Evolutionary Transformation of the Global System and the COVID-19 Pandemic: The Search for a New Development Trajectory

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Abstract

In this study, we aim to determine how the global turmoil of COVID-19 acts as a catalyst for global transformations. After examining recent sociological and economic implications of this pandemic crisis, we analyse specific theoretical frameworks that can be helpful to illuminate some of the features of the current global evolutionary readjustment from an elliptic point of view. These theoretical approaches are the techno-economic paradigm shift, the notion of 'endless transition', the fourth industrial revolution analytical framework, and the approach of 'new globalisation'. Finally, we identify that the current pandemic crisis has caused a 'stroke' to the world economy that accelerates developments and radically intensifies the pre-existing challenges. Especially for the less developed, stable, and resilient socio-economic systems and organisations (the case study of Cyprus is examined, respectively), we conclude that their survival and growth depends primarily upon their potential for adaptiveness, innovation, and on building efficient change management aptitudes and mechanisms.

Keywords: evolutionary global transformation, COVID-19 pandemic, economic development, techno-economic paradigm shift, endless transition, fourth industrial revolution, new globalisation, Cypriot socio-economic system, adaptiveness, change management

Introduction

Gramsci[3] once wrote that 'the crisis consists precisely in the fact that the old is dying and the new cannot be born; in this interregnum, a great variety of morbid symptoms appear'. From a converging point of view, this paper will explore to what

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[3] Antonio Gramsci, *Selections from the Prison Notebooks* (first published 1948, 11th edn, New York: International Publishers 1992) 270.

extent an evolutionary understanding of the crisis provides answers to the current global systemic transition following the changes caused by COVID-19 (the words pandemic and COVID-19 will be used interchangeably hereafter). Evolutionary socio-economic science treats systems and actors as subjects to constant movement caused by the forces of continuous innovation and overall mutations.[4] The critical question that is investigated by this stream of thought is what economic progress socio-economic systems achieve over time through a path of constant reversals and rebalances.[5] In this evolutionary theorisation, the generator of innovation —the capitalist firm and the entrepreneur primarily— is not treated according to conventional, mostly simplistic and 'myopic', neoclassical analytical tools and standards.[6] Instead, the evolutionary tradition uses biological analogies, treating the firm as an adaptive 'organism' with specific behaviours and an evolutionary hypostasis.[7]

Every 'institution', in generic terms, is also a critical concept for the perception of evolutionary change in this direction. In the institutionalist approach, an institution means the specific space-time framework that hosts the sum of the structures that generate culture and behaviour.[8] In this sense, the institutional background contributes dominantly to socio-economic development. Nowadays, especially after the pandemic crisis of COVID-19, the three elements of change in the evolutionary analysis of the economy, that is, innovation, business adaptation, and the evolution of the overall institutional background, seem to be drastically repositioned.

This study will try to determine whether the current coronavirus disease and consequent socio-economic crisis are accelerating global developments by providing an introductory analysis of the unfolding situation. The primary question asked is how do we expect socio-economic systems to change and rebalance? More spe-

[4] Joseph Schumpeter, *Capitalism, Socialism and Democracy* (first published 1942, Taylor & Francis e-Library, 2003.).

[5] Richard R. Nelson & Ors, *Modern Evolutionary Economics: An Overview* (Cambridge: Cambridge University Press, 2018).

[6] Charis Vlados, 'The Classical and Neoclassical Theoretical Traditions and the Evolutionary Study of the Dynamics of Globalization' (2019) 6 *Journal of Economics and Political Economy* 257-280; Sepehr Ghazinoory, Meysam Narimani, Shiva Tatina, 'Neoclassical versus Evolutionary Economics in Developing Countries: Convergence of Policy Implications' (2017) 27 *Journal of Evolutionary Economics* 555-583.

[7] Dimos Chatzinikolaou, Charis Vlados, 'Evolutionary Economics and the Stra.Tech.Man Approach of the Firm into Globalization Dynamics' (2019) 5(10) *Business, Management and Economics Research* 146-160.

[8] Geoffrey M. Hodgson, *Economics and Evolution: Bringing Life Back into Economics* (Cambridge: Polity Press, 1993).

cifically, concerning the less competitive and adaptive business ecosystems, what is the impact of the pandemic crisis, and what can we do about it? Concerning the latter, we will suggest that the post-pandemic recovery of the less developed socio-economic formations means the systematic strengthening of their innovation and adaptiveness potential. More specifically, they will need reinforcement in overcoming deficiencies related to change management and to successfully adapting to the emerging requirements of simultaneous competition and cooperation.[9]

Although the COVID-19 phenomenon is recent and the available data is relatively limited for an integrated forecast, the existing theoretical framework of the global systemic crisis seems to have an interpretative power that can unravel critical trends of future development and underdevelopment. In terms of a positive outcome, the pandemic crisis creates the conditions for accelerating technological modernisation in various socio-economic systems and sub-systems, in sectoral, spatial, and entrepreneurial terms. In contrast, it simultaneously creates challenges for firms, industries, and national economies that face adaptation problems. In other words, we believe that this study contributes to the relevant scientific dialogue as it links the dynamics of overcoming the global crisis to the current dynamics of developments caused by the COVID-19 pandemic.

Concerning the methodology of this study, we will attempt to answer these questions by following five steps:

A. Social and economic implications (timely forecasts and policy responses) are presented to explore how the COVID-19 crisis affects the socio-economic environment.
B. The perceptual context of global evolutionary change and crisis is explored by utilising relevant analytical contributions.
C. Subsequently, the aim is to investigate whether the COVID-19 crisis is accelerating or repositioning global developments towards a new phase of globalisation.
D. Cyprus is examined as a specific case study to show the certain challenges arising for the various socio-economic systems.
E. In conclusion, possible ways to enhance the resilience and flexibility of firms (socio-economic organisations) are explored, stressing that adaptability and efficient change management are the necessary skills to deal with the ubiquitous crisis.

[9] Stefan Markovic & Ors, 'Business-to-business Open Innovation: COVID-19 Lessons for Small and Medium-Sized Enterprises from Emerging Markets' (2021) 170 *Technological Forecasting and Social Change*; Adam M. Brandenburger, Barry Nalebuff, *Co-opetition: A Revolution Mindset that Combines Competition and Cooperation* (New York: Doubleday, 1996).

Gradual Unfolding of the Post-COVID-19 Era via Structural Socio-economic Turbulence

Since the end of December 2019, when a group of patients with 'atypical pneumonia' was identified in Wuhan, China, an 'external' dynamic of chain reactions has erupted. The current pandemic crisis of COVID-19 rearranges the global socio-economic system in unpredictable directions. In this section, we explore sociological implications of the current crisis and recent projections of international organisations, as well as what proposals are formulated as a way of dealing with the pandemic. Our goal is to explore elements of the evolution of the world economy in which COVID-19 creates additional challenges.

It becomes increasingly apparent that we are facing an unprecedented crisis in quantitative and qualitative terms that will profoundly change the global economy and society. According to António Guterres, Secretary-General of the United Nations (UN),[10] our world has entered a rare global health crisis. If we divert funding from humanitarian needs, old diseases will flourish again, more children will become malnourished, and violent extremism will become even more vigorous. Through the voice of Guterres, it is argued that the UN should plan to aid the weakest countries so that humanity can traverse a path of a sustainable and inclusive economy.

Therefore, the global socio-economic system is navigating a multidimensional crisis. In the wider social sphere, the pandemic and the lockdown measures have even caused the reorganisation of social movements, since the spread of the virus has become the primary issue.[11] A typical example of this regression is that many national governments in the early stages of the pandemic were led to the cancellation or postponement of democratic elections; this development undoubtedly calls into question the principle of democratic succession of governments, at least in the most advanced countries.[12] As a result, a backsliding is also observed in the field

[10] United Nations, 'Global Humanitarian Response Plan: COVID-19 United Nations Coordinated Appeal: April–December 2020' (2020), available at: https://www.unocha.org/sites/unocha/files/Global-Humanitarian-Response-Plan-COVID-19.pdf (last accessed 28 June 2021).

