer loans or primary residence mortgages.

BoG had licenced 10 loan servicers at the end of 2017. This will help to develop a distressed debt markets. Allowing loan servicers to manage or purchase SME loans is expected to accelerate resolution of distressed debt given the large number of distressed SME borrowers in Greece. Japan provides a good example of developing a distressed debt market in a relationship banking environment with many SMEs (Box 5).

Tax incentives for banks to dispose of NPLs need to be clarified and streamlined. Loan servicing legislation introduced new tax provisions, but these are partly inconsistent with those provided by the 2003 securitisation law. The 2003 securitisation law in addition to providing an efficient and expeditious means for transferring NPLs offers full exemption from indirect and direct taxes on loans transfers (HFSF, 2016), though they have been underused because of the lack of loan servicers. The more recent loan servicing legislation offers less generous incentives, which are also partly inconsistent with the securitisation law

Box 5. The distressed debt market in Japan

The collapse of the Japanese financial bubble in 1991 lasted for more than 10 years, resulting in plunging asset prices and a rising stock of banks' NPLs. During 1998-2002, the government created a market to resolve NPLs. These actions were effective as in the following years the stock of NPLs first increased, as banks were forced to recognise them; afterwards it diminished drastically (Figure 26).

Figure 26. Policy measures helped to create a distressed debt market and lower NPLs in Japan
Index 1999 Q1 = 100

Source: Thomson Reuters.

The first step in resolving banks NPLs was to induce banks to sell the collateral of NPLs so as to create a distressed debt market. Until the late 1990s, banks had made insufficient provision for NPLs as the assessment of loan losses was largely left to the judgment of individual banks. In addition, banks did not have adequate incentives to make sufficient provisions as they were not allowed to deduct them from taxable income.

In 1998, the Financial Reconstruction Law required banks to classify borrowers with payment arrears more precisely than previously and this played an important role in accelerating NPL disposals. The 1998 Law also created the Resolution and Collection Corporation (RCC) as a government-owned agency (owned by the Deposit Insurance Corporation) by merging two government-owned institutions that had the responsibility of collecting bad loans from failed housing loan companies, banks and credit cooperatives. Its portfolio initially consisted of real estate collateral on defaulted loans. The 1998 Law also gave RCC the power to purchase distressed assets at fair market value, securitise NPLs, restructure companies and participate in debt-equity swaps, thus accelerating the disposal of NPLs.

In 2001, the Emergency Economic Measures further expedited the sales of collateral owned by nonviable SMEs. The measures required major banks to remove NPLs from their books within three years after their recognition by selling them directly to the market, pursuing bankruptcy proceedings, or by rehabilitating borrowers through out-of-court workout procedures. Any remaining loans had to be sold to RCC at fair price. Between 1999 and 2002, the RCC purchased loans worth JPY 55 trillion (USD 495 billion, 10.9% of GDP) at 96% discount. The RCC also improved the transparency of the NPL market by setting standards of disclosure and publishing information on collateral.

In 2002 the government announced the Financial Revitalisation Program with the aim to promote corporate debt restructuring for large firms. Authorities tightened loan assessment standards for large borrowers (using market information such as stock prices, credit ratings and discounted cash flow analysis). This led banks to reclassify part of their portfolio as sub-performing and sell such assets in the distressed debt market.

Overall, these measures resulted in a large increase in banks' NPL write-offs and NPL market transactions, and the distressed debt market evolved. In the mid-1990s, the market was dominated by foreign funds that were able to achieve very high internal rates of return (30-50%) as banks sold collateral linked to NPLs at low prices. As the number of investors (especially Japanese ones) in the distressed debt market rose and the banks started using auctions, prices increased and the internal rate of return of buyers dropped to single digits. Overall, the process was not painless. The number of failed financial institutions rose progressively during the 1990s to reach 56 in 2001.

Source: Ohashi, K. and M. Singh (2004), "Japan's Distressed Debt Market", *IMF Working Paper*, No. WP/04/86, IMF; Callen, T. and J.D. Ostry (2003), *Japan's Lost Decade: Policies for Economic Revival*, IMF; Gomi, H. (2007), "Japan Non-Performing Loan Problem and Financial Reconstruction", Paper presented at the Conference *Financial Stability And Financial Sector Supervision: Lessons From The Past Decade and Way Forward*, organised by IMF Regional Office for Asia and the Pacific (OAP), Keio University.

(Watson Farley & Williams, 2016; HFSF, 2016), as for instance loans transfers are subject to VAT. Aligning the tax incentives provided by the loan servicing industry legislation with those of the securitisation law would enhance tax transparency and encourage the disposal of non-performing loans. Tax incentives can be an important tool to encourage the disposal of non-performing loans (KPMG, 2016). Making such incentives temporary, with for instance sunset clauses, will accelerate their effects and ensure such incentives expire when no longer needed.

