European Stability Mechanism

OECD contribution to the evaluation of the ESM financial assistance programme for Greece

This background study assesses the impact of budgetary and market reforms from the start of the Greek financial assistance programmes, identifying key driving factors and drawing lessons from the Greek adjustment programmes. It assesses the economic and social impact of structural reforms based on four empirical tools. The paper analyses the impact of Greek reforms in labour and product markets, as well as those aimed at improving the effectiveness and quality of public services and administration. Product market reforms proved slow and piecemeal compared to the labour market restructuring, which constrained the much-needed competitiveness improvements and domestic demand, while contributing to rising poverty. A large drop in public investment had a negative effect on medium-term growth. The retrospective analysis is complemented by some prospective scenarios, with a focus on supply side conditions in the economy.

Organisation for Economic Co-operation and Development

June 2020

The principal authors of the report are Manuel Bétin, Tim Bulman, Thomas Chalaux, Boris Cournède, Alain de Serres, Claude Giorno and Yvan Guillemette, with significant contributions provided by Panagiotis Barkas, Eszter Danitz, Mauro Pisu, Olga Rastrigina and Isabelle Wanner. All are staff members of the OECD, except Claude Giorno and Panagiotis Barkas, who have been involved as external consultants. The report has greatly benefitted from multiple exchanges with officials from the European Stability Mechanism.

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Foreword

JOAQUÍN ALMUNIA

High Level Independent Evaluator

11 June 2020

This special series of ESM Discussion Papers gathers analyses that inform the independent evaluation exercise. The objective of these Discussion Papers is to feed into the inference process, help generate debate on the evaluation themes, and provide a broader background to the evaluation mandate. The choice of themes for these studies was guided by the terms of reference of the evaluation.

The authors are external experts to the evaluation exercise. It is important to note that they have not served as members of the evaluation team, nor participated in the Institutions' country teams for Greece. As these Discussion Papers' analyses represent only the views of the authors, the input further strengthens the independence of the exercise. As such, these Discussion Papers represent the third formal element of independence in the evaluation, beyond my role as the High-Level Independent Evaluator, reporting to the Chairperson of the ESM Board of Governors, and of the Evaluation Reference Group.

I am grateful for the detailed work conducted, and would like to thank the authors for their valuable contributions.

Executive summary

Before Covid-19, the Greek economy was recovering from the previous crisis.

Greece has returned to growth since 2017, with its economic position improving on several fronts and, until the outbreak of the Covid-19 pandemic, the short-term outlook was positive. The primary budget surplus was high, public debt was falling and ratings were being upgraded, while the country had regained access to financial markets in July 2017. Unemployment was falling and salaries had stopped declining. Competitiveness had strengthened and the external current account was close to balance. While it is too early – and not the purpose of this report – to assess the full economic impact of the Covid-19 pandemic and widespread containment measures, it is likely to hit Greece hard, creating a setback that hopefully the country will be able to overcome reasonably quickly. The rest of the report focuses on the aftermath of the previous crisis.

The economic depression that followed the earlier crisis was much deeper than expected, spreading large negative social effects.

The relatively modest economic upturn that Greece had been enjoying since 2017 appeared later than expected within the reform programme launched in 2010 under the impetus of Greece's European partners and the IMF. The programme targeted a return to 2009 per capita income by 2018, but in 2019 the average per capita income still lay 20% below the pre-crisis level, contrasting with Portugal, Spain, and Ireland, which reached similar positions several years earlier. This decline in Greek living standards may not be fully offset before about 2027 and has hurt Greece's lowest-income groups the most. The relative poverty rate increased substantially between 2009 and 2016, a rise that proved particularly pronounced in the working-age population.

The objective of this report is to identify key driving factors and draw lessons from the Greek adjustment programme.

Many factors contributed to these unfavourable developments: (i) very large external and fiscal imbalances when the crisis started; (ii) Greek administration shortcomings that limited capacity to implement reform; (iii) strong resistance to reform across the country; (iv) constraints on reform programme design and funding imposed by EU rules, such as the no-bailout clause; and (v) possible shortcomings in programme design. The objective of this report is to identify such shortcomings and draw lessons. The report assesses the economic and social impact of reforms under the programme, using model-based scenarios. The assessment focuses on the supply-side impact of the reforms, assuming that potential growth is a good guide to actual growth. It does not account for developments driven by the possible effects of reforms on aggregate demand that might have induced changes in the output gap.

The evaluation assesses the impact of budgetary reforms from the start of the programme.

At the start of the crisis, an urgent need for consolidation led to very rapid, deep budgetary adjustments because the authorities lacked access to financial markets. Between 2009 and 2012, this adjustment reduced the structural budget deficit by an estimated 17% of potential GDP, as policy measures were implemented that proved detrimental to the country's economic and social performance. A quarter of the fiscal adjustment between 2009 and 2012 was based on sharp cuts in public investment and a steep rise in environmental energy taxes. The sharp public investment decline damaged supply by eroding the economy's capital stock. At the same time, the energy tax rises led to adverse distribution implications by penalising low-income households more than those better off, reflecting the higher weight of transport services and heating fuel in the consumption basket of low-income groups.

From 2012 onward, public finance reforms raised potential growth and lowered inequality.

However, fiscal adjustments between 2012 and 2017 helped improve potential production by replacing distortive taxes with recurrent property taxes and reforming pensions, including an increase in the legal retirement age. The changes aimed to prevent any sharp fiscal deterioration while stimulating the employment of older workers. The ensuing gains to potential production were estimated at 4% relative to the baseline in 2020 and more than 10% by 2050. At the same time, the early-2017 introduction of a guaranteed minimum income helped stem the rise in inequality and poverty, with the relative poverty rate falling sharply after 2017 to below the pre-crisis position. The new minimum income also reduced the depth of poverty, although the decline was limited when measured against a poverty threshold anchored in 2005, hence before the decline in living standards brought about by the crisis.

Labour market reforms improved supply conditions and the status of low-income households.

In addition, labour market reforms – epitomised by decentralised wage negotiations – played a crucial role in limiting the worst damage to the economy by preventing a drastic fall in employment. Without these reforms, potential output would have fallen almost 6% below the baseline by 2020 and 10% below by 2050. These reforms mainly benefited the middle class and poorest households rather than the wealthy, with the decentralisation of wage negotiations boosting the employment of women and low-skilled workers, which more than offset the consequent increase in wage dispersion (variation in wages across the economy).

In contrast, belated piecemeal product market reforms hampered recovery and contributed to widening inequalities.

Before the onset of the crisis, regulatory barriers to competition in Greece ranked as one of the highest in the European Union. Product market reforms proved slow and piecemeal compared to the labour market restructuring and this disparity in their intensity and effectiveness served to limit price adjustments, even as wages fell sharply. This constrained the much-needed competitiveness improvements and weakened domestic demand, landing most of the economic adjustment onto salaries and wages and contributing to the rise in the poverty rate among the working age population.

Strengthening the efficiency and quality of public services in future is essential.

Public service shortcomings have been a genuine problem during Greece's economic and social crisis, generating obstacles to the effective adoption of reforms. Greater efficiency of administrations, tax services, justice, and in general of public interventions, would bring huge benefits, not least by increasing public confidence in the functioning of the State. One way in which these benefits would materialise is through stronger investment and productivity arising from a better application of the rule of law. For instance, bringing the rule of law in Greece to the standard observed in Portugal could lead to a potential production increase of 2% compared to the baseline after 10 years and of 20% by 2060. That would reduce public debt by almost 60 percentage points of GDP.

Maintaining prudent fiscal policies is desirable.

Encouraged by the European Institutions, Greece agreed to preserve debt sustainability by maintaining a high primary balance surplus over coming decades. This budgetary commitment engenders debate, because it contrasts with the option of less-restrictive policies to foster higher public investment or raise social spending. Analyses in this report suggest that the effects of a more relaxed fiscal policy would depend on modalities: any decision to raise current spending or forgo revenues – for instance, raising family allowances or lowering the tax wedge – would not induce a strong enough rise in potential output to finance such budgetary expansion and would simply magnify reliance on financial markets to fund additional debt. In contrast, raising public investment would require just the temporary government financing, because stronger potential growth would eventually generate the tax revenue to self-finance the expansion. But the gains would be relatively small, and improvements would only materialise if the investment targeted high-quality, well-implemented projects.

Introduction

After a long and deep recession, Greece has returned to growth since 2017, with its economic position improving on several fronts and, until the outbreak of the Covid-19 pandemic, the short-term outlook was positive. The primary budget surplus was high, in accordance with the commitments made to European institutions, and public debt was decreasing. Unemployment was declining and salaries had stabilised. Competitiveness had strengthened and the external current account was close to balance. As a result of the renewed credibility of the policies undertaken, Greece has regained access to the financial markets since July 2017, with ratings of Greek debt being upgraded.

While it is too early to assess the full economic impact of the Covid-19 pandemic and widespread containment measures, it is no doubt going to hit Greece hard, creating a setback that hopefully the country will be able to overcome reasonably quickly. This report focuses on the period prior to the Covid-19 crisis, with the objective of drawing lessons from the Greek adjustment programmes launched in 2010 under the impetus of Greece's European partners and the IMF. It aims to provide an assessment of the economic and social impact of the structural reforms implemented during the period of successive programmes, which ended in 2018.

In spite of significant improvements in economic conditions over the last few years, the upturn was both belated and relatively modest when seen from a longer-term perspective and in comparison to other countries that also experienced a severe crisis. The reform programme launched by Greece in 2010 targeted a return to 2009 per capita income by 2018. Ten years after the start of the crisis, the per capita income of Greek citizens was still 20% below pre-crisis levels (Figure 1). In addition, according to pre-Covid-19 OECD long-term projections, this drop may not be fully offset before 2027, or even later depending on the assumptions made. In comparison, living standards in Portugal, Spain and Ireland were already above pre-crisis levels in 2018.

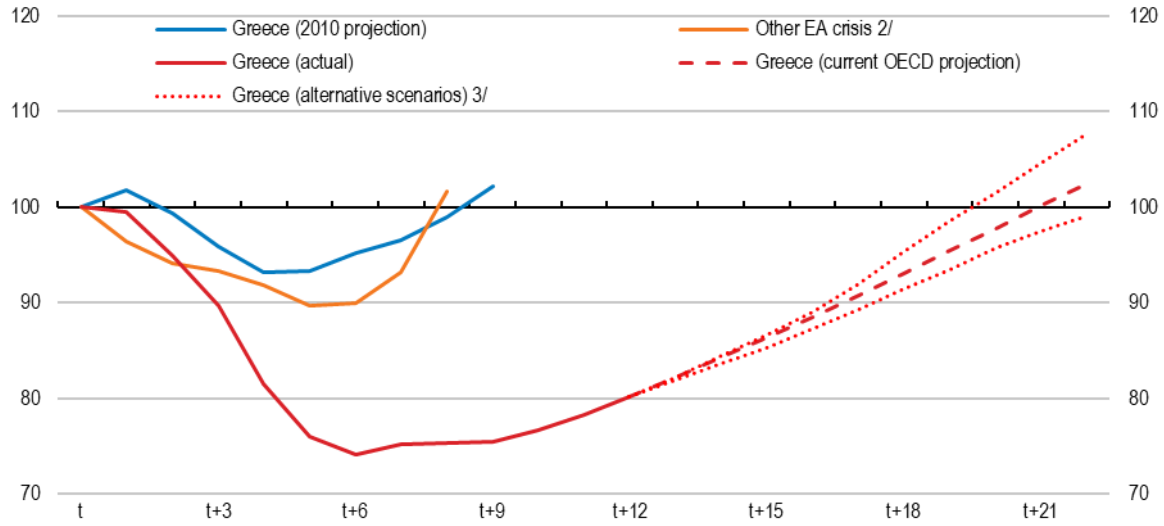
The economic crisis also had adverse effects on income distribution. The decline in living standards recorded in Greece following the outbreak of the financial crisis had affected the lowest income groups more than the rest of the population. Between 2009 and 2016, the relative poverty rate had increased by more than the euro area average and the other euro countries hit by the crisis. Despite a pronounced decline in 2017, it remained, at 12.6%, one of the highest in the euro area. In addition, the rise in poverty has been uneven, with young people and the working-age population affected more than the over-65s (Figure 2).

Questions arise as to the reasons behind such unfavourable developments. A combination of factors is likely to have been at play, the main one being that the magnitude of the initial imbalances in Greece was considerably higher than in the other countries. At the start of the crisis, the external and budget deficits both exceeded the record level of 15% of GDP. In addition, the adjustment process for eliminating these deficits was slowed by multiple constraints. The adjustment triggered by strong fiscal consolidation and internal devaluation through downward adjustment of prices and salaries, which was required to restore competitiveness in the absence of exchange rate flexibility, was hindered by the inadequate performance of the administration and its limited capacity for implementing reforms. This impeded and slowed the progress of adjustment measures, especially as a multitude of projects were launched simultaneously.

Moreover, the progression and effectiveness of the Greek reform programme were undermined

by political economy difficulties. Many reforms met with considerable resistance from the population, which harmed their implementation. In Europe, the options chosen for implementing and financing the programme were not optimal either as they were determined according to the constraints imposed by some EU regulations, like the no bail-out clause, while they had to take into consideration the low level of public support in several countries for the funding of the programme (Thomsen, 2019). Overall, these many constraints on the implementation of the adjustment process contributed to prolonging the weakening of activity in both the public and private sectors.

Figure 1
Real GDP per capita remains well below pre-crisis level in Greece
(Index, pre-crisis peak=100 1/)



Notes:
1. Pre-crisis peaks are: 2007 for Greece, Ireland, and Spain; 2008 for Cyprus and Portugal.
2. Cyprus, Ireland, Portugal, and Spain.
3. These two alternative long-term scenarios prepared around the central projections for Greece are respectively based on a more rapid (slower) cyclical recovery and a stronger (weaker) strengthening of potential output in Greece. The scenario with a stronger potential output is based on the assumption that all the reforms recommended in the forthcoming OECD Survey (OECD, 2020) beyond those included in the central projections are implemented. The scenario with a weaker potential output assumes that a number of past reforms incorporated in the central projections are not continued or, in some cases, reversed.

Sources: European Commission; Eurostat; IMF; and OECD projections

In addition to the effects of these constraints, a number of shortcomings in the design of the adjustment programme also hindered the Greek economy's recovery. Some of these shortcomings were recognized quite early on during the execution of the programme. They concerned, for example, the overestimation of the authorities' capacity to generate significant privatisation revenues, but also the underestimation of budgetary multipliers and therefore the recessionary effect on the economy of the consolidation of public accounts at the start of the adjustment process (EC, 2012; OECD, 2013). Additional tightening of the budget was therefore required to meet the fiscal targets, which further penalised economic activity.

Against this background, and given the constraints that weighed on the design of the programme, one question is whether better outcomes in terms of growth and income distribution could have been obtained through a different combination and sequencing of the main components of the adjustment plan. Answering this question requires an impact assessment of the main elements of this plan. Such an assessment can be useful for Greece insofar as questions remain over the most suitable measures for a sustainable recovery and the strengthening of the economy, in a context where various aspects of the reform agenda continue to feed the policy debate among major stakeholders. For example, the choice to maintain a high primary budget surplus of 3½% of GDP until 2022, followed by 2¼% of GDP, has been questioned by the IMF. The latter institution has been advocating a less restrictive policy

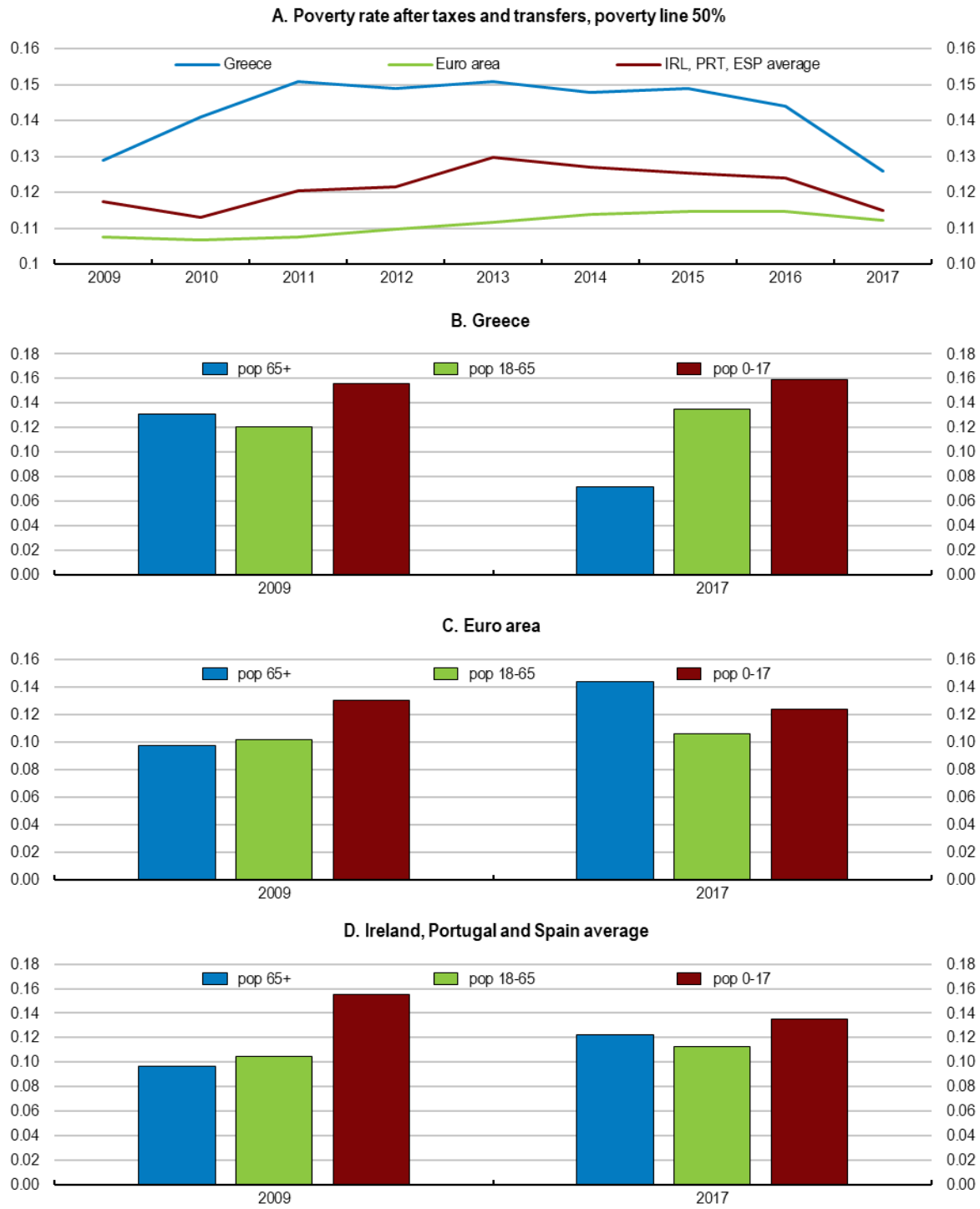
so as to increase public investment and bolster some social spending (IMF, 2019a). However, the choice of a higher primary budget surplus, which is consistent with the requirements under the European fiscal framework (Eurogroup statement of 22 June 2018), is viewed as necessary to maintain debt sustainability. Beyond the case of Greece, learning from this adjustment process may also be useful for other euro area countries that could one day find themselves faced with similar problems.

To shed light on these issues and better assess the impact of the main aspects of the programme, a series of 10 scenarios generated with different empirical models are presented in this document. Five of these examine the outcome of each essential reform implemented since the start of the crisis, in particular those put in place as of 2012. They concern the reforms of public finances (budgetary adjustment, reform of the pension system, introduction of a guaranteed minimum income) and of the labour and product markets. The reform scenarios carried out relative to a baseline scenario allow for the macroeconomic and income redistribution effects of each of these reforms to be estimated over several decades. The past effects of the adopted changes can thus be assessed, as well as their impact over coming years insofar as their full effects have yet to be felt.

This analysis, which is retrospective, is supplemented by five other scenarios of a more prospective nature, and which explore various economic policy options. Two of these relate to reforms that would enhance the efficiency and quality of public services in general, and more specifically in education. Three other scenarios assess the potential effects of a more expansionary budgetary policy, based on different assumptions regarding the nature of the budget expansion: (i) an increase in public investment; (ii) an increase in certain current spending; and (iii) a reduction in the tax wedge.

In this document, the assessment of Greece's adjustment programme focuses on supply conditions in the economy. Given the empirical models used, the results of the reforms undertaken are indeed measured on the country's potential production, whereas their effect on demand is neither evaluated nor considered. Thus, in the case, for example, of public finance consolidation policies, the quantification of measures adopted relates to their impact on the capital stock, the employment rate and the trend labour efficiency which affect potential production. In the short term, the latter can deviate from actual production, which is largely determined by demand. Such a focus on supply factors – or potential production – allows for assessing the effect of structural reforms on the economy from a long-term perspective, insofar as actual growth does not persistently deviate from potential growth. However, it cannot account for short-term economic developments that are determined by demand effects and which induce changes in the output gap.

Figure 2
The initial rise in poverty was strongest among working-age population



Source: OECD Income distribution database

In light of these considerations, the main lessons from this evaluation of the Greek adjustment programme can be summarized as follows:

- The structural changes brought about by the budgetary adjustment on government expenditure and revenue between 2012 and 2017 had a positive effect on potential output,

estimated at 4% over a 10-year horizon and 7% over a 30-year horizon. Such improvements allowed for offsetting the adverse net effect on growth from the sharp drop in public investment between 2009 and 2012, which weakened the capital stock and potential growth. The gains in potential output from the post-2012 measures included gains in employment linked to the pension reform and the increase in the legal retirement age. In general, however, the budgetary changes over that period have increased income inequality. One of the main contributing factors has been the rise in environmental energy taxes since the start of the crisis, which has penalised low-income households more than the better-off.

- The pension reform has played a key role in promoting the consolidation of public finance since 2010 and above all preventing a sharp deterioration over the next three decades. By stimulating the employment of older workers, this reform has also boosted potential production, with gains estimated at 4% in 2020 and more than 10% by 2050 relative to baseline.

- The introduction of a guaranteed minimum income in early 2017 has significantly reduced the increase in income inequality and poverty caused by the crisis. Inequalities, measured by the Gini index, fell sharply between 2016 and 2017, to below their pre-crisis level. The same is true for the relative poverty rate. However, the introduction of the minimum income only resulted in a limited drop in the poverty rate measured on the basis of an anchored poverty line set in 2005, although it did reduce the depth of this poverty (i.e. the income gap relative to the poverty line associated with this indicator).

- The labour market reform played a crucial role in limiting the deterioration of the economic situation at the start of the crisis by preventing a sharper decline in employment than actually recorded. In the absence of reform, potential production would have been lower than in the baseline by almost 6% in 2020 and by more than 10% by 2050. The labour market reform has also mainly benefited the poorest households and those of the middle classes rather than the wealthiest households. The greater decentralisation of wage negotiations, which has been at the heart of this reform, has indeed played a particularly important role in stimulating the employment of women and low-skilled workers, which has more than offset the increase in wage dispersion induced by these changes.

- Although regulatory barriers to firm entry and competition were among the highest in OECD countries before the onset of the crisis, reforms of product market regulation came relatively late and were too piecemeal compared to the reform of the labour market. The strong asymmetry of intensity and effectiveness between product and labour market reforms resulted in a limited adjustment of prices compared to wages and hence to a sharp decline in real wages. This dampened the much-needed gains in competitiveness and weakened demand. Another consequence is that the brunt of macroeconomic adjustment fell excessively on salaries and workers, helping to drive up the poverty rate among the working population and their children.

- Substantial improvements in the functioning and quality of Greek public services are necessary and possible. In the case of education, catching up for example with Portugal in terms of PISA results, would generate significant benefits. These would materialise very gradually, however, because increasing the education level of the population is a slow process. The increase in productivity and potential production resulting from better education could reach 6% by 2060 compared to baseline, and substantially more beyond.

- Greater efficiency of administrations, tax services, justice, and in general of public interventions would also bring important benefits. Such a development, which would translate into greater respect and better application of the rule of law would increase public confidence in the functioning of the State and boost labour efficiency. For instance, bringing the rule of law in Greece to the standard observed in Portugal could result in an increase of potential production of 2% after 10 years and more than 20% by 2060 relative to baseline. This would reduce public debt by almost 60 points of GDP compared to baseline.

- The effects of a looser fiscal policy relative to the baseline scenario of a surplus equivalent to 3.5% of GDP would depend on the modalities. Three scenarios are examined, based on the same ex ante reduction in the primary surplus. Compared to the baseline scenario, the fiscal loosening amounts to 2 percentage points of GDP in 2022 gradually decreasing to 0.7 point of GDP from 2027 onwards.

o In the case where the extra margin is used to increase current spending, including a rise in family allowances, or a fall in the tax wedge, the rise in potential output, of the order of 0.2% to 0.8% relative to baseline, is not strong enough to yield tax revenues sufficient to make up for the initial increase in budgetary costs. In such a scenario, the Greek authorities would need to turn to financial markets to fund the higher deficit and increase in public debt, which reaches about 25 percentage points of GDP in 2060 compared to baseline. In view of the fragile Greek fiscal situation, these developments could become the source of a new confidence crisis.

o In the case of an increase in public investment, the strengthening of potential growth generates enough tax revenue to self-finance the budgetary expansion as from 2030. The higher potential production than in the baseline, brought about by the increase in the capital stock, exceeds 1% by 2025, to reach almost 2% in 2060. In such a scenario, government financing needs are temporary, with public debt peaking at 5 points of GDP above the baseline after five years, before gradually falling back below its baseline level after 30 years. Such a positive outcome would materialise, however, only if high-quality investment projects are selected and effectively implemented. In the past, the governance of infrastructure projects in Greece, including their planning and implementation, has not always been optimal.

All in all, according to the analysis reported in this document, the adjustment programme to correct the imbalances that led to the outbreak of the Greek crisis could have had less negative economic and social outcomes if the reforms had been designed differently in three areas. First, the large drop in public investment taking place as part of the fiscal consolidation measures has had a strong negative impact on medium-term growth, contributing to the protracted recession and very weak recovery. While drastic public finance consolidation was inevitable, including via sizeable spending cuts, a more rapid reduction in the generosity of pensions, for example, would have helped to limit the need for declines in capital expenditure. Second, on the revenue side, the negative effects of the increase in environmental energy taxes on the living standards of the lowest income groups should have better been taken into account in order to limit their effects.

Third, and perhaps more importantly, the programme should have sought to achieve a better balance in the pace of labour and product market reforms. More specifically, the pace and intensity of labour market reforms should have been matched by an equally ambitious and rapid product market reform agenda to avoid the severe and persistent fall in real wages that took place. As a result of the unbalanced reform agenda, the burden of adjustment fell excessively on workers, putting a drag on demand and undermining growth. In a monetary union, the effective implementation of an internal devaluation requires that prices and wages fall as much as possible in tandem, as is mechanically the case following a currency devaluation under a flexible exchange rate regime.

The rest of this document, which provides the details of this analysis, begins with a presentation in the following section of the baseline projection used to construct the different scenarios. This section also provides a short description of the various models used for this work. The two following sections present the scenarios that retrospectively assess the main reforms carried out in Greece since the onset of the crisis, starting with those concerning public finances, followed by those related to labour and product market reforms. The last two sections are devoted to the prospective scenarios, starting with those relating to the improvement of the education system and more generally the functioning of public administrations, and ending with those evaluating the potential effects of different options for less restrictive budgetary policy.

