CHAPTER 7

The Major Macroeconomic Trends

7.1 INTRODUCTION

Major macroeconomic trends have a critical role in shaping the future. Issues such as growth sources, debt evolution, deep-rooted financial instability, declines in productivity, economic convergence, the high levels of uncertainty, and, finally, structural changes in production are the main macroeconomic trends that will decisively influence the future world. These trends pre-existed, but were reinforced by the Covid-19 crisis.

This chapter is laid out as follows: Sect. 7.2 analyzes the optimistic and pessimistic views on growth sources; in Sect. 7.3, global debt evolution is reviewed; and Sect. 7.4 considers the inherent instability of the financial system due to information asymmetry, as opposed to financial instability caused by human behavior. Section 7.5 examines productivity growth developments, followed by a review of the issue of economic convergence (Sect. 7.6). Section 7.7 focuses on the role of uncertainty and, finally, the last two sections of the chapter analyze the major changes in the production structure (Sect. 7.8) and the macroeconomic effects of Covid-19 (Sect. 7.9).
7.2 The Optimistic and Pessimistic Views on Growth Sources

Optimists see the world with a positive outlook and view setbacks and failures as temporary and ephemeral, and mainly due to exogenous factors rather than personal failure. Pessimists see the situation as bad, and possibly getting worse, while expecting negative outcomes.

Optimists, also described as new technologists (Dervis, 2014), believe that the global economy is entering a fourth phase of the industrial revolution, which is expected to be characterized by “smart” machines that will replace low and medium-skilled work. In fact, based on a study by Manyika et al. (2017), “technological unemployment” is expected to reach 800 million jobs by the end of the decade. The optimists predict that new technologies will significantly boost productivity through their impact on energy efficiency, transport (e.g., autonomous vehicles), medicine, and mass production due to the adoption of 3D printing (Dervis, 2014).

Hand in hand with technological change goes the issue of the creation of oversized technology companies (Big Tech). As happens in the case of banks, size itself is not a problem, but their vast size makes regulatory management and policy-making very difficult. Therefore, Big Tech requires special treatment. Their complexity touches on a number of issues, such as the shift in investment from tangibles to non-tangibles, intellectual property, and brands, and the unequal wealth reallocation (with its consequent political impact, populism, etc.). The latter because of the standard financial practice of increasing shareholder wealth while at the same time stifling start-ups (due to the acquisition strategies of Big Tech) and, by extension, affecting employment.

Dervis (2014) distinguishes optimists and pessimists on the basis of their views on four different issues: (a) economic growth and the global economy; (b) income distribution, particularly in the case (Piketty, 2014) where capital becomes a substitute for work (exempted high-skilled work), taking into account that educational systems need time to foster new skill sets but with wage differentials increasing in the meantime; (c) the impact of further automation on employment, since people can thus be “released” from mundane jobs; and (d) climate change and possible constraints on natural resources, which may hinder long-term growth or may lead to a transition to green energy economies, reinforcing another technological revolution capable of increasing social prosperity.
Brynjolfsson and McAfee (2014) argue that the potential of new technologies is equivalent to the potential of past technologies and can transform the economy. Their optimism stems from their belief in the unlimited possibilities of innovation. More specifically, from the fact that even low-cost devices can now communicate with each other, that new technologies are able to respond to the amount of digital information being generated and that machines nowadays have high computing power.

Pessimists, on the other hand, predict that population growth will lead to increasing levels of malnutrition since resources will be insufficient to meet world’s food needs and that rising demand will lead to the depletion of natural resources and the potential for conflict as states increasingly compete for scarce resources. They also believe that the over-intensive exploitation of the productive potential will lead to increased pollution and global warming. They worry that developed countries will continue to create problems in the global economy, such as threatening globalization by creating new obstacles for lagging industrialized countries, which also face Chinese competition and competition from other, more established exporting countries.

More generally, pessimists argue that the development of international trade is responsible for a number of problems, such as environmental decline and growing global inequality. They argue that increased trade leads to increased energy consumption with negative environmental consequences (e.g., carbon dioxide [CO₂] emissions from shipping). Finally, they believe that the benefits of increased international trade are not shared equally among countries, but increase the wealth of the strong economies at the expense of the weak.

A basic premise, commonplace among many pessimistic analysts, is their assessment of a slowdown in technological development, including the benefits of economic convergence for developing countries (Rodrik, 2013). Their main objection to the optimists is that the latter place too much faith in the market operation and its “ability” to correct problems.