Facilitating and expediting the sales of collateral would also help create a distressed debt market. The start of e-auctions is a welcome, if delayed, development. The United States has a well-developed distressed debt market (Altman, 2012; Aiyar et al., 2015a, 2015b). Following GAAP rules on the treatment of NPLs, US banks are obliged to: 1) suspend the accrual of interest income from NPLs after 90 days past due on payment or if the loan is deemed uncollectable; and 2) write down of NPLs to the collateral value after 6 months, with the collateral value based on the current price and takes no account for any forecast increase in market valuation. As a result, the United States debt market has contributed to keeping the stock of NPLs low. NPLs peaked at 5% of gross loans in 2009 and have since then declined to below 2%.

The timely and smooth introduction of the International Financial Reporting Standard (IFRS) rule (IFRS9), planned for 2018, could help develop a distressed debt market. IFRS9 will introduce a new approach for the valuation of financial assets and liabilities, including a forward-looking expected loss value of impaired loans. This is radically different from the current, backward looking approach of Greek (and EU) banks (IAS39). Current rules also allow for the accrual of interest income from NPLs, thus inflating banks' profitability and discouraging the write off of NPLs, and do not provide clear guidance for the valuation of collateral.

Enhancing public investment

Public investment in Greece decreased drastically early in the crisis, as in other crisis-hit countries. From 2011 onwards public investment relative to GDP started to recover and reached a level above that of Italy, Portugal, Spain and the EU28 average (Figure 27). However, resources allocated to the public investment programme continued to shrink, from EUR 6.65 billion in 2013 to EUR 6 billion in 2017.

Figure 27. Public investment has fallen

General government gross fixed capital formation as % of GDP

Source: Eurostat (2018), *Government statistics* (database).

Public investment is largely co-financed by the EU. The rate of absorption of EU funds is high in Greece compared to most EU countries (EU, 2017). Between 2010 and 2017, public investment co-financed by the EU accounted for about 80% of total public investment (Figure 28). The large share of EU funds protected investment from more severe cuts during the crisis. As a result, the share of public investment in total expenditure remained broadly stable between 2013 and 2017 in the range of 11-12% (Figure 29).

Figure 28. EU co-financing of public investment spending is sizeable

Public Investment Programme (PIP) cash expenditure

Source: Ministry of Finance and State General Accounting Office.

Figure 29. The share of public investment in total budget expenditure remains stable

Source: Ministry of Finance, State General Accounting Office and Bank of Greece.

EU funds for public investment will remain significant in the coming years. For the 2014-2020 programming period, the European Structural Investment Funds allocated EUR 4.3 billion to environmental protection and resource efficiency, EUR 2.5 billion to transport and energy networks and EUR 0.8 billion to information and communication technology. The government plans to raise public investment that is not co-financed by the EU from EUR 0.8 billion in 2016 to EUR 1 billion in 2017-18 and EUR 1.25 billion in 2019-21.

Public investment can be an important factor to raise long-term growth and social welfare in addition to strengthening the ongoing recovery. Fiscal consolidation can result in long-term economic losses when spending cuts are focus on valuable public goods such as public investment (Cournède et al., 2015). The government should protect public investment from spending cuts, to achieve the fiscal consolidation targets, and increase it as planned. OECD estimates indicate that the marginal return on additional public investment in Greece is positive (Fournier and Johansson, 2016). A recent IMF study also points to a large positive effect of public investment, with one euro spent on public investment increasing GDP by EUR 1-1.4. Across OECD countries a given increase in public investment lowers unemployment twice as much as the same increase in public consumption (OECD, 2017b).

Greece's public investment needs are large as the public capital stock is low. In 2013 it stood at 45% of GDP against the OECD average of 49%. Also, the perception of Greece's infrastructure quality still lags that of most OECD countries, especially for railways (Figure 30). Moreover, poor intermodal connections – especially between ports and railways – in addition to cumbersome customs procedures and low competencies lower the quality of logistics in Greece (Figure 30). These problems raise trade costs. In Greece the export lead time (the time between the placing of an order and the receipt of the goods) is 3 days for port and airport transportation and 6 days for rail and road transportation, against 2 days on average in high income OECD countries. A similar gap exists for import lead times (World Bank, 2017).

Figure 30. The perceived quality of infrastructure lags other countries

Global Competitiveness Index, scale from 1 to 7 (best), 2017-18

1. Unweighted average.

Source: World Economic Forum, "The Global Competitiveness Report 2017-2018".

Major infrastructure projects are under way to better connect Greece with the road and railway trans-European networks. Completing these projects is key to shortening export and import lead times.

Greece's railway network is severely underdeveloped. The density of railways is less than 2 kilometres per one hundred square kilometres, one of the lowest across OECD countries. The railway density of Greece is closer to that of continental sized countries – such as the United States and Australia – than to similarly sized countries with a well-developed railway network, such as Belgium (with a rail density of 11) and the Netherlands (8).