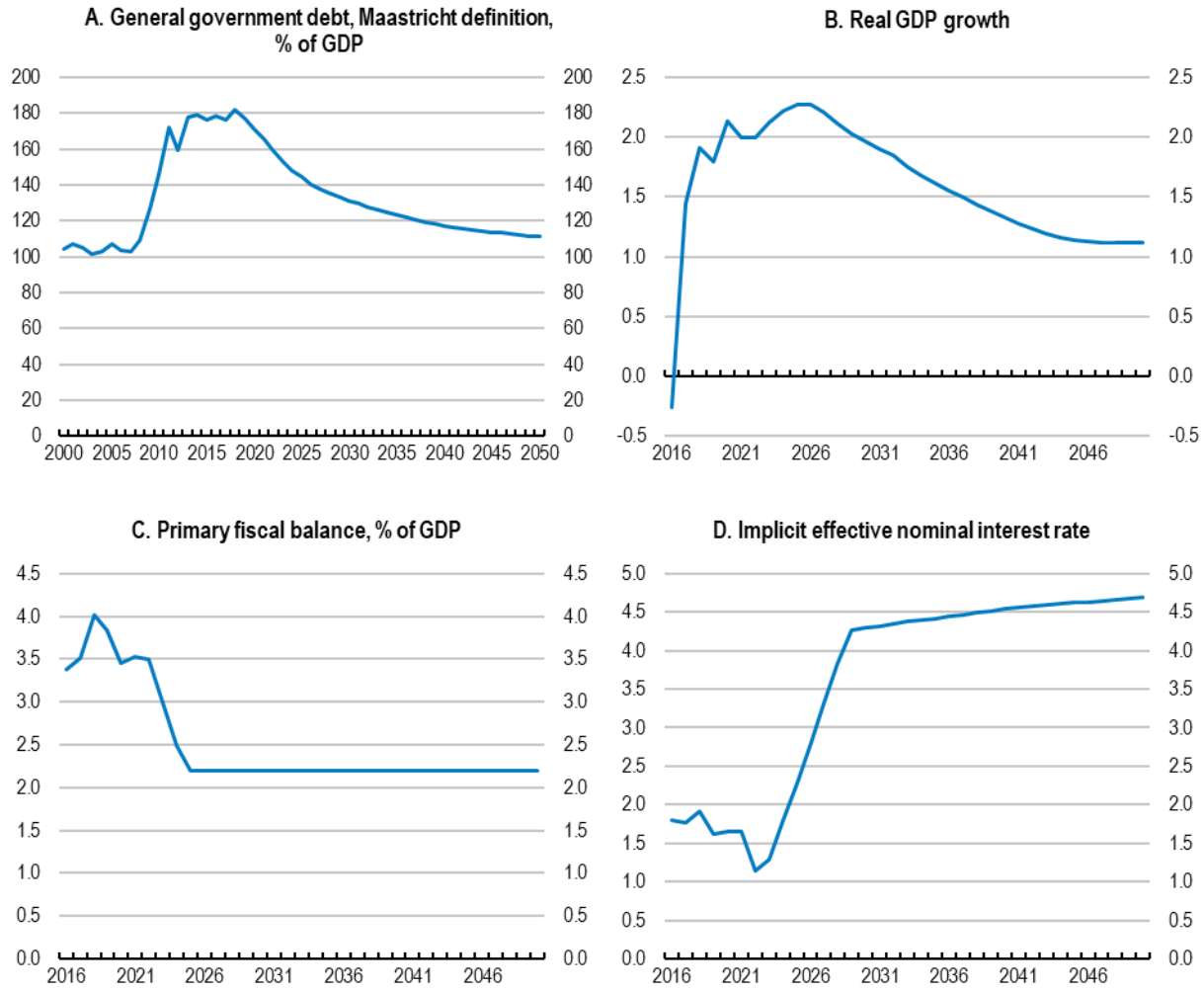
1. The reference (or baseline) scenario and the empirical tools / models used for the analysis

The reform scenarios generated to assess the main aspects of the Greek adjustment programme were built on a baseline scenario that extends the OECD's economic outlook published in November 2019 for all OECD countries. This baseline scenario was produced using the OECD long-term model (Box 1). In the case of Greece, it assumes that GDP growth continues at an average annual rate slightly in excess of 1½% between 2020 and 2050. Under this assumption, the average annual increase in per capita income reaches 2% as a result of the population decline over the period (Figure A1). Between 2020 and 2030, the increase in output, which is expected to exceed an average of 2% per year, is for the most part due to cyclical factors, as Greece entered 2020 with still a considerable output gap to close. Over this period, potential growth also improves on the back of an expected pick-up in trend productivity and capital stock. Beyond that, however, growth slows to 1½% between 2030 and 2040 and to around 1¼% between 2040 and 2050 as a result of a decline in the working population due to demographic ageing.

In terms of public finance, the baseline scenario envisages that the public debt reduction, which began in 2019, continues. From the 2018 peak, the debt to GDP ratio is projected to fall by 70 percentage points between now and 2050 to 110% of GDP on the back of relatively sustained growth, a high primary surplus and a low effective interest rate on public debt (Figure 3). The debt reduction proceeds rapidly, reaching 50 percentage points already by 2030. Over the next 10 years, Greece will indeed see growth recover and the cost of its interest payments fall sharply through the favourable financing conditions granted by the European institutions in possession of over 70% of the country's debt in 2019 (Figure A2). After 2030, however, the expected deceleration in growth and the gradual increase in interest charges resulting from growing recourse to the financial markets by the Greek authorities lead to a slowdown in the deleveraging process.

This baseline scenario incorporates numerous specificities of the Greek economy and the impact of the reforms adopted until early 2020 (OECD, 2020). Even so, there are still significant uncertainties with regard to long-term growth prospects, which are based on a number of normative assumptions and trend extrapolations, for instance in terms of progress in labour efficiency, changes in capital stock, and the employment rate. It is equally difficult to predict future interest rate levels in the OECD, and the projections do not take into consideration a number of potentially important factors for long-term development, such as environmental issues (Guillemette and Turner, 2018). The differences in the assessments of the OECD baseline scenario compared to the scenario recently published by the European Commission provide an illustration of these uncertainties. The long-term projections in November 2019's Enhanced Surveillance Report envisage that Greek public debt will fall to around 90% of GDP by 2050, i.e. 20 points lower than the OECD forecast (EC, 2019a). It is however difficult to identify the main sources of this difference given the very succinct presentation accompanying the Commission's scenario.

Figure 3
Long-term projections for Greece in the OECD baseline scenario



Note: The historical data and projections to 2021 follow the Economic Outlook No. 106. In this reference scenario, the primary budget surplus is projected to be 3.5% of GDP until 2022, then decrease to 2.2% of GDP by 2025 and remain at that level. The GDP deflator growth is expected to gradually rise to 2% by 2023. The effective market interest rate is projected to gradually rise to 4.9% by 2029. The effective interest rate of official creditors' loans (EFSF, ESM and GLF) is projected to rise to 3.9% by 2029. The projections consider the short-term relief measures described in the May 2016 and June 2017 Eurogroup statements. The scenario includes privatisation receipts of EUR 10 billion in total from 2020 to 2040.
Source : Calculations based on OECD (2020), OECD Economic Outlook: Statistics and Projections (database)

Besides the OECD long-term model, three other empirical tools / models are used in this work to establish the different scenarios, which are presented in the following sections: (i) an empirical framework developed by the OECD to examine the links between the structure of public finance and inclusive growth (Cournède, Fournier and Hoeller, 2018); (ii) the Greek module of Euromod (Leventi et al., 2018); and (iii) a micro-macro framework developed by the OECD to assess the distributional impact of structural reforms (Causa, Hermansen and Ruiz, 2017).

Box 1

The OECD long-term projections

The OECD long-term projections are model-based. The backbone of the model is a consistent set of long-term projections for potential output, which are extensions of the short-term potential output estimates prepared for the twice-yearly OECD Economic Outlook (Guillemette and Turner, 2018). A number of assumptions determine the potential or trend growth for all OECD countries from the stock of capital in the economy, trend employment and labour efficiency. More specifically:

- The productive capital stock in the economy, which is split between private and public capital stocks, is projected under the assumption of a stable capital-to-output ratio in steady state. However, for each country, the capital stock depends on the economy's cyclical position, product market regulation, employment protection legislation and the user cost of capital (Guillemette, de Mauro and Turner, 2018).
- The evolution of trend employment is primarily the result of three sets of dynamics: the evolving size of the working-age population; its age composition; and trend in the employment rates of different age/sex groups (Cavalleri and Guillemette, 2017). For each country, these trends are affected by labour market institutional setting (ALMPs, the difference between the share of workers covered by collective agreement and the share represented by unions, the minimum wage, etc.) social programmes (family benefits, length of maternity leave), tax wedges, educational attainment of population and legal retirement age.
- These assumptions also include a conditional convergence of trend labour efficiency growth to an assumed exogenous rate of global technological progress of 1½% per annum. However, for each country labour efficiency performance depends on their specific institutional and policy environment (governance quality, human capital, product market regulation, trade openness, R&D, etc.) (Guillemette et al., 2017).

A set of scenarios to assess the sensitivity of long-term projections for OECD countries relative to the choice of hypotheses used to establish them is presented in Guillemette and Turner (2018). These scenarios examine in particular the impact of alternative hypotheses concerning major emerging-market economies (so-called BRIICS), the international trade regime, and the economic policies or institutions of OECD countries (evolution of public investments, R&D expenditure, systems retirement, and the functioning of product and labour markets).

The empirical framework developed by Cournède, Fournier and Hoeller (2018) is used to assess the effect of structural changes on public finances induced by the fiscal consolidation process initiated after the outbreak of the crisis. The framework has been developed using econometric analyses to estimate the effects of public finance structure on real output and the distribution of real household disposable income. This model of interactions between public account structure and economic performance provides an assessment of the impact on output and income distribution of:

(i) changes in the mix of both spending and revenue;

(ii) changes in the size of government administrations;

(iii) changes in the effectiveness of these administrations.

The effects of changes to the budget structure on average living standards and income distribution are estimated from a long-term perspective, in this case 10 and 30 years, abstracting from cyclical effects. The impact on living standards or production is measured by potential output per capita or potential output.

The Euromod microsimulation model for Greece is used to assess the impact of the introduction of a guaranteed minimum income in 2017. This is part of a broader model with similar modules developed for each EU country. It consists of a set of equations combining information on relevant tax-benefit policy rules with detailed and representative micro-data on individual and household circumstances drawn from Greek household income surveys and other data sources. This model is used to calculate the effects of existing policies and to evaluate reforms to the tax-benefit systems on poverty, inequality and government budgets. It is a static model that abstracts from behavioural reactions of individuals (Sutherland and Figari, 2013; Leventi et al., 2018).

The empirical framework developed by Causa, Hermansen and Ruiz (2017) is used to assess the redistributive effect of the labour market reform adopted in Greece. This framework, which is based on the Atkinson (1970) approach for inequality and welfare analysis, captures the incidence of the labour market reform on household income as the sum of macro and micro effects. The macro effects are reform-driven changes in per capita GDP via their impact on labour productivity and/or labour utilisation that benefit household incomes across the distribution. This encompasses distribution-neutral effects calibrated on the basis of recent empirical analysis (drawn from Gal and Theising (2015) and Egert (2016)) of the effects of structural reforms on growth and its main components (employment, capital and labour efficiency). In the framework developed by Causa, Hermansen and Ruiz, product or labour market reforms that raise GDP will have different distributional implications depending on whether the gains in GDP come from stronger employment, a higher capital-output ratio or improved efficiency. The micro effects are reform-driven changes in the distribution of household incomes which come over and above those channelled through macroeconomic effects.

2. Analysis of the impact of public finance reforms

Effects of changes to the budget revenue and spending mix

Difficulties in managing public finance in Greece were among the main factors that precipitated the economic and social crisis in 2010. These difficulties, which triggered a sharp increase in the public deficit, were caused by a substantial rise in government spending after the country joined the euro area, while the tax burden declined slightly. Between 2001 and 2009, primary expenditure, when assessed on a structural basis, increased by 11½ percentage points of potential GDP according to OECD estimates, whereas public revenues fell by 1½ points (Figure A3). The spending increase was mainly imputable to a surge in pension benefits and government wages, which inflated most of the other primary expenditure items, including the health and education budgets. Over that period 2001-09, all spending components increased as a proportion of GDP with the exception of public investment and interest payments which fell after the euro was adopted. On the other hand, the revenue decline reflected a fall in corporate and indirect consumer taxes that was only partly offset by a slight increase in social contributions.

Following the outbreak of the crisis, and the loss of financial market access by Greek authorities, the priority in the adjustment programme was placed on fiscal reforms with a two-fold objective: wipe out the public deficit and improve the functioning of the administration. The analysis of these reforms, presented below, is based on the empirical framework developed by the OECD to examine the links between public finance structure and inclusive growth (Cournède, Fournier and Hoeller, 2018).

Changes to public finance structure since 2009

The information on the government's revenue and expenditure available in the COFOG database, and the World Bank's government effectiveness indicators are used to analyse the impact of changes to the budget structure from 2009 to 2017. To allow for a more global evaluation, the assessment of the impact of budget transformations between 2012 and 2017 is completed by an analysis that takes into consideration modifications introduced shortly after the start of the crisis, i.e. as of 2009. This approach is considered all the more necessary because the nature of the fiscal reforms carried out within the framework of the Greek adjustment programmes differed between 2009-2012 (first programme) and 2012-2017 (second and third programmes). Between 2009 and 2012, the urgent need for consolidation given that the authorities had no access to the financial markets gave rise to far-reaching quantitative adjustment in order to reduce the structural budget deficit, estimated at over 17% of potential GDP in 2009. As of 2012, while the changes already underway were continued and consolidated, the new reforms focussed more on improving the management quality and effectiveness of public intervention (Box 2).

Figures A4 and A5 highlight the extent and the nature of the changes to public spending and income between 2009-2012 and 2012-2017. They were measured using observed data and structural (or cyclically-adjusted) data.

Box 2

The main fiscal reforms and public administration reforms since 2010

The analysis of Greece's budget accounts, combined with a review of the main reforms undertaken since 2010, reveals two distinct phases in the adjustment process. In the first phase, which ended in 2012, the focus was on balancing the public accounts, even if some reforms were launched to streamline the functioning of the administrations.

A far-reaching reduction in public spending was launched during the first phase, containing significant measures such as:

- A reduction in salary costs. This reform, launched in 2010, was aimed at reducing public sector remuneration through measures including the abolition of numerous allowances and a sharp reduction in public employment. Contract employment fell significantly and a 1:5 attrition rule was introduced, meaning that only one employee could be hired for every five retirements with a view to decreasing general government employment by 150,000 (or around 25%) by 2015. The implementation of this adjustment went more quickly than expected however, and the target was reached in 2013 (EC, 2014).
- A pension system reform, which was also launched in 2010 to ensure the sustainability of long-term pension financing. The measures adopted, which included less generous pension conditions, an increase in the retirement age and a simpler structure, nevertheless only had a limited short-term budget impact, mainly as a result of the inertia of this expenditure.
- A reduction in defence spending.
- A reduction in public investment.
- A reduction in operating expenditures in many sectors.
- The closure or merging of many government units and the restructuring of several public companies.
- Cost-cutting and improving the functioning of the health sector with regard to hospitals and spending on drugs in order to strengthen the provision of healthcare and reduce the cost thereof.
- A streamlining of some social programmes, such as seasonal unemployment benefits and certain aids to farmers due to their weak effectiveness.

These measures were topped off with a tax reform launched in 2010 to correct shortcomings in the tax system and increase public revenues. It included:

- An increase in personal income tax with the abolition of some tax exemptions and raising the marginal tax rate on high incomes from 40% to 49%.
- A VAT hike, with the normal rate going up from 19% to 23%, and an increase on indirect energy taxes and excise duties on tobacco and alcohol.
- An increase in recurrent taxes on property with a specific higher levy on assets with high land value.
- The corporate tax rate however fell from 35% to 20% between 2009 and 2012.

After this first phase, fiscal consolidation continued at a much more moderate pace. The authorities switched their focus to improving the functioning of the administration, with initiatives in many areas:

- A programme to modernise the tax administration was launched in 2013 in order to improve tax collection and better combat tax evasion. The tax administration was endowed with significant autonomy, with a Secretary General who was given broad powers in terms of budget and human resource management.
- A reform of the judicial system was launched in 2012 to accelerate the processing of court files and unclog the courts of simplest cases.
- New measures to broaden tax bases and simplify the tax system were taken following the adoption of a new tax reform in 2013 that exempted around one million small taxpayers from having to pay income tax (EC, 2013a). Some tax credits (on mortgage interest and life insurance payments) were abolished. The corporate tax rate was raised from 20% to 26%, and then 29% in 2015. A new single tax on property replacing the previous taxes was adopted in 2014.
- Measures were also taken to improve the collection of social contributions. Financial penalties for using undeclared labour were increased.
- The system of family allowances was streamlined in 2013 to better target benefits at the most vulnerable populations. A means-tested social solidarity income (or guaranteed minimum income) was rolled out in 2017. In 2018, means-tested family benefits were increased and a single agency was created responsible for the payment of all social benefits.
- The reform of the remuneration of public officials continued with the adoption of a unified wage grid in 2015.
- A national anti-corruption plan was adopted in 2015 with the creation of an ad-hoc dedicated secretariat.

Between 2009 and 2012, primary structural public spending was reduced by over 10 percentage points of potential GDP (Figure A4, panel D), whereas total revenues rose by almost 7 percentage points (Figure A5, panel D). This extremely rapid adjustment, which made it possible to deal with the structural budget deficit, was accompanied by some significant changes in the government's spending and revenue mix:

(i) In terms of spending, the changes were mainly the outcome of a reduction in civil service salaries and employment, a general decline in operating expenditure and a fall in investment by administrations (Box 2). In addition, a small increase in production subsidies was observed, along with a slight decrease in spending on families.

(ii) In terms of revenue, the increase in revenues following the tax reforms adopted in 2010 was mainly generated by the increase in personal income taxes, in VAT rates (included in oth. revenues in Figure A5), indirect energy taxes, and recurrent taxes on property (Box 2). In contrast, corporate tax rates and revenues fell over the period. In general, these changes have resulted in relatively high statutory tax rates compared to other European countries due to the lower effectiveness of the Greek tax administration, including shortcomings in tax collection.

(iii) According to World Bank data, the administration's effectiveness, as measured by the indicator based on perceptions, deteriorated between 2009 and 2012 (Figure A6).

As mentioned above, fiscal adjustment between 2012 and 2017 was more moderate. Both the reduction in spending and the increase in public revenues amounted to 1½ percentage points of potential GDP (Figure A4 and A5, panel D):

(i) In terms of spending, the first effects of the pension reform launched in 2010 were being

felt, while reforms to streamline the management of the administrations led to a further slight reduction in the health and education budgets (included in "other primary spending" in Figure A4). Public investment, however, rose very slightly over the period.

(ii) In terms of revenue, the corporate tax hike, as well as the increase in environmental taxes and recurrent taxes on property all contributed to the improvement (Box 2). At the same time, the slight reduction in personal income taxes was offset by an increase in social contributions.

(iii) As of 2016, the effectiveness of the administrations improved slightly, returning in 2017 to its level in 2012 (Figure A6).

Impact of budget modifications on output and inequalities

Period 2012-2017

The assessment by the OECD model of changes to the structure of public finance on Greece's economic performance between 2012 and 2017 reveals an overall positive impact on potential output. Modifications to both spending and income have spurred an increase in potential GDP, with a total estimated impact of around 4% over 10 years and 7% over 30 years (Figure 4, panel A). Overall, the gains from changes to spending are lower than the gains from changes to revenue. However, the benefits from modifying the public revenue mix tend to benefit high-income earners more than those on low incomes, and this is only partly offset by the slight reduction in inequalities generated by changes to spending (Figure 4, panel B). Overall, despite a slight increase in inequalities, the changes to public account structure between 2012 and 2017 have a positive impact on standards of living across the whole scale of income distribution.

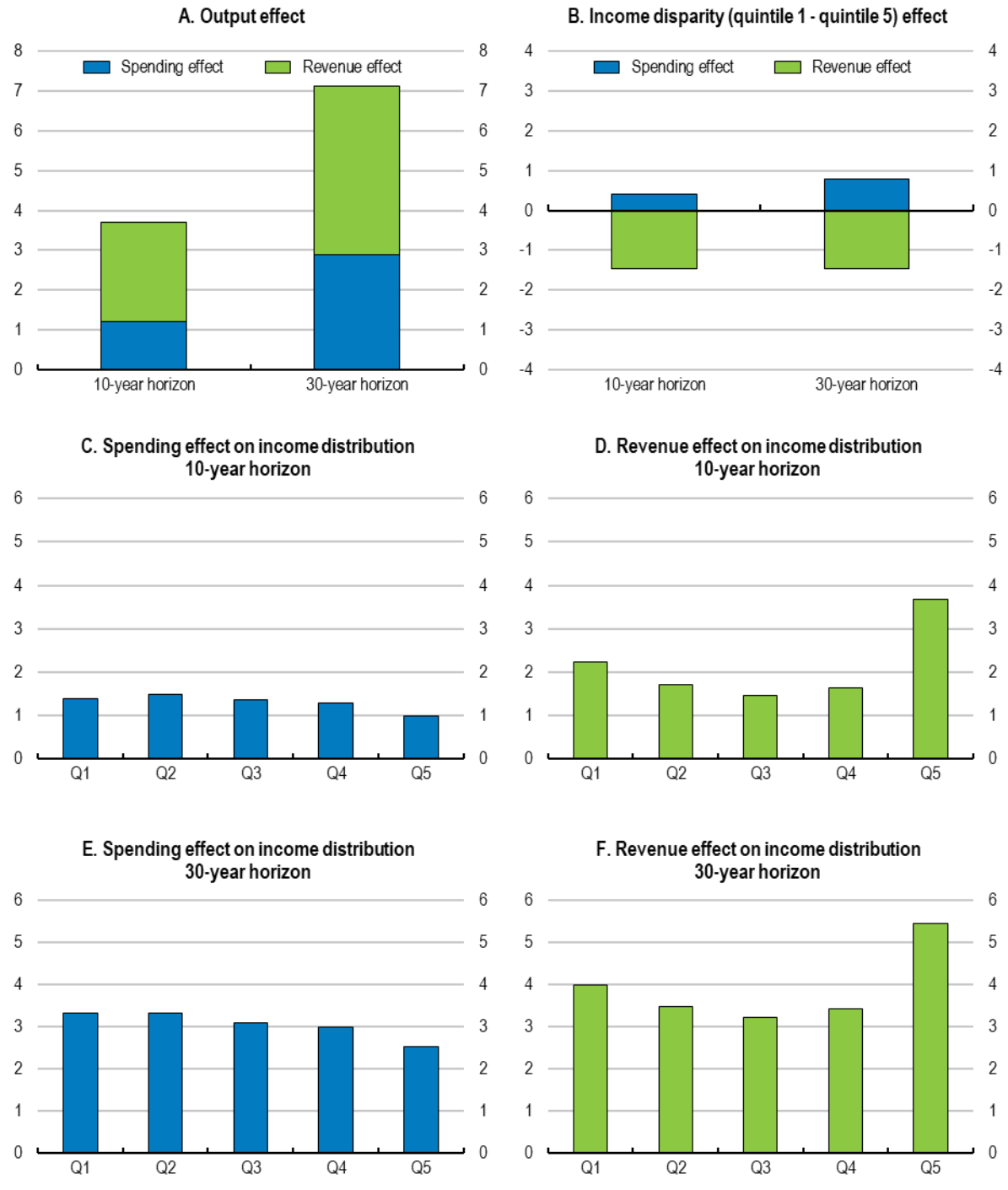
A more detailed analysis of these changes to budget structure, presented in Figure A7, highlights the main factors behind these results. On the spending side, output is mainly stimulated by pension reductions, the slight increase in investments and efforts to reduce the size of public administrations (Figure A7, panel A). This increase is slightly moderated by the negative impact of the increase in production subsidies between 2012 and 2017.

Indeed, reducing public spending allocated to pensions tends to increase labour supply incentives, be it through less generous pensions or longer careers. Public investment, when focussed on properly selected projects, also helps to strengthen long-term economic growth potential, by improving public infrastructures and increasing the overall capital stock (Fournier, 2016). Moreover, reducing the size of public administrations are generally found to go hand in hand with higher output levels in cases where they account for a large share of total employment and yet are not particularly effective in delivering public services (Box 3) (Fournier and Johansson, 2016). Downsizing large public administrations (relative to the overall size of the economy) can also make room for reducing distortive taxes, further boosting production.

Figure 4

The changes after 2012 have been positive on growth, neutral on inequality

(Total effect from change in public finance composition on output and income distribution, in %)



Source: OECD calculation based on OECD framework to examine the link between public finance structure and inclusive growth (Cournède, Fournier and Hoeller, 2018)

Box 3

Accounting for the effect of government size in the analysis

The OECD's analytical framework for measuring the impact on economic performance of changes in the size of public administrations, their structure, their effectiveness and the composition of the revenues was developed for situations and countries that do not face issues regarding the sustainability of public finances. The application of this framework to Greece raises the question of the appropriate measure of the reduction of the size of the government: the latter did indeed shrink after the start of the crisis in terms of spending, but expanded in terms of revenues in light of the reforms adopted to restore the financial viability of public accounts.

The decision was made to assess changes in the size of administrations using the ratio of total public spending to GDP. The decline in the ratio helped capture the benefits arising from the fewer distortions stemming from reduced government intervention in economic activity, given the poor efficiency of Greek public administrations. The impact of higher tax revenues in GDP, which could have been interpreted as an increase in the size of government, was not integrated into the simulations. Only the impact of the tax revenue mix was used. The underlying assumption behind this choice is that this increase in tax revenues was required to ensure the sustainability of Greece's public finances. The OECD model used for this exercise is not suited to assess the net impact of such an overall tax hike, which can be harmful to activity via increases in tax pressures but at the same time also improves the sustainability of public accounts.

In terms of revenues, the higher proportion of receipts generated by recurrent taxes on property is the main factor behind the increase in potential GDP (Figure A7, panel B). For given levels of overall taxation, switching the tax burden of periodic taxes onto immovable property does indeed encourage growth as this type of levy generates fewer distortions, as supported by both tax theory and empirical analyses (Blochliger et al., 2015; Hoj, Jorgensen and Schou, 2018). This impact is underpinned by a slight increase in revenues from inheritance taxes, as the reduced incentives to save resulting from this change are lower than the costs to the economy of other taxes that could be reduced (Cournède, Fournier and Hoeller, 2018). These gains are nonetheless eroded by the increase in the share of tax revenues from corporate taxation. As economic literature states, an increase in the effective tax rates on corporate income penalises productive investment and productivity (Arnold et al., 2011).

Regarding income distribution, the detailed results indicate that the slight reduction of inequalities linked to changes in spending is mainly the result of the increase in production subsidies (Figure A7, panel A) which are indeed estimated to penalise high-income groups more than low-income groups (Fournier and Johansson, 2016). This effect is partially offset by the impact of the reduced size of government, which is better for high-income earners, even if the change generates improved living standards in absolute terms for all income groups. As a rule, smaller administrations distribute less insofar as they have more limited resources (Causa and Hermansen, 2017). These estimated effects of income distribution resulting from changes to the spending mix must nevertheless be treated with caution as they do not take into consideration the impact of the reduction in old-age benefits on the distribution of income between the working population and pensioners. Although lowering pensions does not have a statistically significant impact on income distribution among the working-age population, reduced spending in this area is likely to have an adverse impact on the poverty rate of elderly people. Nevertheless, as stated above, since the start of the crisis, the over-65s have been less affected than the rest of the population by the decline in living standards and the increase in relative poverty (Figure 2).

In terms of revenues, the estimated increase in inequalities is mainly attributable to the increase in environmental taxes on energy, which has a greater effect on low-income earners (Figure A7, panel B). Indeed, a shift in the tax burden towards environmental taxes tends to deepen inequalities as the consumption mix, especially in terms of transports and heating fuels, varies according to income (Akgun, Cournède and Fournier, 2017; Flues and Thomas, 2015). This effect is somewhat offset by the redistributive effect created by the slight increase in inheritance taxes. In fact, increasing inheritance taxes causes an increase in the tax burden of the wealthiest, with distributional effects that are likely to produce even more progressive effects on the redistribution of wealth than income (Cournède, Fournier and Hoeller, 2018).

Period 2009-2017

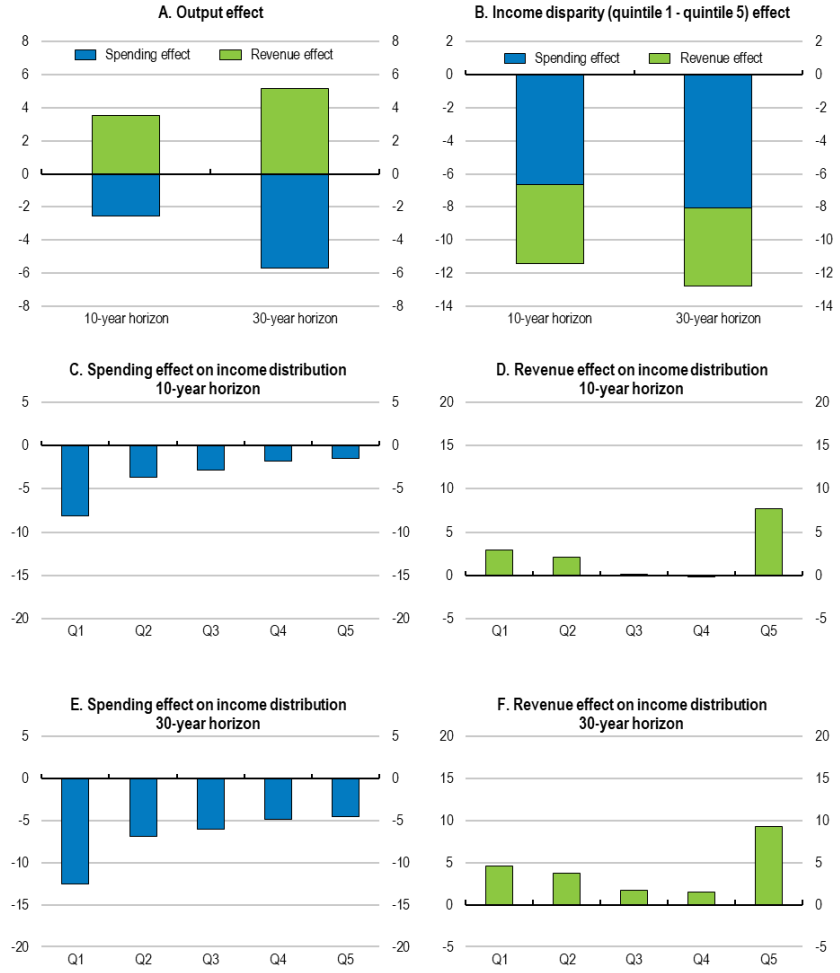
When assessed over a longer period, between 2009 and 2017, the impact on potential output of changes to Greece's public finance structure was globally neutral. The increase in potential GDP caused by changes to revenues was largely offset by the reduction induced by changes in spending over a 10-year timeframe (Figure 5, panel A). Over 30 years, the 5% positive and negative impacts of these changes neutralised each other. However, changes to spending and revenues both led to a notable increase in income inequalities.