[11] Cristina Flesher Fominaya, 'From Classical Syndicalism to Spain's 15-M Movement' in Athina Karatzogianni, Michael Schandorf, Ioanna Ferra (eds), *Protest Technologies and Media Revolutions, Digital Activism and Society: Politics, Economy and Culture in Network Communication* (Emerald Publishing Limited, 2020) 197-209.

[12] International Institute for Democracy and Electoral Assistance, 'Global Monitor of COVID-19's Impact on Democracy and Human Rights' (Stockholm: 2020), available at: https://www.idea.int/sites/

of promoting human rights, since, as reported by the UN,[13] a rise in nationalism, authoritarianism, and populism is recorded nowadays, which results in increased xenophobia, gender-based and sexual violence, discrimination against specific communities, and mistreatment of migrants.

The ramifications of the pandemic crisis in promoting human freedom and democracy have led to various social readjustments.[14] Social movements have been forced to adapt to the new environment, with some analysts pointing out that after the lockdowns a new wave of movements will emerge that will be characterised by decentralised reactions which might benefit human freedom worldwide.[15] Overall, the central message communicated by most of these sociological approaches on the consequences of the conjuncture of the pandemic (although we see this crisis not as a 'conjuncture' but as a structural mutation, as we will point out in the following sections) is that a new crisis of authority has emerged nowadays. In this crisis, inequalities and social injustice seem to intensify.[16]

In terms of the economic base, various international organisations have forecasted the projected output of the post-COVID-19 global economy. According to the Organisation for Economic Cooperation and Development (OECD), the world economy is balancing on a tightrope.[17] Amidst the growing uncertainty in June 2020 when this report was published, two scenarios seemed likely to happen: the double-hit and the single-hit scenario.

- In the double-hit scenario, after a second pandemic wave would have taken place until the end of 2020, lockdowns would return with the world econom-

default/files/publications/COVID19_Global-Monitor-Methodology-and-Codebook.pdf (last accessed 28 June 2021).

[13] United Nations, 'COVID-19 and Human Rights: We are All in This Together' (2020), available at: https://www.un.org/en/un-coronavirus-communications-team/we-are-all-together-human-rights-and-covid-19-response-and (last accessed 28 June 2021).

[14] Louise Haagh, 'Rethinking Democratic Theories of Justice in the Economy After COVID-19' (2020) 7 *Democratic Theory* 110-123.

[15] Such reactions (characterised as 'pre-modern protest logics') are banging pot protests, toppling statues symbolising the enemy, the occupation of buildings, and similar spontaneous forms of actions. See the following: Paolo Gerbaudo, 'The Pandemic Crowd: Protest in the Time of COVID-19' (2020) 73 *Journal of International Affairs* 61-76.

[16] Geoffrey Pleyers, 'The Pandemic is a Battlefield: Social Movements in the COVID-19 Lockdown' (2020) 16 *Journal of Civil Society* 295-312.

[17] OECD, *OECD Economic Outlook, Volume 2020 Issue 1: Preliminary Version* (Paris: OECD Publishing), available at: https://www.oecd-ilibrary.org/economics/oecd-economic-outlook/volume-2020/issue-1_0d1d1e2e-en (last accessed 28 June 2021).

ic output sinking by 7.6% that year before climbing back 2.8% in 2021. As a result, the unemployment rate in OECD countries would double to 10%, and no rapid recovery would occur in 2021.

- In the single-hit scenario, the world would not enter a new wave, with global economic activity dropping by 6% and unemployment reaching 9.2% from 5.4% in 2019. As a result, living standards would fall less sharply than with the double-hit, although five years of income growth would have vanished in the advent of 2021.

It seems that the double-hit scenario has been materialised in 2021. This OECD report also suggested that significant resources in health infrastructure and policies are necessary for actual recovery. First, governments should invest in national health systems while identifying and reducing infections by cooperating in the appropriate international framework for vaccine production. Second, they must incentivise workers and companies to move to not-affected sectors, helping the restructuring of firms, accelerating digitisation, and providing liquidity while preparing for the subsequent financial turmoil. Finally, they need to maintain minimal interest rates by investing in tax policies that promote economic and business activity and the well-being of their citizens.

As far as the International Labour Organisation (ILO) is concerned, the approximate amount of working-hour losses was announced in the report called 'ILO monitor: COVID-19 and the world of work'.[18] The first quarter of 2020 signalled a 5.4% loss of global working hours compared to 2019 (corresponding to 155 million full-time jobs). In the second quarter of 2020, the ILO estimated that the fall would reach 14% worldwide, which is equivalent to 400 million full-time jobs. The ILO suggested a policy framework of four pillars to tackle the COVID-19 crisis. The first pillar concerns the stimulation of the economy and employment through active fiscal and monetary policy, and the second one concerns the support of companies and incomes through social protection policies and tax provisions for businesses. The third one involves the health protection of employees in their working environment, the adoption of new arrangements, such as teleworking, and the prevention of discrimination and exclusion. Finally, the fourth pillar is about strengthening social dialogue, collective bargaining, and labour relations institutions.

[18] ILO, 'ILO Monitor: COVID-19 and the World of Work. Fifth Edition. Updated Estimates and Analysis' (30 June 2020), available at: https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/briefingnote/wcms_749399.pdf (last accessed 28 June 2021).

In its 'Global Economic Prospects' report, the World Bank investigated three direct possible scenarios for the global economy.[19] The baseline scenario calculated the contraction of global output at 5.2%, the downside scenario at 8%, and the 'favourable' upside scenario at approximately 4%. Even in the upside scenario, the global recession of 2020 would be twice as deep as that of 2009. The pandemic crisis would mostly hit the developed nations, with developing and emerging economies also facing the broad consequences of the disruption of global value chains. According to the report, the pandemic crisis has dealt a devastating blow to an already sensitive and relatively anaemic global economy. The applied restrictions and lockdowns, which reduce the economic activity of consumers and producers, lead the global socio-economic system towards recession. The World Bank report included the strengthening of the health care systems and the short-term stimulation of economic activity and employment in the immediate policy measures. In the long-term, governments and international organisations would need to promote reforms to constrain some of the repercussions of the pandemic, improve the business environment, and expand investment in education and public health.

In the World Economic Outlook (WEO) report, the International Monetary Fund (IMF) presented COVID-19 as a 'crisis like no other', noting that the impact is acute on low-income households and interrupts the significant progress made in battling extreme poverty. The WEO argued that making an accurate projection is highly uncertain due to the timespan of applied quarantine, the subsequent voluntary social distancing, the ability of the displaced workers to secure employment, and the security measures within firms. The latest WEO revised the predictions of the impact of COVID-19 for the worse, since it forecasted that the recovery would be more gradual than the initial projections. In 2021, global growth would reach 5.4%, which is 6.5% less than the pre-COVID-19 forecast of January 2020 (Table 1).

Table 1: World Economic Outlook growth projections, real GDP, annual per cent change, according to the IMF.[20]

	2019	2020 (projection)	2021 (projection)
World output	**2.9**	**-4.9**	**5.4**
Advanced economies	**1.7**	**-8.0**	**4.8**
United States	**2.3**	**-8.0**	**4.5**

[19] World Bank, 'Global Economic Prospects' (Washington, DC: The World Bank, 2020).
[20] Ibid.