Gordon (2012) notes that the US’s rapid economic growth over the last 250 years, may represent a unique event in world history, which will not be repeated anytime soon. He agrees with Krugman (1990), who argues that slow growth during the period 1973–1990 was a harbinger of a new, more pessimistic future, and where the earlier high expectations of Americans will come down to earth. In addition, he emphasizes that US productivity has fallen significantly since 1970 and that economic growth
will slow. In fact, he estimates that over the next decade growth rates will decrease significantly because the innovation impact has been smaller and more limited than previously, particularly since transport and energy technologies have changed little in the last half century. He argues that the high economic growth rates of the previous century were the product of the second industrial revolution (1870–1900), where the discovery and use of new technologies structurally altered economic activity and society (electricity, water, and sanitation, the internal combustion engine, radio and telephone, chemicals and oil, etc.). As such, the economic consequences of this earlier period were considerably more significant than those of the first industrial revolution—the era of the steam engine and railroads—but also more significant than those of the third industrial revolution—the information age and the internet.

Rodrik (2013) argues that growth will remain low at best. He believes that the global economy is entering a new phase in which future growth will not be the same as in recent decades, especially for East Asia countries where high growth rates will be difficult to be maintained. He believes that the distance between developed and developing economies is likely to decrease significantly relative to the levels of the last two decades, with developing countries continuing to grow faster than developed ones, but with economic convergence mainly be due to slower growth in developed countries.

Jones (2009) believes that the level of innovation will decline significantly in coming years since, as he argues, technological development is expected to significantly and continuously increase the stock of knowledge, resulting in reduced opportunities for innovation by future generations due to technological and cognitive constraints. And while this problem may be compensated for by greater investment in education, but to the detriment of experience, the resulting lack of on-the-job training may lead to reduced innovation at individual level as a greater reliance on teamwork will have a negative impact on economic growth. This is one of the reasons for the lack of growth in productivity witnessed in recent decades, despite an enormous growth in collective research. Jones (2009) stresses that such barriers to knowledge change the nature of innovation, leading to negative consequences for long-term economic growth.

A big question mark arising from the Covid-19 crisis is whether the Black Swan form of Covid-19 favored the camps of optimists or pessimists, regarding the economies’ growth prospects.
At first glance, it favors the pessimistic analysis of data and that it causes a great recession without (pharmaceutical) innovation being able to deal with it effectively and in a timely manner, at least before it causes the great recession of 2020. Also, prosperity, wealth and income levels returned to levels seen in the past in almost all countries of the world. Analysis from pessimists, in regard to the evolution and role of international trade, have been strengthened, a fact which in some ways confirmed the correctness of views on its limitation.

At the same time, however, the Covid-19 crisis has shown that the use of technology in both education and work paves the way for their use and seek answers that make them more effective. The severity of the crisis is also certain to draw large sums of money to the pharmaceutical industry, which will give a new impetus—not just in the coronavirus era—to pharmaceutical innovation. In addition, it seems that social media networks are being required to include health data and social distancing policies. Finally, new data is being created for the development of supply chains. Based on all of the above, it seems that the Covid-19 crisis has indeed the nature to act as a catalyst and accelerator in the development of at least in some aspects of technology.

7.3 Debt’s Evolution

The problem of over-indebtedness is both a fundamentally moral and real problem of intergenerational justice. High debt accumulation burdens deprive future generations of resources. Of course, this applies in cases where debt is channeled toward current consumption. If it is invested, the question then becomes one of investment returns. If investment return is lower than cost, this represents a preference for the present relative to the future, in which case the problem is essentially the same. Blanchard (2019) notes that, since 1980, US government bond yields have been falling steadily, they are now below the nominal rate of economic growth and are expected to remain at correspondingly low levels over the medium term. Asked about the impact of low interest rates on government debt policy, he notes that if the interest rate paid by the government is less than the growth rate, then the intertemporal budget constraint facing the government no longer binds. Thus, when borrowing costs remain below the gross domestic product (GDP) growth rate, debt (as a percentage of GDP) decreases through the debt rollover.
In the post-war period, global debt has been on an almost uninterrupted, upward course that continues to this day, with developed countries leading the trend in rising global debt/GDP ratios (Mbaye, Moreno-Badia, & Chae, 2018). Despite a significant increase in the share of developing countries’ debt since the mid-2000s—with China contributing, after the 2008 financial crisis, to three-quarters of the increase in global private debt—the difference with developed countries remains large. At the same time, the share of debt issued by underdeveloped countries in terms of global GDP remains very low, below 1%.

Starting in 2000, private debt has been the main driver of this increase with an almost continuous upward trend until 2009, while from 2018 onwards, the trend in private debt appears to be more stable (Badia & Dudine, 2019). From 2004 to 2008, global public debt decreased (Badia & Dudine, 2019), but with the start of the recent global financial crisis, it rose again to an historic high in the 3rd quarter of 2016.