On the revenue side, the increase in energy taxes is behind the rise in inequalities arising from the change in composition (Figure A8, panel B). This effect is somewhat moderated by the slightly more marked impact of the increase in the tax wedge, which has marginally stronger repercussions on high-income earners than low-income earners. On the spending side, the rise in inequalities is the result of the reduced size of government and its lower effectiveness as measured by the World Bank indicators (see Figure A6 and Figure A8, panel A). Indeed, less effective public administrations tend to be less successful in targeting vulnerable populations with their transfer programmes, while the cost-effectiveness of such programmes generally tends to be lower (Fournier and Johansson, 2016). The increase in inequalities is also reinforced by the reduction in spending on families between 2009 and 2017. The unfavourable distributional impact of these measures is nevertheless partly mitigated by the redistributive effect generated by the increase in output subsidies.

Figure 5

The changes since 2009 have been neutral on growth, but led to higher inequality

(Total effect on output and income distribution, in %)



Source: OECD calculation based on OECD framework to examine the link between public finance structure and inclusive growth (Cournède, Fournier and Hoeller, 2018)

The dominant factor behind the decline in output on the spending side is the fall in public investment (Figure A8, panel A). This effect, which was to some extent heightened by the increase in production subsidies, was partially offset by the benefits of reducing the size of government. On the revenue side, the growing proportion of revenues from recurrent taxes on property and the smaller proportion of income from corporate tax helped increase GDP (Figure A8, panel B). The positive impact was nevertheless partially counteracted by the increase in the tax wedge resulting mainly from the increase in personal income tax between 2009 and 2017. Indeed, according to the OECD model, an increase in the labour tax wedge as part of a tax-neutral reform tends to generate significant output losses. These outcomes are consistent with empirical findings showing that this type of levy is prejudicial to economic growth over the long term (Arnold, 2008). In the OECD model, the impact of variations in these deductions is applied to both high-income earners (167% of average wage) and low-income earners (67% of average wage) (Box 4).

Box 4

Impact of tax wedge variations in the OECD analysis

The scope of the OECD analysis of the impact of public finance structure changes on output and income distribution includes the different effects of variations of the tax wedge on high-income earners (167% of average wage) and low-income earners (67% of average wage) (Cournède, Fournier and Hoeller, 2018). The tax wedges used in this model are the marginal tax wedges affecting these groups of workers. Within this framework, a tax wedge on both high- and low-income earners has a negative impact on output affecting all income groups. This effect is nevertheless exacerbated for the specific group of workers directly impacted by the tax wedge. Accordingly, an increase in the tax wedge on high-income earners reduces GDP and inequalities due to the sharper drop in income for rich workers. An increase in the tax wedge on low-income earners tends to have the opposite effect and increase income inequality.

In the assessment above, it was assumed that the average variation of the tax wedge on labour linked to changes to revenues from social contributions and personal income tax had a similar effect on high- and low-income earners. Moreover, variations in the marginal tax wedges used within the scope of the analysis were assumed to be identical to variations in the average implied tax wedges calculated using macroeconomic variables. The variations in these implied tax wedges were calculated using the ratio between the change in the ratio of taxes and contributions on labour compared to GDP and the proportion of salaries in the value added. Algebraically:

$$(TYH+SSRG)/WSSS= [(TYH+SSRG)/GDP]/(WSSS/GDP)$$

where TYH is personal income tax, SSRG is social contributions, WSSS is the payroll, (TYH+SSRG)/WSSS the tax wedge and WSSS/GDP the share of salaries in GDP.

Between two periods 0 and 1, the tax wedge variation was therefore calculated as:

$$[(TYH_1+ SSRG_1)/GDP_1]/[WSSS_1/GDP_1)] - [(TYH_0+ SSRG_0)/GDP_0]/[WSSS_0/GDP_0)]$$

On this basis, the tax wedge rose by 16 percentage points between 2009 and 2017.

Evaluating the effects of the pension reform

The overhaul of the Greek pension system was one of the first major reforms launched after the start of the crisis. In fact, as many analyses carried out at the end of the 1990s and early 2000s had demonstrated, the system needed reforming in order to avoid the inevitable budgetary pressures arising from demographic ageing (Mylonas and de la Maisonneuve, 1999; Borsch-Supan and Tinios, 2001). Indeed, the Greek pension system had several flaws:

(i) The pension schemes were excessively complex, with many pension funds using different rules, which made them difficult to manage. For example, the IKA fund for private sector employees had some 800 different pension scales that varied according to the pensioners' professions and when they entered the labour market (OECD, 2011).

(ii) The financial penalties for taking early retirement before the statutory ages of 65 for men and 60 for women were not sufficiently dissuasive. For example, 37 years of contributions entitled workers to a full pension at 58. A woman with three dependent children could also claim a full pension between the ages of 50 and 55, after 20 years of contributions.

(iii) The parameters used to calculate pension entitlements were too generous, with a replacement rate of between 70% and 80% of the average salary, which was high compared to international standards.

Given these parameters and demographic trends, Greece was faced with serious long-term financial issues. Expenditure on pensions, at over 14% of GDP in 2010, was already higher than in other OECD countries (Figure A9), and calculations by the European Commission predicted an additional increase in this spending by 12 percentage points of GDP by 2060, compared to an average increase of 2½ percentage points of GDP for EU countries (EC, 2009).

In these conditions, the primary objective of the pension reform was to ensure the system's long-term financial viability. To this end, the reforms undertaken between 2010 and 2016 reduced the system's generosity and introduced compatibility between contributions and benefits. The lengths of careers were extended by harmonising and increasing the statutory retirement age for men and women. The very fragmented organisation of the pension system was simplified, and it was made fairer and more transparent (Box 5).

Measures, including a pension freeze until 2022, were also launched in mid-2017 to reduce the high share of pension expenditure in public spending and free up more resources for other forms of social spending, the share of which was relatively small compared to other European countries (Figure A10). Nevertheless, parts of these measures were cancelled in 2018 and 2019 and some aspects of the 2012 reforms (abolition of the 13th month of pension) and the 2016 reforms (reducing the generosity of survivors' pensions) were also challenged.

All these changes are incorporated in the long-term baseline scenario developed using the long-term model. Therefore, the scenario to quantify the impact of the reforms consists of simulating a return to the pre-reform situation through two key adjustments:

(i) A reduction in the statutory retirement age corresponding to a return to the situation before 2010, i.e. the possibility to retire at 60 for women and 65 for men, instead of the current retirement age of 67 for both sexes, and which is set to increase in line with life expectancy.

(ii) An increase in the generosity of old-age benefits also designed to simulate a return to the situation in 2009.

Box 5
Key aspects of the Greek pension reform

There were three core components to the reform of the pension system in Greece undertaken in 2010:

- The move from a very fragmented system to a unified system based on three levels comprising:
  - A non-contributory flat-rate pension of €360 per month;
  - A contributory pension, based on workers' contributions;
  - A supplementary pension, the calculation of which was revised to ensure that it remained actuarially neutral.
- A reduction in the generosity of pensions:
  - The accrual rate per year of contribution was reduced from 2%-3% to 0.8%-1.5% depending on the number of years worked.
  - Pensionable earnings rights were calculated based on the full-earnings history instead of the best five years of the final 10 years;
  - An increase in the full contributory period from 35 to 40 years.
  - Indexation of pensions set so as not to exceed inflation measured by the consumer price index.
- Longer careers:
  - A unified statutory retirement age set at 67 for both sexes was introduced. In addition, the new statutory retirement age was indexed on life expectancy.
  - Eligibility for early retirement was restricted by raising the minimum retirement age to 60, even for professions with arduous working conditions. The list of these professions was also narrowed down to represent under 10% of the active population compared to one third before.
  - An annual 6% pension right reduction was introduced for persons with fewer than 40 years of contributions who were retiring between the ages of 60 and 67.

The change in the generosity of old-age pensions was calibrated on the basis of projections of pension expenditure and benefit ratio variables, which provide an indicator of the replacement rate of average pensions over time in the Ageing reports published by the European Commission in 2009 and 2018 (EC, 2009 and 2018a). A comparison of the projections for pension expenditure published in the two reports indicates a downward revision of this spending of 12.7% of GDP by 2060 (Figure 6), with a reduction in the projected benefit ratio for 2060 from 80% in the 2009 report to 43.1% in the 2018 report. The scenario also integrated the time lag recorded between the change to the retirement age, which came into force at the start of the reform, and the change to the trajectory of pension expenditure, which occurred just over 10 years later. Indeed, the implementation of the pension reform in 2010 had little impact on pension expenditure until 2020 due to both the inertia in the changes of this spending while output fell, as well as the slow implementation of some aspects of the reform, which reflected a certain amount of resistance to their introduction (OECD, 2016a).

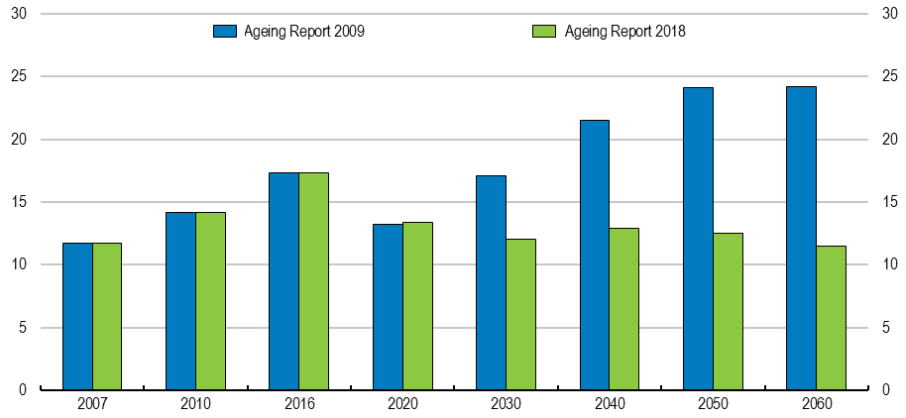
The completed scenario, the main outcomes of which are presented in Figure 7, illustrates the negative consequences for the economy, and catastrophic ramifications for public finance, if pension reform had not been undertaken. It would have led to a very steep increase in pension expenditure, especially after 2020, and a particularly significant fall in employment among older workers. The GDP decrease resulting from these developments is around 4% in 2020 and

around 10% by 2050 compared to the level in the baseline scenario. There would have also been a significant worsening of the public accounts, with an increase in the primary deficit and interest payments linked to higher risk premiums on interest rates and an increase in public debt in excess of 100 percentage points of GDP as of the start of the 2030s. The extent of the deterioration of the economic and especially budget situation as revealed in the simulation thus underscores the important role of the pension reform in the adjustment programme. The fiscal benefits of this reform would have been even greater if the measures to reduce the generosity of pensions had been implemented more quickly. Everything else equal, a faster adjustment of pension spending would have increased the primary balance by some 2 percentage points of GDP in 2020 relative to its recorded level.

Figure 6

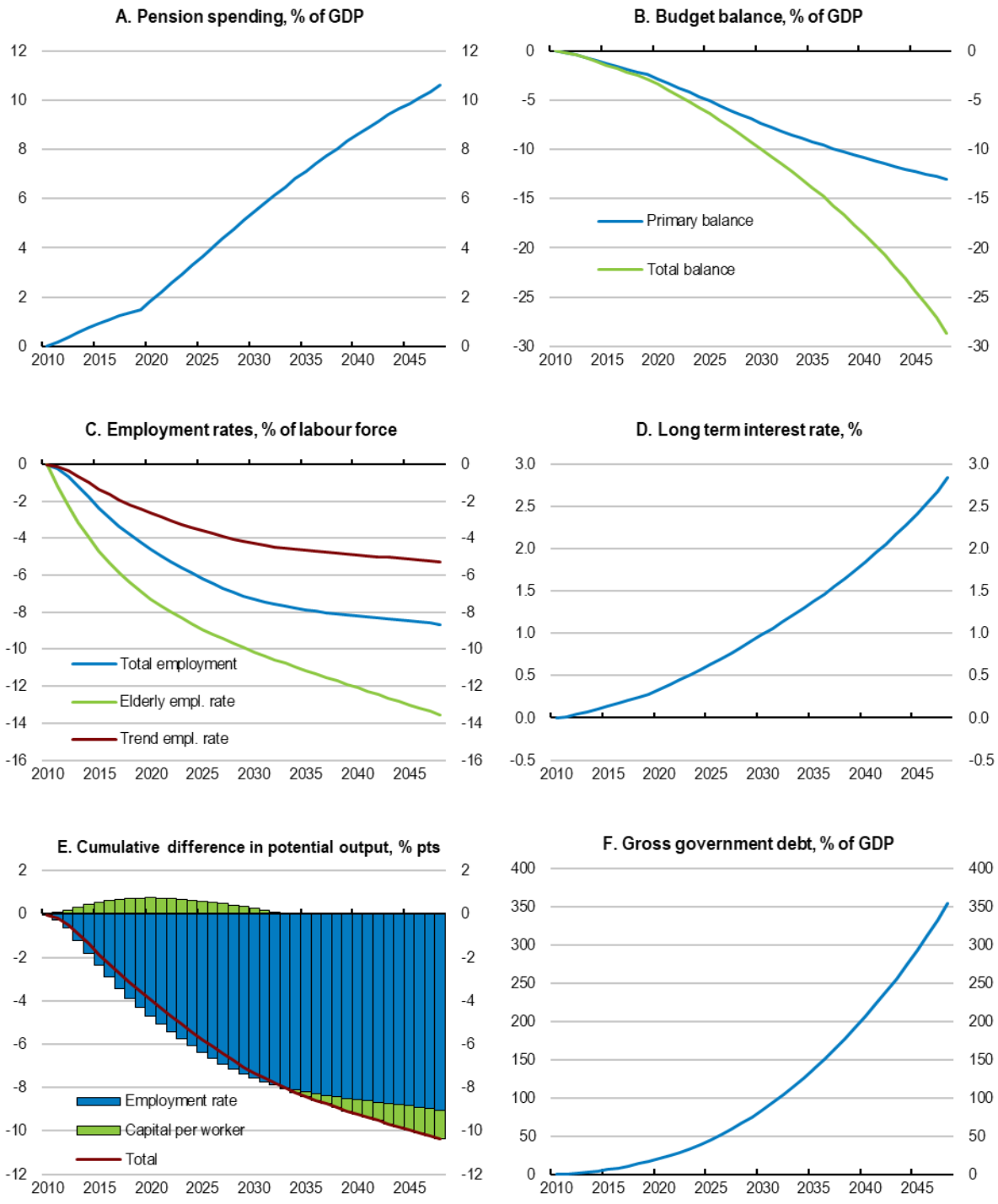
The pension reforms included a decline in the ratio of benefits over wages

(Comparison of long-term projections of public pension expenditure, in % of GDP)



Source: European Commission (2009), 2009 Ageing Report; European Commission (2018), 2018 Ageing Report

Figure 7
The pension reform had a large impact on public finances and employment
(Difference with baseline in the counterfactual of absence of pension reform)



Source: OECD calculation based on the OECD Long Tem Model (Guillemette and Turner, 2018)

Social policy reform and the assessment of the new minimum income

Following the initial phase of intense budget adjustments and structural reforms to restore the sustainability of government accounts, changes in the public sector have focused on improving the effectiveness of public interventions. In particular, steps have been taken to streamline and improve the structure of social protection to more effectively support vulnerable households. After a rationalisation of family allowances in 2013, from 2014 onward the authorities worked on the development of a guaranteed minimum income (or social solidarity income, SSI), which was introduced in early 2017 (Box 6).

Box 6

Main characteristics of the Social Solidarity Income

Before its implementation, the social solidarity income (SSI) went through a long development process. This new social allowance was initially tested in 2014/2015 in 13 municipalities, then revised and tested again in 30 municipalities in 2016, before being finally launched at the national level in February 2017.

The SSI provides a monthly transfer of € 200 for the first adult in a household, € 100 for the second person, and € 50 for each child, up to a maximum allowance of € 900. To be eligible for the SSI, a household's total net income over the preceding six months must be less than the value of six months of the SSI, disregarding 20% of employment income and disability allowances. The household's assets must also be below certain thresholds.

The SSI was designed as part of a system based on three pillars: (i) income support; (ii) social inclusion; (iii) labour market reintegration. By linking the SSI with social-service delivery and with active labour market programmes, the government aims to improve low-income households' access to social protection, and help recipients develop their human capital and move into employment (OECD, 2018a).

With respect to the second pillar, a network of Community Centres has been established throughout the country with the support of the European Social Fund, expanding the provision of social services at local level in a coordinated way. These services include free medical care for the uninsured, food assistance programmes, and priority placement in childcare centres. The third pillar which was still being developed in the autumn 2019, relies on the provision of active labour market services (ALMPs) to help SSI recipients (re-)enter the labour market (EC, 2019a). The "mutual obligation" of the SSI programme requiring recipients to engage in a tailored programme of job search, skill training and other social support activities was still not mandatory in 2020.

The analysis of poverty and inequality indicators between 2008 and 2017 highlights the need to improve effective social protection not only because of the increased share of the population affected by poverty in the first years that followed the outbreak of the crisis, but also because of the increased depth of poverty (i.e. the income gap relative to the poverty line). According to standard relative poverty indicators defined with a threshold set at 50% of median income, the poverty rate and the poverty gap increased significantly between 2009 and 2011, stabilised between 2011 and 2016, and then dropped substantially in 2017 (Figure 8, panel A). This increase in the poverty rate, when measured on the basis of an anchored poverty line set in 2005, is even more marked since it rose from 10% to 35% of households between 2009 and 2013 before falling slightly (Figure 8, panel B).[1] This is because this alternative measure of poverty takes into account the impact of the change in the overall living standards since the

[1] An anchored poverty line maintains the poverty line at its initial year (in this case 2005), adjusting it in each subsequent year only according to consumer price changes.

beginning of the crisis. According to this measure, the poverty gap also widened until 2014, before declining. Moreover, this increase in poverty was accompanied by a rise in inequalities between 2009 and 2013-2015, which thereafter recorded a decline that accelerated in 2017 (Figure 8, panel C).

To assess the effects of the changes adopted in the social field, simulations concerning the introduction of SSI were carried out with the Greek module of Euromod, the microsimulation model of the European Union. Since the SSI programme's design was finalised in 2016 ahead of its national rollout, its potential impact on households' incomes, risk of poverty and overall inequality have been simulated using 2016 household survey data. To take into account the uncertainties surrounding the impact of this reform, several variants of this scenario have been prepared with alternative hypotheses on the take-up rate of this new allocation and the rate of under-reporting of income of potential beneficiaries:

- *Take-up.* Two cases were considered: (i) full take-up rate, which assumes that the programme is perfectly targeted and that all eligible households apply for the SSI; (ii) random take-up rate, which assumes that 77% of eligible households apply for the allowance.
- *Income under-reporting.* Two cases are also envisaged: (i) no under-reporting of potential SSI beneficiaries; (ii) income under-reporting of 5% on employment income, 35% on self-employment income and 80% on agricultural income.

According to the simulations, the number of households benefiting from the SSI would reach between 220,000 and 400,000, which corresponds to a total population estimated between 530,000 and 1,040,000 people, i.e. between 5% and 10% of the total Greek population. SSI beneficiaries would most often be part of households in the first decile of the income distribution (Table 1). Furthermore, the estimated budgetary cost of this new social benefit is estimated between 0.3% and 0.5% of GDP, according to the simulations.

This is in line with the most recent information collected on the impact of the reform. In the first four months of 2019, 270,000 households corresponding to about 500,000 individuals had benefited from the SSI for an annual expenditure of € 680 million (0.36% of GDP) (EC, 2019b). These figures, which are consistent with the simulation results, are below those of 2018 when the scheme had reached about 300,000 households corresponding to more than 600,000 individuals for an annual expenditure of about € 750 million (0.40% of GDP) probably due to the improvement of the economic and social situation and the intensification of controls.

The results of the simulation, presented in Table 2, also indicate that the introduction of the SSI would only have limited effects on the poverty rate in Greece, but a significant impact in terms of the reduction of the poverty gap. Based on a poverty measure assessed in this scenario with a poverty line anchored in 2015, the SSI would have reduced the poverty rate from 0.5 to 1.3 percentage points, compared to a level of 14.7% in the baseline. The decline in the poverty gap, on the other hand, would reach between 8.5 and 12.5 percentage points, i.e. a decrease from 22% to 32% of the gap. These developments would also contribute to significantly reducing inequality. The latter could fall below the pre-crisis level, with a drop of 0.9 to 1.5 points in the Gini coefficient and a decrease of between 9% and 17% in the S80 / S20 inter-quintile ratio, which measures the difference between the average income received by 20% of the wealthiest individuals and the average income of the poorest 20%.

These simulated effects of reducing poverty and inequality are broadly in line with the most recent indicators, which incorporate the first effects of the introduction of the SSI. In 2017, the inequality measures are in sharp decline and below their pre-crisis level, as is the relative

poverty rate (Figure 8). However, the decline in the poverty rate measured from an anchored poverty line is more modest, while the poverty gap associated with this indicator narrows more sharply. This implies that the share of population below the poverty line does not fall substantially, but on average their income moves closer to the poverty threshold.

These results are also consistent with those of the analysis carried out in the 2018 OECD Survey of the Greek economy and with the lessons learned from the ex post review of the implementation of GMI conducted by the World Bank in late 2017 / early 2018 (OECD, 2018a; World Bank, 2019). The SSI increases the incomes of the poorest households, significantly reduces the poverty gap and lowers income inequality. However, the effect on the poverty rate is limited when it is assessed by indicator with an anchored poverty line, because the amount of the SSI is relatively low and, above all, because the eligibility threshold for this allowance is also very low. Thus, even after receiving this allowance, the income of the beneficiaries most often remains below the poverty line.

In a way, these results highlight the effectiveness of the programme in targeting the poorest households: this is because the SSI appears to be so well targeted and effective at reaching the poorest that the poverty rate is not affected. All in all, this suggests that to reduce the risk of poverty, this social safety net should be strengthened by increasing the resources devoted to it, and linked more closely to better access to social services and effective market programmes helping SSI beneficiaries to move to employment. Promoting employment through a better functioning labour market is indeed crucial to further reduce poverty.

Figure 8
Poverty and inequality development

Note: Poverty measures are based on income thresholds (povery line). Here two measures, relative and anchored povery are used: i) Relative poverty: The share of people living in households with an income below 50% of median disposable income. Disposable income is "equivalised" by dividing it by the square root of household size to adjust for economies of scale in household spending; ii) Anchored poverty: The share of people living in households with an income below a poverty line set at 50% of median equivalised disposable income in 2005, adjusted for inflation; iii) Poverty gap: For each poverty measure the poverty gap gives the percentage by which the average income of the poor fall below the poverty line. It measures the intensity of poverty among the poor.
Source: OECD Income distribution database

Table 1
Distribution of households receiving SSI
(Share of households receiving SSI, by income decile, in %)

Income decile	Simulations with 2016 household information and policies				Implementation assessment by the World Bank
	Scenario 1	**Scenario 2**	**Scenario 3**	**Scenario 4**	
Income underreporting:	Without underreporting		With underreporting		
GMI take-up:	full take-up	random take-up	full take-up	random take-up	
1	54.3	41.7	63.9	49.4	37.3
2	7.0	5.4	13.6	10.8	19.0
3	3.2	2.5	7.2	5.0	5.8
4	3.1	2.1	6.6	4.9	1.5
5	2.0	1.6	3.4	2.2	0.6
6	0.5	0.4	1.4	1.1	0.3
7	0.2	0.1	0.8	0.4	0.3
8	0.2	0.2	0.7	0.6	0.1
9	0.0	0.0	0.0	0.0	0.2
10	0.1	0.1	0.1	0.1	0.0

Note: Household disposable income is equivalised using square root of household size.
Source: Results are based on simulations run with EUROMOD version I1.66+; (WB, 2019)

Table 2
Anticipated effects of the Social Solidarity Income

	Baseline A	**Scenario 1**	**Scenario 2**	**Baseline B**	**Scenario 3**	**Scenario 4**
Income underreporting:	Without underreporting			With underreporting		
GMI take-up:		Full take-up	Random take-up		Full take-up	Random take-up
Poverty indicators:						
Poverty rate:	14.81	14.08	14.30	14.73	13.40	13.80
Change :		*-0.73*	*-0.51*		*-1.33*	*-0.92*
Mean poverty gap:	39.08	28.35	30.61	39.29	26.76	29.47
Change :		*-10.73*	*-8.46*		*-12.53*	*-9.82*
Inequality indicators:						
Gini coefficient:	33.71	32.60	32.84	33.74	32.28	32.61
Change :		*-1.11*	*-0.86*		*-1.46*	*-1.13*
S80/S20 ratio:	6.27	5.55	5.69	6.27	5.38	5.56
Change :		*-0.72*	*-0.58*		*-0.89*	*-0.71*
Expenditure on SSI, EUR m.		718 (0.4% of GDP)	558 (0.3% of GDP)		958 (0.5% of GDP)	734 (0.4% of GDP)
Number of households recipients, thousands		285	219		397	303
Number of individual recipients, thousands		687	530		1043	799

Note: Household disposable income is equivalised using the square root of household size. The poverty line is at 50% of median household disposable income in 2015, as reported in the 2016 Survey of Income and Living Conditions (SILC), and is held at its value before the introduction of the SSI policy. The poverty gap is the difference between the mean equivalised income of households below the poverty line and the poverty line. Two baselines A and B were used in these simulations because of different poverty lines associated with the assumption on income under-reporting.
Source: Results are based on simulations run with EUROMOD version I1.66+

3. Analysis of the impact of the labour market and product market reforms

Evaluating the effects of the labour market reform

The labour market reform undertaken in 2011 also played a key role in the Greek adjustment programme by triggering internal devaluation and restoring the competitiveness of the economy in the absence of a flexible exchange rate. This reform was made necessary by the wage drift and surge in labour costs before the start of the crisis. Indeed, the strong wage increases disconnected from productivity gains resulted in marked deterioration in the competitiveness of the Greek economy between 2001 and 2010, and a significant widening of the current account deficit (Figure A11).

Many labour market rigidities have contributed to these developments, the main one being a wage bargaining system poorly tailored to local labour market conditions. The system gave priority to collective agreements despite a relatively low union coverage, with mechanisms for the administrative extension of these agreements to non-signatories (Figure A12, panels A and B). In the event of a disagreement with their employers, the unions could unilaterally access an arbitration service. In addition, company agreements could not be less generous than sectoral agreements because of a principle known as "favourability principle" (OECD, 2011). Against a backdrop of sharp increases in public sector remuneration, which no doubt encouraged private sector wage demands, this negotiation process contributed to the growing misalignment between salaries and productivity in the period running up to the crisis.

Other institutions, such as restrictive employment protection legislation (EPL) also undermined the functioning of the labour market (Figure A12, panel C). Before the crisis, EPL was characterised by long notice periods for dismissal, high dismissal costs, and uncertain procedures for collective dismissals because of discretionary interventions by the Labour Ministry (EC, 2014). Moreover, labour market regulation imposed short probationary periods for new hires and narrowed the scope for flexible working hours and using temporary staff. These measures made it difficult to implement workforce adjustments in companies, while at the same time, high non-wage labour costs due to high social contributions (Figure A12, panel D) encouraged informal employment.

The labour market reforms implemented to keep labour costs more in line with productivity and stimulate job creation contained several provisions:

(i) The wage bargaining system was decentralised as of 2011. Company agreements were developed, and the scope of sector agreements was strictly limited, with a reduction in their duration and the suspension of both the administrative extension to non-signatories and the “favourability” principle. The possibilities of access to arbitrage were also restricted in the event of joint agreement thereon by both employers and employees.

(ii) Employment protection legislation was relaxed between 2011 and 2014. Notice periods were shortened, and dismissal costs were reduced. Procedures for collective dismissals were simplified and the uncertainty of their outcomes reduced. Use of temporary employment was facilitated. In addition, the authorities eased the compliance burden generated by labour regulations on business management. For example, the system of pre-approval from the labour inspectorate for overtime was abolished and replaced by a notification system using a new electronic platform (IMF, 2019b).