Euro Area	**1.3**	**-10.2**	**6.0**
Germany	0.6	-7.8	5.4
France	1.5	-12.5	7.3
Italy	0.3	-12.8	6.3
Spain	2.0	-12.8	6.3
Japan	0.7	-5.8	2.4
United Kingdom	**1.4**	**-10.2**	**6.3**
Canada	**1.7**	**-8.4**	**4.9**
Other Advanced Economies	**1.7**	**-4.8**	**4.2**
Emerging Markets and Developing Economies	**3.7**	**-3.0**	**5.9**
Emerging and Developing Asia	**5.5**	**-0.8**	**7.4**
China	6.1	1.0	8.2
India	4.2	-4.5	6.0
ASEAN-5	4.9	-2.0	6.2
Emerging and Developing Europe	**2.1**	**-5.8**	**4.3**
Russia	1.3	-6.6	4.1
Latin America and the Caribbean	0.1	-9.4	3.7
Brazil	1.1	-9.1	3.6
Mexico	-0.3	-10.5	3.3
The Middle East and Central Asia	**1.0**	**-4.7**	**3.3**
Saudi Arabia	0.3	-6.8	3.1
Sub-Saharan Africa	**3.1**	**-3.2**	**3.4**
Nigeria	2.2	-5.4	2.6
South Africa	0.2	-8.0	3.5
Low-Income Developing Countries	**5.2**	**-1.0**	**5.2**

Table 1 shows the sum of the WEO growth projections for the different countries and regions across the planet. Growth in developed countries was projected at -8% for 2020, a significantly more negative forecast than in April 2020.[21] This downward revision suggested a slower recovery for fear of new measures due to the spread of the pandemic. The WEO predicted that growth in developed countries in 2021 would reach around 4.8%. It also referred to the fact that all world regions would perform poorly, but with fluctuations due to the different sectoral

[21] International Monetary Fund (IMF), 'World Economic Outlook: The Great Lockdown' (Washington, DC: IMF April 2020).

structure of economies. China would recover faster than other economies after the recession in the first quarter of 2020, mainly due to political stimulus. India was expected to shrink after the extended lockdown, while the recession for 2020 in Latin America would reach 10%. The WEO predicted that the growth rate of 2021 for the emerging market and developing economies would increase by 5.9%, where China's growth of 8.2% would be decisive. Overall, it seems that the projections made were largely confirmed, although, in some cases, the crisis appears to have hit various economies harder compared to the initial estimations.[22]

Concerning policy implications, the WEO of the IMF underlined that multilateral cooperation is essential. Governments should collaborate to solve trade and technological tensions that might hinder quick recovery. At the same time, they must invest in the reduction of gas emission that was achieved during the lockdowns, implementing their commitments to slow down climate change. According to this report by the IMF, the global community must ensure that mechanisms are in place to prevent the recurrence of such a disaster by creating global stockpiles of essential supplies and protective equipment, funding related research, and supporting public health systems.

The last report chosen for discussion, as it conveys an actual policy debate, involves the conclusions from the Special meeting of the European Council held between 17 and 21 July 2020.[23] The goal of the multi-day negotiations was to implement emergency measures to protect the health of the European citizens and prevent the economy from collapsing. After declaring the COVID-19 crisis a 'challenge of historic proportions', the European Union (EU) leaders stated in the conclusions that, although maximum attention is still needed in the sanitary situation, the emphasis is now shifting towards reducing the socio-economic catastrophe. In this context, European leaders decided to activate surprisingly large grants and loans through the instruments and programmes of the Multiannual Financial Framework (MFF) and a specific Recovery effort under Next Generation EU (NGEU), as an attempt to transform the EU towards the European Green Deal, the digital revolution, and resilience. According to the conclusions, these programmes

[22] Anastasia Arkhipova, Valentina Turkova, Olga Kuznetsova, 'World Economy Development Forecast During the COVID-19 Pandemic' 751 (Presented at the IOP Conference Series: Earth and Environmental Science, 2021).

[23] European Council, 'Special Meeting of the European Council (17, 18, 19, 20 and 21 July 2020) –Conclusions' (Brussels, 21 July 2020), available at: consilium.europa.eu/media/45109/210720-euco-final-conclusions-en.pdf (last accessed 28 June 2021).

are significant because the impact of the crisis is far-reaching, and, therefore, Europe must act to protect the most affected regions and sectors. Among other things, the programmes can and should promote research, innovation, and, primarily, the digital transformation and competitiveness of small and medium-sized enterprises (SMEs).

From a concluding perspective, international organisations have foreseen an extraordinary fall in the global output. For 2021, they did not expect global growth surpassing the magnitude of the preceded recession; a trend reaffirmed in mid-2021 when these lines were written. Inequality and poverty are to be reinforced, and if governments do not act quickly, older diseases may re-emerge, together with political extremism. These international organisations also suggest necessary policy responses, not only of a direct 'fire-fighting' reach but also of long-term directions for improving the business environment. At the business level, we observed policy responses such as promoting research, innovation, and digital transformation to enhance competitiveness, and emphasising SMEs, which have been hit hard by the current pandemic.

Table 2: Sum of the suggested policy directions by international organisations after the COVID-19 pandemic.

Pillar of policy response	**Required measures**
Health	- Invest in national health systems while identifying and reducing infections by cooperating in the appropriate international framework for vaccine production. - Strengthen health care systems. - Build mechanisms to prevent the recurrence of such a disaster by creating global stockpiles of essential supplies and protective equipment, funding related research, and supporting public health systems.
Business	- Incentivise firms to move to not-affected sectors. - Help the restructuring of firms. - Accelerate digitisation. - Support companies and incomes through social protection policies and tax provisions. - Promote research, innovation, and the digital transformation and competitiveness of enterprises and SMEs.

Workers	- Incentivise workers to move to not-affected sectors. - Protect the health of employees in their working environment. - Adopt new arrangements, such as teleworking, and prevent discrimination and exclusion.
Macroeconomic environment	- Provide liquidity while preparing for the subsequent financial turmoil. - Maintain minimal interest rates by investing in tax policies that promote economic and business activity and the well-being of citizens. - Stimulate the economy and employment through an active fiscal and monetary policy.
Long-term directions	- Improve the business environment. - Expand investment in education and public health. - Invest in multilateral cooperation. - Invest in the reduction of gas emission achieved during the lockdowns by implementing commitments to restrict climate change. - Improve the development potential of the most affected regions and sectors.

Table 2 sums up the policy responses suggested by these international organisations; it is worth mentioning that —as we have shown by presenting recent, significant sociological approaches— the path to achieve enhanced social justice is not through the centralisation of political means but by stimulating the further participation of civil society.[24] Overall, the new era that seems to arise reframes the critical questions concerning tomorrow's global development: poverty versus wealth, equality versus inequality, real versus financial economy, freedom versus control, economy versus humanity and nature, and uniformity versus diversity.[25]

Transformations of the Global Development Modus Operandi

How can we understand and interpret these developments based on the analytical equipment provided by economic science to proceed with accurate future predic-

[24] Donatella Della Porta, 'How Progressive Social Movements Can Save Democracy in Pandemic Times' (2020) 12 *Interface: A Journal for and about Social Movements* 355-358.

[25] Charis Vlados, Nikolaos Deniozos, Demosthenes Chatzinikolaou, 'Global Crisis, Innovation and Change Management: Towards a New Systemic Perception of the Current Globalization Restructuring' (2018) 11 *International Business Research* 9-29.

tions? According to Schumpeter,[26] the phenomena of imbalance caused by entrepreneurial innovation tend to self-regulate and cease their accumulation, and this continuous evolutionary adaptation creates the paradox of 'stable instability' of the global system. Thus, to use the words of Schumpeter, there is instability in the 'System' but no economic instability of the 'Order'.

Global Change in Evolutionary Context

Over the last years, several analysts and policymakers have introduced concepts that attempt to interpret global change. They focus on different phases of the evolution of the world economy, presenting various explanatory schemes that aim to understand and predict history. The theoretical frameworks that we have distinguished for the needs of this study are, in chronological order of appearance in the literature, the 'techno-economic paradigm shift', the 'endless transition', the 'fourth industrial revolution', and the 'new globalisation'; it is worth mentioning that we have employed an elliptical and critical perspective, picking specific theorisations that we deemed the most useful along the way. The passages we use below are those in which these notions first appeared.

(a) Techno-economic paradigm shift.