The amount of global debt is now more than three times the world’s economic output and its evolution points toward an eventual rise in interest rates and a consequent slowdown in global output.

In the case of Greece, the evolution of public and private debt reflects two simultaneous but diverging trends due to the contraction in economic output over the last decade (Fig. 7.1). As a result of the crisis and Greece’s economic adjustment programs, the ratio of public debt to GDP widened dramatically relative to private debt because the private sector was no longer able to “support” the public sector.

As a result, the debt/GDP ratio rose sharply during this period and continuing on an upward trend until today, but with the exception of 2012 (PSI). The European average increased much less in the years of the crisis, remaining below 90%.

It is clear that the Covid-19 crisis is increasing economies’ debt. This increase is a key feature of the 2020 crisis. In fact, in the United States, the increase as a percentage of GDP will exceed the corresponding increase seen at the end of World War II. The question that arises is whether this defines a new debt crisis, like that seen in 2008. The same question, though more acute, relates to Eurozone, and countries that had been hit in 2008, such as Italy, Spain, and Greece.

A positive fact is that the deficiency environment that has been created helps keep the cost of borrowing low. The negative growth rate in 2020 may be lower than the cost of borrowing, but from 2021 onwards it will
7.4 **The Inherent Financial Instability**

Is the financial system “fragile by design” (Calomiris & Haber, 2014)? The instability of its design is linked to its operational foundations, where information asymmetry between buyers and sellers can lead to adverse selection practices, due to contracts imperfections and creation of moral hazard. Given these circumstances, significant changes to the financial system are now in process, focusing on financial intermediation and its direct impact on growth potential, and coming mainly from the adoption of new technologies (FinTech). It should be noted that, following the rapid growth of the financial sector in the 1970s and 1980s, the banking system’s culpability in the Great Recession has come into focus, re-igniting the debate about the relationship between the financial system and growth.

Fig. 7.1 Development of GDP growth, public* and private** debt (% GDP): Greece and the Eurozone (*Note: Eurozone’s private, as well as public, debt is the average debt ratio for the euro area group countries, calculated by weighting each country’s debt-to-GDP ratio by the share of that country’s GDP in the group’s aggregate GDP. *Source: Statistical Office of the European Communities [2019a, 2019b*, 2019c**] and author’s own creation)
It is important to understand the exact nature and extent of financial crises. It is also important to understand the role of asymmetric information in the repeated occurrence of extreme adverse developments in which the principal/agent relationship appears to be significantly responsible for the emergence of such crises.

The use of macroprudential regulation has evolved, with developed countries employing them more widely than emerging and low-income countries. A large and growing body of literature shows that many macroprudential policies seem to be effective and successful in ensuring overall financial stability (Cerutti, Claessens, & Laeven, 2018). However, we still do not know how effective these policies will be over the long run since many have been implemented only very recently, and most countries have not yet weathered a full economic and financial cycle. Additional research and better data are needed to understand the interaction of macroprudential policies with other policies (e.g., capital controls), and to explore the best way to implement policies during the business cycle (rules versus discretion), their economic costs and how best to deal with the constraints of the political economy.

A well-functioning economy depends on the financial sector’s ability to finance growth, providing the necessary capital to fill the gap between investment and return. Economic efficiency and growth depend not only on access to capital, but also on the very structure of the financial system. The financial system in the euro area (as in Japan) is geared toward traditional bank financing, as opposed to the structure of financing prevalent in United States, which is based on capital markets (Reid, Lakhani, & Templeman, 2019).

The Greek economy relies heavily on the mediating function of the banking system and much less on the market’s “invisible hand.” Indicative is Fig. 7.2, which shows Greek banking sector assets from 2000 to 2017 as a percentage of GDP compared to corresponding figures for United States and euro area economies. It should be noted that, since 2004, the Greek economy’s dependence on its banking system has increased and that, since 2009, the role of bank financing in the Greek economy has been higher than the Eurozone average. The corresponding US dependence on the banking system is much lower throughout the period 2000–2017.

The functioning of a financial system and the growth potential of an economy are tightly linked. The relationship is characterized by a strong, reciprocal association, where the policies of banking institutions
and capital markets alternatively affect, and are influenced by, the growth rate of an economy.

Issues such as liquidity, leverage and risk-taking in an economy go hand in hand with the business cycle and serve as systemic, procyclical variables, leading to a high degree of volatility in the economic system. At the same time, however, the economic conditions affect the profitability of the financial system and, by extension, the funding policies of financial institutions.