(iii) In 2012, the minimum wage was lowered by 22% and the minimum wage for under-25s by 32%, following the creation of a sub-minimum wage for youth. As a result, the ratio of minimum to average wages fell below the EU average (Figure A13). Moreover,

the mechanism for determining the minimum wage was transferred from social partners to the government in 2013.

(iv) Lastly, total social contributions were lowered in 2014.

These changes caused an initial drop in wages, followed as of 2013 by a revival in employment and an upturn in remuneration in line with productivity gains (Figure A14).

As in the case of pensions, the alternative scenario designed with the long-term model to evaluate the impact of these changes consists of simulating a return to the situation prior to the labour market reform. It is therefore a counterfactual scenario which examines the impact of the following specific modifications (all designed to offset the actual changes that took place):

(i) An increase of 8 percentage points in the ratio of minimum to median wages in 2012.

(ii) The variable measuring the difference between collective bargaining coverage and union density was gradually increased by 70 percentage points between 2011 and 2016.

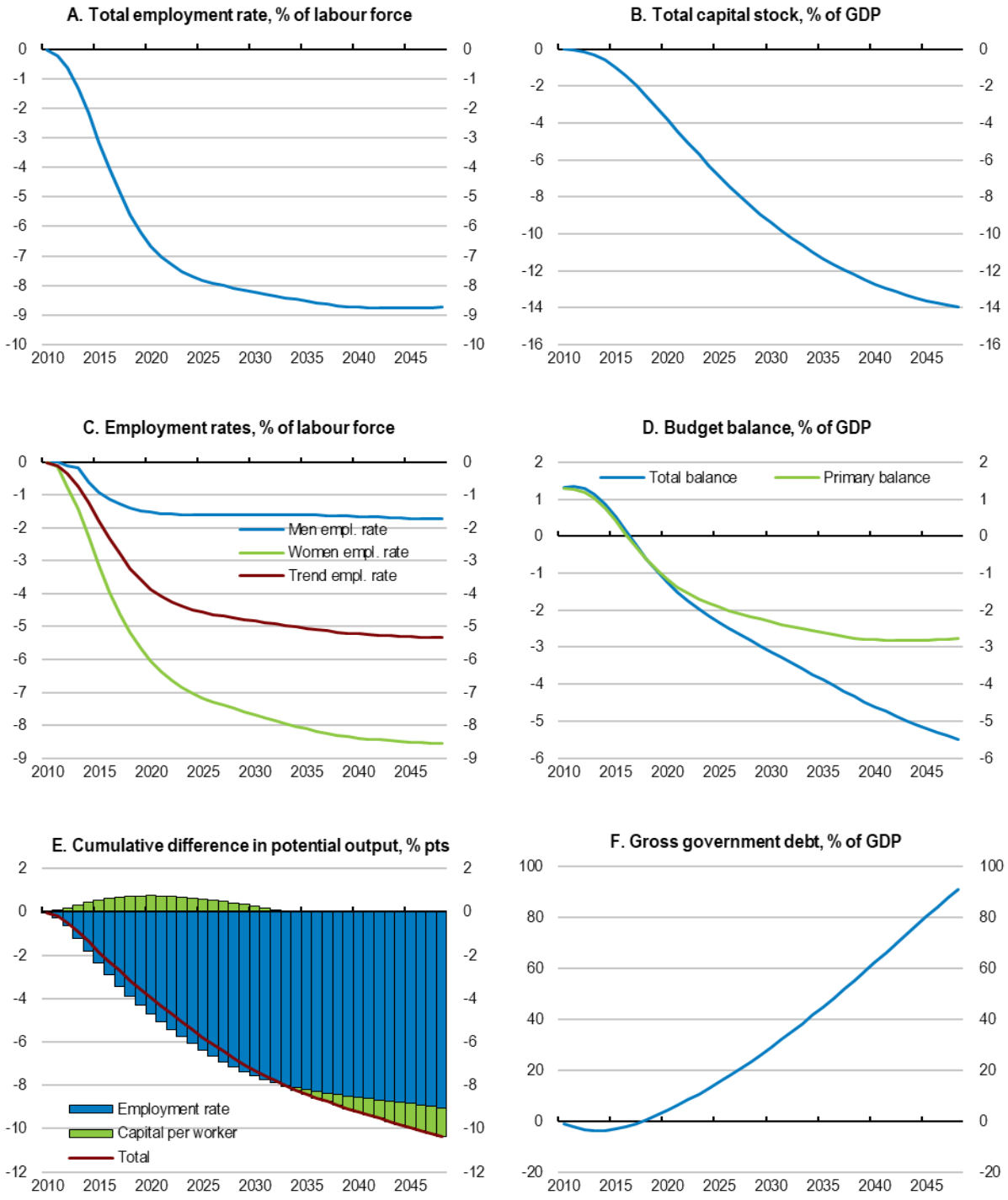
(iii) The OECD EPL indicator was raised by 4 points in 2013, neutralising the easing of employment protection that took place.

(iv) The tax wedge on labour was raised by 4 percentage points in 2014. This adjustment was accompanied by an increase in budget revenues of 1.3% of GDP.

The main outcomes of the scenarios, which are presented in Figure 9, show the crucial role played by the labour market reform at the outbreak of the crisis in limiting the deterioration of the macroeconomic situation. According to the scenario, the reform did indeed prevent a sharper decline in employment than was actually recorded in the first years of the crisis. Without the reform, the fall in employment would have been 7% bigger compared to the baseline after 10 years and almost 9% larger after 30 years, affecting women the most. In these conditions, the fall in GDP would have been even worse, with the decline in output exceeding 10% in the long term compared to the baseline scenario. The stronger decrease of output relative to employment reflects a decline in the capital-labour ratio resulting from a higher cost of capital. Indeed, in the absence of labour market reform, the budgetary balance would have worsened after a temporary improvement generated by initially higher social security contribution revenues. The worsening of the budget balance due to the weakening of activity would have led to an increase in interest rates and resulted in a deterioration of government debt by some 90 percentage points of GDP by 2050 compared to the baseline scenario.

A breakdown of the main aspects of the labour market reform, presented in Figure A15 demonstrate the crucial importance of the decentralisation of the wage bargaining system among all changes introduced. Indeed, this measure alone accounts for half of the overall impact of the reform as a whole. The role played by the reduction of social contributions and the minimum wage is far more limited, as are the measures concerning employment protection legislation. Indeed, as shown by the empirical literature, strict EPL has no clear effect on employment levels. However, by restricting the fluidity of the labour market, tight EPL can result in a higher incidence of long-term unemployment.

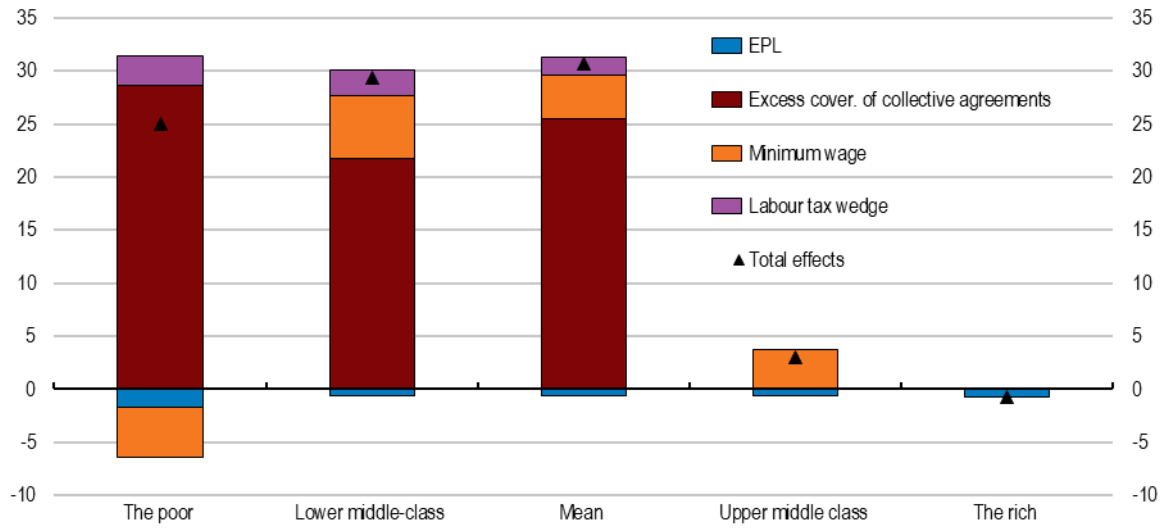
Figure 9
The labour market reforms helped to limit the economic impact of the crisis
(Main developments in the counterfactual of absence of reform: % difference with baseline)



Source: OECD calculation based on the OECD Long Tem Model (Guillemette and Turner, 2018)

The labour market reform also broadly favoured more inclusive growth. The analysis of its impact on long-term income distribution using a macro-micro approach reveals a significant increase in available income among less affluent households (Figure 10) (Causa, Hermansen and Ruiz, 2016). The gains are nevertheless higher for the middle and lower-middle classes than for the lowest-income groups.

Figure 10
The labour market reforms also helped reduce inequality
(Income distribution impact of reforms: Household income level effect, in %)



Source: Calculation based on the OECD framework to examine the distribution impact of structural reforms (Causa, Hermansen and Ruiz, 2016)

This analysis, like the scenario using the long-term model, also reveals the key role played by the revision of the wage bargaining system and the limitations imposed on the automatic extension of collective agreements in the labour market reform. It highlights the significant redistributive impact of the measure. Indeed, the positive effects of the greater decentralisation of wage negotiations on the employment rate of women and poorly skilled workers more than offset the greater wage dispersion caused by the measure. Phasing out administrative extension of collective agreements to non-union members lifts job creation and, through this channel, household disposable incomes in the middle class and among the poor, leaving rich households unaffected. One possible explanation is that when the fraction of workers covered by collective agreements is very high relative to union density, unions do not internalise the potentially adverse effects of their wage demands on the job prospects of the whole workforce, leading to higher unemployment (Murtin et al., 2014).

According to this framework for evaluating the redistribution effects of the structural reforms, households in the middle and at the bottom of the income distribution scale should have been the main beneficiaries of the reduction in social contributions, given the positive effect on employment. For the most affluent groups, earning gains due to higher employment may have been offset by increases in more progressive taxes needed to compensate for the reduction in social security contributions. In the specific case of Greece, the estimated effect of the reduction of income inequalities due to the decrease in social contributions could nevertheless be overestimated on account of the regressive effect of tax measures adopted as of the beginning of the crisis (see above).

The outcomes of the evaluation of the redistribution effects of the labour market reform also bring to light the beneficial impact on the middle classes of the reduction in the minimum wage. However, the latter is unfavourable for the most disadvantaged groups. Indeed, in this case the benefits of the increase in employment are not sufficient to make up for the fall in salaries. Although they are on a smaller scale, measures to ease social protection are also bad for low income earners. Indeed, an easing of employment protection legislation may have contributed to higher inequality, as it tends to disproportionately weaken the bargaining power of low-skilled workers relative to high-skilled workers.

Assessing the effects of enhancing product market competition

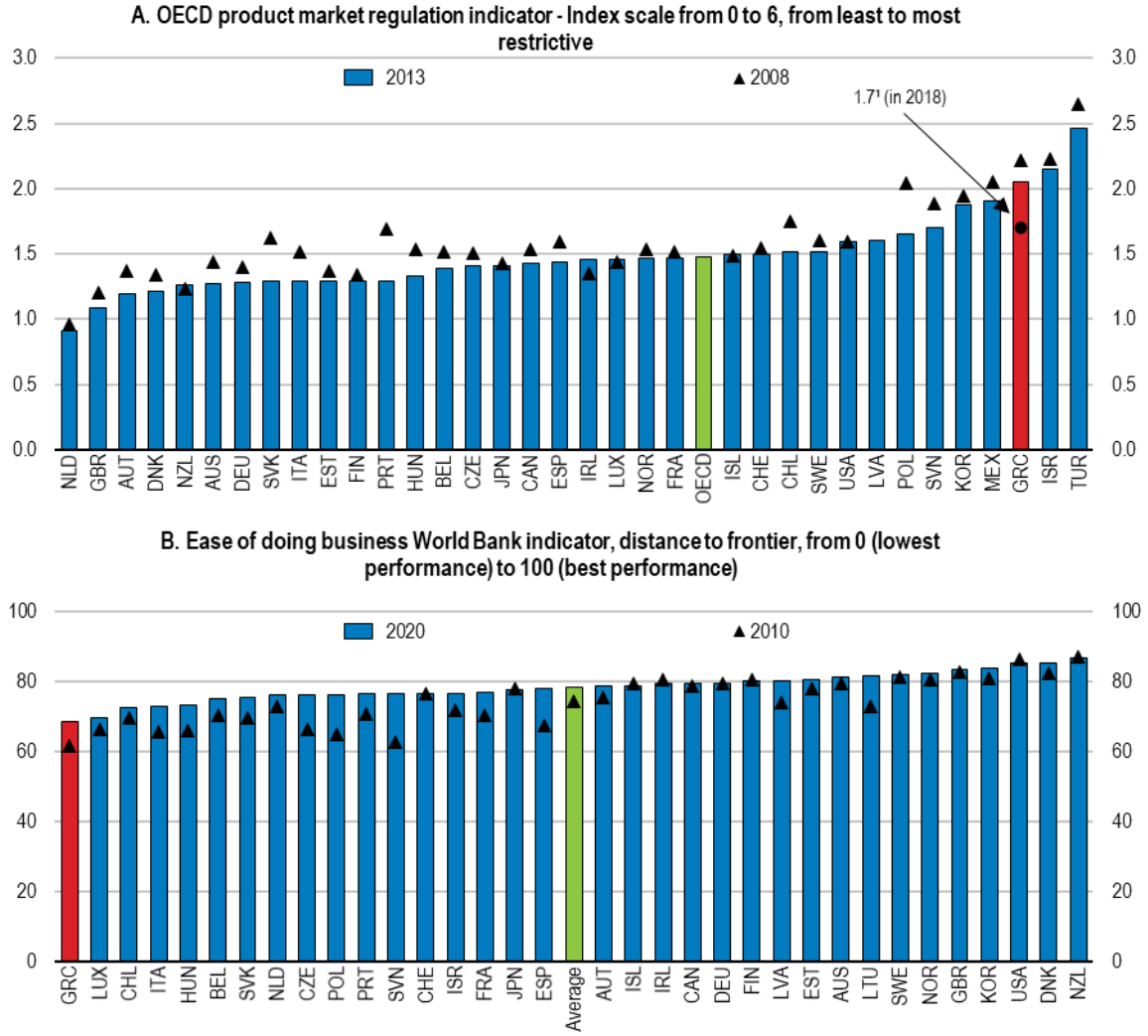
At the end of the 2000s, product market regulation was one of the most restrictive among OECD countries, as indicated by Greece's poor scores in international rankings (Figure 11). Barriers to entry for new competitors, public monopolies, geographic restrictions and price constraints protected incumbents in many sectors of the economy, including professional services, retail, network industries and transportation. A large and cumbersome bureaucracy due to opaque regulation was also unfavourable to entrepreneurship, while competition policy was not very active reflecting inter alia a lack of "culture of competition" and deficiencies in the institutional framework (OECD, 2011). Combined with the country's relatively low foreign trade exposure, these multiple shortcomings weakened innovation, hampered job creation and hindered investment, especially from foreign origin.

After the outbreak of the financial crisis, the need for both price and wage adjustments to strengthen competitiveness and stimulate growth, in the absence of a flexible exchange rate, have made product market reforms all the more essential. These reforms, which covered the full spectrum of the economy, have contributed to progress in several areas (Box 7). The functioning of competition policy has improved, for instance. Advances in market regulation since the late 2000s have also been greater than in most other OECD countries. However, in view of the extent of the initial dysfunctions, these improvements remained modest. According to the PMR indicators of the OECD or Doing business of the World Bank, the regulation of the product markets remains more restrictive than in most other OECD countries (Figure 11). In their most recent assessments, the European Commission and the IMF also highlight the still unsatisfactory functioning of product markets, which hinders the dynamism of businesses and contributes to maintaining an economy dominated by SMEs operating in a rigid business climate (EC, 2019a and IMF, 2019c). In particular, progress in the areas of privatisation, the energy sector and the development of a cadastre has been very slow (Box 7).

To assess the impact of the reforms, a counterfactual simulation has been carried out using the long-term model. As in the case of pension and labour market reforms, this scenario consists of simulating a return to a situation before the product market reforms. More specifically, it is assumed that the drop in the PMR indicator from 2.2 in 2008 to 1.7 in 2018 (Figure 11), which measures the improvement in the functioning of product markets according to OECD analysis, has not happened.

This scenario shows that product market reforms have had significant positive effects on labour efficiency, investment, production and as a result, Greek public finances. Indeed, as shown in Figure 12, the economy would have been in a worse condition in the absence of product market reforms. Labour efficiency and the capital stock would have experienced a marked weakening compared to the baseline scenario. These unfavourable developments, which would have been accompanied by a slight decline in employment, would have led GDP to be lower by around 5% in 2030 compared to baseline and by 9% by 2050. This worsening of the macroeconomic situation would have led to a deterioration in the public accounts, with an increase in the primary deficit and interest payments linked to an increase in public debt and the increase in the risk premium on interest rates. Greek public debt would have been higher by 10 percentage points of GDP compared to the baseline by 2030 and by 40 percentage points of GDP by 2050.

Figure 11
Regulatory barriers to competition were among the highest

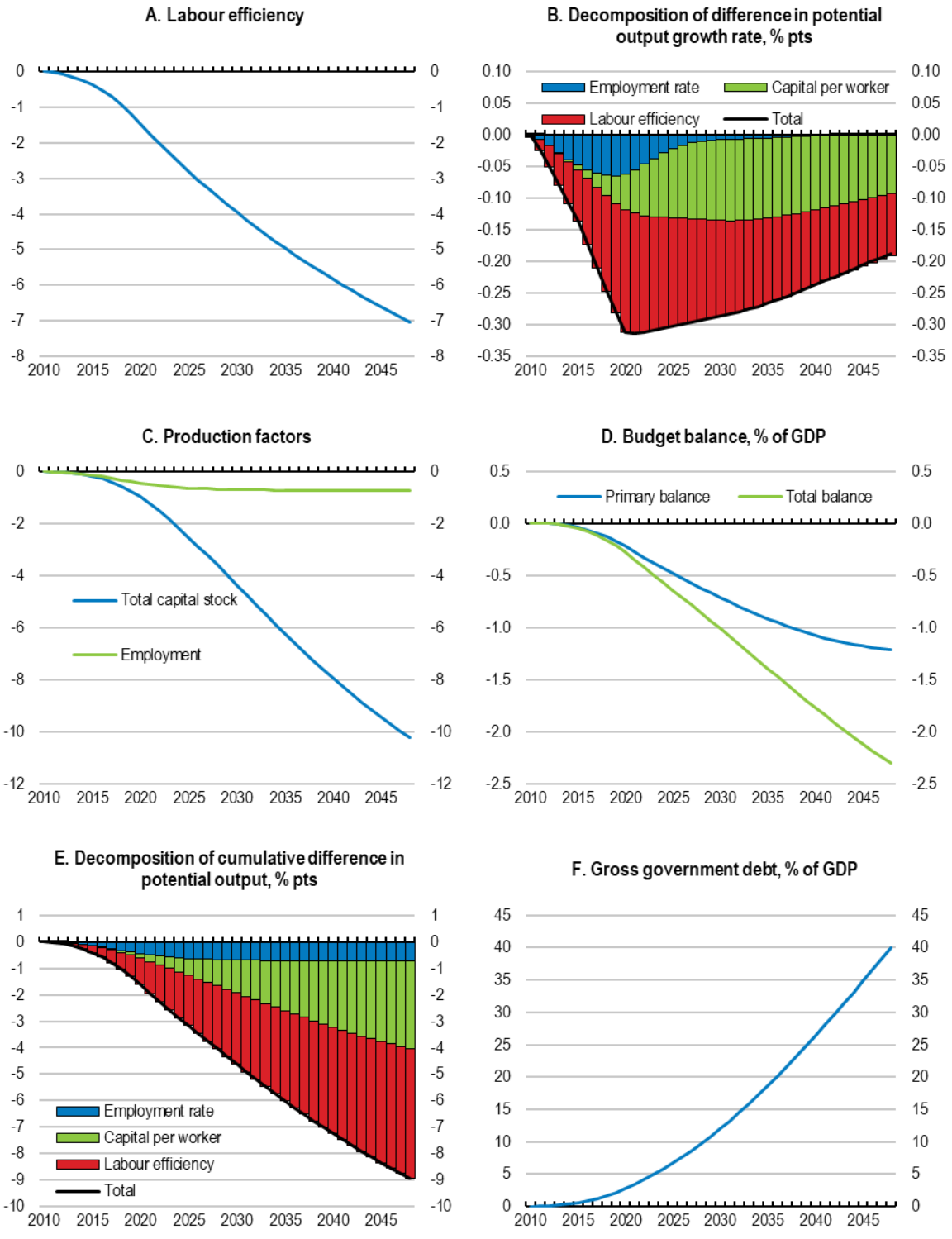


Note: 1. Based on preliminary calculation of the product market reforms for 2018.
Source: World Bank (2020), Doing Business 2020 (database); OECD (2020), Product Market Regulation Database and OECD calculations

Figure 12

Economic outcomes would have been worse without product market reforms

(Main developments in the counterfactual of absence of reforms: % difference with baseline)

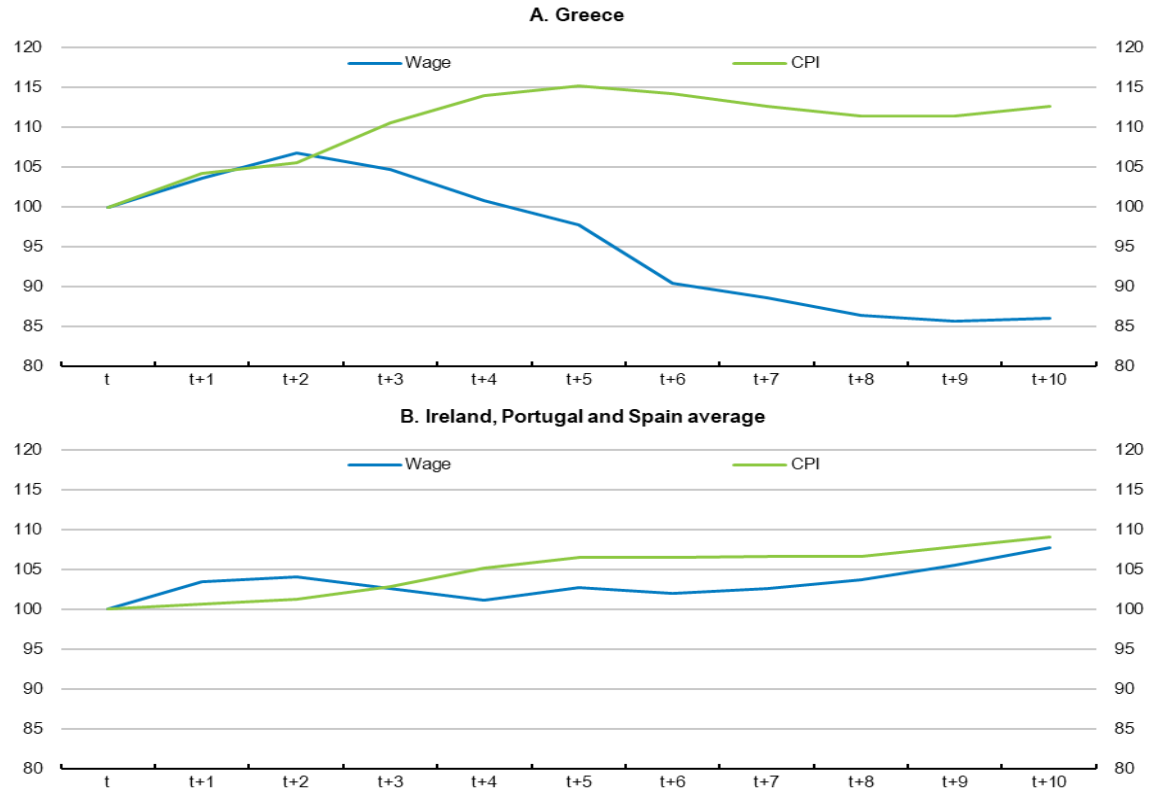


Source: OECD calculation based on the OECD Long Tem Model (Guillemette and Turner, 2018)

However, this scenario is likely to overestimate the magnitude of the benefits of better functioning product markets in Greece. The OECD PMR indicators used to quantify the effect of the reforms provide a *de jure* but not a *de facto* assessment of the progress made in improving product market regulation. And, as in other areas, the implementation of changes in product markets has been poor due to the inefficiency of public administrations and difficulties to overcome resistance from the private sector. In the case of product markets, these implementation problems were further exacerbated by the need to intervene at multiple levels and in a very large number of sectors, often having specific and poorly understood features. Adopted reforms have often been ineffective or delayed due to missing or contradictory secondary legislation (IMF, 2019c).

All in all, the reforms adopted have not fundamentally changed behaviour on the ground. One sign is that despite the sharp decline in production in Greece, there has not been a significant fall in the price level. Indicators of corporate profit margins increased in almost all sectors between 2012 and 2014 before declining slightly, and the dynamism of companies measured by the business churning rate has remained low compared to other EU countries (IMF, 2019b; EC, 2019a). This difference in intensity and effectiveness between labour and product market reforms has led to strongly diverging wage and price profiles (Figure 13), a sharp drop in real wages and negative effects on activity and on income distribution, which hampered Greece's adjustment programme.

Figure 13
Greek wages and prices diverged to an extent not seen in other countries
(Index pre-crisis level=100[1])



Note: Pre-crisis levels correspond at pre-crisis production peak: 2007 for Greece and Ireland; 2008 for Portugal and Spain.
Source: OECD Analytic Database and OECD calculation

Box 7

Main product market reforms

The main reforms carried out between 2010 and 2018 to improve the functioning of the product markets in Greece were as follows:

- In 2011, a new competition law strengthened the independence of the Hellenic Competition Commission and modernized its working methods (OECD, 2011).
- In the professional services sector, which represents one third of private sector employment, restrictions on competition in almost 350 regulated professions (also called closed professions) have been reduced through the 2011 framework law that established professional freedom and removed obstacles to entry and operation (IMF, 2019b).
- In 2010, restrictions on cabotage, which reduced competition in maritime cruises, were lifted and the road freight sector, which was very highly regulated, was liberalised (OECD, 2011).
- Measures have been taken since 2010 to streamline and modernise regulation of the retail sector, which was among the most restrictive in OECD countries. In 2013, shop opening on Sundays was, for instance, somewhat liberalised (OECD, 2013).
- Between 2013 and 2016, three Competition Assessment Reviews conducted with the OECD helped identify barriers to competition in 14 sectors, accounting for about 30% of GDP. This resulted in 773 recommendations for legislative changes to enhance competition, most of which have been adopted (OECD, 2018a).
- Measures have been implemented to reduce bureaucracy, including a simplification of investment licensing procedures both horizontally and on a sectoral basis with the help of the World Bank. The prior authorisations that were required to establish and operate a business in a given area have been replaced by a notification and ex post inspection system. Between 2015 and 2018, the sectors examined in the context of this reform represented 75% of GDP (EC, 2018b).
- A trade facilitation strategy was launched in 2013 to reduce excessive costs and delays related to export and customs clearance procedures through the establishment of a "single window for exports" (OECD, 2013). This “single window” is still being developed (EC, 2019b).
- Work has been started to establish a cadastre. However, in 2018, only 30% of real properties had been listed (EC, 2018b).
- The authorities have initiated reforms to reduce the presence of state-owned enterprises in the energy sector and to put an end to its the vertical integration. Significant progress in this area, however, is not expected for several years (EC, 2019a).
- Three major privatisation deals concerning regional airports, the port of Piraeus, and the railways have been signed. However, the privatisation process has been very slow due to the lack of comprehensive information on the state's assets, poor administrative and regulatory management, and the lack of a cadastre (OECD, 2018a).

4. Analysis of reforms aimed at improving the effectiveness and quality of public services and administrations

Benefits of an improved education system

In Greece, school enrolment bears comparison with other OECD countries, and among the youngest cohorts, completion rates in secondary and tertiary education are higher than in most other EU members. That said, many students complete their studies with fewer achievements than their counterparts in other countries, as the results of the assessment of the competencies of young adults reveal (Figure A16, panel A)**.** Adults, moreover, have little opportunity for retraining via further education or vocational training (Figure A16, panel B). In addition, the educational attainment of Greek students is significantly lower than their peers in other countries, with little improvement since the start of the 2000s, according to the PISA assessment of 15-year olds (Figure 14). These unfavourable outcomes, which result in poorer professional skills and lower lifetime social well-being than in most other OECD countries (OECD, 2015), are due in part to the reduction of resources in the education system resulting from the crisis, while it had to absorb large numbers of refugees (Figure A17). Nevertheless, as the 2018 OECD report on Greece points out, these failings are primarily the education system's legacy of highly centralised management, fragmented institutions, and limited capacity to assess and improve its performance (OECD, 2018a).