In the paper published in 1983 under the title 'Structural Change and Assimilation of New Technologies in the Economic and Social Systems', C. Perez introduces the concept of 'techno-economic paradigms':

> We suggest that the upswing of a Kondratiev long wave begins when a harmonic complementarity has been achieved, through adequate social and institutional innovations, between the "technoeconomic paradigm", which emerged and developed in the previous Kondratiev peak and downswing, and the socio-institutional climate. This unleashes the swarming process and generates the wave of infrastructural investment that induces the attainment of full growth potential, through accelerated diffusion and ultimate generalisation of the paradigm. It is a period of bandwagon effects, when one after another all productive units—and even social activities of all kinds—tend to apply what is then generally considered as the 'optimal or ideal form of productive organisation.[27]

[26] Joseph Schumpeter, 'The Instability of Capitalism' (1928) 38 *The Economic Journal* 361-386.

[27] Carlota Perez, 'Structural Change and Assimilation of New Technologies in the Economic and Social Systems' (1983) 5 *Futures* 357-375.

In this theoretical perspective, Perez uses the cyclical behaviour of the capitalistic system of Schumpeter[28] and the long waves of Kondratiev[29] that correspond to widespread depressions experienced every five or six decades. In contrasting these two works, Perez argues that Schumpeter laid the foundations of cyclical analysis by using innovation as the causation mechanism, contrary to Kondratiev, who established the idea of long waves as a measurable manifestation of the harmonic or disharmonious behaviour of the socio-economic and institutional system. Concerning the periodic adjustment followed by the global economy, Perez hypothesises the long waves as successive modes of development, which correspond to specific technological styles. These 'styles' or 'paradigms' denote the optimal productive organisation developed to answer the current and relatively stable global dynamics.

In this context, Perez implies that the post-war era marked the solidification of a specific modus of development in the leading industrial countries, which created the necessary harmonisation between the institutional framework and the technological style. For her, a structural crisis or a depression, according to the Kondratiev long wave of development, is a disruption between the dynamics of the economic sub-system and the socio-institutional framework. It is a painful phase during which a dynamic harmony is re-established both in the parts and the whole of the socio-economic system.

Therefore, Perez does not focus on the ways the institutional arrangements are structured periodically but penetrates the productive and organisational processes. Today, after the current pandemic crisis, some scholars point at the insertion of our world into a 'sixth Kondratiev wave',[30] where medical, additive, nano, information, and cognitive technologies are expected to play a dominant role.[31]

(b) Endless transition.

In 1998, H. Etzkowitz and L. Leydesdorff introduced the concept of 'endless transition'. The following passage summarises the content and potential reach of this theoretical perspective:

[28] Joseph Schumpeter, *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process* (New York: McGraw-Hill, 1939).

[29] Nikolai Kondratieff, 'The Long Waves in Economic Life' (1935) 17 *The Review of Economics and Statistics* 105-115.

[30] After the wave of information technology that started around the 1990s.

[31] Leonid Grinin and Andrey Korotayev, 'Covid-19 Pandemic, Geopolitics, and Recession' (June 2020) Working Paper 4 (Moscow: International Center for Education and Social and Humanitarian Studies).

> The linear model [of innovation] is currently being supplanted by new ideas and alternative models based upon interdisciplinary and spiral links between technology and science [...] Beyond the "endless frontier" of linear models lies a continuous series of experiments on the relationship between science, industry and government in creating the conditions for future innovation: the 'endless transition.' Although this transition is an international phenomenon, it does not follow a single course. Nevertheless, the goal is the same: to build upon existing resources so as to create niches of technological innovation and secure a place within the division of labour in the global economy.[32]

Etzkowitz and Leydesdorff formulated the 'endless transition' approach as an extension of V. Bush's 'endless frontier',[33] which constituted the 'conceptual compass' for the post-war articulation of science policies. Bush argued that the US government and industry are directly dependent upon universities and research institutes to expand the basic scientific frontiers and foster trained scientific investigators. Etzkowitz and Leydesdorff underlined the constant repositioning of the role of sciences in society. The reason is that the boundaries between the public and the private sphere, science and technology, and university and business have become increasingly blurred.

By presenting the need to conceptualise a 'spiral model of innovation', which they had previously introduced as the 'triple helix' model,[34] the authors argued that the State's role, for developed and developing nations alike, is crucial in the design of technology and science policy. In this context, the former Soviet Union countries and Central Europe are not the only economies in transition: All socio-economic systems are facing a crisis of global transition to a knowledge-based economy. The 'endless transition' means that the complex dynamics of social relations between the different institutionalised spheres (government-academia-industry), which are 'locked' in a regime of technological innovation and organisational reform, come to the fore.

Although Etzkowitz and Leydesdorff did not describe the overall change of the global system, and even though this concept of endless transition has not been uti-

[32] Henry Etzkowitz and Loet Leydesdorff, 'The Endless Transition: A "Triple Helix" of University-Industry-Government Relations: Introduction' (1998) 3 *Minerva* 203-208.

[33] Vannevar Bush, *Science, the Endless Frontier; A Report to the President on a Program for Postwar Scientific Research* (Washington, DC: Office of Scientific Research and Development, 1945).

[34] Henry Etzkowitz and Loet Leydesdorff, 'The Triple Helix -- University-Industry-Government Relations: A Laboratory for Knowledge Based Economic Development' (1995) 14 *EASST Review* 14-19.

lised and enriched today, we believe that it has significant interpretive power. Developments in the field of technological innovation, as the authors report, are due to fundamental changes at the organisational and institutional level, which can no longer be perceived with a linear and mechanistic interpretation.

(c) Fourth industrial revolution.

K. Schwab, Founder and Executive Chairman of the World Economic Forum, is considered to have coined (or, more accurately, popularised and described thoroughly)[35] the term 'fourth industrial revolution' in an article published in foreign affairs in 2015[36] and later at the Davos meeting that took place in 2016.[37] Schwab introduced this theoretical framework with the following words:

> We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society. The First Industrial Revolution used water and steam power to mechanise production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterised by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.[38]

A central concept in perceiving the unfolding fourth industrial revolution is the evolution of the so-called 'cyber-physical systems',[39] meaning the physical, biolog-

[35] The term Industry 4.0 preceded the concept of the 'fourth industrial revolution' in a high-tech strategy project of the German government to promote the computerisation of manufacturing. BMBF-Internetredaktion, 'Future Project Industry 4.0 - BMBF' (Zukunftsprojekt Industrie 4.0 - BMBF) (2016), available at: https://www.bmbf.de/de/zukunftsprojekt-industrie-4-0-848.html (last accessed 28 June 2021) (in German).

[36] Klaus Schwab, 'The Fourth Industrial Revolution', (*Foreign Affairs,* 12 December 2015), available at: https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution (last accessed 28 June 2021).

[37] Id., *The Fourth Industrial Revolution* (New York: Crown Business, 2016).

[38] Schwab (no 34).

[39] Helen Gill, 'A Continuing Vision: Cyber-Physical Systems' (Annual Carnegie Mellon Conference on Electricity Industry. Energy Systems: Efficiency, Security, Control, 10-11 March 2008).

ical, and engineered systems whose behaviour is a fully integrated hybridisation of computational (logical) and physical activity. Schwab notices that the impact of these digital technologies is going to manifest radically because of the increased automation.

By acknowledging the overarching effect of the fourth industrial revolution in society and economy, Schwab analyses (1) the emerging opportunities and threats, (2) the impact in business, (3) in government, (4) in people, and (5) in those elements that they are going to shape the near future. These five points are analysed and described as follows:

1. The possible increase of incomes and the diffusion of products and services at virtually no cost directly improves the consumer's life worldwide. However, as automation substitutes manual labour gradually, an exacerbation of inequality and social tensions between the 'high-skill/high-pay' and the 'low-skill/low-pay' workers is highly possible.
2. Even the best-connected and well-informed companies cannot predict the changes brought by the acceleration of innovation and the velocity of disruption. Therefore, well-established incumbents are disrupted faster because of the newcomers who have access to all kinds of digital platforms, which changes the demand-side drastically by giving new options to the consumers. The simple digitisation gives its place to innovation based on the combination of technologies.
3. Citizens begin to engage directly with their governments, which now have new digital capabilities to increase their control and repressive power. As a result, legislators and regulators need to continuously adapt to the fast-changing environment to understand what they are regulating by collaborating closely with businesses and civil society. At the same time, today's State conflicts become increasingly 'hybrid', combining traditional battlefield techniques with elements previously associated with non-State actors.
4. Developments in biotechnology and artificial intelligence are redefining what it means to be human by causing us to redefine our moral and ethical boundaries. However, the 'uncritical' integration of technology can lead to losing some of our 'quintessential' human capabilities.
5. Schwab concludes that we need to grasp the opportunity and direct this new epoch toward our shared goals and values. We must shape a future by putting people first and empowering them. The current era might lead to the 'robotisa-

tion' of humanity, but it can also drive our future towards a moral consciousness based on a shared sense of destiny.