The question that arises is whether this endogenous situation makes the financial system, and ultimately the capitalist system, fundamentally vulnerable to constant crises. Can macroprudential policies, to a greater or lesser degree, curb this problematic functioning of financial systems? And is it possible to eliminate the negative feedback loop that exists between public borrowing and banking systems through the continuous recycling of debt burdens? These are some of the questions where public policy can help shape the relationship between financial systems and economic growth.

This time, however, the crisis did not come from the financial system. Covid-19, having an exogenous origin—in terms of economic system—caused a negative shock in both supply and demand, resulting in expectations for a dramatic reduction in economic activity (as was the case). This caused recessionary expectations and then a recessionary reality.
This reality was reflected in expectations for business profits. Thus, stock market indices collapsed as did, of course, the values of all kinds of assets. But this is nothing more than a classic “Minsky Moment,” which reveals the leverage exposure of over-indebted portfolios. Fortunately, liquidity injections, mainly of monetary and fiscal policy, have so far stopped the immediate transmission of the crisis within the banking system. However, it is a fact that non-performing loans will increase and the profits of banking institutions will shrink. Consequently, the transferring of the crisis’ effects within the financial system will be, up to a point, inevitable.

7.5 Growth in Productivity

There is no question that the issue of productivity growth is a major subject in economic development, since it is closely linked to an improvement in standards of living. But while you would expect that in the modern age of technological progress and worker training, productivity would increase, this has not been proven. In recent decades there has been a worldwide decline in productivity growth. The recent crisis could be the main reason for this decline, but productivity growth has been slowing for decades across many developed economies (Organisation for Economic Co-operation and Development [OECD], 2019)—in recent years the decline in United States has also been significant. Figure 7.3 illustrates this declining trend.

The slowing rate of growth in productivity is a critical issue and poses one of the greatest threats to standards of living, economic prosperity, and development, whether it be in developing or developed economies. A crisis in productivity is being automatically translated into negative effects on wages and profits, limits to competitiveness and development, and a threat to jobs creation and global economic growth (van Ark et al., 2015). In fact, this issue, combined with the problem of aging populations, is one of particular concern to economists (Manyika et al., 2015).

In recent years, labor output has been marked by significant divergences. Productivity growth has varied among countries and, in some cases, has shown decreases (OECD, 2019). A typical case is the Greek economy (Fig. 7.3), which has experienced a significant decrease in labor productivity in recent years. Noteworthy is that Greece’s level of productivity is among the lowest between OECD countries (OECD, 2019).
Van Ark et al. (2015) points out that, in order to maintain economic growth and living standards at the level it was in the 10 years before the crisis, the level of productivity needs to increase by 60% compared to that period.

In general, the problem globally seems related to the fact that firms have become less efficient at “transforming” work and capital into goods and services, while also confronting problems with policymakers. Also, it seems that slowing productivity growth is not just a result of the global financial crisis of 2008, which cut production and reduced investment, but also the result of structural issues facing economies worldwide (van Ark et al., 2015).

Nevertheless, the long-term trend of low growth rates is being accompanied, as one would expect, by low-productivity rates. Indeed, Gordon (2016) cites data from 1890 onwards that confirm this trend. He notes that during three broadly-defined periods for US economy (1890–1920, 1920–1970, and 1970–2014), the component explaining deviations in productivity growth rates appears to be total factor productivity (TFP).
From 1890–1920 to the period 1920–1970, TFP increased roughly four-fold (from a ratio of 0.45% in the first period, to about 1.9% in the second period), which was then followed by a significant decline to approximately 0.7% in the period 1970–2014. However, the contribution from human capital and capital deepening held steady, maintaining their respective shares over all three periods—the ratio for human capital is about 0.3% while for capital deepening it is about 0.7%. So, the interest remains on the persistent question: what is it that changes TFP?

In the case of the Greek economy, TFP has fluctuated widely in recent decades, declining sharply in the six years from 2008 to 2012, and possibly explaining the depth of Greece’s recession (see Chapter 9, Sect. 9.3).

The escalation of the Covid-19 pandemic, through the lockdown of economies and the arising need for teleworking, directly and strongly affected economies’ productivity levels. The change in the performance of remote workers depends, of course, on the nature of the profession itself. It is logical that, in professions that require physical presence, the exclusion of workers from the workplace nullifies productivity. However, continuing to work from home for professions where this is possible may involve maintaining employee performance, in some cases, or even increasing it. In general, however, teleworking in the midst of the coronary epidemiological crisis (Morikawa, 2020) seems to reduce productivity, as in many cases there is not the necessary technical infrastructure and familiarity to support employees from home, while at the same time the physical presence of employees and the sometime necessary access to an office environment cannot be completely replaced. Additionally, many employees do not have a properly designed workplace or favorable conditions to work remotely in the same efficient manner. In the future, the digital training of human capital and further advancement of technology in communications and information technology are expected to lead to more efficient forms of teleworking.