Moreover, spending on the railway network declined markedly during the crisis. The average infrastructure spending on railways (as a share of GDP) declined by 71% between the 2000-08 and 2009-15 whereas the average spending on roads fell by less than 10%. The ratio of infrastructure spending on roads to railways more than tripled after the crisis, the largest increase across OECD countries (Figure 31). In 2013 alone Greece spent on roads about 23 times more than on rail infrastructure.

Figure 31 Greece's logistics lags OECD countries

1. Unweighted average.

Source: World Bank database.

Figure 32 Railways infrastructure spending was cut much more than spending on roads

1. The average spending on road infrastructure investment per one thousand units of GDP (in current USD) is divided by the average spending on rail infrastructure investment per one thousand units of GDP for 2000-08 and 2009-15.

Source: OECD (2017), "Performance Indicators", *OECD Transport Statistics* (database).

The quality of Greek port infrastructure hampers international connectivity and the tourist industry. Despite being the 4th most popular cruise ship destination in Europe, Greece is ranked only 8th for the revenue generated by this sector. Also, cruise ships bring about 10% of Greece's tourists each year, but they contribute only 3% of total tourist revenue. The insufficient infrastructure and the poor management of Greek ports put Greece at disadvantage to other cruise destinations in the Mediterranean regions, such as Spain and Italy. For instance, 85% of cruise ships reaching Greece carry less than 1 000 passengers against only 44% in the Mediterranean region. Improving port infrastructure to allow larger cruise ships to moor in Greek ports and enhancing home-porting activities could generate more than EUR 60 million of additional tourist revenue per year and a significant increase in the share of the Mediterranean cruise market (Dianeosis, 2017).

Improving port infrastructure will enable Greece to fully reap the benefits of the reforms passed between 2012 and 2014, which eliminated cabotage and the obligation of round trips for cruise ships.

Making the most of scarce resources by improving public investment management functions

Given the limited fiscal space, the government should use available funds in a timely and effective manner and exploit all supporting European-wide initiatives, such as the Juncker plan. As of February 2018, Greece ranks first among EU countries for the use of resources (as a share of GDP) allocated through Juncker plan. Also, user fees could be used better and more extensively mobilised as fees are currently often below cost-recovery levels and congestion charges are not applied in Greece (PWC, 2017). User fees could generate additional resources to fund investment and maintenance spending and encourage more efficient use of existing infrastructure.

Public investment can be more effective. Burdensome administrative procedures often delay public works and inflate project costs. The incomplete land registry is a major problem as it often delays land acquisition. Completing the land registry should become a national priority. For instance, in 2016 delays in issuing permissions, relating for instance to archaeological reviews, halted works in the Ionian highway and triggered hefty penalty payments from the government to contractors. The highway fully opened only in mid-2017 after several years of delay. A complete registry is necessary to clearly identify all of the state's non-financial assets and to develop a strategy to maximise their social and economic value (Bova et al., 2013).

Shortcomings in the planning stage often lead to modification of contracts during works and higher costs. For instance, none of the 6 Greek road projects audited by European Court of Auditors (ECA, 2013) were delivered at the original contract price. The average cost increase was 36%, the highest among the four countries (Germany, Greece, Poland and Spain) considered. The report also finds that in Greece, like in Poland, high capital requirements have led to large tenders being awarded to only major project management companies. These companies had to register and qualify ex-ante with the Ministry of Infrastructure. This is not the case in Poland and Germany, where all companies can participate in tenders without pre-qualification. The report also finds that re-measurement of works and contract updates after their initial signing usually lead to large modifications, delays and higher costs. Among the four audited countries, Greece had the longest delay for transport projects on average – 16 months or 57% later than expected, compared with 9 months and 41%, on average, for the four other countries. This calls for better management and ex ante design of public investment projects, particularly when other parties are also involved.

Also, public investment payments in Greece are disbursed towards the end of the year (Figure 33). This is partly due to the projects being mostly executed from March to October. However, the large payment spike in December also indicates delays in certifying contracting obligations after the completion of works and in the availability of resources.

Figure 33 Disbursement of public investment funds is concentrated towards the end of the year

Source: Bank of Greece.

Efforts to improve public investment management functions are already under way. For instance, to expedite and enhance the transparency of payments relating to public investment projects, the Information System for the Monitoring of Public Investments Payments and Debts was introduced in early 2015 within the Public Investment Directorate of the Ministry of the Economy. Additional actions include the abrogation of single-project bank accounts at the Bank of Greece. Also, a new system of “ring-fenced accounts” ensures that funds are available when needed for the payments of the co-financed part of the projects. A separate mechanism guarantees the immediate allocations of appropriations and their financing and the unhampered payment of projects from the start of the fiscal year. Also, the Public Investments Directorate has strengthened the central coordination of decisions relating to public investment by issuing documents on a timely basis with concrete guidelines and timetables to authorities responsible for public investment projects. Transparency is also improving as the new electronic platform (e-pde Information System) will provide up-to-date information on all publicly funded projects.