(d) New globalisation.

Ch. Vlados notes that the outgoing period of globalisation has matured structurally, gradually giving its place to the new globalisation.[40] Arguing that the mutating crisis of capitalism that has been 'lurking' over the last years is structural and not superficial or simply 'conjunctural', and after periodising the phases of development of the post-war world economy, Vlados expresses this approach using the following words:

> Everything shows that, through the crisis, the 'new globalisation' is trying to emerge and take shape, with significant liquidity to this day, with a particularly challenging 'childbirth', with the future structural outline still unclear, and in intense socio-economic and political upheavals and shocks that are articulated and intertwined now on a planetary level. [...] Today, the overcoming of crisis and the restructuring of the global system, that is, the insertion into a trajectory of a new and stable model of development, requires a leap of innovation aligned and implemented at all levels. Behind the necessity of this 'innovative transcendence' arises inevitably the problem of designing requisite new methodologies and mechanisms of change management, which will enable and make possible this transition.[41]

This evolutionary step of the world economy described in the new globalisation approach comes after the 1945-1973 first post-war phase, the 1973-1980 'pre-globalisation' phase, and 1980-2008 globalisation phase. The structure of the international regime, the central model of crisis and development, and the dominant type of business innovation are the three interpretive tools that Vlados uses to determine the lifecycle of the distinct phases. In this sense, the current crisis of the COVID-19 pandemic accelerates and exacerbates some of the evolutionary trends that have been evident in the last decade (Figure 1).

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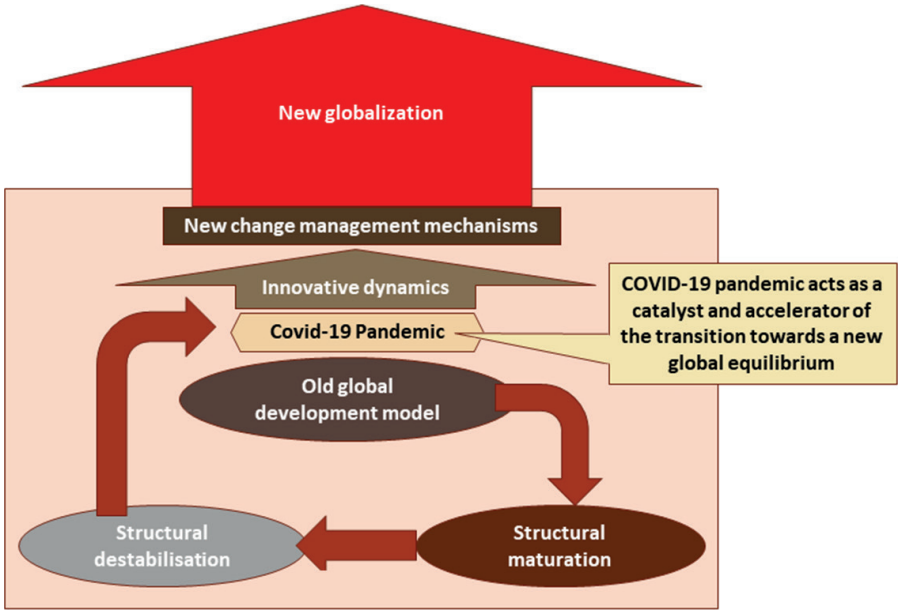
[40] Charis Vlados, 'The Phases of the Postwar Evolution of Capitalism: The Transition from the Current Crisis into a New Worldwide Developmental Trajectory' (2019) 18 *Perspectives on Global Development and Technology* 457-488.

[41] Charis Vlados, *Global Crisis, Innovation and Change Management: The Stra.Tech.Man Perspective* (*Παγκόσμια Κρίση, Καινοτομία Και Διαχείριση Αλλαγής: Η Προσέγγιση Stra.Tech.Man*) (Athens: Kritiki Publications, 2017) 25–26 (in Greek).

Figure 1: COVID-19 accelerates evolutionary trends
that were apparent during the past decade.



The COVID-19 pandemic crisis comes as a catalyst and accelerator of the transition towards a new global equilibrium. This crisis is directly involved in the maturation and destabilisation of the old development model. What is still unclear is how to construct the necessary change management mechanisms to allow for a broad leap of innovation globally. However, besides innovation and change management, this approach suggests that the sought-after structural triangle of exiting the crisis and the 'new globalisation' must be built on a balanced democratic multipolarity, a new perception of innovative capitalism, and organic innovation within enterprises. The new globalisation can create favourable conditions for a growing number of people on the planet, as with the previous phase of globalisation, if the following conditions apply:

I. The cooperative hegemony of the Western partners would be renewed by repositioning the geostrategic role of the US in today's multipolar world[42] and by strengthening and deepening the institutions of the EU. However, today we observe a growing challenge to Western institutions, as these were built after

[42] Jury K. Krasnov, Anna U. Solovieva-Oposhnynskaya, Victoria V. Artiukh, 'Interstate Relations between Russia and Cyprus amid Geopolitical Contradictions in a Multipolar World' (2019) 31 *The Cyprus Review* 237-261.

the Bretton Woods (International Monetary Fund, World Bank) mainly from emerging economies such as the BRICS.[43] Moreover, the return of past geopolitical tensions and the outbreak of new ones, such as Turkey's questioning of the sovereign rights of Cyprus and Greece in maritime areas of the Eastern Mediterranean,[44] exacerbate the instability of Western institutions and weaken their dominance over the emerging multipolar regime.[45]

II. A new model of rebalanced capitalism would prevail, which would be refocused on the 'real economy' by cultivating liberalism from a rebalanced and robustly innovative perspective. This new model would require continuous restructuring of the capitalist productive and managerial potential, repositioning consumption patterns on a global scale, and mitigating the global financial bubble.

III. Innovative firms/organisations progressively perceive that innovation is 'organic' rather than mechanistic. Nowadays, the hierarchical and functional barriers within the innovative firms/organisations cease to exist, while the holistic integration into the external environment becomes increasingly and directly necessary. Thus, partial strategic, technological, and managerial priorities of the firms/organisations must give way now to the demand for complete integration in terms of strategy, technology, and management (the 'Stra.Tech.Man' synthesis, as phrased by the author) in an increasingly complex, evolving external environment.

From a neo-Schumpeterian perspective,[46] Vlados focuses on the organically perceived internal environment of the firm. Efficient change within the firm requires a dialectical mindset. The modern manager of change must clarify the main 'physiological' goals of development, before any action, in terms of internal synthesis of strategy, technology, and management (Stra.Tech.Man) of the different actors in all functional and spatial levels. Every socio-economic organisation must comprehend its specific 'physiological' strengths and weaknesses based on the synthetic view

[43] Charis Vlados, Dimos Chatzinikolaou, 'BRICS and Global Restructuring: Notes for the Near Future' (2020) 6 *Management and Economics Research Journal* 1-7.

[44] Michalis Kontos, 'Power Games in the Exclusive Economic Zone of the Republic of Cyprus' (2018) 30 *The Cyprus Review* 51-70; Zenonas Tziarras, 'The Eastern Mediterranean in Transition: Multipolarity, Politics and Power' (2017) 29 *The Cyprus Review* 259-263.

[45] Niall Duggan, 'BRICS and the Evolution of a New Agenda within Global Governance' in Marek Rewizorski (ed.), *The European Union and the BRICS: Complex Relations in the Era of Global Governance* (Cham, Switzerland: Springer 2015) 11-25.