7.6 Convergences and Divergences in Economic Growth Rates

The concept of economic convergence is based on the assumption that income per capita in poorer economies tends to grow faster than in richer ones. The lower the level of real GDP per capita is, the higher the expected growth rate. Where economies have similar preferences and
technology, they converge on the same steady-state, and if these conditions do not apply, they converge to different steady-states. The ideal outcome is for all economies to eventually converge in terms of income per capita.

There is broad consensus that data showing a convergence in incomes’ per capita across countries does not exist. According to Johnson and Papageorgiou (2018) the process of development, and possibly convergence, is not a smooth one and is characterized by significant variations among countries. This should come as no surprise, since the concept of convergence is merely a theoretical construction that characterizes part of the broader dynamic development process. It appears, therefore, that recent optimism surrounding rapid and sustainable convergence is unfounded (Johnson & Papageorgiou, 2018). The conclusion is that apart from a few Asian countries that have managed to transform their economies, most of the economic successes in developing countries is related to improvements in efficiency, with only a temporary effect on growth rates.

Thus, it seems that acceleration in growth rates is influenced by a complex set of parameters, with only dependence on the past as a common starting point.

The evolution in Greek national income over the years is characteristic. Figure 7.4 shows the evolution of Greek GDP per capita in dollar terms from 1850 to 2016 (with 2011 as base year) and the country’s four main economic crises (in 1893, 1932, 2008, and 2020).1

In general, we see almost no change in GDP per capita throughout the period before 1953. This begins to improve, almost exponentially, after 1953 and until the 2008 crisis, when it embarks on a sharp downward trajectory. Since 2012 we have seen signs of a slight recovery in income.

Over this period, the transformation of the Greek economy from a predominantly agricultural economy (in the nineteenth century) to a services-based one (in the twenty-first century) played an important role, along with the greater availability in financing (Thomadakis, 1981). Since the birth of the Greek state, however, economic growth has been accompanied by a series of national, social, and macroeconomic crises (Kalafatis, Demathas, & Petrakis, 2011). These have affected capital accumulation, labor development, and all the other factors of production and thereby influenced both the quantitative and qualitative characteristics of Greek economic growth, as well as attendant social attitudes and stereotypes in Greek society.
Greek income per capita in the 1980s was lower than in countries such as Germany and Italy, but not by a large amount. According to the theory of convergence, the Greek income per capita and these countries should have converged. Instead there was a divergence (Fig. 7.5) in
income per capita, a trend that has become even more marked since the 1980s and which has clearly increased further since 2008, even though these countries were and continue to be important trading partners of Greece.

Rodrik (2011), with regard to economies’ convergence, tried to explore whether the difference in growth between the developed and developing world can continue and, in particular, whether developing economies can continue the rapid growth they have experienced during the last decades of the twentieth century. He points out that growth in the developing world should depend not so much on the growth of the developed economies themselves, but on the difference in productivity levels between developed and developing countries, the so-called convergence gap, which remains quite large.

Throughout the second half of the twentieth century, there is a steady difference in growth rates between high income and other countries, with the exception of the 2000s when both middle and low-income countries recorded higher growth rates (Table 7.1). Thus, in conclusion, we observe that the gap has widened, in contrast with expectations of a convergence between rich and poorer economies based on the prospect of capital accumulation and transfer of technology and know-how.

Table 7.1 GDP per capita growth (%): average price per decade (1961–2018)

|          | 1961–1969 | 1970–1979 | 1980–1989 | 1990–1999 | 2000–2009 | 2010–2018 |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| High     | 4.42      | 2.72      | 2.22      | 1.89      | 1.12      | 1.44      |
| income   |           |           |           |           |           |           |
| Upper    | 3.54      | 3.89      | 1.47      | 1.41      | 4.99      | 4.11      |
| middle   |           |           |           |           |           |           |
| income   | 2.97      | 3.44      | 1.33      | 1.14      | 4.49      | 3.88      |
| Middle   | 1.54      | 3.35      | 1.26      | 1.02      | 4.33      | 3.72      |
| income   | 2.91      | 2.35      | 1.55      | 1.18      | 3.93      | 4.06      |
| Low &    | –0.12     | –1.20     | 2.33      | 2.06      |           |           |
| middle   |           |           |           |           |           |           |
| income   | 3.55      | 2.05      | 1.24      | 1.12      | 1.58      | 1.82      |
| Low      |           |           |           |           |           |           |
| income   |           |           |           |           |           |           |
| World    |           |           |           |           |           |           |

Source The World Bank (2019) and author’s own calculations and creation
Covid-19 shook economies’ convergence process. Of course, due its systemic nature, it also has a recessionary impact on almost all economies. Based on the predictions that can be made, we find that at the Eurozone level the pandemic crisis will lead to the convergence of European economies (Fig. 7.6).

