CHAPTER 11
The Requirements for a Pro-growth Long-Term View

11.1 INTRODUCTION
The Greek economy in recent years has made a brave effort to bring about structural reforms, in line with the requirements of the fiscal adjustment programs implemented since 2010 in order Greek economy to recover from the effects of the recent global financial crisis. Those reforms, many of which are still on-going, are expected to contribute in the economic activity of Greece in the future.

Of course, the crisis of the Covid-19 pandemic poses significant challenges to the Greek economy as it is expected to have significant effects on almost all sectors of economic activity. Even if these effects are short-term (recovery is expected in 2021) they are expected to change the reform strategy by creating new needs to solve new problems that emerged on the occasion of the pandemic, while at the same time there are obstacles to the effectiveness of the reforms already carried out and the achievement of goals.

The purpose of this chapter is to set the background to capture the forecasts concerning the Greek economy in the period from 2020 to 2030 and which are reflected in the next chapter (Chapter 12). For this purpose, particular emphasis is placed on the role of Total Factor Productivity (TFP), which is considered a particularly critical size for the Greek economy and is directly related to the implementation of structural reforms, but also to the strengthening of the Greek economy in
the year 2020 through an increase in government spending to stimulate the economy in the face of the economic crisis brought by the Covid-19 pandemic. In this way, two different scenarios are presented; the Normal Scenario (business as usual) and the Optimal Pro-Growth Scenario for the Greek economy for the period from 2020 to 2030. It should be noted that the analysis presented could be regarded as a strategic foresight—a way to present multiple scenarios of possible futures to test the arsenal for strategic adaptation, while taking into using trend analysis—what to expect if the present continues, and intelligence analysis which provides adversary courses of action based on established patterns of behavior (Sotiriadis & Grove, 2020). In this way, the analysis gives the opportunity to create a virtual training ground for policy-makers and the Greek government. However, as Sotiriadis and Grove (2020) point out, in times of economic shocks, such as during a pandemic or a financial crisis, scenarios can appear imprudent. It is the capacity to develop and maintain intellectual capital for new thinking that enables research to take the high ground when a security environment is turned upside down.

The structure of the chapter is as follows: initially, Sect. 11.2 presents the need for institutional and cultural changes in order for an economy to transform an idiosyncratic, interrelated with stagnated characteristics, model into an optimal pro-growth model, with direct reference to the Greek economy. Section 11.3 presents the relationship between TFP and structural reforms in the case of the Greek economy until 2019, while Sect. 11.4 presents the Normal Scenario (business as usual) for the Greek economy for the period from 2020 to 2030. Then (Sect. 11.5) the relationship between the TFP and the reforms and the effect of the reforms on the country’s GDP is described, and finally in Sect. 11.6 the Optimal Pro-Growth Scenario for the Greek economy for the period from 2020 to 2030 is presented.

### 11.2 The Endogenous Transformation from Idiosyncratic Stagnated to Optimal Pro-growth Model Through Institutional and Cultural Changes

The standard way to implement a pro-growth model in the long-term is to follow the Solowian or Schumpeterian growth requirements with an enlarged role of technology augmented labor and capital deepening. But what about the residual factors?
As presented in Chapter 4, when at a society predominates an idiosyn-
cratic anti-growth model in its cultural and institutional background,
then stagnated forces may prevailing. In contrast, an optimal pro-growth
model is emerging when the prevail conditions that favor the long-term
orientation, the investment in new technologies, and the uncertainty
handling under an institutional nexus that secures the incentives and the
actions of the economic agents.

In order for a transformation from an idiosyncratic stagnated model
to an optimal pro-growth model to occur, this transformation must be
combined with the differentiation of a series of parameters that are linked
to the prevailing institutions and the cultural background.

Hence, the main question is whether a stagnated growth model can
be transformed to an endogenous growth model. In other words: can an
idiosyncratic stagnated growth model be transformed into a pro-growth
model?

Searching for an answer we have to ask a policy oriented methodolog-
ical question: Do we have to cure the sources of the generation of the
SGM or we should impose policies which will directly change the existing
institutions and the preferences of the society? However, this question
is meaningless since no one can, in a definite manner, reverse the path-
dependence evolution in order to cure the initial causes. In addition, this
approach is in line with the Ng (1977) proposition of third-best policy
solutions according to which if you can attend the first best conditions
and since the second-order (Lipsey & Lancaster, 1956) create a risk to
generate an uncertain framework of policy recommendation, then it is
preferable to implement the first-order policies as much as you probably
can. Therefore what we can simply do is to try to change the today’s
state of institutions, although we know that institutions change in the
medium-term and in the long-term. But according to the coevolution
principle (Kafka, Pantelis, & Petrakis, 2020; Petrakis, Kafka, Kostis, &
Valsamis, 2021), the institutions should change simultaneously with the
preferences status. However, we also know that preferences change with
various speeds under specific circumstances as a medium to long-term
process. But there are some arguments that preferences can be affected
by external shocks, that they are under the influence of storming forming
conditions. For that reason the initial question has a merit and it should
be answered in the sense that we could form a large-scale transfor-
mation program of institutions and preferences to be applied in the medium
to long-term horizon. However, although there is a very clear idea of
how—and in which direction—you can change institutions, there is no a clear proposal of how we could change preferences (during the process of changing institutions) and thus avoiding the institutions-preferences low growth trap (Petrakis, 2014). This is obviously a much more difficult task.