[46] Dimos Chatzinikolaou, Charis Vlados, 'Schumpeter, Neo-Schumpeterianism, and Stra.Tech.Man Evolution of the Firm' (2019) 5 *Issues in Economics and Business (International Economics and Business)* 80-102.

of Stra.Tech.Man, which lays the foundations for the opportunities and threats to arise in today's challenging global economy.[47]

This unfolding reality calls for an understanding that every socio-economic organisation (of every size and reach) is like a 'tree', while the primary purpose of managing change is to improve the survival potential through innovation. In this profound context of crisis, a sensitive 'gardening' (holistic policies) is necessary for the 'living organisation' to survive and grow.

Possible Corridors in the Post-COVID-19 Era

As we have seen, many scholars have analysed the 'behaviour' of the world economy, focusing on the different structural characteristics that drive change. These approaches show that the global crisis and restructuring are expected processes in the evolution of capitalism (Table 3).

Table 3: Constituents of global change, according to different conceptions.

Mode of global evolutionary change	Timespan	Must happen for change to occur
Techno-economic paradigm shift	It requires five to six decades, based on the Kondratiev waves. Continuation is not defined, at least in the initial contribution.	A wave of infrastructural investment that induces the attainment of full growth potential must occur through accelerated diffusion and ultimate generalisation of the paradigm.
Endless transition	Endless.	The various actors need to build upon existing resources to create niches of technological innovation and secure a place within the division of labour in the global economy.
Fourth industrial revolution	Until the 'fifth industrial revolution'.	A fusion of technologies that blurs the lines between the physical, digital, and biological spheres must occur.
New globalisation	Until it arrives, grows, and then declines to give place to the new phase of global development.	A leap of innovation, aligned and implemented at all levels, must be materialised. Behind the necessity of this 'innovative transcendence' the problem of designing requisite new methodologies and mechanisms of change management, which will enable and make possible this transition, inevitably arises.

[47] Charis Vlados, 'On a Correlative and Evolutionary SWOT Analysis' (2019) 12 *Journal of Strategy and Management* 347-363.

Undoubtedly, the COVID-19 health crisis is a 'fire' that must be extinguished immediately. Needless to say, the socio-economic 'flora and fauna' of global capitalism will never be the same again after this 'extinguishing of fire'. The transition towards a new techno-economic paradigm, the fourth industrial revolution, the knowledge-based economy, and the new globalisation will accelerate after this 'fire'. These global transformation approaches successfully predict continuous crisis phenomena in capitalism that give rise to new species and socio-economic environments. They may not predict outbreaks of health emergencies accurately, but the evolutionary outline of these approaches can show how to deal with global evolutionary transformations, such as the 'stroke' of the COVID-19 pandemic.

The Current 'Stroke' of the Global Socio-economic System

As is well known in medical science, a stroke is caused when the bloodstream breaks off abruptly in a part of the brain.[48] A stroke occurs when a blood vessel that carries oxygen to the brain is blocked, causing sudden damage to brain tissue. Without a blood supply, the brain cells gradually die, and some sort of disability occurs depending on the area of the brain affected. Thus, the related symptoms arise and settle speedily and uncontrollably. The consequences of a stroke are often permanent because dead nerve cells cannot be replaced.

If the acute phase of the stroke is overcome, the interest shifts from taking necessary measures to provide vital support to more extensive and focused recovery efforts. The long-term rehabilitation objectives depend on the severity of the initial stroke, the patient's age, and their overall state of health. The rehabilitation program usually consists of various exercises and therapies, including neuro-muscle retraining, 'kinetic' learning and control, and functional activities that focus on relearning necessary self-service skills.

The reader must be wondering why we are writing this since we are not doctors in medicine and while our thematic focus is on the context of socio-economic sciences. As socio-economic scientists, we cannot find a more appropriate metaphor[49] to describe what is happening in the world economy nowadays.

[48] Peter H. Collin, *Dictionary of Medicine* (2nd edn, Chicago, IL; London, UK: Taylor & Francis, 1998).

[49] For a discussion on the use of metaphors in social sciences, the following works must be considered: George Lakoff, Mark Johnson, *Metaphors We Live By* (Chicago, IL: University of Chicago Press, 1990); Deirdre McCloskey, *The Rhetoric of Economics* (Madison, WI: University of Wisconsin Press, 1998).

Today, we are estimating that global capitalism is dealing with a 'stroke': we are on the verge of a peculiar and very harsh global stagflation crisis,[50] accompanied by the synchronous rise in unemployment and inflation. This world crisis is undoubtedly more onerous than those that occurred during the past decades and probably even more significant than the crisis of 1929, given its current, immediate, and unavoidable global synthesis and diffusion.

At the same time, available data prevent us from hoping for an easy 'V-type' of recovery and development, especially for the less powerful and competitive economies. We foresee a significant degradation of productive 'tissues' in several relatively vulnerable socio-economic environments, both in local and national terms. An 'L-type' development seems much more likely in many cases of less competitive (both local and national) economic systems.[51] It appears that we are facing the horizon of a sui generis situation of simultaneous collapse in supply and demand, with considerable price falls in some markets in a first phase (oil market, for example), which will probably be followed by significant price increases in many sectors worldwide due to a decline in economic activity. These events will bring substantial and adverse multiplier effects.[52]

Some analysts argue that COVID-19 accelerates the fourth industrial revolution and digital transformation, causing the rapid disappearance of several 'traditional' professions and the deepening of inequality by hindering the war against extreme poverty.[53] Others see this crisis as an occasional upset of the past equilibrium that will eventually end, allowing everything to return to 'normal'.[54]

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[50] Nicos Christodoulakis, *How Crises Shaped Economic Ideas and Policies* (Cham, Switzerland: Springer International Publishing, 2015).

[51] David Rodeck, 'Alphabet Soup: Understanding the Shape of a COVID-19 Recession' (*Forbes Advisor*, 8 June 2020), available at: https://www.forbes.com/advisor/investing/covid-19-coronavirus-recession-shape/ (last accessed 28 June 2021).

[52] Arshian Sharif, Chaker Aloui, Larisa Yarovaya, 'COVID-19 Pandemic, Oil Prices, Stock Market, Geopolitical Risk and Policy Uncertainty Nexus in the US Economy: Fresh Evidence from the Wavelet-Based Approach' (2020) 70 *International Review of Financial Analysis*.

[53] Luis Bonilla-Molina, 'Covid-19 on Route of the Fourth Industrial Revolution' (2020) 2 *Postdigital Science and Education*, available at: https://doi.org/10.1007/s42438-020-00179-4 (last accessed 28 June 2021); Nicola L. Bragazzi, 'Digital Technologies-Enabled Smart Manufacturing and Industry 4.0 in the Post-COVID-19 Era: Lessons Learnt from a Pandemic' (2020) 17 *International Journal of Environmental Research and Public Health*; György Czifra, Zsolt Molnár, 'Covid-19 and Industry 4.0' (2020) 28 *Research Papers Faculty of Materials Science and Technology Slovak University of Technology* 36-45.

[54] According to the Director-General of the World Health Organisation (WHO), we are not going back to the 'old normal'. The pandemic crisis has already changed the way we live, and part of adjusting to the 'new normal' is finding ways to live our lives safely. WHO, 'WHO Director-General's Opening Remarks

However, the current global change analysis can be better understood through a structural rather than a 'conjunctural' perspective. The structural view avoids interpretations that suggest any possibility of return to the past. In the structural conception, the disturbance of any macro-meso-micro socio-economic system is more of an endogenous rather than exogenous nature. At the same time, the upset of the balance is evolving in a natural and organic pattern, rather than being an unusual and occasional coincidence. In the structural perspective, the crisis is non-absorbable by the existing system, which leads to an entirely new dynamic equilibrium.[55]

In this context of global structural mutation, the very perception we hold of aggregate demand and supply and their balance in the international and national political economy must be repositioned. It seems that we are standing in front of a new phase where we must overcome the past 'confidence' in austerity in economic policy[56] by realising that 'austerity' for the post-COVID-19 era means a new policy mix that emphasises the rapid adaptation and strengthening of the supply side. At the same time, we must approach the inherent creation of crises in capitalism[57] (financial and broader socio-economic) from a realistic perspective,[58] which implies that we cannot ignore the limitations in terms of public spending. Therefore, we believe that a new global era leading to more significant benefits for a growing number of people across the world requires a new approach to the 'progressive' policy, which is aimed at fostering innovation and accelerating structures that favour investment confidence simultaneously without making choices that would jeopardise the fiscal and monetary stability at the national and global levels.[59]

Although the current pandemic crisis of COVID-19 occurred as an exogenous event, it manifested itself in the existing structures of the global system by transforming them drastically. In this sense, following the immediate health crisis which

at the Media Briefing on COVID-19 - 23 July 2020', available at: https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---23-july-2020 (last accessed 28 June 2021).