7.7 Uncertainty

Concern about the prevalence of high levels of uncertainty has intensified in recent years and is lying at the heart of economic thinking, particularly in the wake of the global financial crisis of 2008 and the debt crisis in the euro area countries.

The nature of uncertainty is due either to incomplete knowledge (subjective uncertainty), or to the variability of the system, i.e., the existence of continuous and volatile events (objective uncertainty) that can influence economic decision-making and business activity (van Asselt & Rotmans, 2002; Walker et al., 2003). Uncertainty due to incomplete knowledge can be differentiated through constant research, study, experience, and continuous evaluation and monitoring of the events and policies applied.
Research into the nature and consequences of uncertainty has grown over the last decade (perhaps in the past there was less research interest) and this may be one of the reasons why the subject has garnered more attention and gained in significance, although the topic is addressed in classical economic theory. Recent research findings examine uncertainty effects on economic activity, as uncertainty plays an important role in economic policy-making (Petrakis, Valsamis, & Kafka, 2020). The existence of uncertainty, therefore, does not favor long-term policy decisions. Decisions in periods of uncertainty are limited to a more short-term horizon at the expense of long-term planning.

Over the past three decades, uncertainty has increased significantly or has had an increased impact on the global economy (Fig. 7.7). In fact, rising uncertainty appears to be an ongoing trend, reaching—as shown in Fig. 7.7—at very high levels due to Covid-19.

The Greek economy is facing increasing levels of uncertainty. This directly affects business decisions on investment and job creation (Schaal, 2011), with an impact on employment and economic activity. As a classic Black Swan case, Covid-19 increased global uncertainty. With the

![Fig. 7.7 World Uncertainty Index (Source Ahir, Bloom, and Furceri [2018] and author’s own creation)](image-url)
Table 7.2  The 5 most important risks for Greece

| Risk 1                  | Risk 2                                  | Risk 3                              | Risk 4                               | Risk 5                              |
|-------------------------|-----------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| Greece Fiscal Crises    | Failure of Financial Mechanism or Institution | Failure of National Governance | Large-Scale Involuntary Migration | Profound Social Instability |

Source: World Economic Forum (WEF) (2019) and author’s own creation

outbreak of the Covid-19 pandemic, uncertainty in the Greek market—for the first time since July 2019—surpassed its historical (in the last two decades) average (Center of Planning and Economic Research [KEPE], 2020), demonstrating concerns raised by the epidemiological crisis.

It is difficult to describe all the possible random events that negatively affect the development of an economy. They appear haphazardly and involve risks that can be ascribed with a certain degree of predictability and danger. Such events are presented in Table 7.2 for the Greek economy, with fiscal derailment remaining the highest risk.

All of the events listed in the above table contain an element of randomness, but more importantly they include a risk element that can, however, be assessed and calculated. By contrast, there may be “black swan events” (Taleb, 2010) which have very significant effects, without being possible to accurately calculate the probability of their occurrence.

Among the random risks that Greece faces is the occurrence of major seismic events. Seismic events are inherently unpredictable, while the effects of strong earthquakes can have major financial consequences on society.

In fact, Greece is one of the most seismically active countries in the world with Fig. 7.8 showing the strongest seismic events in Greece since 1817. During these 202 years (from 1817 to 2019) 127 earthquakes of more than 4 on the Richter scale have been recorded, while 91 of them above 6 on the Richter scale.

A serendipitous approach to economic and social development is therefore also based on the existence of unforeseeable events, which may change the prevailing circumstances. Rasmus (2014), in fact, uses the term “serendipity economy” to describe an economic model that is emerging and unpredictable, and which is being evolved, not in a linear way, but rather through randomness and circumstance.
7.8 **Structural Changes in Production**

Major structural changes in production fall into two categories. The first relates to the geographical location of economic decision-making and production centers around the world (east/west, north/south).

The second relates to changes in technology, the rise of the services sector, the shift of investment from tangibles to non-tangibles, and the declining value of low and intermediate-skilled work and their replacement by digital processes.

In recent decades, the spread of digitization and the internet has radically reorganized the structure and functioning of economies and societies as a whole, altering production processes and outputs and, as a result, consumer attitudes and lifestyles. In the coming years, industrial trends and technological developments are expected to have similar effects. Also, trends such as aging populations are expected to have a significant impact on economies’ structural transformation process (Cravino, Levchenko, & Rojas, 2019).