### 11.2.1 Institutional Change

While the contribution of institutions on economic development (Acemoglu & Robinson, 2012; Ostrom, 1990) is well defined, much less is known about institutional change which is limited to a theoretical level (see, for example Aoki, 2007; Greif & Laitin, 2004; Hodgson, 2004; Kingston & Caballero, 2009).

The debate about institutional change we can approach it through two points of view (Kingston & Caballero, 2009):

1. The first category includes theories which see the institutional change as deliberate designed; and
2. The second category refers to the case where the change can be spontaneous by following an evolutionary process.

For more information on institutional change see Kafka et al. (2020), Petrakis et al. (2021).

Institutional change is a long-lasting process that faces obstacles to any change, since in every institutional nexus there are winners and losers, so they are accompanied by the creation of opposition forces. Besides, the functioning of institutions acts in favor of the situation that exists and against the new situation that is expected to come. The main reason for changing institutions is none other than the effort of policy-makers to renew existing institutions so that they can meet pro-growth conditions.

The factors of institutional change can be classified into endogenous and exogenous determined. Exogenous factors include (Libecap, 1989):

1. Shifts in relative prices,
2. Changes in technology of enforcing and defining property rights, and
3. Shifts in preferences and other political preferences.
Human capital, knowledge, learning, technology change may alter formal and informal rules. As Ayres (1944) points out “technological development forces change upon the institutional structure by changing the material setting in which it operates”. While technology can lead to an institutional change, it alone is not a sufficient condition, since whether an exogenous shock will result to a change in an institution depends on the distribution of benefits among agents both under the existing structure and under the new structure expected to emerge.

Endogenous institutional change can be based on the Darwinian Theory. The endogenous change of institutions follows a Darwinian approach so that we can understand the process. In this context, institutional change follows a “path-dependence” process where the institutional framework at the time t is a function of both the conditions prevailing at the time t and the precedent institutions and conditions (Kingston & Caballero, 2009). Of course, it should be emphasized that as decisions are made by agents, if one sees the change of institutions as a process where participants (agents, policy-makers) have bound rationality can be led to the wrong conclusions about the changes they promote. Therefore despite the fact that the change in institutions is influenced by external factors, the overall process may follow an evolutionary pattern.

Greif and Laitin (2004) introduces the term “quasi-parameters” to describe factors which are exogenous in the short-run, but over time adopt endogenous character. Changes in these parameters have the effect of changing the range of potential equilibrium points, without this always implying that the economy is shifting to a better state. It is possible that the economy is moving away from an optimal condition.

The above factors are decisive in the development of institutions and the emergence of extractive institutions that lead to deviations from an optimal growth pattern. At the same time, however, the political power and in general the political actors influence, in turn, the distribution of the resources of the economy through the formation of the institutional background. The approach that institutional change is the result of supply and demand forces in the society (Alston, 1996) is typical. That is to say, the change of institutions is, in fact, the result of “negotiation” between the suppliers (e.g., Government) and demanders (e.g., pressure groups). On the contrary, other theories support the neutrality of political actors in determining the institutional framework. Despite the fact that politicians are under pressure from groups of the population to change the formal rules (Kantor, 1998), yet politicians, in turn, have their own motives
that guide their actions, while they are also confronted by constitutional constraints.¹

11.2.2 Cultural Changes

Cultural change should be regarded as a Darwinian evolutionary process where some cultural values prevail and others disappear (Richerson & Boyd, 2005). Economic growth is inextricably linked to the evolution of societies. What concerns us is whether cultural values change due to economic parameters. In general, cultural values could be regarded as stable in the long run as the parameters affecting them remain relatively unchanged (De Jong, 2009). The transformation of the prevailing cultural values is a long-lasting process that needs a great effort as it depends on a variety of factors (history legacy, geography, psychology).

The most significant sources of external influence on the formation of the cultural background are considered to be the available resources, the climate and in general the geographical characteristics (Diamond, 1999; Petrakis, 2014; Triandis, 2009). Factors that can lead to culture change may come from human psychology (as some ideas are more readily learned or remembered) or may be social and ecological (some ideas make people richer, live longer, or migrate more often, and the resulting selective processes generate culture change) (Richerson & Boyd, 2005).

Also, the changes observed in the cultural background after an external shock change are also significant. It is a fact of common observation that crisis tends to produce or accelerate cultural changes and in fact, if the changes are being accepted due to the crisis, they tend to persist. Changes of this type can cause high stress to individuals (Eschbach, Parker, & Stoeberl, 2001) by affecting their psychological adjustment to new conditions and can be—depending on the intensity of the change—a strong shock to the context of their cultural values that characterize them.