Since 2011, the authorities have implemented a series of reforms aimed at modernising and improving the education and training system. In secondary education, the weekly duration of instruction was raised by two hours, and the number of children per class increased to be closer to the OECD average. A system for evaluating teaching institutions is gradually being rolled out with the creation of an independent assessment agency (EC, 2013b). A three-year education plan based on a review of national education policies by the OECD has also been adopted (OECD, 2018b). This includes introducing mandatory enrolment at the age of four, the creation of primary schools open all day and the modernisation of school curricula (OECD, 2018a). Higher education reforms have also been undertaken, with streamlining measures involving the merger of some departments and institutions. A reform of the governance of the higher education institutions is also underway.

In order to illustrate the benefits of raising the average attainment of the population, an education reform scenario was performed, whereby a gradual improvement of PISA outcomes and the longer duration of studies was assumed to take place as of 2022. Based on an unchanged quality of education, Greece has a little ground to make up in terms of the length of studies of its working population compared to the OECD average. This gap is slightly below one year in 2020 and shrinks to 0.67 of a year in 2060 in the baseline scenario. More significantly, Greece could bridge the gap vis-à-vis Portugal in terms of the quality of school education as measured in PISA surveys. Portugal, which in 2006 had a PISA score close to Greece's current score, improved its performance and reached an OECD average score in 2015, i.e. in the space of 9 years. The scenario performed, based on the assumption of a similar performance by Greece, therefore seems realistic. It involves an improvement in Greece's score from 455 to 500, or a 45-point gain over 9 years.

The impact of human capital in the long-term model is accounted for using a variable for the duration of studies of the population aged 15-74 whose behaviour is modelled based on cohorts taking into consideration behaviour by age. Accordingly, a correspondence between the effects of improving the quality of education measured by PISA and the duration of studies was used. This was based on a rule of thumb which is regularly referred to in PISA reports, and which equates 30 score points with about one year of schooling (OECD, 2016b, p.64).

Figure 14
Greece lags other countries in educational attainments of students
Performance in reading, mathematics and science of 15-year-old students, PISA point scores

Source: OECD PISA database

The scenario of improved attainment in Greece therefore takes into consideration the effects of better quality and longer studies in the following manner:

(i) The 45-point increase in the PISA score over nine years is represented by a 1.5 year increase in the length of studies, reflecting an annual gain of 0.167 of a year.

(ii) The bridging of the gap in terms of length of studies versus the OECD average of 0.67 of a year, which is also assumed to spread over a nine-year period, represents an annual additional gain of 0.074 of a year.

(iii) The total annual gain of 0.24 of a year (0.167 + 0.074) is assumed to be gradually spread in this scenario in the different cohorts of the population aged 15-74 between 2022 and 2060, without ending on that date.

(iv) These gains are added to the number of years of study of the population aged 15-74 in the baseline scenario, which, to keep things simple, was supposed to be the same for all the cohorts of a given year. Accordingly, the benefits of increasing the length of studies and improving the quality of education can be calculated in terms of the length of education for the total stock of 15-74 year olds year after year.

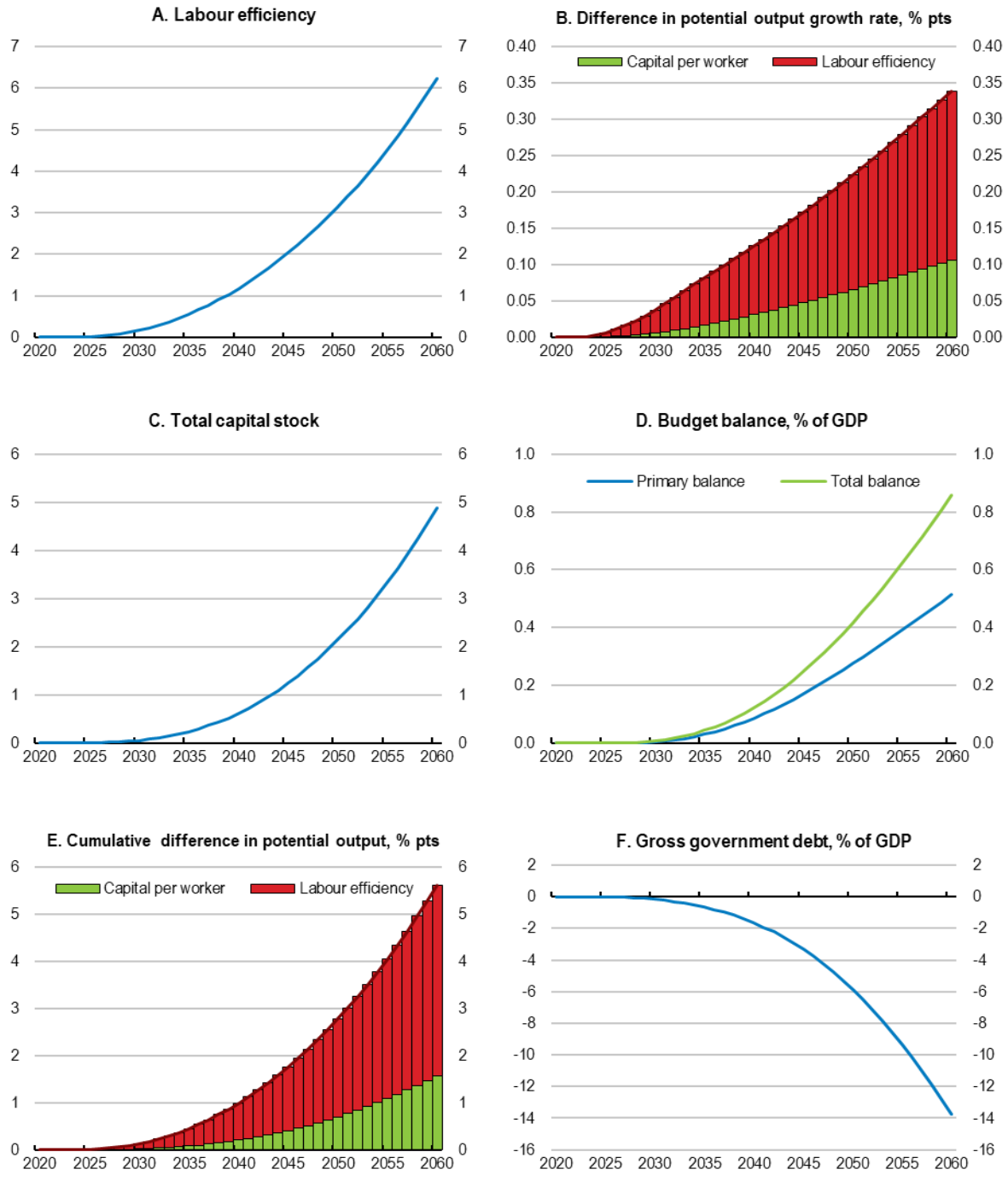
The outcomes of the scenario are presented in Figure 15. They reveal the positive effects of a reform of this nature resulting from labour efficiency gains and strengthened capital stock. These effects, which are felt very gradually given the nature of the shock, lead to a GDP increase of some 6% by 2060 compared to the baseline. This favourable macroeconomic trend also has a gradual positive impact on the fiscal situation, with a fall in the budget deficit and reduction in public debt of 14 percentage points of GDP in 2060.

Despite being positive, all of these impacts come into effect with long lags, and are relatively modest in size. This reflects not only the slow trickling down of the improved level of attainment of the population until 2060, but also the slow convergence speed of labour effectiveness when its equilibrium level increases. Indeed, the positive long-term impact on GDP of the changes introduced in the scenario can be estimated at 23% compared to the baseline scenario. Accordingly, by 2060, only one quarter of the effect has materialised.

Benefits of a more modern and effective public administration

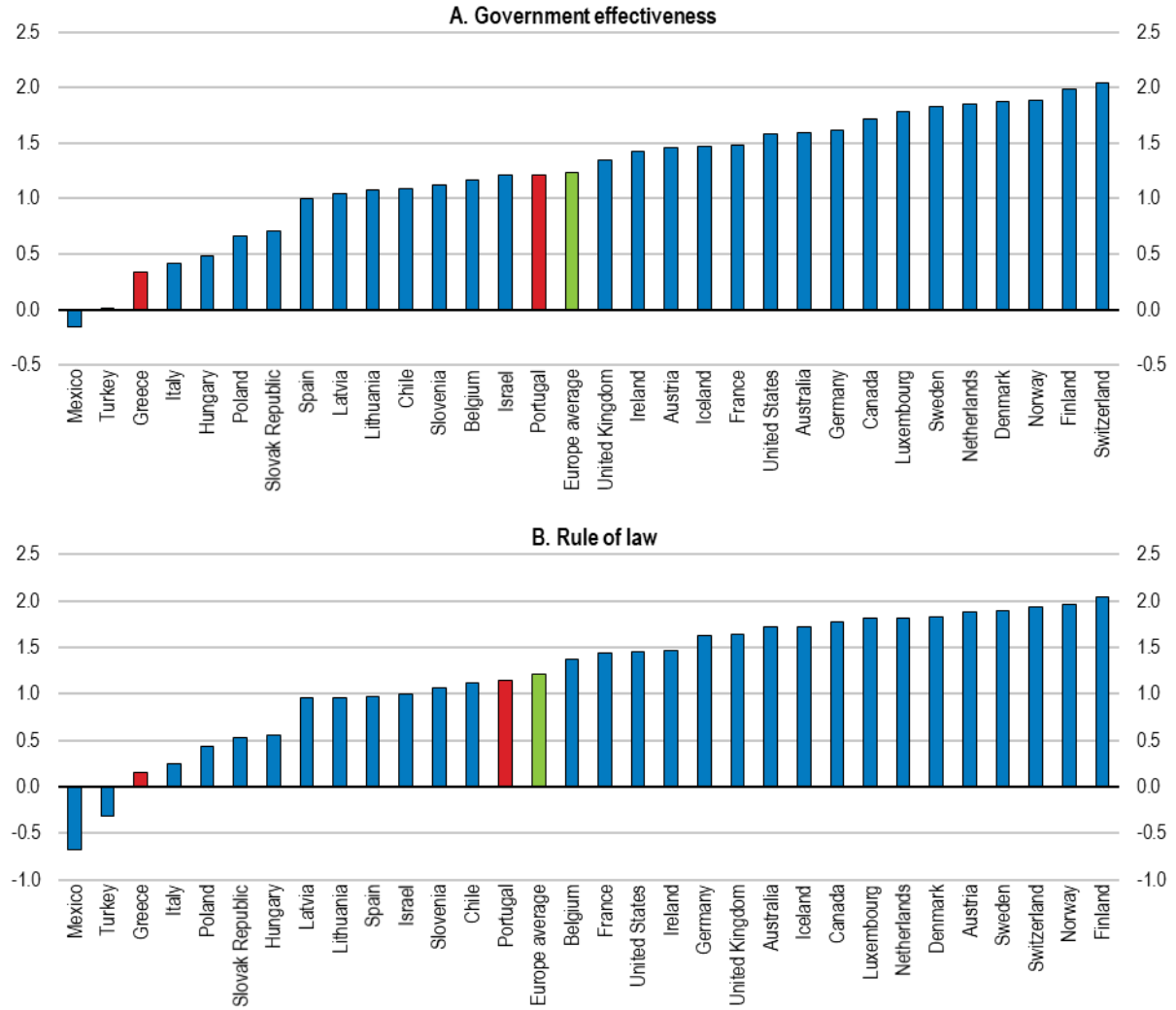
One of the major problems behind the economic and social crisis in Greece, and which was also at the root of the difficulties in adopting the remedial reforms required, was the shortcomings in public administrations. According to World Bank indicators, Greek administrations are regarded as being among the most inefficient in the OECD (Figure 16, panel A). These shortcomings weigh considerably on public account management with significant negative repercussions on the private sector. The ineffectiveness of the administrations represents a budget cost, which results, for example, from deficiencies in the tax collection system and in some public interventions that lead to wastage. Probably even more serious is that the recurrent administrative shortcomings are undermining confidence in the State, which is not perceived to work in the general interest of the population (OECD, 2013). Failings in many public services, the extent of tax evasion, the recurrent use in the past of tax amnesties, and the slowness of legal procedures mean that the application of rules of law has very often been inadequate. In fact, according to the World Bank, it seems that Greece has more serious problems applying these rules than most other OECD countries (Figure 16, panel B). This situation, which contributes to the low level of foreign direct investment in Greece, carries huge costs in terms of economic efficiency, social cohesion, and reduced well-being across the population.

Figure 15
The benefits from modernising the education system show-up with long lags
(Difference with baseline, in %)



Source: OECD calculation based on the OECD Long Tem Model (Guillemette and Turner, 2018)

Figure 16
Government efficiency is perceived to be weak by international standards



Note: Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5
Source: World Bank database: Worldwide Governance Indicators

As of the end of 2012, the authorities stepped up their effort to modernise and improve the effectiveness of administrations and public services. These reforms affected many areas, including the functioning of tax administrations and the justice system, fighting corruption, and improving the management and quality of public employment (Box 8). Indeed, better quality public services are important when it comes to restoring public confidence in the public sector, strengthening consent to taxation, creating a healthier business environment, and stimulating the competitiveness of the economy.

Box 8

The main reforms aimed at improving the effectiveness of administrations

The measures adopted for modernising administrations and increasing their effectiveness targeted many areas:

- As part of the efforts to improve tax collection and step up the fight against tax evasion, the authorities notably banned cash payments in tax centres as of 2013. The number of these centres was reduced and a maximum three-year timeframe for management thereof by the same person was imposed. Working techniques were modernised with an extension of risk-based audits to improve the efficiency of inspections and the recovery of taxes.
- A unified payment system for tax debts and social contributions was put in place in all tax centres, with a system for cross-checking information between databases. A unit was set up in the tax administration to deal with taxpayers' claims before they went to court.
- As of 2012, several measures were taken to speed up the functioning of the judiciary and reduce the court backlog. A fee on filing for legal claims was put in place. Mediation systems were introduced for the most straightforward cases. Moreover, the authorities computerised and developed the electronic processing of court cases by rolling out the necessary infrastructures and introducing some legislative amendments.
- In the fight against corruption, a reform of the system for funding political parties was introduced in 2015. A code of conduct was brought in for members of the government that limited their scope for intervening in individual investigations. Moreover, reforms of key sectors, such as public procurement and social and healthcare services are underway with the support of the OECD (OECD, 2018a).
- The management of public-sector employment was updated with the implementation as of 2015 of a mobility system for public officials. More transparent and objective management recruitment procedures were also adopted, along with a performance evaluation system for staff (EC, 2018b).

To illustrate the benefits of more modern and more effective public administrations, two scenarios were performed. The first, based on the long-term model, uses the rule of law variable. In this scenario, the assumption is that the reforms enabled Greece to improve the rule of law indicator by 0.07 of a percentage point annually over a total of 14 years to bring it from 0.15 (value in 2018) to the level of Portugal (1.14 in 2018), just below the OECD average. Although this is substantial, an improvement of this magnitude in the functioning of the rule of law is plausible. It assumes that, in a first phase, Greece takes around 10 years to return to the situation prevailing 10 years earlier, with the rule of law indicator returning to its level in 2008 (0.85), followed by further progress at the same pace for another four years.

The outcomes of this first scenario, presented in Figure 17**,** highlight the very strong positive impact of this change on the economy via productivity gains. These gain are accompanied by an increase in capital stock that fosters gradual improvement in GDP level, reaching only 2% after 10 years but exceeding 20% in 2060. This stronger growth has a knock-on effect on public finance, which also registers a sharp improvement. The improvement in the budget balance, which starts off slowly, picks up pace, from ½ percentage point of GDP in 2035 to over 2 percentage points of GDP as of 2050. The consequence is a fall in public debt of almost 60 percentage points of GDP in 2060. As was the case in the education scenario, it is also worth noting that the changes recorded in 2060 do not represent the long-term effects of the scenario, as the latter will still need several decades to reach completion.

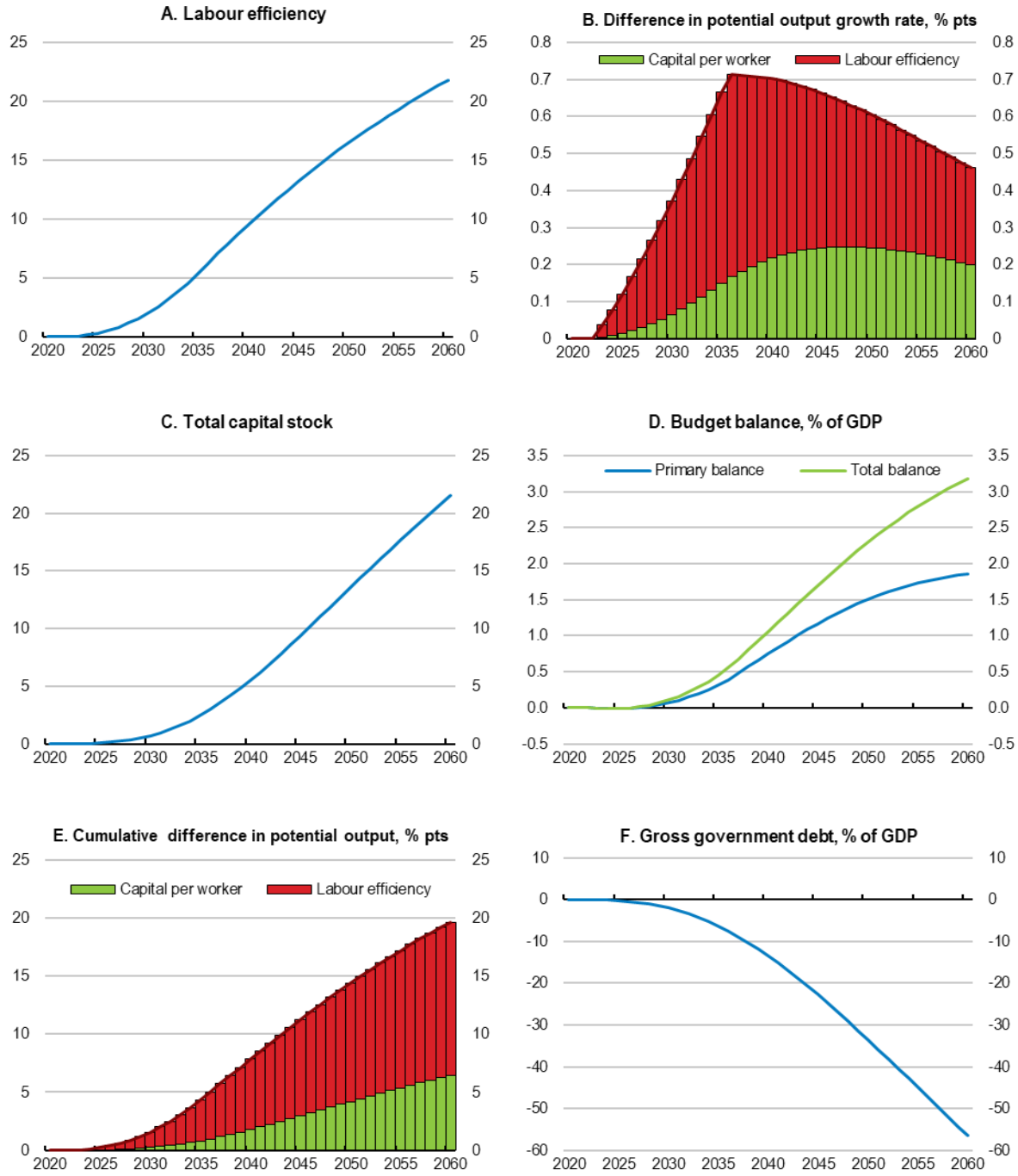
The second scenario on improving the effectiveness of public administrations was performed using the OECD analytical framework, which can be used to assess the impact of the quality of public finance on economic performance. The assumption here was also that Greece's current level of effectiveness (0.34 in 2018 according to the World Bank indicator) improved to match the level of Portugal (1.21 in 2018). Nevertheless, unlike the first scenario, the estimated output gains from the change are very low, at around only 0.2% after 30 years.

The considerable differences between the two scenarios reflect the uncertainties of the outcomes as a result of the difficulties in measuring and factoring in to economic models the problems of administrations' effectiveness. In the first scenario based on the long-term model, the rule of law variable captures, in a reduced form, the impact on productivity of a series of factors linked to the inefficiency of government authorities. These factors potentially include all the public finance structure aspects in terms of income and spending, which affect output and are identified in the second model used. But they also include the indirect negative effects on productivity and activity stemming from the inadequate functioning of rule of law that is often connected to other failings, including corruption, for example. While it is possible that the potential impact of the rule of law variable on economic performance is overestimated in the first scenario, it is underestimated in the second scenario as a result of the very limited nature of what is evaluated by the effectiveness variable in this case. Indeed, this variable is used in combination with a variable measuring the size of administrations to estimate the extent to which their cross effect is a source of distortions for economic activities. The effect on output of efficiency gains depends therefore on the size of the government sector, which itself represents only one of the many characteristics of the structure and operating quality of public administrations that affect output in this model.

Assessing the impact of a more relaxed fiscal policy

Spurred on by the European institutions, Greece agreed to maintain a high primary balance surplus of 3½% of GDP until 2022, before gradually bringing it down to 2¼% of GDP after this period. There is, however, some debate over these budget choices. According to the IMF, a less restrictive fiscal policy designed to increase public investment and strengthen some areas of social spending would encourage stronger and more inclusive growth. This in turn would help step up the pace of structural reforms (IMF, 2019a). Nevertheless, such a large change in the budgetary stance risks compromising the objectives of bringing down Greek public debt. The choice of the authorities to maintain a significant primary balance surplus is consistent with the requirements under the European Fiscal Framework as such surplus is assessed to be necessary to maintain debt sustainability. This is important to reinforce the credibility of the existing reform strategy, take advantage of low interest rates to finance the economy, and sustainably improve living standards.

Figure 17
The productivity gains from better public administrations can be sizeable
(Difference with baseline, in %)



Source: OECD calculation based on the OECD Long Tem Model (Guillemette and Turner, 2018)

In order to examine these issues, three scenarios were performed based on the assumption of a fall in Greece's primary surplus to 1½% of GDP. These scenarios assess three options regarding the use of the resulting new budgetary margin of manoeuvre:

(i) an increase in public investment;

(ii) an increase in government current expenditure;

(iii) a reduction in the tax wedge on labour.

Given the assumption regarding the fiscal primary balance used in the baseline, the extent of the fiscal shock performed ex ante in all three scenarios is as follows: a reduction on the primary surplus by 2 percentage point of GDP relative to baseline for the first three years of the shock, followed by respective cuts of 1½ and 1 percentage point of GDP in the following two years, then a sustained reduction of 0.7 percentage point of GDP thereafter.

The scenarios presented below and compared to the baseline scenario were developed using the OECD long-term model (Guillemette and Turner, 2018). This model is primarily designed to analyse policies with effects on supply conditions, via the availability of labour, the existing capital stock and the efficiency of labour, and their repercussions on public finance from a long-term perspective. However, the modelling of the demand side is not sufficiently developed to capture the types of Keynesian effects that are often associated with fiscal shocks. The short-term multiplier effects of budgetary adjustments on production are therefore not considered in the scenarios. The only effects of budgetary changes on production taken into account are those which affect potential output and supply conditions.

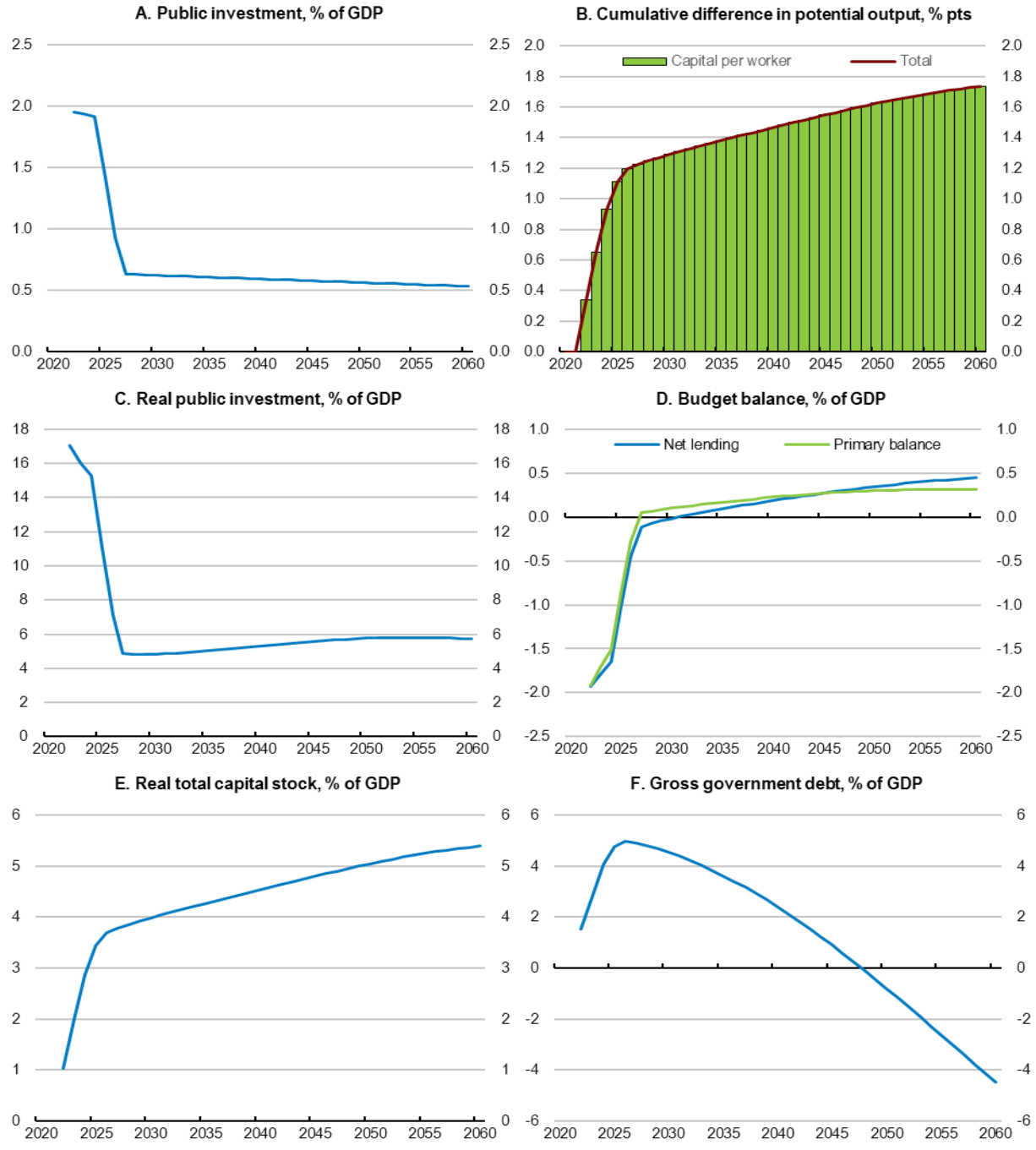
Increase in public investment

In the first scenario, the main effects of an increase in public investment are reviewed. Indeed, Greece has significant leeway for strengthening its growth potential through judicious public investment, given the relatively low level of its public capital stock (Figure A18, panel A) (Fournier, 2016). In addition, international comparisons reveal the country's lag in several infrastructure sectors, examples being the poor quality of railways and ports (Figure A18, panel B and C). The share of households with Internet access in the home is also low compared to other OECD countries (Figure A18, panel D). Yet, in recent years, the Greek government has tended to restrain public investment more than necessary even when it had fiscal space (EC, 2019b).

As the scenario shows, an increase in public investment made possible by a less ambitious primary surplus fiscal objective would enable a gradual increase in capital stock in the economy, and would strengthen output (Figure 18). Over 10 years, GDP would increase by around 1½% compared to the baseline, which is very close to the 1¾% increase estimated for the longer-term 30-year projection. This increase in activity would also generate additional income for public administrations. Accordingly, the initial increase in the public deficit resulting from the additional spending would be gradually absorbed before being completely offset after around 10 years. The increase in public debt, which would peak at 5 percentage points of GDP after five years, would then progressively fall to below its baseline level after 30 years.

To complete this analysis, an increase in public investment was also simulated using the OECD analytical framework modelling the impact of changes to public finance structure on output and income distribution. The simulation was performed based on an increase in total government investment and public spending by 0.7 percentage point of GDP, as only the long-term effects of this type of change can be assessed with this model. The outcomes obtained were similar to the long-term model, with a 1% GDP increase over 10 years, and a 2¼% increase after 30 years. This analysis moreover suggests that these changes could slightly reduce inequalities on the back of the distribution effect linked to the overall increase in public spending resulting from the shock.

Figure 18
A rise in public investment could improve public finances in the medium term
(Difference with baseline, in %)



Source: OECD calculation based on the OECD Long Tem Model (Guillemette and Turner, 2018)

Furthermore, the similar outcomes obtained from the two modelling frameworks on the positive effects of an increase in public investment could be underestimated. Indeed, quality infrastructures generate benefits over and above their direct contribution to capital accumulation in the economy, as were estimated by the long-term model for example. Good public transport and telecommunication networks not only strengthen business competitiveness, they also facilitate trade, and foster competition and the dissemination of ideas and innovations, with potentially favourable effects on labour efficiency.