Structural changes in production can be evaluated based on three equally, of importance, elements: (a) technologies and trends which have the greatest impact on the organization, operation, and firms’ viability in each sector, thereby revealing the outlook, concerns, and needed adjustments facing an industry; (b) the main types of firms investments,
revealing their preferences and objectives and, ultimately, future industrial development; and (c) those factors which are seen as changing firms competitive landscape.

Thus, as regards the first point, almost all firms regard the Internet of Things (IoT) as the technological development that will have the greatest impact, both in the short and medium- to-long term (BMI Research, 2018), given its usefulness and the continuous rise in consumer demands. Improving the quality and functionality of devices, while also reducing costs across various economic and social activities, constitute the basic incentives driving this development, but also raising issues of security and privacy at the same time.

Automation & Robotics are also ranked among the technologies that are expected to lead to structural changes in production, mainly over the long-term in the fields of technology and communication, mining, construction, and manufacturing. Although a long-term proposition and only applicable in some industrial sectors, automation has nevertheless highlighted the debate over its impact on labor costs and employment, particularly among low-skilled workers.

Technologies and trends such as Artificial Intelligence (AI), Sharing Economy, 3D Printing, Blockchain adoption, and Space Economy are expected to have less of an impact.

By contrast, businesses are choosing to invest (BMI Research, 2018) in new energy-saving technologies (Energy Efficiency) and in the Personalization of Services. In doing so, they are conforming with the requirements of the age—greater efficiency in household energy consumption, rising costs to businesses for energy-related emissions, and protection of the environment—and seeking to diversify, providing higher value-added services and personalizing services to the consumer.

Those factors which businesses see as changing their competitive landscape are more enduring, with technological development and innovation in general seen as having the greatest impact (BMI Research, 2018). Changing consumer preferences and regulatory policies, such as the transition to low carbon economies, are seen as among the least influential factors.

In conclusion, two important phenomena have been identified: (a) increasing economic inequality and (b) economic and political power accumulation by monopolies and oligopolies, with the most visible concentration of such power being evident in the technology sector. While smaller, innovative companies espoused a free, open, and
networked society, with easier access to information, cheaper products, and faster communication, the dominant influence exerted by the tech giants with the economic, cultural, and political power they wield and which they acquired with the advent of the digital age, creates a new environment (Wu, 2018). The relaxation of antitrust laws has led to the absolute dominance of a single search engine (Google), an e-commerce provider (Amazon), and a social media platform (Facebook). But if the fundamental laws of liberal democracy ensure that political power be restrained through checks and balances, then the same must apply to economic influence.

The important question that arises regarding the Covid-19 crisis is whether it can affect the Greek and, more broadly, the global production model.

We have repeatedly stated at this point that Covid-19 acts as an accelerator and amplifier of every trend observed in the economy. The isolation of people and economies’ lockdown were a bulwark against virus transmission, but at the same time further highlighted the tendency and need to digitize, connect and automate economies by accelerating the technological megatrends of IoT, Automation & Robotics and AI. Productive and consumer structural changes, such as new methods of labor, production and distribution, electronic trade and e-markets, or new consumer habits are evolving processes.

It seems, however, that they were intensified by the epidemiological crisis of Covid-19. Although in some sectors, where high-capital investment is required (e.g., the automotive industry), the expected global recession of 2020 is likely to delay such changes. In the medium to long term, their further integration into industry is now imperative. This is because in the future the goal is to prevent and reduce costs from similar phenomenon to Covid-19 causing a break in supply chains and harming human resources. At the same time, a greater need for more “connected” economies increases the needs of cybersecurity. Finally, the side effects of reducing global greenhouse gas emissions, as an unintended consequence of the coronavirus, may increase the tendency to switch to low carbon economies.
7.9 Macroeconomic Consequences of Covid-19

The Covid-19 pandemic has created a new reality in the macroeconomic environment. Already, since the Great Recession of 2008, certain conditions have been created, which are summarized by the prevalence of low interest rates, low inflation, and low investment. The new situation created by Covid-19 includes all of the above. In essence, however, as we have already noted, the pandemic functioned as an accelerator and exacerbated existing problems.

In general, a pandemic outbreak has a number of expected negative consequences as it affects the economy as a whole. In particular, it reduces the supply of labor due to deaths and illnesses increases business costs, changes consumer habits, and the investment profile of countries, as investors reconsider their positions based on the reaction of government policies. At the same time, pandemics make economies more vulnerable to macroeconomic imbalances.