Finally, the concept of culture shock is also important. Oberg (1960) defined the term culture shock as the “anxiety that results from losing all of our familiar signs and symbols of social intercourse”. Culture shock can occur due to the loss of familiar cues, the breakdown of interpersonal communications or an identity crisis (Weaver, 1994). As culture shock we could define a change that leads individuals and societies to face circumstances that are characterized by conditions different from their previous cultural context (Xia, 2009).
An individual entering in a society that is being characterized by a culture which is different from his own is an example of culture change (Kostis, Kafka, & Petrakis, 2018). For such a person, this change leads him not be able to understand the ideology and behavior of the members of the new society, thus he doesn’t understand why these people behave the way they behave and how himself should behave (Xia, 2009). Under these conditions, the person will suffer—completely or partially—symptoms such as depression, anxiety, and feelings of helplessness (Mio, 1999). The more these symptoms increase, the more difficult it is to learn and adapt to the new cultural background. So the individual must adapt to the new cultural environment which is characterized by a different way of life, living conditions and business practices. However, this adjustment can only be long-term. If the individual fails to adequately adapt to his or her cultural background, this can lead to the alienation of the individual from the new society, which would lead to psychological confusion and emotional discomfort (Hess, 1994).

11.3 Total Factor Productivity and Reforms in the Greek Economy Until 2019

During the recent decades there have been notable increases in product market reforms in Greece, based mainly on the fact that competition, productivity and competitiveness should be strengthened. Recent models predict that long-term economic growth is mainly based on innovation, which in turn is strongly influenced by low market regulation (Aghion, Bloom, Blundell, Griffith, & Howitt, 2005; Alesina, Ardagna, Nicoletti, & Schiantarelli, 2005).

The key question is whether and to what extent these changes have been and are successful. While most academics agree that competitive policies increase productivity, what are the effects of lower regulation is still not widely agreed. In fact, there has been minimum effort to study whether the effects of market regulation differ between countries with different economic and institutional frameworks.

As for Greek economy, according to Malliaropoulos (2017) periods of high (low) potential growth coincide with periods of high (low) TFP growth. In addition, by examining the period from 1966 to 2015 Malliaropoulos (2017) concludes that there is a high correlation between TFP growth and capital accumulation, by 0.62. The rationale behind this relationship is that when potential growth is low, there is a large
pool of unemployment which provides initial space to increase economy. However, at the same time, capital stock continues to decline due to the negative net investment. To get out of this situation, the economy needs structural reforms that will facilitate the increase in capital stock. Then the increase in capital stock combined with the fact that structural reforms are beginning to pay off, increasing TFP.

The Foundation of Economic and Industrial Research (IOBE, 2008), having conducted a sectoral and country analysis for the Greek economy for the period from 1970 to 2004, concludes that TFP was the main determinant of product growth (gross value added) for this period overall. However, it is noted that in contrast to the 1970s and 1980s, the TFP became negative in the 1990s and was not significantly stimulated by widespread use of information technologies, as was the case in most developed economies.

In a report conducted by the Centre of Planning and Economic Research (KEPE, 2019), Greece is being examined as a particularly interesting case study in an effort to explore the TFP growth impact of upstream regulation in all sectors of the Greek economy. As noted, although the Greek economy belongs to the group of developed economies, many of its institutional aspects are similar to those of middle-income economies, while productivity levels lag significantly behind those of the EU’s leading economies.

KEPE (2019) focuses on the effect of anti-competitive regulations in the upstream areas of energy, transport, and communications whose output is used as an intermediate input in downstream industries. Upstream regulation may be harmful for the efficiency of sectors which use their services, as part of the expected efficiency gains may be captured by intermediate input providers (Bourles, Cette, Lopez, Mairesse, & Nicoletti, 2013). KEPE (2019) analyzes the TFP growth impact of entry barriers and public ownership in upstream sectors. The TFP growth impact of upstream regulation is estimated for the period 1996–2015. The empirical results illustrate that upstream regulation is not significantly associated with TFP growth of Greek industries. However, it exerts an indirect negative effect on TFP growth of less productive sectors. This indicates that the harmful effects of regulation are guaranteed in the laggard industries of the Greek economy. A strong and robust technological catch-up effect is estimated, which indicates that technological convergence plays a major role for TFP growth of Greek industries.
Finally, KEPE’s (2019) analysis concludes that technology transfer could exert a beneficial impact on TFP growth of Greek sectors.

11.4 The Normal Scenario for the Greek Economy 2020–2030

But how do we expect the key figures in the Greek economy to evolve between 2020 and 2030 under normal circumstances? To answer this question we will use the Global Economic Model (GEM) model provided by Oxford Economics, which is used in this book to describe the expected development in the Greek economy of the two scenarios for the period 2020–2030 that is the Normal Scenario under normal circumstances and the Optimal Scenario which is a desirable and recommended scenario. Thus, this model and its basic assumptions is firstly presented and then Normal Scenario and its relationship with the corresponding estimates of other international organizations is being presented.

11.4.1 Forecast Model

The GEM model is structured in a strict manner in order to provide consistent predictions and to proceed to effective scenario analysis. The forecasts of the model relate to the following years and are updated every month, unlike international organizations that provide forecasts, such as the IMF which renews its estimates for the next 5 years twice a year.

The GEM model is eclectic. In this sense it draws from a wide range of theory, as it is Keynesian at the short-term level and monetarist at the long-term level. Thus, increased demand is initially expected to lead to higher levels of production and employment, but this then leads into higher wages and prices. Given an inflation target, interest rates should then increase, reducing demand again. In the long run, production and employment are determined by supply-side factors. It is a structural model of general equilibrium.