Nevertheless, the potential growth gains generated by an increase in public investment depend heavily on the quality of the investment projects selected, the specific assessment of the cost-effectiveness of these projects and the effectiveness of their implementation. Available international comparisons suggest that the governance of infrastructure projects in Greece, and, in particular, their planning and execution, needs improving (Herties School of Governance, 2016) (Figure A19).

Increase in current expenditure

In this second scenario, the assumption was that the increase in current budgetary expenditure associated with the primary budget surplus was spread between the increase in public consumption and social transfers for families. More specifically, the package of simulated fiscal measures includes:

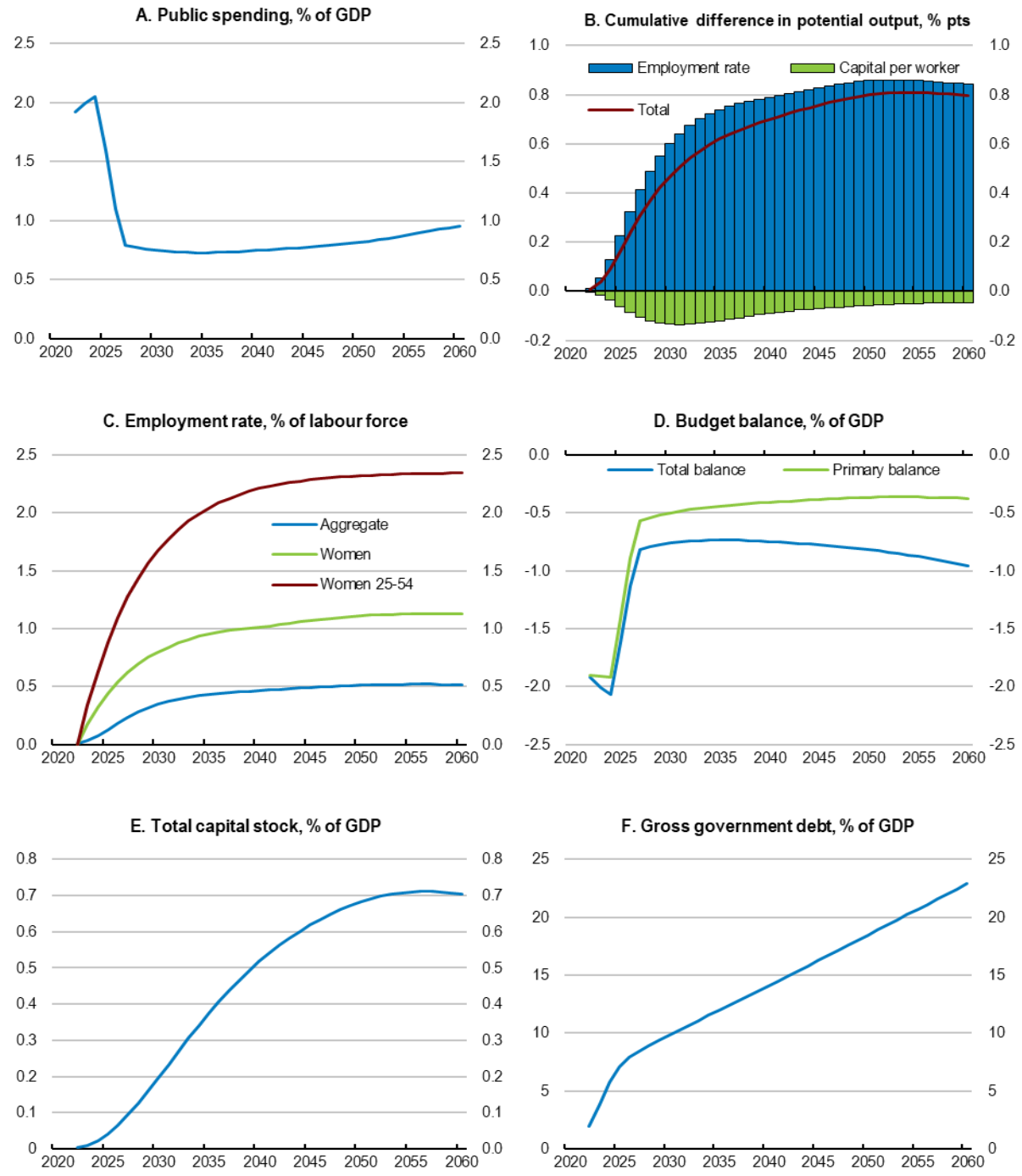
- A ½ percentage point of GDP increase in spending for families;
- A 1½ percentage point of GDP increase in public consumption for the first three years of the shock, followed by a 1 and a ½ percentage point of GDP increase in years four and five, and then a 0.2 percentage point of GDP increase as of the sixth year.

Social spending for families, in particular when delivered in kind in the form of childcare facilities and nurseries, is very low in Greece (Figure A20). This has a negative impact on well-being and the employment rate of women, although informal childcare solutions organised via an extended family network partially offset the limited supply of these social services. On the other hand, a targeted increase in public consumption in the form of salary increases for certain public officials would help solve some recruitment issues in key sectors of the administration. Some services, such as the Independent Authority for Public Revenue are indeed having difficulties to recruit and retain highly qualified personnel due to the lack of attractiveness of the positions available (EC, 2019a). This is damaging their effectiveness and the upgrading of their operations.

As Figure 19 shows, the increase in current public spending for families and public consumption has positive repercussions on output due to the rise in the employment rate, notably resulting from the increase in transfers to families, which benefits women, especially young women. Indeed, the development of nurseries and other aid encouraging childcare are likely to increase their availability and boost their labour market integration, thereby fostering more inclusive growth. This improvement in employment generates an increase in GDP of around ½% compared to the baseline scenario after 10 years, and slightly more than ¾% after 30 years.

The package of fiscal measures under consideration is moreover conducive to reducing income inequalities. Indeed, increased spending on family benefits has a very strong impact on distribution capacities if the related programmes are properly thought out, as experience in other countries reveals (Joumard, Pisu and Bloch, 2012; Causa, Vindics and Akgun, 2018). In this respect, it is worth noting that the Greek authorities adopted measures to improve the running and focus of their transfer programmes for families. After streamlining benefits in 2013, the 2018 reform created a unified child allowance and increased allocations, which are means-tested.

Figure 19
A rise in current public spending raises public debt despite employment gains
(Difference with baseline in %)



Source: OECD calculation based on the OECD Long Tem Model (Guillemette and Turner, 2018)

Nevertheless, the tax revenues generated by this stronger activity are insufficient to offset the increase in public spending. This fiscal outcome reflects the assumption that the share of current expenditure used to boost salaries and public consumption does not generate any additional revenues as it has no positive impact on supply conditions and long-term output. In the scenario, the sustained upturn of the budget deficit, despite being lower than 1% of GDP

as of the seventh year of the shock, causes public debt to climb continuously, exceeding 10 percentage points of GDP after 10 years and almost 20 percentage points of GDP after 30 years (Figure 19, panels D and F). This deterioration in public accounts could be even more pronounced in the event of a sharp increase in the risk premium on Greek interest rates, given the fragility of the budgetary situation. Although the possibility that targeted measures to increase the salaries of certain officials, notably in the tax administration, could help improve tax collection, it is likely that such an increase in public spending would face funding difficulties and would substantially slow down the government deleveraging process.

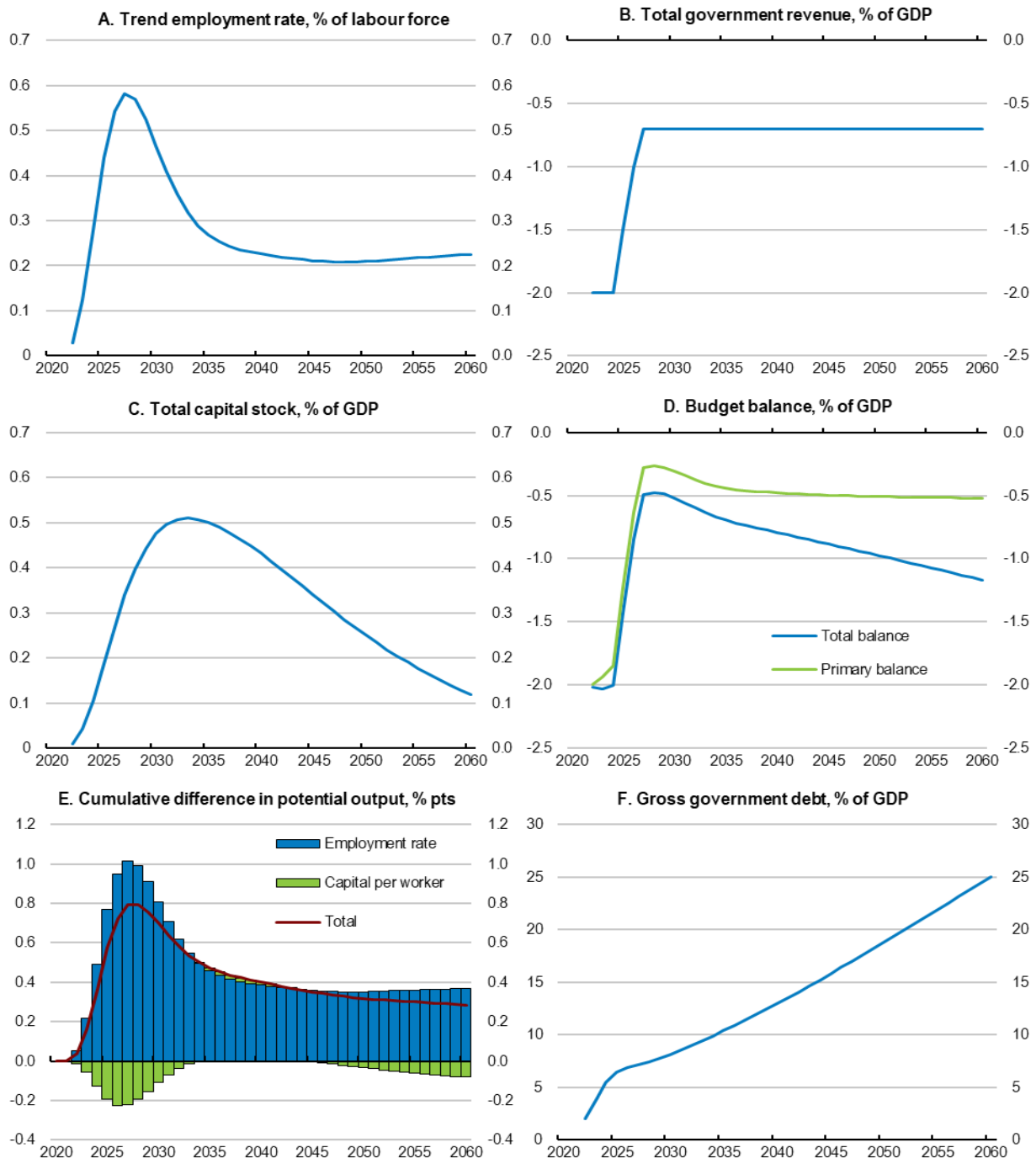
Reduction of the tax wedge on labour

The third fiscal expansion scenario involves a lower tax wedge, as the average and marginal tax wedge in Greece is similar or higher than the European average for many household categories. This is the situation for example for middle-income single people with no children, and married couples with two children in which only one spouse works and earns average income (Figure A21). The tax wedge indicators for these two groups are the ones used in the long-term model, with the modelling of the impact of these variables on employment patterns in the model based on the work of Gal and Theising (2015), and Egert and Gal (2017). Based on these analyses, a measured tax wedge reduction for single people strengthens the employment rate of men aged 15-24, and the same reduction for couples increases employment for men aged 25-74.

In the scenario, the calibration of the tax wedge reduction corresponding to the available room for fiscal manoeuvre is based on the approach presented in Box 3 and used in the previous simulations. All other things being equal, it is therefore assumed that the fall in public revenues measured in proportion to the wage bill generates an equivalent decline in the average tax wedge on labour. Given that salaries represent less than 34% of value added in Greece, the simulated reduction in the primary deficit is supposed to lower the tax wedge by 6 percentage points in the first three years of the shock, followed by 4.5 percentage points and 3.0 percentage points in years four and five, and then 2.1 percentage points as of year six. This downturn is moreover accompanied by a fall in public revenues corresponding to the targeted reduction of the primary budget surplus.

The main outcomes of the scenario, presented in Figure 20, reveal the positive impact of the lower tax wedge on employment. That said, after a rapid increase at the beginning of the period, the effect starts to wane as of the seventh year of the shock, as the easing of the tax burden on labour diminishes. These employment-related developments give rise to similar output-related changes. The extent of the gains is also mitigated by the slow adjustment of capital stock relative to employment, especially in the first years of the shock. On the fiscal side, the gains generated via additional tax revenues are not enough to offset the fall in budget revenues caused directly by the shock, raising again a funding problem of the expansionary measures in this case. The result is a steady increase in public debt of around 10 percentage points of GDP after 10 years, and 20 percentage points of GDP after 30 years, which would slow the government deleveraging process as in the preceding scenario. As in the previous scenario, this deterioration in public accounts could be more pronounced as the fragility of the Greek budgetary situation could trigger a significant increase in the risk premium on interest rates.

Figure 20
A reduction in the labour tax wedge also brings jobs gains at high budget cost
(Difference with baseline in %)



Source: OECD calculation based on the OECD Long Tem Model (Guillemette and Turner, 2018)

Despite being positive, the employment and output outcomes of the simulated reduction of the tax wedge on labour are nevertheless modest, even in comparison with the previous simulation, which included aid measures for families to improve the labour market integration of women. The relatively limited impact of the reduced employment taxation partly reflects the relatively low share of paid employment in total employment compared to self-

employment in Greece.[2] Moreover, the problems with tax evasion and social contributions faced by the Greek administration could also undermine the effectiveness of such a measure, even if this impact is not considered in the model.

On the other hand, one cannot exclude that the model underestimates the impact on employment of fiscal labour cost reduction measures. The empirical work on which the long-term model is based was not able to establish a significant link between a reduction in the tax wedge and an increase women's employment. Nevertheless, insofar as the role of women's employment in households is often more marginal than male employment, it could be more responsive to tax incentives than male employment.

The possibility that employment gains in the event of a tax wedge reduction are underestimated is also supported by a complementary simulation performed using the OECD framework modelling the impact of changes in public finance structure on economic performance. According to this alternative simulation, which is based on a tax wedge reduction of 2.1 percentage points on high and low incomes corresponding to a budget cost of 0.7% of GDP, the estimated output gains would be 0.8% after 10 years and 1½% after 30 years, compared to 0.3% in the long-term model. Moreover, according to this simulation, the improvement in output would have no major impact on income distribution.

[2]. Self-employed workers in Greece represent 36% of total employment versus an average of less than 15% in OECD countries.

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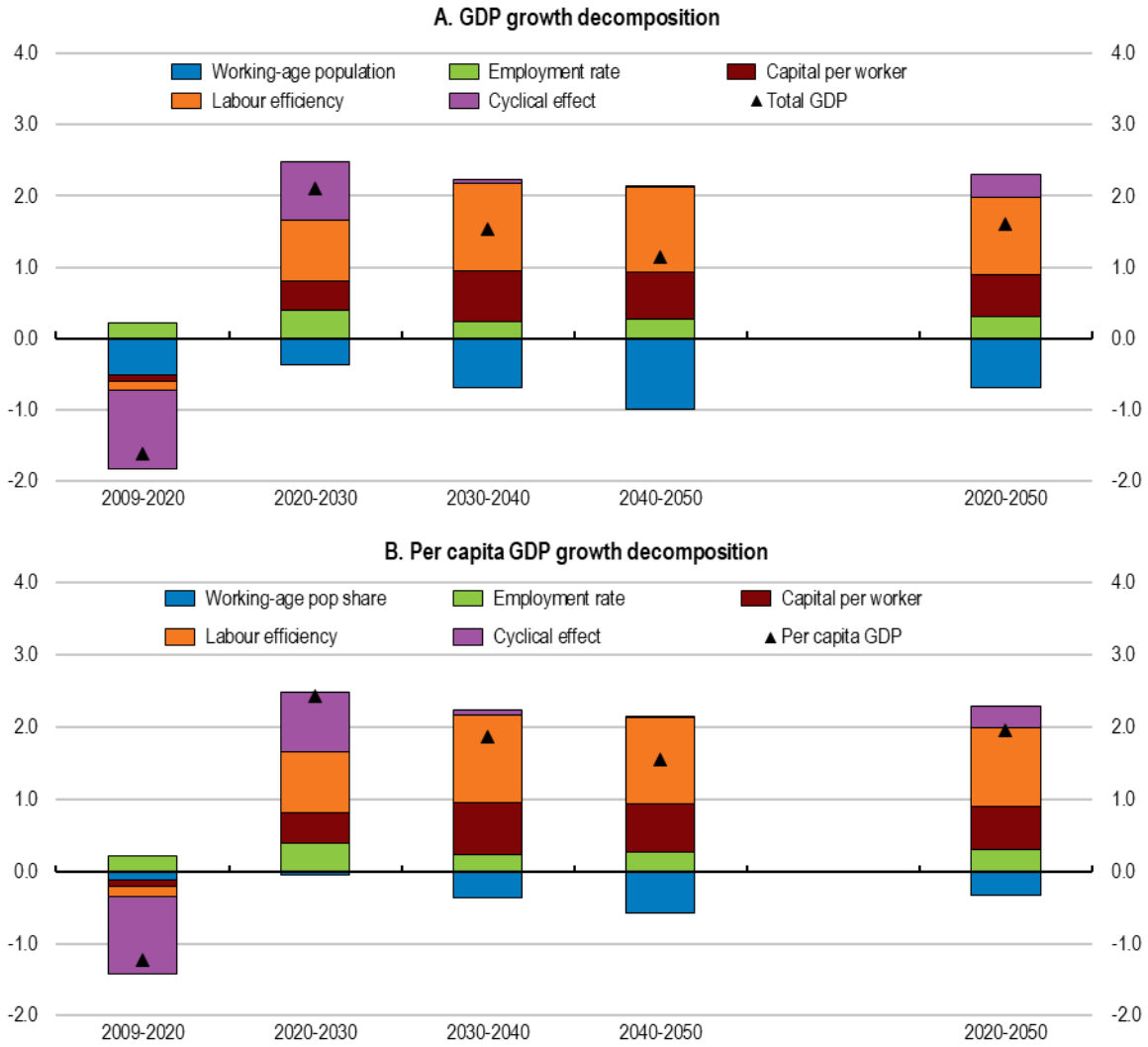
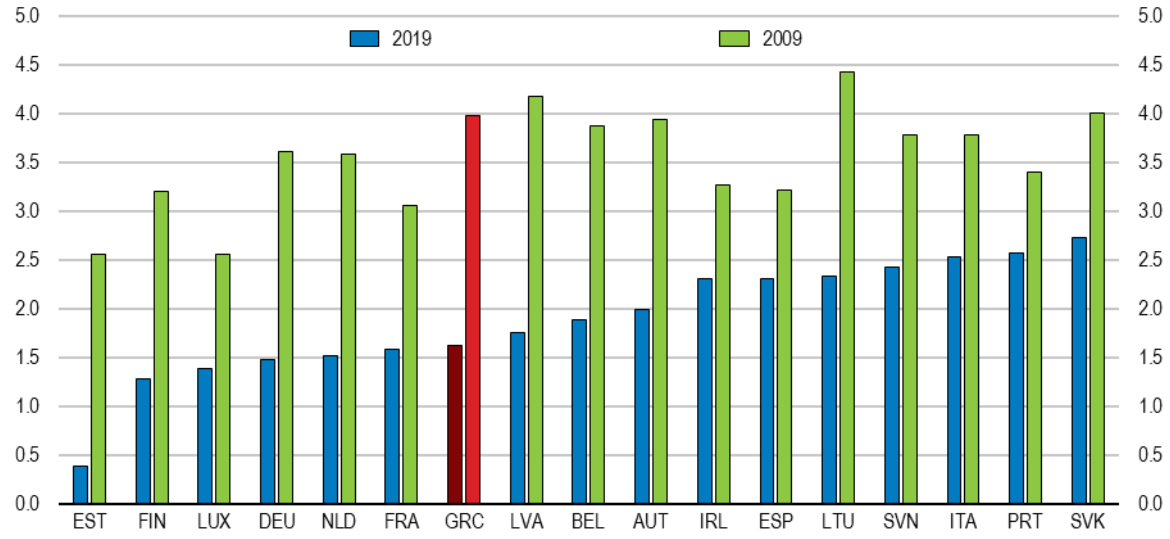
Annex figures

Figure A1
Greece long-term growth projection



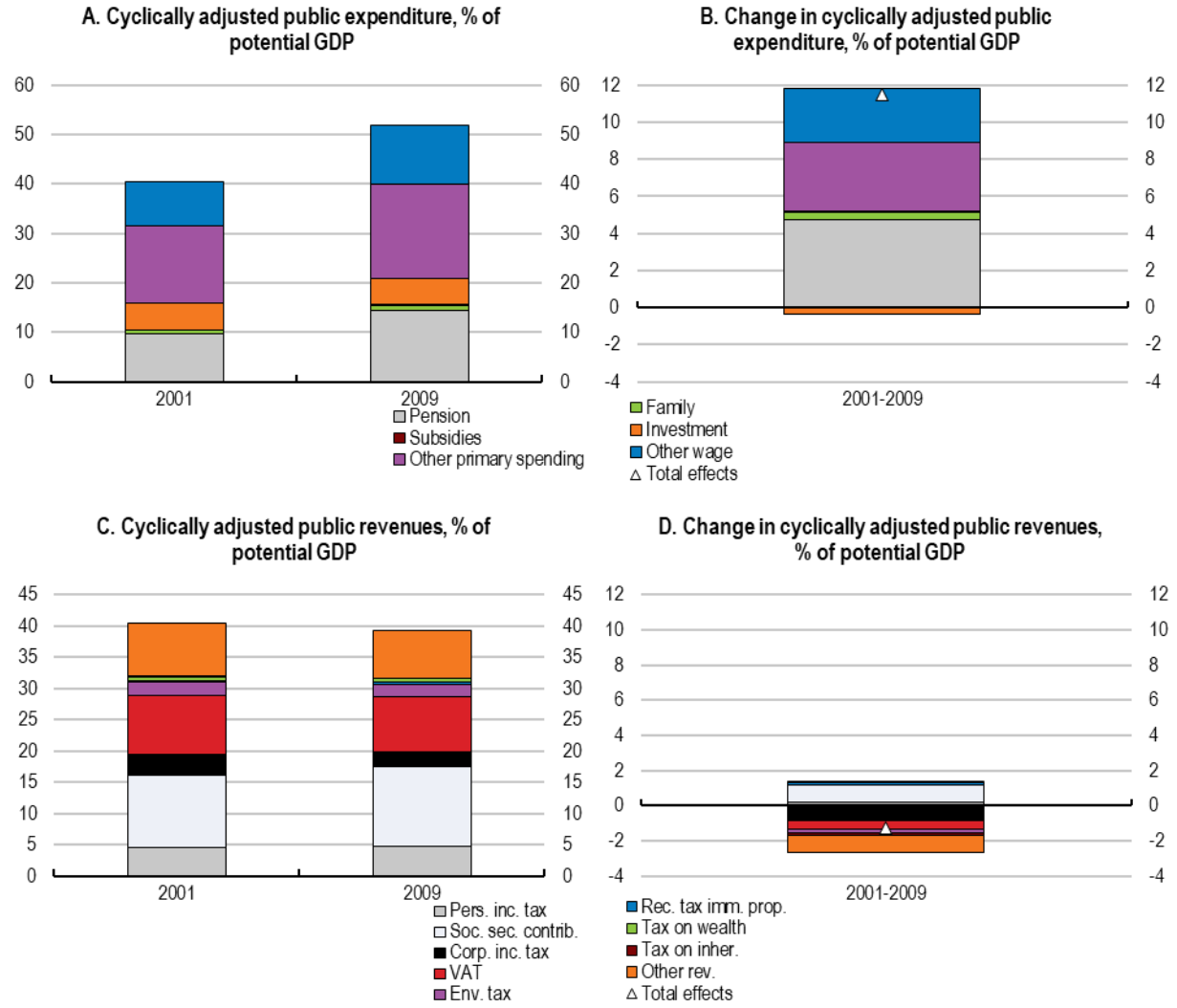
Source: OECD long-term growth scenario

Figure A2
General government average effective interest rate



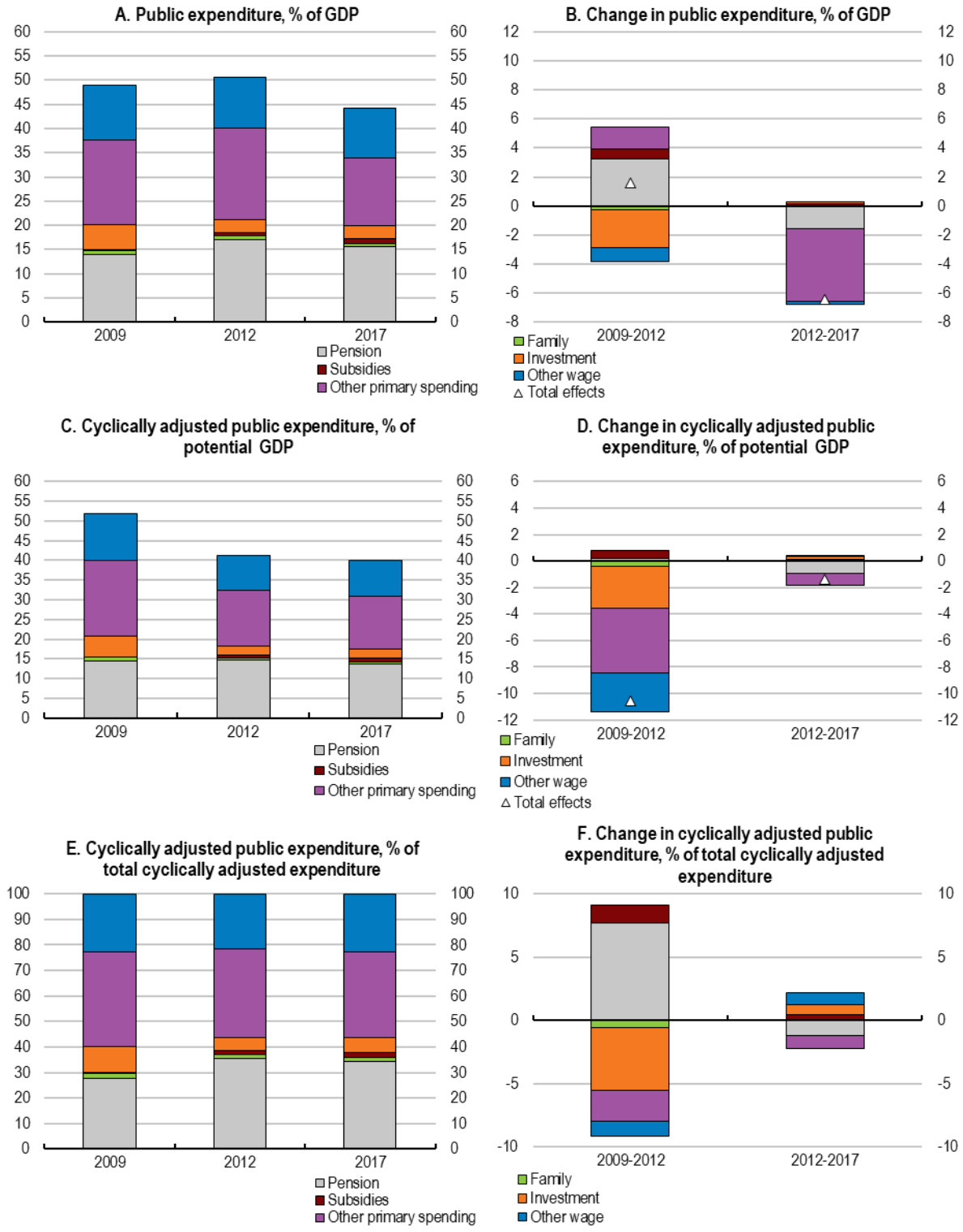
Source: COFOG data, ADB database and OECD calculation