Covid-19 had a clear negative effect on the side of supply as factories and businesses closed and the operation of supply chains (OECD, 2020) were disrupted. The impact on demand is more difficult to measure, but it is crucial to identify them, because in terms of economic policy they are easier to deal with than supply deficiencies.

Changing consumer prices may indicate whether Covid-19 has had a major impact on demand. In particular, if the overall effects of supply dominate the effects of demand, we should see prices rise as activity decreases, in a kind of repetition of the 1970 stagflation.

In the period between February 20 and 28, 2020, markets were hit by the Covid-19 shock, and then the global economy was hit by other shocks (on February 28 the Fed chair said it would act appropriately, this was followed on March 3rd by an intermeeting, 50 b.p. rate cut, then followed the 3 March pledge by G7 ministers to “use all appropriate policy tools” to deal with the shock, the subsequent dispute between Saudi Arabia and Russia over oil, and the extension to the whole of Italy of emergency measures to contain Covid-19).

The Chicago Board Options Exchange’s Volatility Index (VIX), as a measure of volatility in money markets, has more than doubled and global stock has lost about 10%. However, there is no sign of rising inflation in raw material prices. The impact of the Covid-19 shock was negative, particularly on energy and agricultural products.
Those developments show that the shock of the pandemic had significant effects on reducing demand. The total impact on demand from the shock is at least as significant as the total impact on supply and, therefore, policies that increase demand are justified.

However, the concern in such a situation, where there are disturbances in both supply and demand, is whether the Covid-19 pandemic can cause a demand-driven slump that will provide a boost to supply-demand loop and open the door to stagnation traps induced by any animal spirits (Fornaro & Wolf, 2020).

In a typical New Keynesian model (Gali, 2009), as in Keynesian economics, employment and product are determined by aggregate demand which in turn is determined by productivity growth. The reason for this is that faster productivity growth boosts agents’ expectations of future income, inducing them to spend more in the present (Lorenzoni, 2009). This result creates a positive relationship between increased productivity and employment. However, the Covid-19 pandemic negatively affects expectations for future productivity growth resulting in a demand-driven recession (Fornaro & Wolf, 2020) with reduced employment and manufactured output.

In reality, however, the channel through which productivity growth passes are company investments which, in turn, depend on demand. When demand is high, the return on investment is high, and vice versa. Thus, there is a positive relationship between productivity growth and aggregate demand. Suppose the pandemic creates a negative shock. The initial shock to supply reduces demand but now lower demand pushes businesses to reduce investments, a fact which in turn creates a drop in productivity growth. In turn, lower productivity growth creates a further drop in demand, which again reduces productivity growth. So, a vicious circle is created, a supply-demand doom loop that strengthens the impact of the initial shock on employment and productivity growth.

However, in a period where we are at the zero-lower bound, the aggregate demand (AD) curve exhibits a kink. The horizontal part of the AD curve (Fornaro & Wolf, 2020) relates to a case where monetary policy is limited by zero interest rates and the economy faces liquidity traps. In this event, a negative productivity shock shifts the supply curve downward and creates two equilibrium points where the economy is in a liquidity trap and both growth and employment are depressed. This second equilibrium can then be thought of as a stagnation trap (Benigno & Fornaro, 2018). At which of the two equilibrium points the economy will be located at
depends on the expectations of economic agents. Pessimistic animal spirits can push the economy into a stagnation trap.

In order to address the above disturbances in supply and demand, the reaction of fiscal and monetary policy was necessary. Thus, governments increased fiscal benefits and encouraged banks to lend to troubled businesses. This way, they tried to mitigate the loss of income to the present, creating future imbalances.

But what are the implications for inflation? In the short term, inflationary pressure created by this massive adverse supply shock is offset by falling prices in basic commodities and oil. But what will then happen as the lockdown gets lifted and recovery ensues, following a period of massive fiscal and monetary expansion (Baldwin & di Mauro, 2020)? As stated by Goodhart and Pradhan (2020), inflation is expected to increase by 5–10% in 2021.

Relative concerns had arisen after the Great Recession of 2008 and the implementation of quantitative easing (QE), with fears of rising inflation not being verified. However, according to Goodhart and Pradhan (2020), pandemic policies have directly increased the broader measures of money, in contrast to QE where interventions remained within the banking system. Also, the speed with which economies will recover will play an important role, as the stronger the recovery, the more implemented policies will seem procyclical. Finally, China’s role in the global economy has changed, and with deflationary exports in the past, it is likely to develop into an element of inflationary pressure in the future.

**Note**

1. Omits reference to the crisis of 1843, which is not included in the data by Maddison.

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