Its main components are behavioral equations (which interconnect the behavior of the variables used), identities and policy rules (for example Taylor’s rule).

If we were to attempt an overview of the model we would say that, as its basic elements, includes consumption (function of real income, wealth and interest rates), investment, exports (which depend on global demand and labor costs), imports (which depend on final costs and
competitiveness), Layard-Nickell\(^4\) wage/price system, monetary policy (which is endogenous and the options given are related to Taylor’s rule and exchange rate targets), exchange rates (as determined by uncovered interest rate parity\(^5\) in the short-term and exchange rate equilibrium in the long term) and expectations (which may be adaptive or forward looking). However, the model also maintains a significant degree of interconnections between economies in terms of trade flows, competitiveness, trade prices, interest rates, exchange rates, commodity prices, and capital flows.

### 11.4.2 The Normal Scenario

Figure 11.1 presents the Normal Scenario’s estimates of GDP growth in the Greek economy in contrast to the European Commission’s (EC), International Monetary Fund (IMF) and Consensus Economics\(^6\) estimates.

Normal Scenario is generally in line with the European Commission and IMF estimates for 2020 but is more optimistic than these estimates and less optimistic than Consensus Economics estimates about the depth of the Covid-19 pandemic crisis for 2020. The picture is reversed for 2021 as all estimates are expected the economy to recover and the lower

![Graph showing GDP growth rate (%) from 2019 to 2030.](image)

**Fig. 11.1** Estimates for GDP growth rate (%) (Sources Consensus Economics [2020], European Commission [2020], IMF [2020], Oxford Economics [2020], and authors’ creation)
the estimate for 2020, the more important this recovery is expected. After 2021 and until 2030, the growth rate of the Greek economy should be expected to be positive, although it is expected to decline over time. Oxford Economics’ differentiation from the forecasts of other organizations is based on the fact that, in the long run, the importance of macroeconomic restructuring achieved during the Memorandum period and the importance of removing disruptive factors such as the balance sheet recession from which the Greek economy suffers in the medium term, increases. Normal Scenario will be the basis on which the Optimal Pro-Growth Scenario presented in the next part will be created.

Normal Scenario includes the evolution of TFP which since its inception (it is an endogenous variable of the Global Economic Model of Oxford Economics and therefore calculated through other variables of the model) does not incorporate the increased effects of structural changes that will affect the period. 2020–2030. These effects have two origins: the structural changes of the period 2010–2019 and the new structural changes of the period 2020–2030. That is why the change in TFP is essentially very small.

Essentially, the TFP is considered in the Global Economic Model, as follows: in advanced economies, where data availability permits, TFP depends on institutional quality, the R&D stock, relative energy prices, a time trend and a catch-up factor for economic growth. This is meant to make TFP partially endogenous, so that it does react within scenarios rather than being fully exogenous. In most advanced economies, Oxford Economics uses official estimates of potential GDP and things like the NAIRU (mostly from the OECD) and derive the TFP history, which is in line with Oxford Economics’ equation and that data. In terms of the TFP forecasts, Oxford Economics generally assumes somewhat of a recovery from lower levels in recent years in advanced economies, but a rather moderate medium- to long-term trend. As with several key variables, Oxford Economics’ forecasts can overwrite a purely model-driven output.

Based on the way TFP is calculated by Oxford Economics, for the Greek economy has prices ranging from its historic low of –7.04 in 1991 to –6.67 in 2030 in the Normal scenario (based on available data from 1980 to 2030). It is characteristic that this is a size that over time receives negative values and in which there are quite small changes over the years that, although small in number, highlight large changes in TFP.

Figure 11.2 shows the TFP growth for Greece, based on the Oxford Economics model.
Fig. 11.2 TFP growth of Greek economy under Normal Scenario (Source Oxford Economics [2020] and authors’ creation)

Fig. 11.3 Annual change of TFP (%) (Source OECD [2020], Oxford Economics [2020], The Conference Board [2020] and authors’ calculations and creation)
Although the change in the Oxford Economics measure for the TFP is much smaller than the Total Conference Board and OECD measurements, the three figures show a similar trend, and the correlation between the Oxford Economics measure and that of the Total Conference Board is 0.62 and based on the OECD is 0.54 (Fig. 11.3).

### 11.5 Total Factor Productivity and Reforms: 2020–2030

The structural changes that took place during the period 2010–2014 in the Greek economy in combination with the structural changes that were included in the third adjustment program for the Greek economy had the effects presented in Table 11.1 on the GDP’s growth rate for the Greek economy over a decade (OECD, 2016a). In the current and subsequent chapters, it is assumed that non-fiscal structural changes will continue in the period 2020–2023\(^7\) to then pay off so as to make it possible to increase investment.

It is therefore noted that the total reforms in the Greek economy during the period 2010–2019, will have a total contribution to the GDP of the Greek economy of 13.4% over a decade. Of this change, 2.8% are expected to derive from an improvement in employment and 10.6% from an improvement in productivity due to these reforms. Also, in another distinction, it appears that product market reforms are expected to improve GDP by approximately 4.4%, labor market reforms by approximately 2.4%, tax structure reforms by approximately 0.8% and bankruptcy reforms by approximately 0.2%.