Figure A3
Public expenditure and revenue development before the crisis



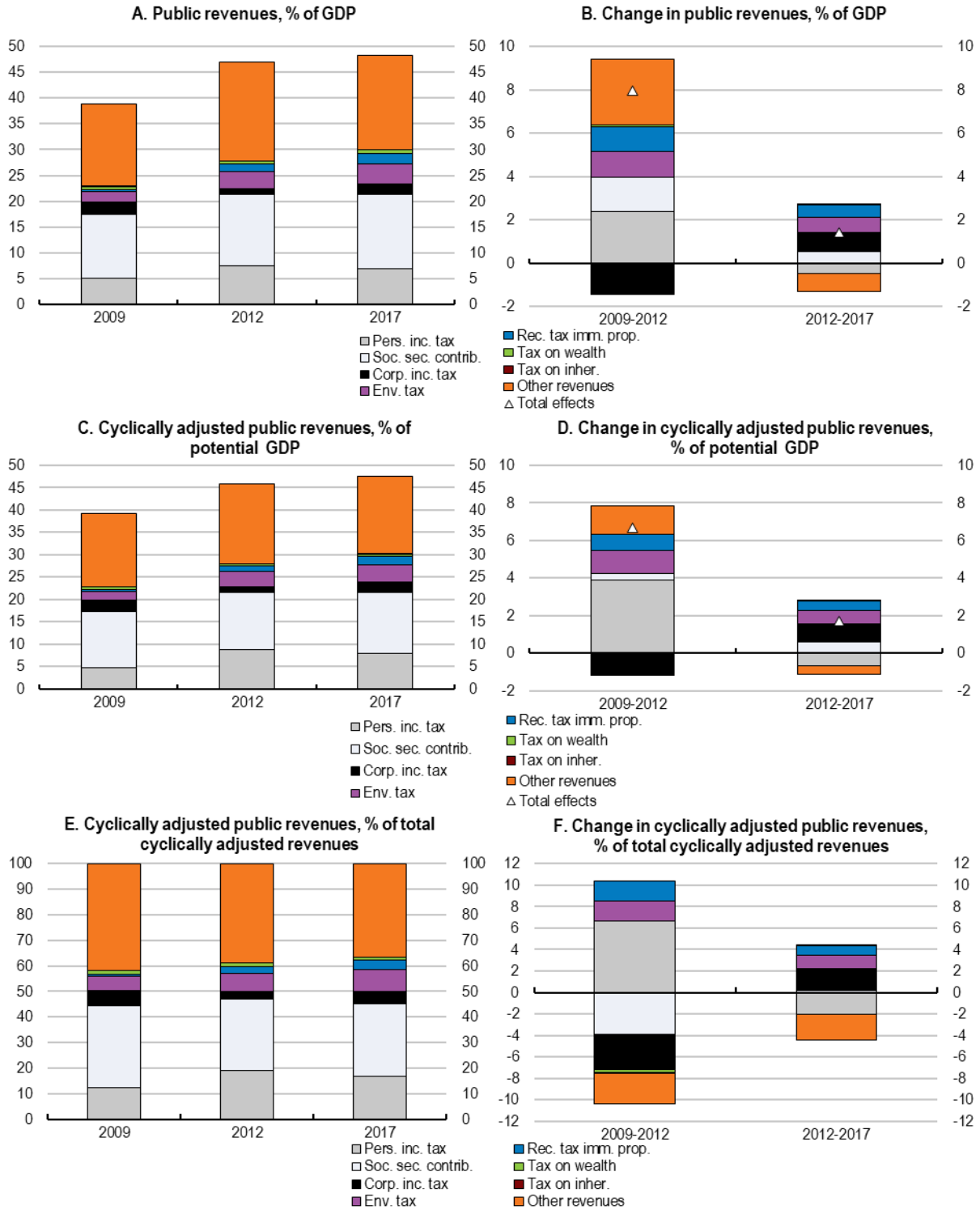
Source: COFOG data, ADB database and OECD calculation

Figure A4
Change in public expenditure as share of GDP



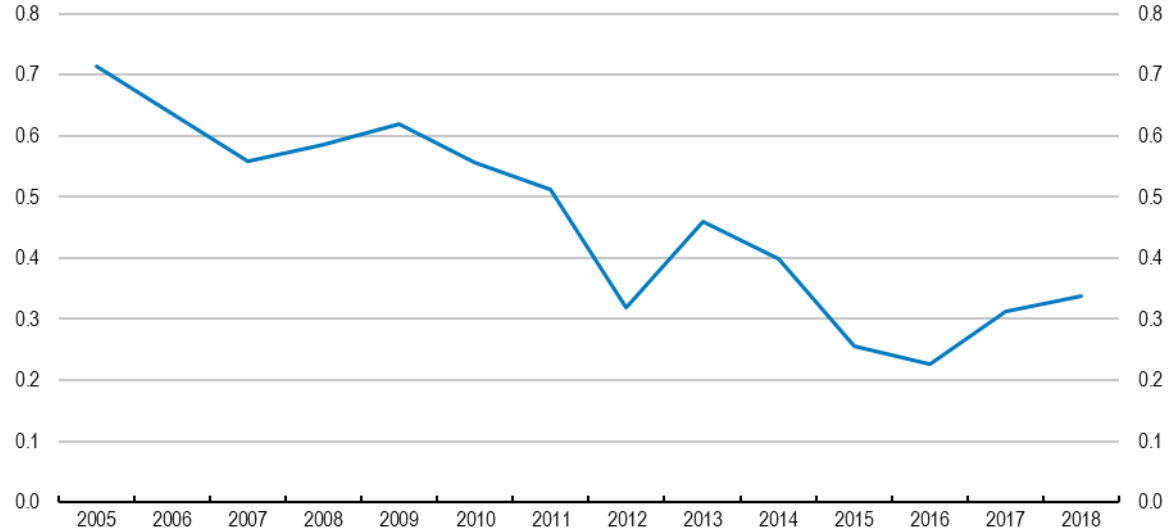
Source: COFOG data, ADB database and OECD calculation

Figure A5
Change in public revenue as share of GDP



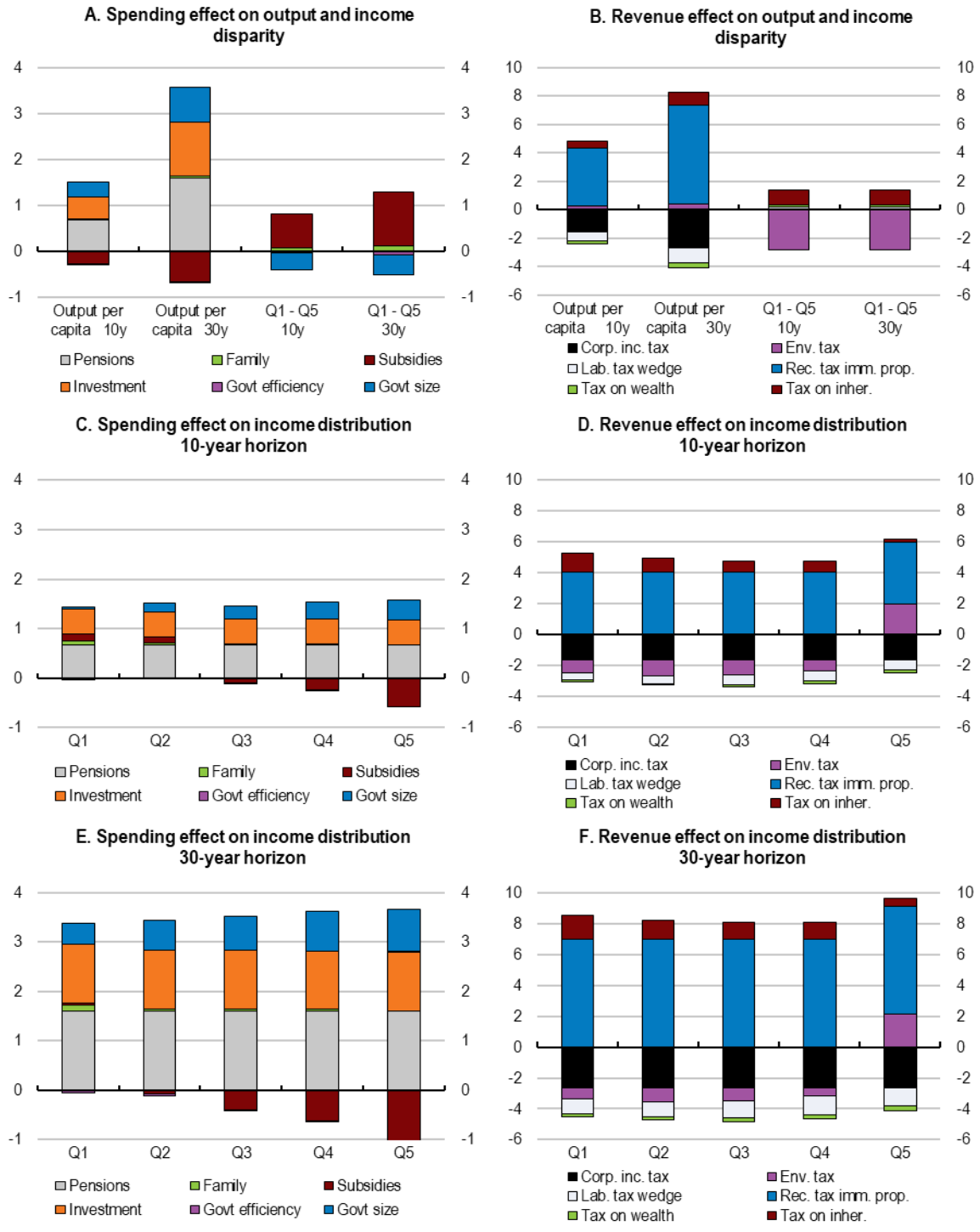
Source: Revenue statistics, ADB database and OECD calculation

Figure A6
Government Effectiveness



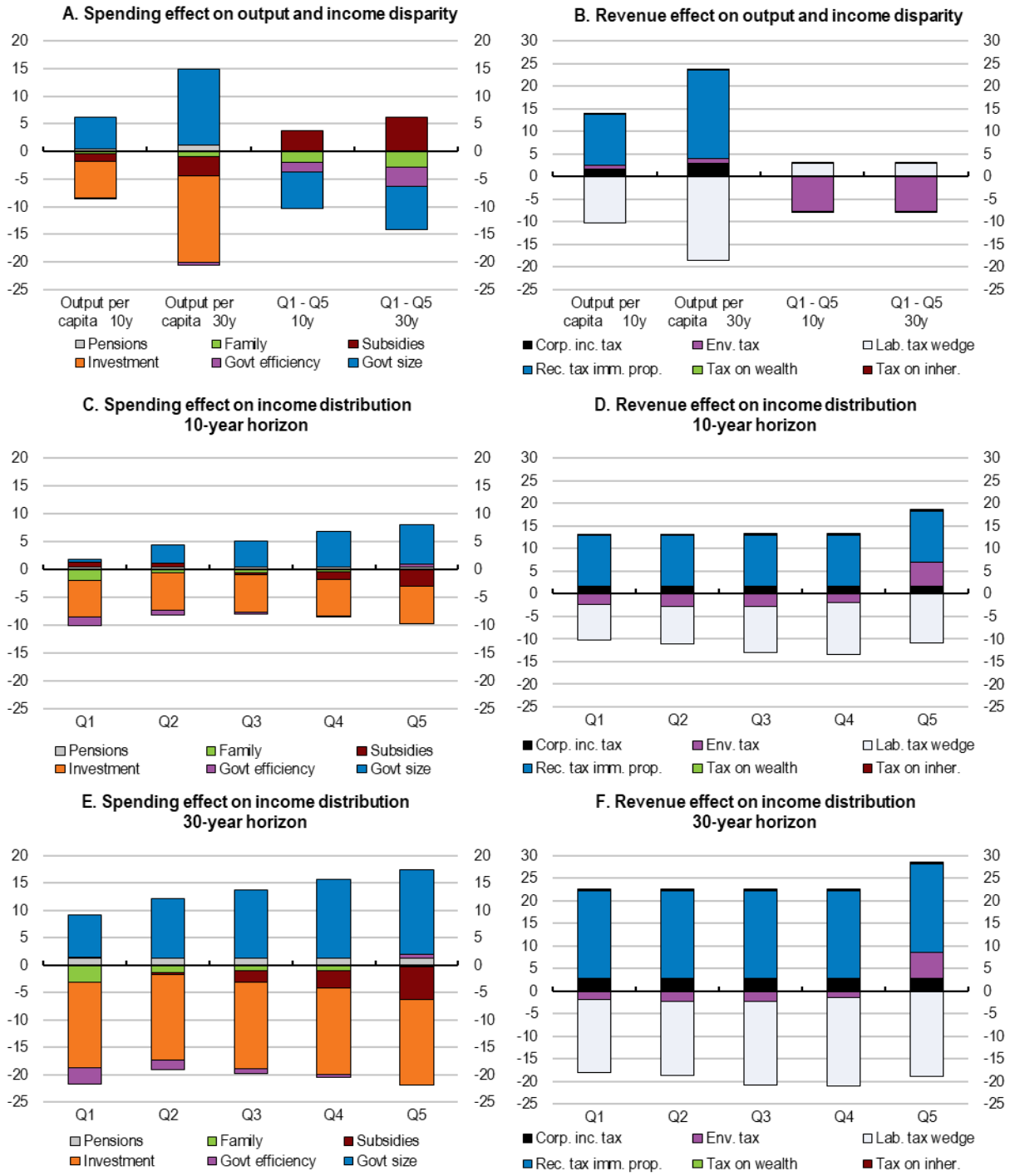
Source: World Bank database: Worldwide Governance Indicators

Figure A7
Change in public finance structure 2012-17 - Detailed effects
(Detailed effects on output and income distribution)



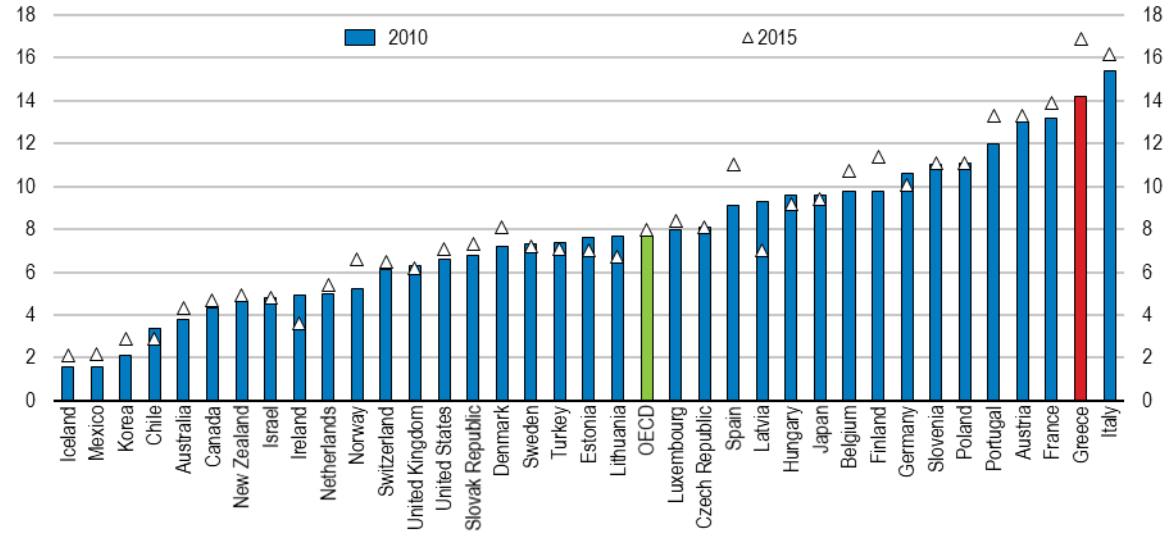
Source: OECD calculation based on OECD framework to examine the link between public finance structure and inclusive growth (Cournède, Fournier and Hoeller, 2018)

Figure A8
Change in public finance structure 2009-17 - Detailed effects
(Detailed effects on output and income distribution)



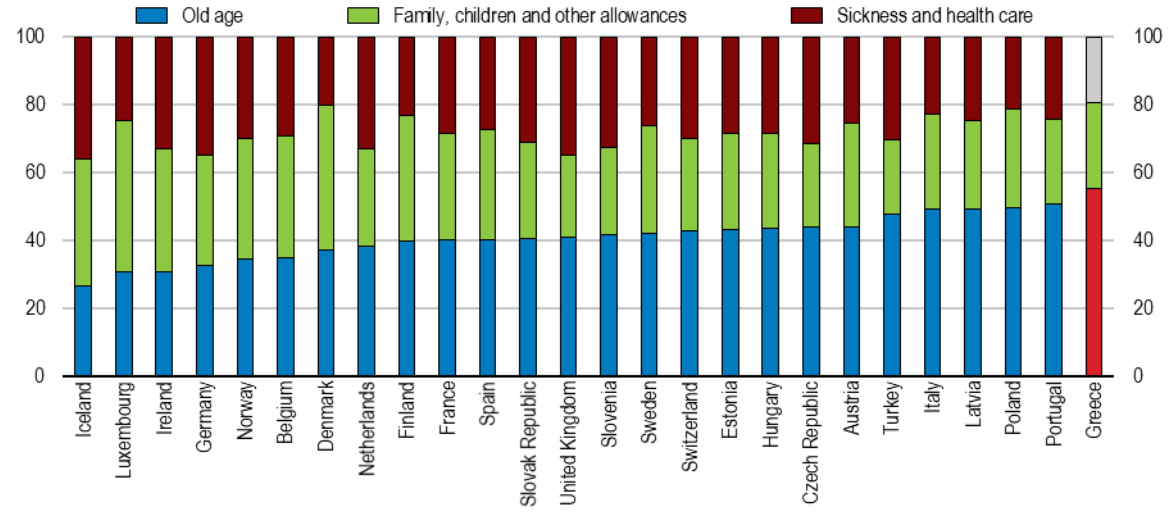
Source: OECD calculation based on OECD framework to examine the link between public finance structure and inclusive growth (Cournède, Fournier and Hoeller, 2018)

Figure A9
Public expenditure on pensions
(In % of GDP)



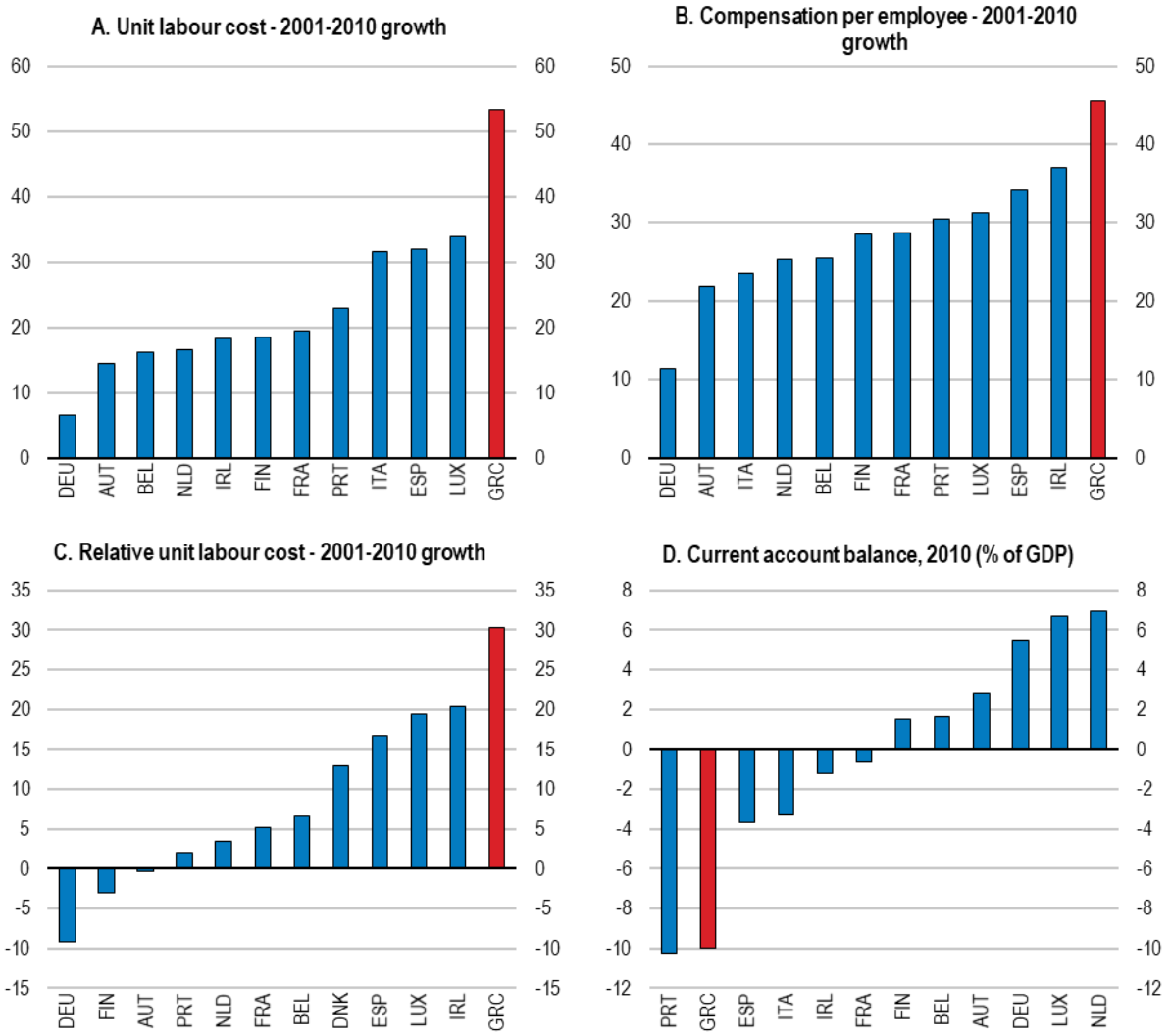
Source: OECD Pension at a glance database

Figure A10
Social protection expenditure by function of social protection
(in %, 2015 or latest year)



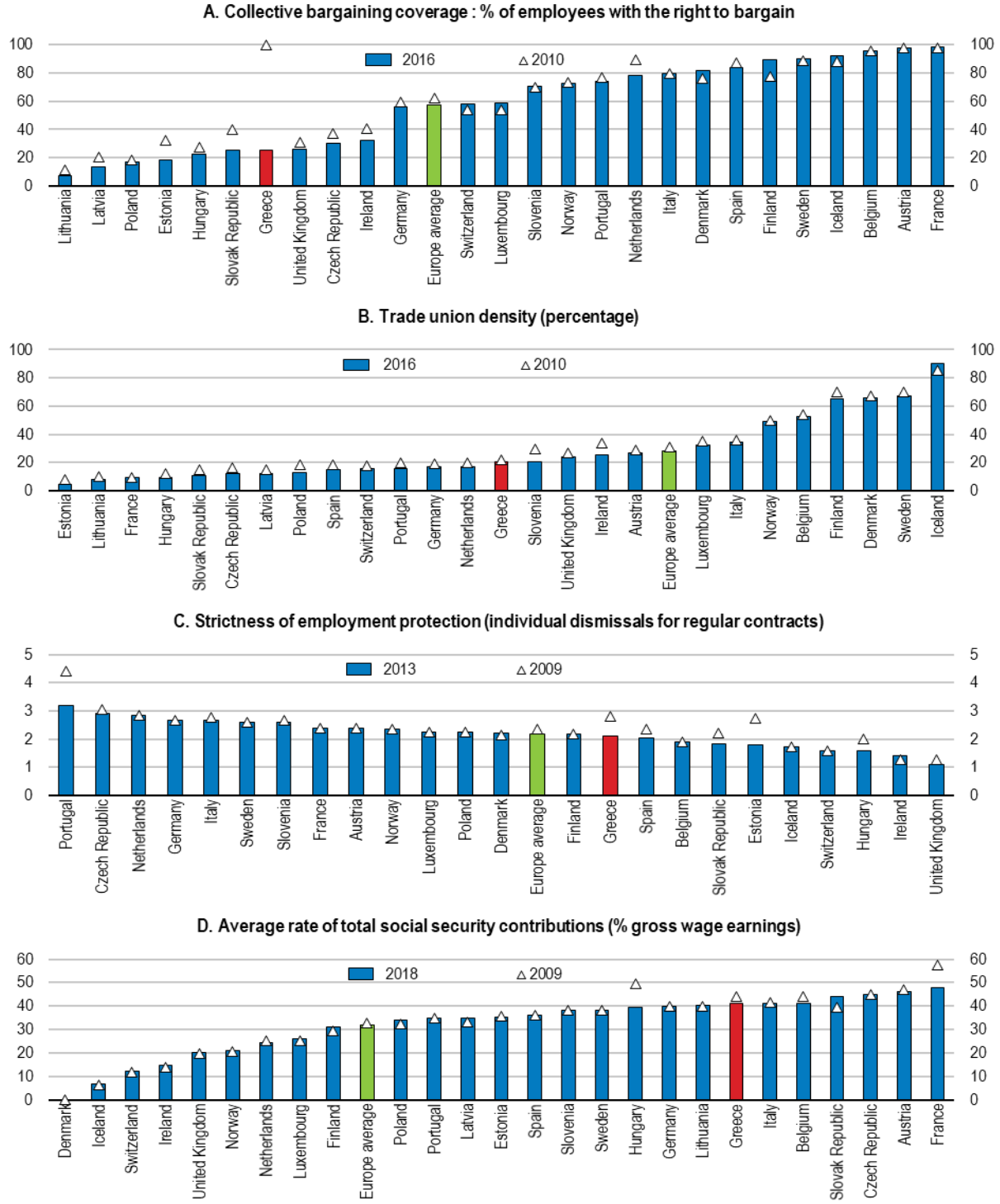
Note: 2014 for Poland and Turkey. The category family children and allowances iIncludes social expenditure on unemployment, housing and social exclusion n.e.c.
Source: Eurostat (2018), Social Protection Statistics (database)

Figure A11
Wage and labour costs: pre-crisis development
(in %)



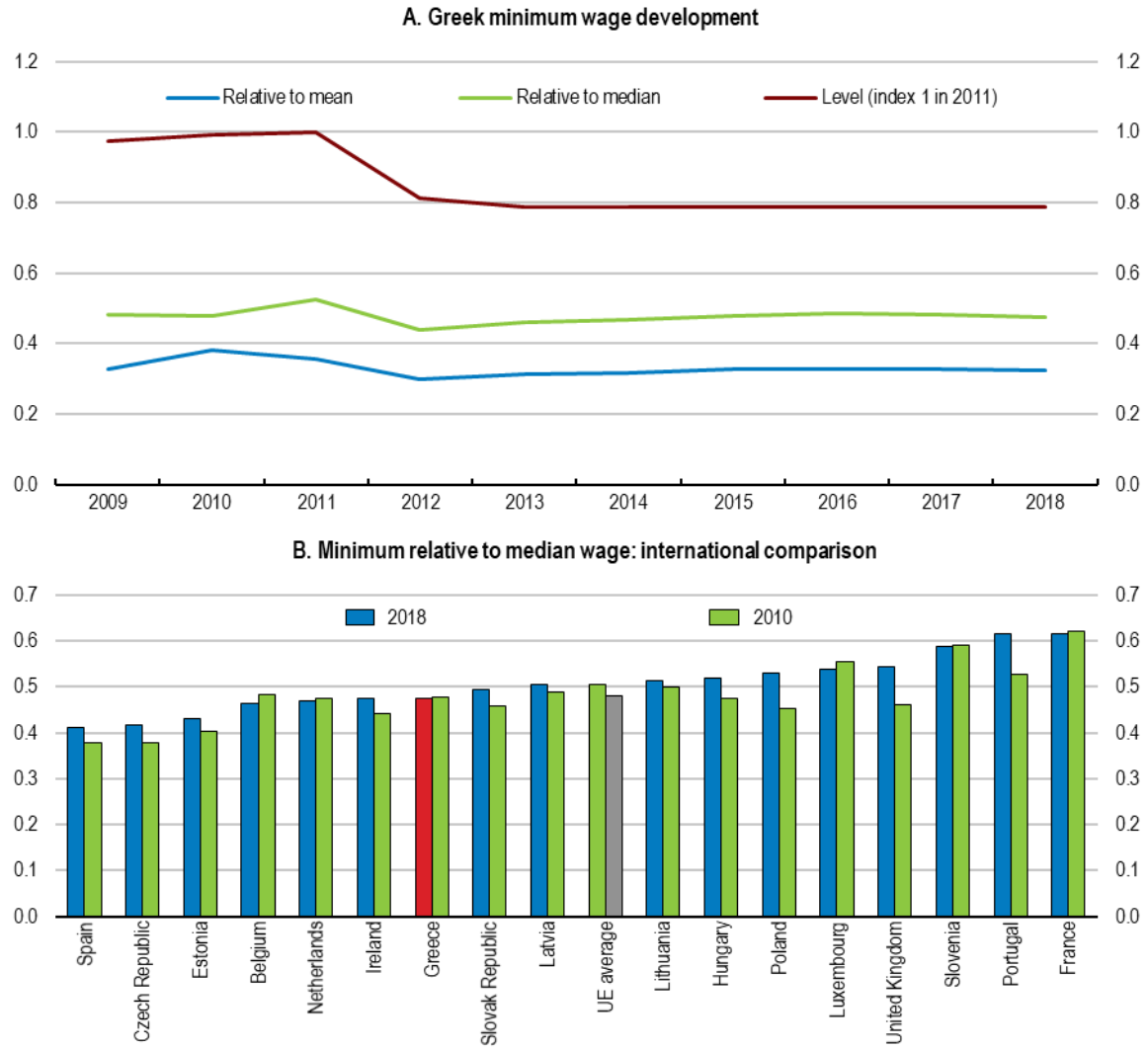
Source: OECD ADB database

Figure A12
Selected labour market indicators



Source: OECD Labour and taxing wage database in OECD

Figure A13
Minimum wage

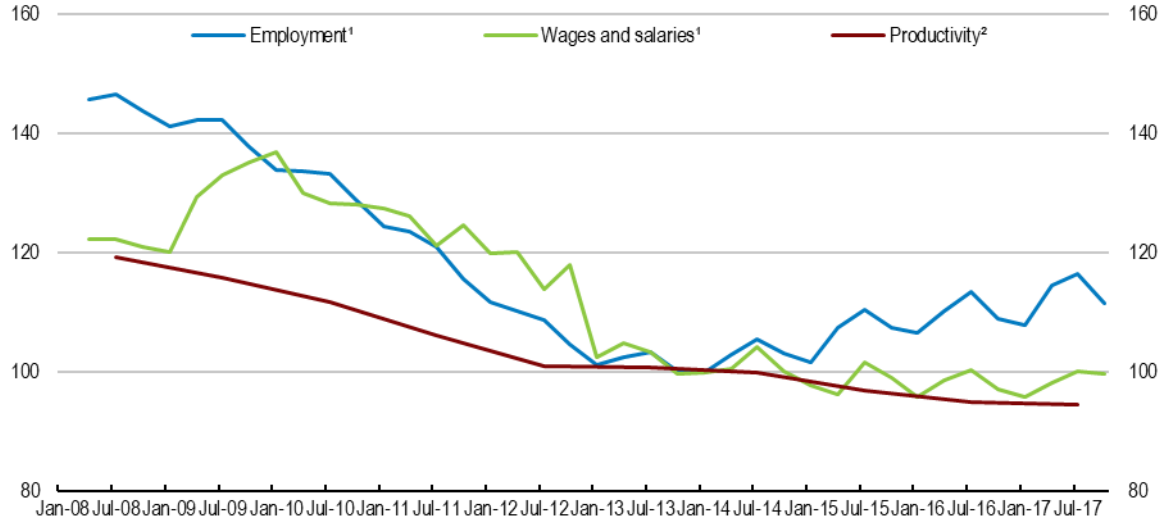


Source: OECD Labour and taxing wage database in OECD.Stat

Figure A14

Wage, employment and productivity after the labour market reform

(Employment, wage and salaries, and productivity in the non-agriculture business sector, index 2014 Q1 = 100)