The government should pursue these initiatives and link them with the ongoing public administration reform in order to maximise synergies. A recent econometric analysis covering EU countries shows that higher public sector efficiency significantly increases the positive growth impact of public investment (Papaioannou, 2016).

Developing a long-term public investment strategy

Greece lacks a clear long-term public investment strategy, though public investment decisions are highly centralised. In Greece, the central government is responsible for more than 80% of public investment (Figure 34). Public investment decisions are mostly based on the European Union 2014-2020 programme, as a large share of public investment is co-financed by the EU. However, the absence of an integrated long-term public investment strategy, along with political and policy uncertainty, has compounded the problems relating to poor planning and execution. These factors – along with the crisis – might have contributed to a large backlog of projects. There are currently 69 projects in the area of transport, energy and waste and sewage planned for completion by 2022 for a value of more than EUR 20 billion (PWC, 2017).

Developing and regularly updating a long-term public investment strategy, involving full consultations with all stakeholders, would help build credible policy commitments. It would build synergies among sectors and projects and help link public investment objectives with wider socio-economic and environmental

considerations. Strong political ownership would help overcome short-term budget and political pressures to divert resources dedicated to investment projects to other spending. A long-term public investment strategy covering the whole transport sector is key to developing intermodal transport, thus turning Greece into the European gateway for Asian goods and facilitating Greece's integration into global value chains.

Figure 34. The central government accounts for most public investments spending

Note: 2015 for Australia, Israel, Japan, Korea, Mexico, New Zealand, Switzerland, Turkey, the United States and the OECD aggregate. Data for Turkey are not included in the OECD average because of missing time series. Local government is included in state government for Australia and the United States. Australia does not operate government social insurance schemes. Social security funds are included in central government in Ireland, New Zealand, Norway, the United Kingdom and the United States.

Source: OECD (2017), *Government at a Glance 2017* and *OECD National Accounts Statistics* (database).

The Ministry of Transport and Infrastructure is coordinating the development of the National Transport Plan, which is scheduled to be finalised in March 2019. The Plan will span 20 years and identify projects to achieve broad socio-economic goals. The development of the National Transport Plan is an important positive step towards an integrated long-term strategy for public investment. Other recent positive initiatives in this direction include the design of strategic plans covering: digital policy; innovation and smart specialisation; risk prevention and management; and solid waste management. These strategic plans will need to be developed and implemented in a coordinated way.

To build broad ownership of a long-term investment strategy the government should fully consult all stakeholders. Transparent and early engagement with all stakeholders is key to building political ownership of long-term public investment strategies. Engagement should be inclusive and transparent. Inclusive consultation allows any regulated party or member of the public to contribute or comment on proposals, ensuring that all concerned interests are heard. Transparent engagement involves publicly documenting who has been consulted, their inputs, and releasing the regulator's responses (OECD, 2010c). The Netherlands provides an example of a coherent long-term infrastructure strategy based on a long-time horizon and involving ample consultations with stakeholders.

Policy recommendations

Lowering product market regulation and enhancing regulatory quality

- Expand the scope of the “silence is consent” rule, ex-post monitoring compliance and one-stop shops; ensure they have the resources to operate effectively.
- Eliminate the rule allowing the central government to claw back 80% of the yearly savings of the Hellenic Competition Commission.

Streamlining insolvency procedures and strengthening contract enforcement.

- Fully implement the legislated insolvency reforms.
- Ensure a sufficient number of well-trained insolvency professionals start operating soon.
- Establish a national insolvency registry.
- Expand the use of electronic platforms and tools in the justice system.

Boosting foreign direct investment and integration in global value chains

- Build a national platform to increase awareness of international quality certification among SMEs, share experience and best practices and facilitate matching of foreign and domestic firms.

Building an innovation system

- Consolidate agencies having responsibilities for government funded research.
- Building on the planned pilot programme, develop an action plan to encourage innovation through the public procurement process based on effective monitoring and impact assessments.

Reviving bank lending to firms

- Continue to align banks' governance standards with international best practices.
- Align tax incentives for disposing of non-performing loans with those of previous legislation and make them temporary.
- Fully implement out-of-court workout procedures and e-auctions.
- Ensure public-sector agencies actively participate in debt structuring procedures with other creditors.
- Adhere to the road map to phase out capital controls while preserving financial stability.

Enhancing public investment

- Complete the land registry.
- Develop the National Transport Plan with full consultation with all stakeholders.
- Protect railways from further spending cuts.

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