OECD estimates suggest that over the next decade, the reforms introduced since 2010 in combination with the reforms included in the third economic adjustment program will significantly boost the output of the economy, offsetting to a high degree the loss of potential production due to the crisis. Indeed, these estimates represent a threshold, in the sense that critical reforms such as reforms in the judiciary, bankruptcy regulations, and modernization of Public Administration have not been implemented. OECD’s methodology also assumes that legislative reforms are implemented with the average quality of the OECD and do not take into account short-term interactions with aggregate demand or interactions derived from a combination of reforms.

Anderson, Barkbu, Lusinyan, and Muir (2014) show the effect of reforms on real GDP over the long run for the Eurozone as a whole.
Table 11.1  Effect of reforms on real GDP over a decade

| Reform                                      | GDP   | Via employment growth | Via productivity growth |
|---------------------------------------------|-------|-----------------------|-------------------------|
| Reforms implemented 2010–2014               |       |                       |                         |
| Product Market Reforms                      | 3.4   |                       |                         |
| Product Market Reforms 2010–2013            | 2.9   |                       |                         |
| Product Market Reforms 2013–2014            | 0.5   |                       |                         |
| Labor Market Reforms                        | 0.9   | 0.6                   | 0.3                     |
| Employment Protection Legislation reform in 2010–2013 | 0.3   |                       |                         |
| Pension reform                              | 0.6   | 0.6                   |                         |
| Tax Structure Reforms                       | 1.3   |                       | 1.3                     |
| Total Implemented Reforms                   | 5.6   | 0.6                   | 5.0                     |
| Reforms implemented 2015–2019               |       |                       |                         |
| Product Market Reforms                      | 4.4   |                       |                         |
| Network industries reform                   | 2.3   |                       |                         |
| (electricity, gas, rail road, and transport) |       |                       |                         |
| Other product market reforms                | 2.1   |                       |                         |
| Labor Market Reforms                        | 2.4   |                       |                         |
| Pension reform                              | 2.2   |                       | 2.2                     |
| Employment Protection Legislation           | 0.2   |                       | 0.2                     |
| Tax Structure Reforms                       | 0.8   |                       | 0.8                     |
| Bankruptcy reforms                          | 0.2   |                       | 0.2                     |
| Total Implemented Reforms                   | 7.8   | 2.2                   | 5.6                     |
| Total                                        | 13.4  | 2.8                   | 10.6                    |

Source OECD (2016a) and authors’ calculations and creation

The significant effect of the reforms on GDP seems to come, ceteris paribus, after 5 years from the time of their implementation. This means that significant benefits are expected to emerge from the overall reforms carried out in previous years in the Greek economy.

The above event, combined with the dynamics of the new non-fiscal reforms that are expected to take place in the Greek economy between 2020 and 2023, is expected to give a significant boost to the product produced by 2030 and achieve the expected excess of the observed trends.
Of course, it should be noted that the (non-fiscal) reforms expected to be carried out in the period 2020–2023 are not estimated to be of the same effectiveness as in the period 2010–2017 and therefore their effect on GDP should be expected proportionally less. This is because as we get closer to the reform frontier the reforms are getting harder and harder with smaller reform effects.

What is important, however, is not to carry out numerous structural reforms, but effective structural reforms, in the sense of reforms that significantly improve TFP and ultimately stimulate economic activity. In other words, small-scale structural reforms but in specific sectors of economic activity (such as in industry and in manufacturing and in the upstream sectors of energy, transport, and communications, which output is used as an intermediate input into downstream industries) can have the same or even higher effects on investment growth than more multi-dimensional structural reforms in the economy as a whole. The reason for this is the effects on TFP and thus on the productivity of the sectors of economic activity.

This is why the Optimal Scenario of this analysis differs from Normal Scenario in terms of TFP. Indeed, given that during the period 2010–2014 (5 years) the structural reforms increased the GDP of the Greek economy by 5.6% of which 5% was through increased productivity, and that the structural reforms in the period 2015–2019 (5 years) increased GDP by 7.8% of which 5.6% was due to increased productivity, one should expect that the structural reforms of the period 2020–2023 should increase GDP by an even greater extent. Table 11.2 shows these relationships and the expected benefit of structural reforms in the period 2020–2023.

Essentially, the improvement of the TFP that we expect in Optimal Scenario compared to Normal Scenario, is presented in Fig. 11.4.

**Table 11.2  Effects of reforms in the Greek economy on GDP**

| Number of years | GDP growth (%) | Through productivity (%) |
|-----------------|----------------|--------------------------|
| 2010–2014       | 5              | 5.6                      | 5                          |
| 2015–2019       | 5              | 7.8                      | 5.6                        |
| 2020–2023       | 4              | 8.1                      | 8.1                        |

*Source* OECD (2016a) and author’s estimations
Through this differentiation, it is sought to highlight the significant benefits of structural reforms that have already taken place and those that are expected to be realized in the Greek economy for the GDP and to highlight the benefits of structural reforms in specific sectors of economic activity.

Optimal Scenario shows improved TFP compared to Normal Scenario by 0.3% in 2020, a rate that reaches 1.2% in 2023, decreasing to 0.95% by 2028 and increasing to 1.05% until 2030.