[55] Charis Vlados & Ors, 'Towards an Evolutionary Understanding of the Current Global Socio-Economic Crisis and Restructuring: From a Conjunctural to a Structural and Evolutionary Perspective' (2018) 9 *Research in World Economy* 15-33.

[56] Mark Blyth, *Austerity: The History of a Dangerous Idea* (Oxford University Press, 2013).

[57] Adam Tooze, *Crashed*: *How a Decade of Financial Crises Changed the World* (New York: Penguin, 2018).

[58] Andreas Andrikopoulos, Christos Nastopoulos, *Crisis and Realism* (Κρίση και Ρεαλισμός) (Athens: Propobos Publications, 2015) (in Greek).

[59] See global governance for the post-COVID-19 era: David L. Levy, 'COVID-19 and Global Governance' (2021) 58 *Journal of Management Studies* 562-566.

must be addressed directly with the development of vaccines,[60] the socio-economic problem the pandemic causes is an issue of systemic nature.[61] The main feature of contemporary global capitalism is that both positive and negative outcomes are transmitted rapidly in the form of chain reactions, recalibrating the structure and dynamics of the system irreversibly. In the next section, the development and underdevelopment dynamics displayed by the Cypriot economy are examined to indicate the challenges emerging in the post-COVID-19 era for the various socio-economic systems.

Cyprus' Socio-economic System and the Challenges for the Post-COVID-19 Era

Cyprus is a notable case of a country that seems to be facing structural weaknesses in terms of the necessary adaptation to this emerging socio-economic environment. Under a long history of geopolitical uncertainty due to the illegal possession of about 37% of its territory by the Turkish armed forces,[62] Cyprus has made significant strides, such as, most notably, its entry into the EU in 2004. However, the Cypriot socio-economic system —an organic part of the EU and the Eurozone— nowadays appears relatively insufficient in structural-competitiveness terms. As is the case with other southern European countries, the previous global crisis exacerbated this trend.[63]

According to various analysts focusing mainly on the macroeconomic and structural dimensions of the Cypriot economic crisis, the problem lies in the law abuses primarily by the banking system and the risks posed by the derived lack of confidence in the banking institutions.[64] Nevertheless, compared to Greece (with which

[60] Emily Lockey, 'COVID-19: The Race for a Vaccine' (2020) 21 *Journal of the Renin-Angiotensin-Aldosterone System* 1-3.

[61] Milan Zeleny, *Autopoiesis: A Theory of Living Organizations* (New York: Elsevier Science, 1980).

[62] Thekla Kyritsi, Nikolaos Christofis (eds), *Cypriot Nationalisms in Context* (London: Palgrave Macmillan, 2018).

[63] Kjell Hausken, Jonathan W. Welburn, 'Assessing the 2010–2018 financial crisis in Greece, Portugal, Ireland, Spain, and Cyprus' (2020) *Journal of Economic Studies*, available at: https://doi.org/10.1108/JES-08-2020-0406 (last accessed 28 June 2021).

[64] Nicos Pavlides, 'Cypriot Economic Crisis – Crime and Punishment: Great Expectations or Realistic Possibility?' (2015) 27 *Cyprus Review* 249-290; Petros Lois, Athina Christodoulou, 'Impact of the Global Financial Crisis and Resulting Bail-In on the Audit of Cypriot Banks' (2019) 31 *Cyprus Review* 79-118; Elisavet Constantinou, Nikolaos Yfantopoulos, John Yfantopoulos, 'The Economic Crisis, the Memorandum and the Reforms in the Health System of Cyprus' (2020) 37 *Archives of Hellenic Medicine* 832-843.

it shares common national and cultural ties), Cyprus has dealt more successfully with macroeconomic shocks and forced bailout programs (Cyprus received only one in 2013, whereas Greece has received multiple from 2010 onwards). Moreover, the Cypriot economy maintained a comparatively higher income, as well as its main international competitive advantages, because it is a small and relatively open economy with a reasonably flexible labour market.[65]

Amidst this volatile period,[66] the Cypriot socio-economic system was called upon to face the pandemic crisis from the beginning of 2020, when COVID-19 spread to Europe. According to various scholars, the response to the crisis was characterised by successful and swift intervention efforts, privileging expert involvement in shaping the response plan and minimising the transmission of the virus.[67] According to a study conducted in the Central Bank of Cyprus,[68] the crisis has tested the Cypriot economy, in which specific trade-offs have been implemented to deal with its consequences, devoting public resources to support the real economy and aiming at a rapid return to growth.

However, the real economy of Cyprus is characterised by structural deficiencies, which makes the future development outline particularly challenging for all socio-economic actors in the country. Specifically, the competitiveness of the Cypriot economy seems to have been transformed by the outbreak of the previous crisis, with the period 2013-2016 leading to significant wage cuts in the private and public sector and especially in construction, transport, and tourism.[69] It seems that the overall level of development of the Cypriot economy, aggravated by pre-existing

[65] Artemii S. Bobrov, 'Greece and Cyprus Amidst Debt Crisis: A Comparative Study' (2019) 63 *World Economy and International Relations* 84-89.

[66] Yiannos Katsourides, 'Circumstantial and Utilitarian Euroscepticism: Bailed-in Cyprus during and after the Eurozone Crisis' (2020) *South European Society and Politics* 1-28.

[67] Evangelia Petridou, Nikolaos Zahariadis, Stephen Ceccoli, 'Averting Institutional Disasters? Drawing Lessons from China to Inform the Cypriot Response to the COVID-19 Pandemic' (2020) 6 *European Policy Analysis* 318-327.

[68] Alexa Giagkou & Ors, 'Thematic Study: Measures and Decisions made to Address the Effects of the COVID-19 Pandemic' ('Θεματική Μελέτη: Μέτρα και Αποφάσεις που Λήφθηκαν για την Αντιμετώπιση των Επιπτώσεων της Πανδημίας COVID-19') (Central Bank of Cyprus, 2021), available at: https://www.centralbank.cy/images/media/pdf/FSD-Occasional-paper-on-measures-re-COVID-19.pdf (last accessed 28 June 2021) (in Greek).

[69] Marios C. Polemidiotis, Maria C. Papageorghiou, Maria G. Mithillou, 'Measuring the Competitiveness of the Cyprus Economy: The Case of Unit Labour Costs' (July 2019) Working Paper 2018-2 (Central Bank of Cyprus, 2018), available at: https://www.centralbank.cy/images/media/pdf/CBC-Working-Paper-on-ULC-2018-02.pdf (last accessed 28 June 2021).

comparative weaknesses, has been shaken after this crisis. These weaknesses are rooted in the relatively restrained local and national market environment and the distorted client perception of value.[70] In this context, internationalisation appears critical for the survival and development of SMEs (the actors hit the hardest by both crises).