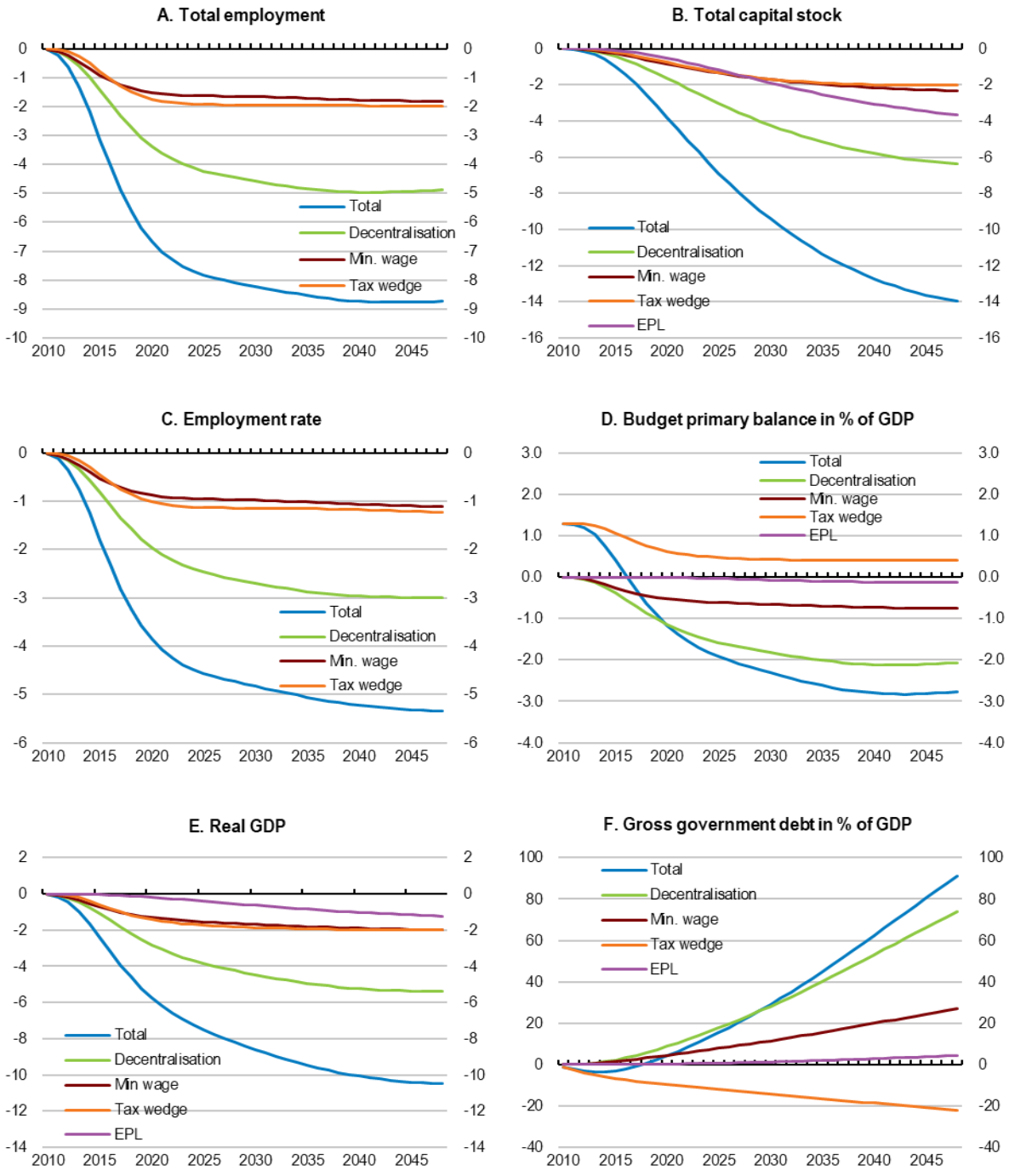


Notes:

1. The reference industry is aggregated according to the NACE Rev. 2. Wages and salaries are seasonally and calendar day adjusted.
2. Annual real gross value added per person employed. The reference industry is the non-agriculture business sector excluding real estate based on the ISIC Rev. 4.

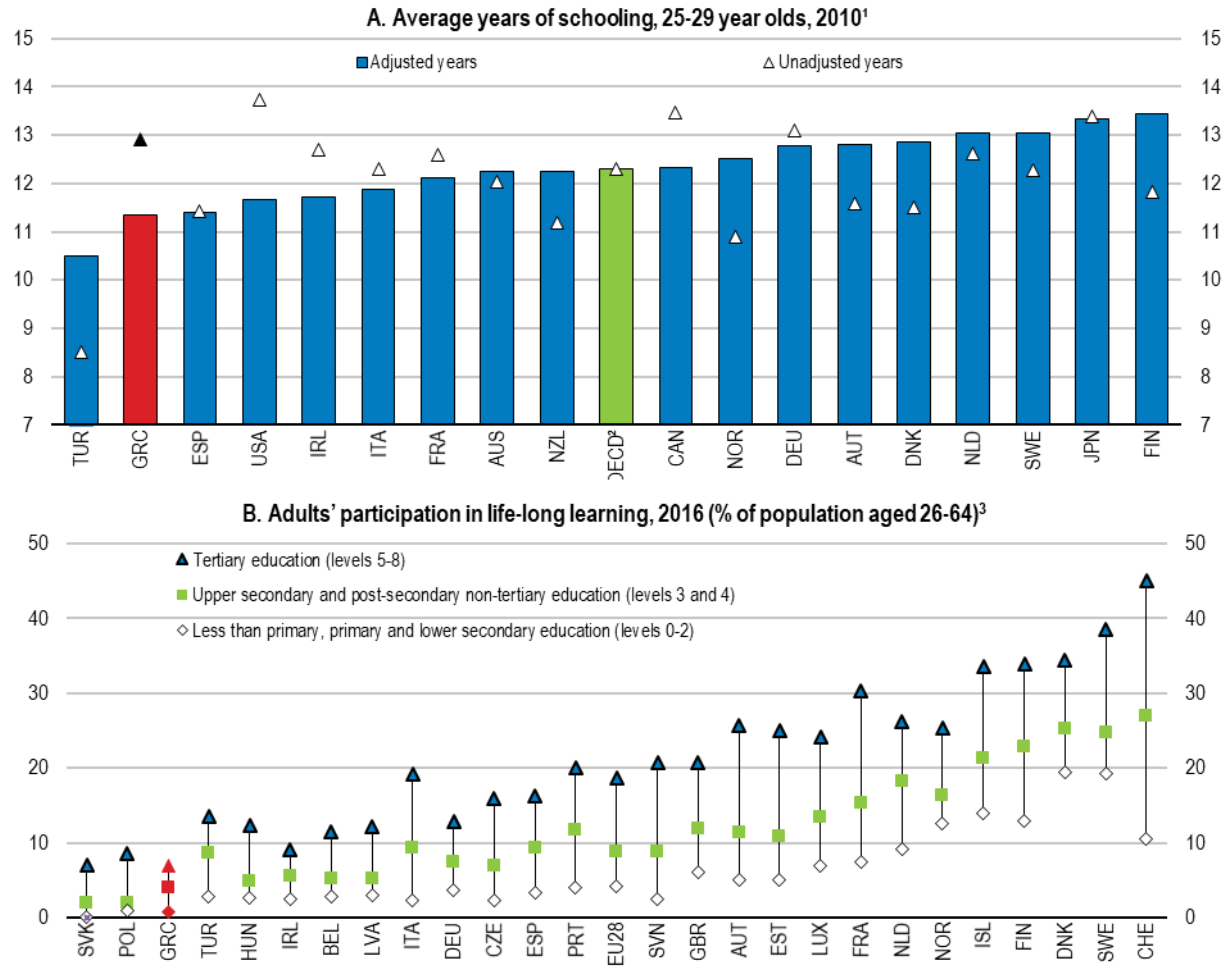
Source: OECD (2018), OECD National Accounts Statistics (database) and Eurostat (2018), Labour Market Statistics (database)

Figure A15
Main developments in the absence of labour market reform: impact of the various measures
(difference with baseline in %)



Source: OECD calculation based on the OECD Long Tem Model (Guillemette and Turner, 2018)

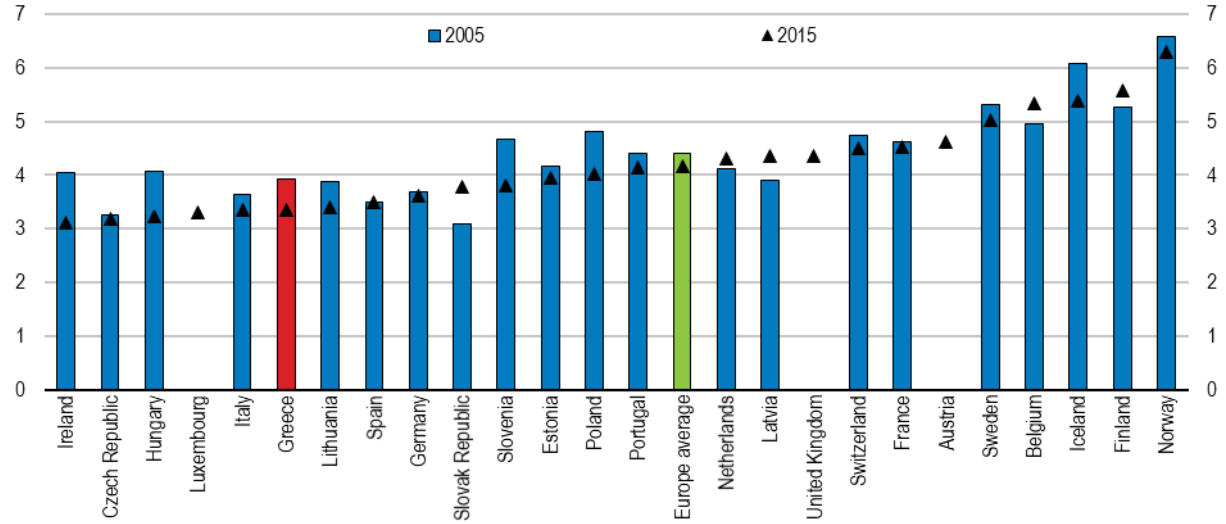
Figure A16
Selected education and training indicators



Notes:
1. Unadjusted years of schooling are based on Barro and Lee (2016). Years of schooling are adjusted for the strength of educational outcomes using the PIAAC numeracy mean assessment in the following way: a country's unadjusted years of schooling are multiplied by the ratio of its median PIAAC numeracy score to its average years of schooling, divided by the benchmark ratio of the OECD median score to OECD average years of schooling. The benchmark ratio is calculated by dividing the median PIAAC numeracy score across available OECD countries by the average years of schooling across available OECD countries. The median PIAAC scores are from the 2012 assessment for 25-29 year olds, while estimates of average years of schooling are for 2010, also for 25 to 29 year olds.
2. Unweighted average of data shown.
3. Participation in life-long learning includes formal as well as non-formal education and training.

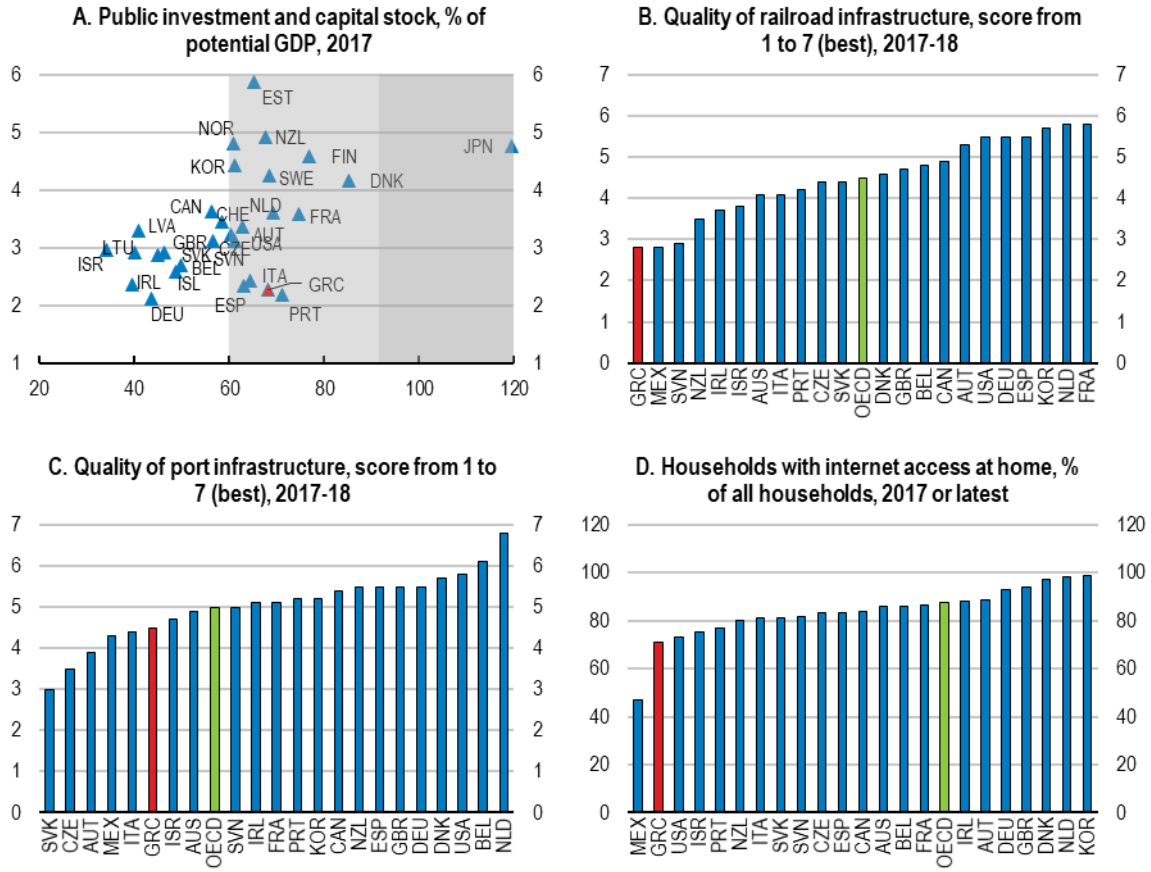
Source: Barro and Lee (2016), Education Attainment Dataset, February, OECD (2016), Skills Matter: Further Results from the Survey of Adult Skills; Eurostat (2017), Education and training (database) and OECD calculations

Figure A17
Total government expenditure on education
(in % of GDP)



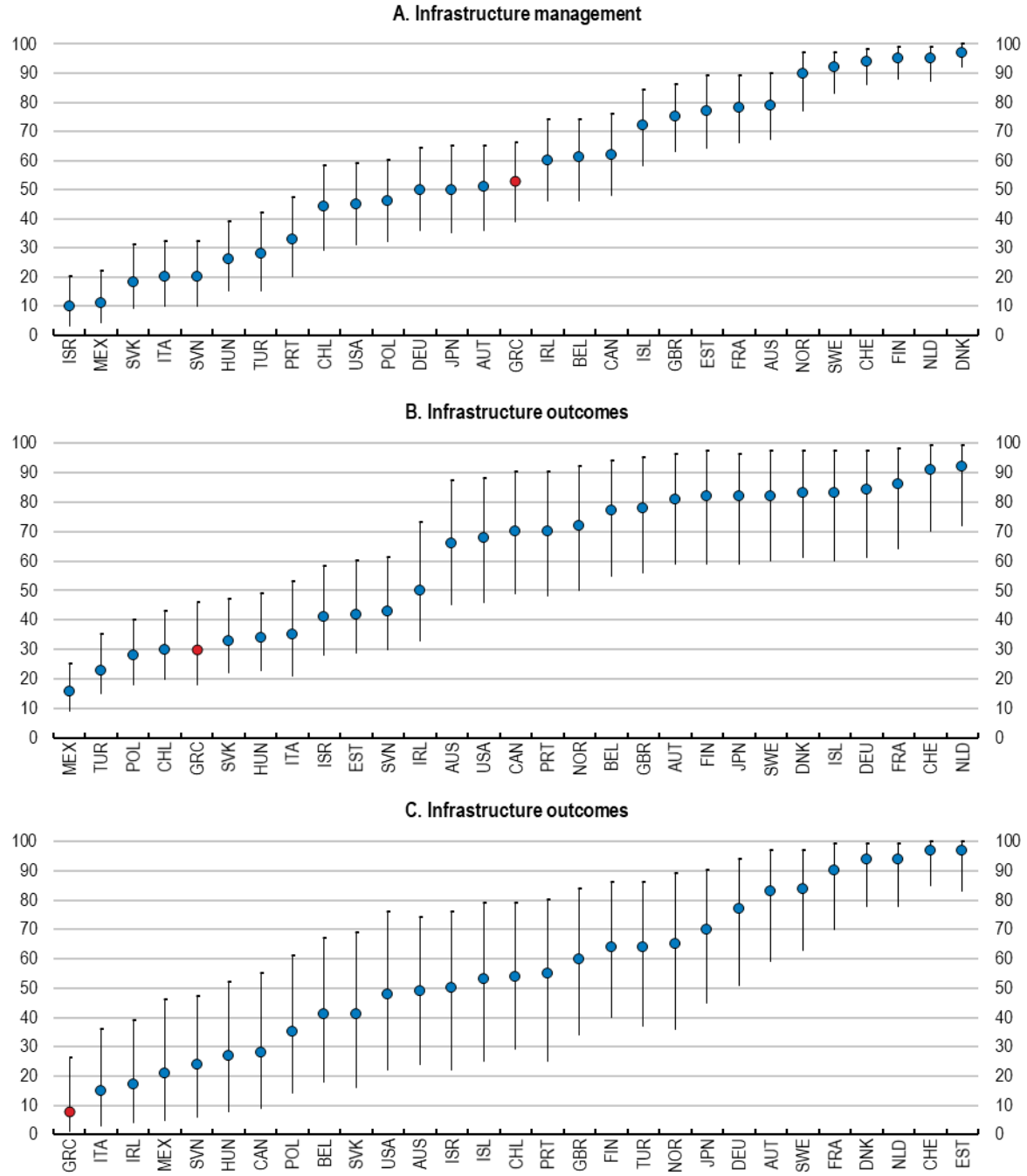
Source: Education at Glance database in OECD.stat

Figure A18
Public investment and infrastructure



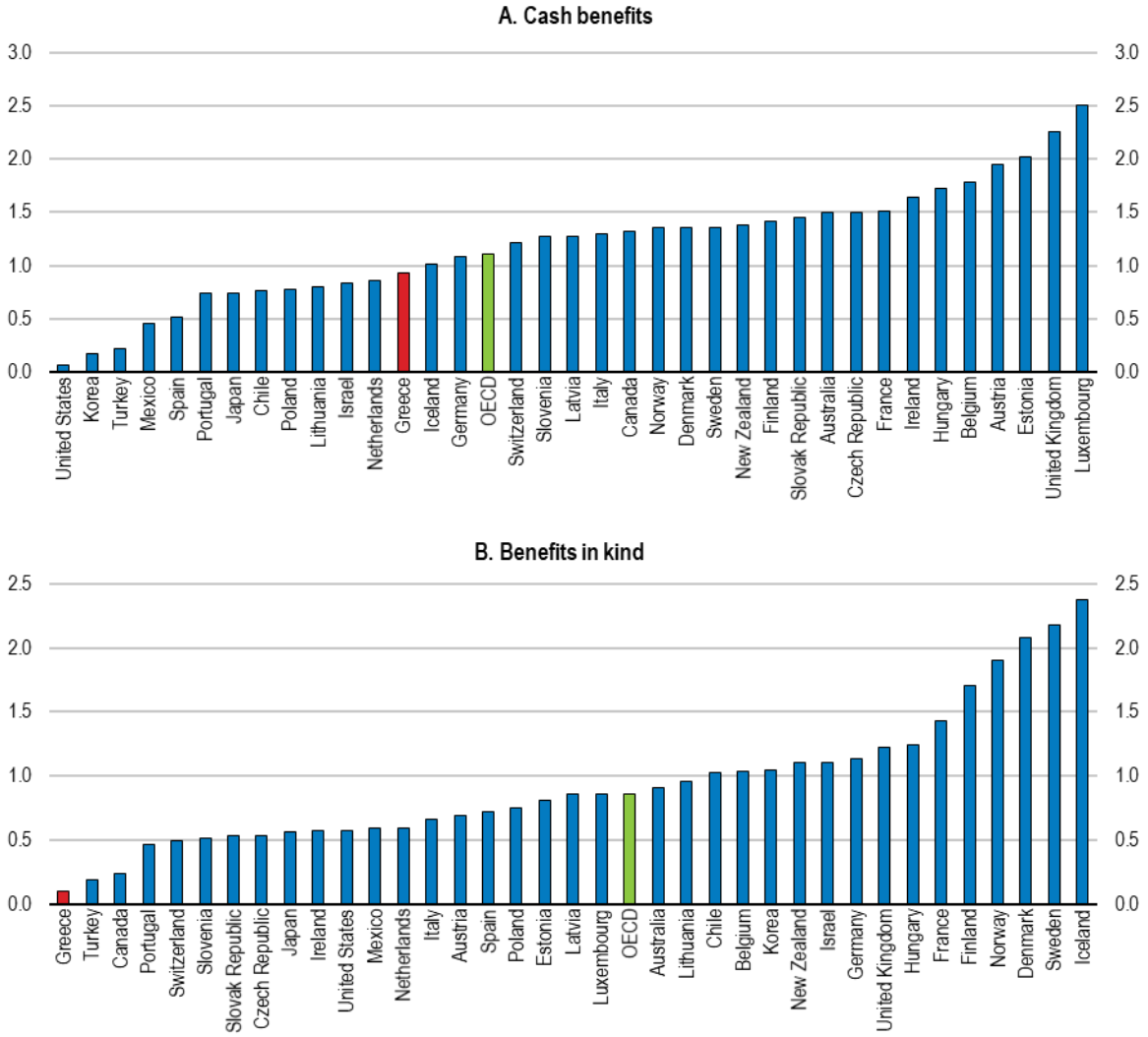
Source: World Economic Forum (2017), The Global Competitiveness Report 2017-18; OECD, ICT Access & Usage database, IMF, Investment and Capital Stock Dataset, http://www.imf.org/external/np/fad/publicinvestment/

Figure A19
Infrastructure governance indicators[1], 2016
(Index scale from 0 (least performant) to 100 (most performant))



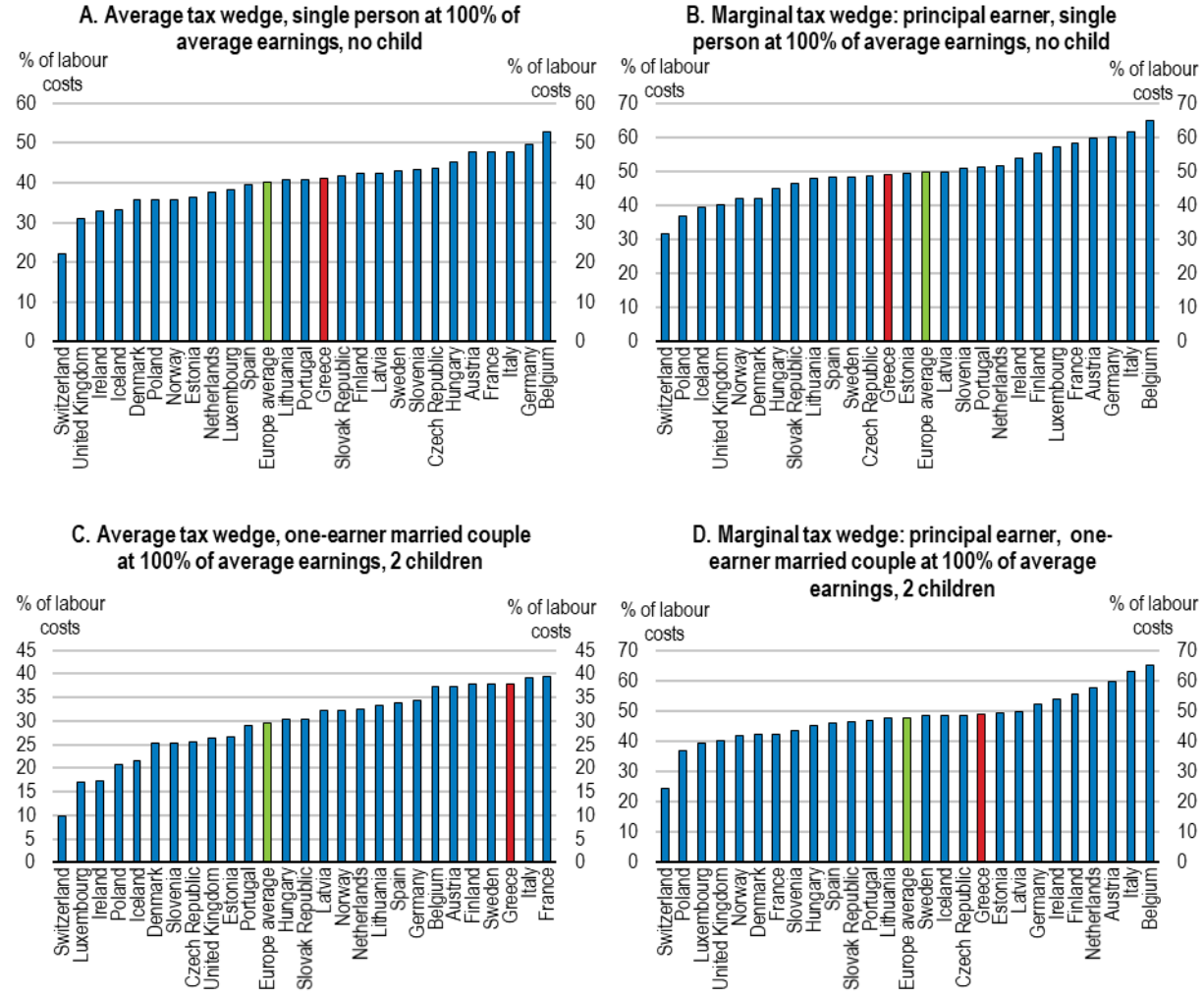
Note: These governance indicators measure countries' performance on each of the three dimensions of infrastructure planning, management and outcomes. The circles show the countries' scores while the vertical lines represent the statistical uncertainty around the scores.
Source: Hertie School of Governance (2016), The Governance Report 2016: Infrastructure Governance Indicators

Figure A20
Family benefits
(in % of GDP)



Source: OECD Social expenditure database

Figure A21
Tax wedge
(2018)



Source: OECD taxing wages database