The integration of the reforms assumes that it presents an upgrade of the TFP by 0.121 points while in the Normal Scenario it was 0.071 points. At the same time, it has effects on the key variables of the economic system as presented in Fig. 11.5 (see next chapter).

What has not been sufficiently clarified in the relevant literature is the relationship of structural reforms with TFP as well as the relationship of TFP with factors such as investment, consumption, trade balance, savings, employment, etc.

OECD in the reports of the Economic Policy Reforms (OECD, 2015, 2016b, 2017, 2018, 2019) presents the reform effort of the economies every two years. This is done by recording the percentage of OECD policy recommendations that are ultimately adopted for each economy.
Based on the relevant data for the period from 2011 to 2018 and the corresponding development of TFP in each economy based on the Global Economic Model of Oxford Economics, Fig. 11.6 summarizes the correlations observed between the two variables.

It is noted that for 27 of the 32 OECD countries presented in Fig. 11.6 there is a strong positive or negative correlation (above 0.3 or below −0.3) which highlights the strong effect of structural reforms on TFP.

Especially for the case of the Greek economy the correlation observed is perfectly negative, having value of −1. This means that when the Reform Responsiveness Rate in Greece increases, the less the negative
size of TFP decreases, the more TFP is improving. In the context of this relationship, the great importance of the reform effort to improve TFP is highlighted. More specifically, in Greece the improvement of TFP from 2010 to 2018 where there was a great reform effort was of the order of 1.09%, while in normal Scenario we should expect from 2020 to 2030 a corresponding improvement of 1.05%. At the same time, in the Optimal Scenario we should expect an improvement in TFP by 1.8%. Thus, if we take into account that the Reform Responsiveness Rate for the period 2015–2018 was about 45% for Greece, and we know that the improvement in TFP was 1.09%, a simple calculation seems to require a Reform Responsiveness Rate of about 74%, about 10 percentage points higher than the average for the period 2011–2018 which was 63%. In another book, in Palgrave Macmillan’s series of books on the Greek economy under the title “The Political Economy of Greek Growth up to 2030”, Petrakis and Kostis (2020) describe the reforms that are necessary to measure the appropriate Reform Responsiveness Rate that leads to the “desired” evolution of Total Factor Productivity that is “consistent” with the Optimal Scenario.

11.6 THE OPTIMAL PRO-GROWTH SCENARIO FOR THE GREEK ECONOMY: 2020–2030

The integration of the upgraded TFP into the Normal Scenario causes GDP growth so as to create an Optimal Pro-Growth path for the Greek economy in the period 2020–2030. At the same time, with the increase of TFP, the Optimal Scenario includes an increase in government spending by 3 billion euros in 2020 to stimulate the Greek economy against the crisis of the Covid-19 pandemic.

Figure 11.7 shows the comparison of Normal Scenario with Optimal Scenario in terms of the level of real GDP and is indicative of the expected benefit of the 2010–2019 reforms and those expected for 2020–2022 in GDP through the effect of TFP. Additionally, the improvement in government spending in 2020 improves the size of real GDP for that year.

Table 11.3 presents the multipliers that link TFP to GDP for the Greek economy compared to the economies of Germany, Ireland, and Portugal. More specifically, it presents GDP multipliers after a TFP increase of 0.1 units each year (for 10 years), for each economy.
Fig. 11.7  Real GDP growth in Normal and Optimal Scenario (billion Euros) 
(Source Oxford Economics [2020] and authors’ calculations and creation)

Table 11.3  GDP multipliers after TFP increase by 0.1 points

|        | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|--------|------|------|------|------|------|------|------|------|------|------|------|
| Greece | 1.03 | 1.06 | 1.08 | 1.09 | 1.10 | 1.11 | 1.11 | 1.11 | 1.12 | 1.12 | 1.12 |
| Germany| 1.02 | 1.04 | 1.05 | 1.06 | 1.07 | 1.08 | 1.08 | 1.09 | 1.10 | 1.10 | 1.10 |
| Ireland| 1.02 | 1.02 | 1.03 | 1.03 | 1.04 | 1.05 | 1.06 | 1.07 | 1.08 | 1.08 | 1.09 |
| Portugal| 1.03 | 1.04 | 1.05 | 1.06 | 1.07 | 1.08 | 1.09 | 1.10 | 1.10 | 1.11 | 1.11 |

(Source Oxford Economics (2020) and author’s calculations and creation)

For Greece, the above multiplier means that an increase in TFP by 0.1 points, is expected to increase cumulatively GDP of the economy by 3% in 2020, 6% in 2021, 8% in 2022, 9% in 2023, 10% in 2024, 11% by 2027, and 12% by 2030. The corresponding multipliers for the economies of Germany, Ireland and Portugal are slightly smaller, thus highlighting the great importance of structural changes to stimulate economic activity through the TFP channel. It is also observed that for Greece, as of course for the other economies examined, there is an increase in the multiplier over the years, reaching its maximum level after the seventh year.
Notes

1. See Chapter 4
2. The Oxford Global Economic Model (GEM) is the most widely used international macroeconomic model, with users such as the International Monetary Fund, the World Bank, the Asian Development Bank and a large number of blue-chip companies. The original specifications of the model are provided by Oxford Economics, which was founded in 1981 in collaboration with the Oxford University College of Economics. The research team of EKPA under P.E. Petrakis has been cooperating with Oxford Economics since 2016.
3. According to Taylor’s rule, the real interest rate is in line with the long-term potential growth of the economy, provided that both economic activity and prices are kept close to their equilibrium. More specifically, in the event of a positive deviation from the equilibrium, the Central Bank must increase the intervention rate (i.e., decides the adoption of a restrictive monetary policy) to prevent the economy from “overheating”. In contrast, in the event of a negative deviation from equilibrium, the Central Bank must decrease the intervention rate (i.e., adopts an expansionary monetary policy) to prevent a sharp recession.
4. The Layard-Nickell wage /price system includes nothing but the intersection of a total supply curve with a total demand curve in a two-axis system, where the horizontal represents the unemployment rate and the vertical represents the actual wage. The intersection point of the two curves, which have been built to incorporate all the imperfections of product and labor markets, corresponds to the state of equilibrium of the economy.
5. Uncovered interest rate parity is a strategy that aims to make a profit by taking advantage of the inequality between the interest rate difference between two currencies and the expected change in their exchange rate.
6. Consensus Economics was founded in 1989, and is the world’s leading international economic survey organization and polls more than 700 economists each month to obtain their forecasts and views. Consensus Economics has cultivated a growing network of economists, drawing upon the expertise of well-established local consultants and large teams of professionals in the banks who are dedicated to particular countries and regions. These surveys cover estimates for the principal macroeconomic indicators including GDP growth, inflation, interest rates, and exchange rates in over 85 countries, as well as energy and metal prices. Consensus Economics does not use its own model for relevant predictions in the medium and long term. Instead, it uses the forecasts of a number of forecasting firms as a basis and formulates its own average estimate. Consensus Economics makes long-term estimates of a number of countries in the world. For Greece in particular, the estimates concern GDP, exports and private
consumption. Consensus Economics in general ultimately makes more conservative predictions than the OE. The way Consensus forecasts are taken into account is through GDP forecasts, imports, exports, and private consumption.

7. In the present and the next chapter, the hypothesis is made that during the period 2020–2023, the reform effort will continue intensively. Especially for 2020—and despite the crisis of the Covid-19 pandemic—the reform effort should be expected to restart in the fourth quarter of the year.

8. The improvement by 0.1 units concerns an improvement of about 1.49% for each year in Greece, by about 1.59% in Germany, by about 1.67% in Ireland and by about 1.47% in Portugal.

REFERENCES

Acemoglu, D., & Robinson, J. A. (2012). Why Nations Fail: The Origins of Power, Prosperity and Poverty. New York: Crown Publishers.
Aghion, P., Bloom, N., Blundell, R., Griffith, R., & Howitt, P. (2005). Competition and Innovation: An Inverted-U Relationship. The Quarterly Journal of Economics, 120(2), 701–728.
Alesina, A., Ardagna, S., Nicoletti, G., & Schiantarelli, F. (2005). Regulation and Investment. Journal of the European Economic Association, 3(4), 791–825.
Alston, L. (1996). Empirical Work in Institutional Economics: An Overview. In L. Alston, T. Eggertsson, & D. North (Eds.), Empirical Studies in Institutional Change (pp. 25–30). Cambridge: Cambridge University Press.
Anderson, D., Barkbu, B., Lusinyan, L., & Muir, D., (2014). Assessing the Gains from Structural Reforms for Jobs and Growth, Chapter 7 in IMF, Jobs and Growth: Supporting the European Recovery.
Aoki, M. (2007). Endogenizing Institutions and Institutional Changes. Journal of Institutional Economics, 3(1), 131.
Ayres, C. P. (1944). The Theory of Economic Progress. Chapel Hill: University of North Carolina Press.
Bourles, R., Cette, G., Lopez, J., Mairesse, J., & Nicoletti, G. (2013). Do Product Market Regulations in Upstream Sectors Curb Productivity Growth? Panel Data Evidence for OECD Countries. The Review of Economics and Statistics, 95(5), 1750–1768.
Consensus Economics. (2020, April). Surveys of International Economic Forecasts.
De Jong, E. (2009). Culture and Economics: On Values, Economics and International Business. New York: Routledge.
Diamond, L. (1999). Developing Democracy: Toward Consolidation. Baltimore: Johns Hopkins University Press.
Eschbach, D. M., Parker, G. E., & Stoeberl, P. A. (2001). American Repatriate Employees’ Retrospective Assessments of the Effects of Cross-Cultural Training on Their Adaptation to International Assignments. *International Journal of Human Resource Management, 12*(2), 270–287.

European Commission. (2020). *Spring 2020 Economic Forecast: A Deep and Uneven Recession, an Uncertain Recovery*. Retrieved from: https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts_en.

Greif, A., & Laitin, D. D. (2004). A Theory of Endogenous Institutional Change. *American Political Science Review, 98*(4), 633–652.

Hess, J. D. (1994). *The Whole World Guide to Culture Learning* (pp. 701–728). Yarmouth: Intercultural Press.

Hodgson, G. M. (2004). *The Evolution of Institutional Economics: Agency, Structure and Darwinism in American Institutionalism*. London and New York: Routledge.

IMF. (2020). *World Economic Outlook Database: April 2020 Edition*.

Kafka, K. I., Pantelis, C. K., & Petrakis, P. E. (2020). Why Coevolution of Culture and Institutions Matters for Economic Development and Growth? *Intecopen*. https://doi.org/10.5772/intechopen.90631.

Kantor, S. E. (1998). *Politics and Property Rights: The Closing of the Open Range in the Postbellum South*. Chicago: University of Chicago Press.

KEPE—Centre of Planning and Economic Research. (2019). *Structural reforms in Greece, 2010–2018* (Report prepared for European Commission). Luxembourg: Publications Office of the European Union.

Kingston, C., & Caballero, G. (2009). Comparing Theories of Institutional Change. *Journal of Institutional Economics, 5*(2), 151–180.

Kostis, P. C., Kafka, K. I., & Petrakis, P. E. (2018, July). Cultural Change and Innovation Performance. *Journal of Business Research, 88*, 306–313. https://doi.org/10.1016/j.jbusres.2017.12.010.

Libecap, G. D. (1989). *Contracting for Property Rights*. New York: Cambridge University Press.

Lipsey, R. G., & Lancaster, K. (1956). The General Theory of Second Best. *Review of Economic Studies, 24*(1), 11–32.

Malliaropoulos, D. (2017). *Greece: State of Economy, Outlook and Major Challenges*. Presentation in CRETE 2017 Conference. Bank of Greece Economic Analysis and Research Department. Retrieved from http://www2.aueb.gr/conferences/Crete2017/Papers/Malliaropoulos_slides.pdf.

Mio, J. S. (1999). *Key Words in Multicultural Interventions: A Dictionary*. Westport: Greenwood Publishing Group.

Ng, Y. K. (1977). Towards a Theory of Third-Best. *Public Finance, 32*(1), 1–15.

Oberg, K. (1960). Cultural Shock: Adjustment to New Cultural Environments. *Practical Anthropology, 7*(4), 177–182.
OECD. (2015). *Economic Policy Reforms 2015: Going for Growth*. Paris: OECD Publishing. Retrieved from https://doi.org/10.1787/growth-2015-en.

OECD. (2016a). *OECD Economic Surveys: Greece 2016*. Paris: OECD Publishing. Retrieved from https://doi.org/10.1787/eco_surveys-grc-2016-en.

OECD. (2016b). *Economic Policy Reforms 2016: Going for Growth Interim Report*. Paris: OECD Publishing. Retrieved from https://doi.org/10.1787/growth-2016-en.

OECD. (2017). *Economic Policy Reforms 2017: Going for Growth*. Paris: OECD Publishing. Retrieved from https://doi.org/10.1787/growth-2017-en.

OECD. (2018). *Economic Policy Reforms 2018: Going for Growth Interim Report*. Paris: OECD Publishing. Retrieved from https://doi.org/10.1787/growth-2018-en.

OECD. (2019). *Economic Policy Reforms 2019: Going for Growth*. Paris: OECD Publishing. Retrieved from: https://doi.org/10.1787/aec5b059-en.

OECD. (2020). GDP Per Capita and Productivity Growth. *OECD Productivity Statistics* (database). Retrieved from https://doi.org/10.1787/data-00685-en.

Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge [England] and New York: Cambridge University Press.

Oxford Economics. (2020). Oxford Economics Global Macro Model.

Petrakis, P. E. (2014). *Culture, Growth and Economic Policy*. Berlin: Springer.

Petrakis, P. E., Kafka, K. I., Kostis, P. C., & Valsamis, D. G. (2021). *Greek Culture After the Financial Crisis: An Economic Analysis*. New York: Palgrave Macmillan.

Petrakis, P. E., & Kostis, P. C. (2020). *Policies for a Stronger Greek Economy: Actions for the Next Decade*. New York: Palgrave Macmillan.

Richerson, P. J., & Boyd, R. (2005). *Not by Genes Alone: How Culture Transformed Human Evolution*. Chicago: University of Chicago Press.

Sotiriadis, C. J., & Grove, J. V. (2020). Global Futures Report. Alternative Futures of Geopolitical Competition in a Post-Covid-19 World. A Collaborative Analysis With Foresight Practitioners and Experts, Air Force Warfighting Integration Capability (AFWIC), Strategic Foresight and Futures Branch. The Conference Board. (2020). The Conference Board Total Economy Database: April 2019.

Triandis, H. C. (2009). Ecological Determinants of Cultural Variation. In R. W. Wyer, C. Y. Chiu, & Y. Hong (Eds.), *Understanding Culture: Theory, Research and Applications* (pp. 189–210). New York: Psychology Press.

Vettas, N. (2016). *Some Thoughts on Productivity and Greece*. Retrieved from http://iobe.gr/docs/events/var/Vettas_Bank_of_Greece_%2025042016.pdf.
Weaver, G. (1994). *Culture, Communication and Conflict: Readings in Intercultural Relations*. Needham Heights: Simon & Schuster.

Xia, J. (2009). Analysis of Impact of Culture Shock on Individual Psychology. *International Journal of Psychological Studies, 1*(2), 97–101.