Overall, having gone through periods of relative stability, peace, and economic growth, the Cypriot economy entered an era of turmoil from 2013 onwards, which was the result of cultural and socio-economic factors. Without ignoring phenomena occurring at the global level, the crisis of the Cypriot economy (like all other economies) starts from the internal environment, both at the level of the private and the public-regulatory sector; according to Theofanous,[71] it seems that the Cypriot socio-economic system is currently in search of a comprehensive new paradigm. Promising in this direction is the NGEU program, a large-scale fund to support EU Member States as mentioned above, which is structured in such a way so as to supply grants to projects aimed at fostering green energy and digital transformation to ensure the recovery and resilience of the participating countries and the EU.[72]

In terms of the challenges faced by the Cypriot economy, it can be argued that there is a need for further focus on strengthening the competitiveness of the productive system. Particular emphasis must be placed on reinforcing the skills and knowledge of SMEs, which seem to lag in terms of innovation and extroversion. Specifically, the relatively small size of many businesses and the predominance of informal forms in a relatively large number of firms in Cyprus creates obstacles in their adaptation process to the post-COVID-19 global system. In this context, many industries seem to be facing the pressing need for the rapid development of their strategic, technological and management structures, and especially the tourism sector that seems particularly vulnerable in the current crisis. At the same time, this need for rapid readjustment requires macroeconomic stability and the preparedness to follow the reforms that will necessarily accompany the NGEU. The next concluding section is dedicated to analysing more specific ways of dealing with the

[70] Demetris Vrontis, Alkis Thrassou, 'Internationalization of SMEs in Cyprus' in Leo P. Dana & Ors (eds), *Handbook of Research on European Business and Entrepreneurship: Towards a Theory of Internationalization* (Edward Elgar Publishing, 2008) 150-170.

[71] Andreas Theophanous, 'Cyprus in Search of a New Economic Paradigm' (2018) 30 *The Cyprus Review* 213-242.

[72] Claire Dupont, Sebastian Oberthür, Ingmar von Homeyer, 'The Covid-19 Crisis: A Critical Juncture for EU Climate Policy Development?' (2020) 42 *Journal of European Integration* 1095-1110.

immense current changes initiated by COVID-19 for the various socio-economic systems rather than Cyprus only.

Concluding Remarks: Challenges in the Emergence of the New Global Era

This article aimed to investigate whether the current COVID-19 pandemic crisis is accelerating global developments. After presenting some of the perspectives of international organisations on the expected regression of global socio-economic progress, we examined these developments through the prism of perceptions that study the organic transformation of the global socio-economic system over time.

It seems that our world is entering a complex evolutionary transformation with high velocity and intensity. It would be no exaggeration to claim that we are facing the techno-economic paradigm shift, the endless transition to the knowledge-based economy, the fourth industrial revolution, and the gradual emergence of the new globalisation at the same time. Using biological analogies to describe the ongoing change in the 'organism' of the global system, we concluded that the generalised cessation of productive activity resembles the case of a 'stroke'.

Today, a crisis is being added to the already feeble global socio-economic development, weakening structures at all levels.[73] COVID-19 causes radical and irreversible changes which are expected to have the most adverse effect on the weakest and less competitive socio-economic systems and organisations.[74] For example, at the Eurozone level, southern countries such as Cyprus and Greece, which host some of the less developed regional ecosystems in terms of competitiveness and innovation,[75] are expected to be hit significantly compared to other Eurozone economies. The problem is that many of the industries and regions of these countries have a

[73] Charis Vlados, 'Porter's Diamond Approaches and the Competitiveness Web' (2019) 10 *International Journal of Business Administration* 33-52.

[74] Charis Vlados & Ors, 'Regional Underdevelopment and Less Developed Business Ecosystems: The Case of Eastern Macedonia and Thrace' (2019) 6 *Bulletin of Applied Economics* 31-44; Charis Vlados & Ors, 'Crisis, Innovation, and Change Management in Less Developed Local Business Ecosystems: The Case of Eastern Macedonia and Thrace' (2019) 19 *Perspectives of Innovations, Economics and Business* 114-140.

[75] Andreas Kirlappos, 'Reforming Local Government in the Republic of Cyprus: Resistance and Differentiations' (2018) 30 *The Cyprus Review* 101-122; Mark J. Boden, 'RIS3 Implementation in Lagging Regions: Lessons from Eastern Macedonia and Thrace' (2017) 5 *European Structural & Investment Funds Journal* 77-83; Theophanous (no 69).

'long history of illness': they are comparatively underdeveloped because they are suffering diachronically in structural competitiveness.[76]

What can be done in terms of economic policy to reduce negative impacts and, at the same time, diffuse new opportunities? A drastic boost in demand, both in national- international and EU terms, is also necessary but not sufficient. Stimulating active demand either by budgetary or monetary means is not enough, just as blood transfusions and 'hot soups' are not enough to resuscitate a stroke victim. Our gaze must turn directly on how to rescue and restore the 'organs' of the economy, similarly to the case of a 'stroke'.

Several analysts argue that the principal challenge for the near future is digital transformation.[77] The concept of digital transformation suggests the widespread use of technology to improve a firm's performance.[78] Regarding the challenging situation of less adaptive and competitive entrepreneurial models, appropriate instruments and policies that promote their digital transformation must be articulated by the governments and other stakeholders.[79]

At the same time, the design and implementation of local-national innovation policies will ultimately determine how the less developed socio-economic formations will overcome the current crisis. First and foremost, socio-economic organisations must learn how to navigate complexity in conditions of 'chaos'.[80] Especially the weakest organisations in terms of adaptation must learn how to navigate through and innovate in the turbulent global macro-environment (Figure 2).

[76] Charis Vlados, Dimos Chatzinikolaou, 'Institutional Dynamics and Economic Development in Greece: An Acemoglian Approach' (2020) 12 *Research in Applied Economics* 12-32.

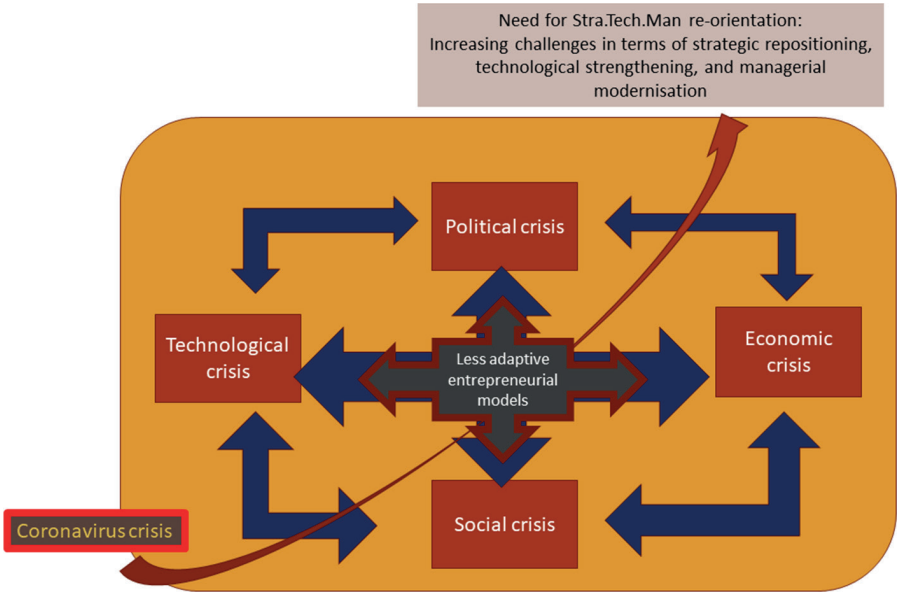
[77] Dobrica Savić, 'COVID-19 and Work from Home: Digital Transformation of the Workforce' (2020) 16 *Grey Journal (TGJ)* 101-104; David Mhlanga, Tankiso Moloi, 'COVID-19 and the Digital Transformation of Education: What Are We Learning on 4IR in South Africa?' (2020) 10 *Education Sciences*; Marco Iansiti, Greg Richards, 'Coronavirus Is Widening the Corporate Digital Divide' (2020) *Harvard Business Review*.

[78] Daniel Schallmo, Christopher Williams, Luke Boardman, 'Digital Transformation of Business Models—Best Practice, Enablers, and Roadmap' (2017) 21 *International Journal of Innovation Management*.

[79] Benjamin Barann & Ors, 'Supporting Digital Transformation in Small and Medium-Sized Enterprises: A Procedure Model Involving Publicly Funded Support Units' (2019) *Proceedings of the 52nd Hawaii International Conference on System Sciences*.

[80] Philip Kotler, John Caslione, *Chaotics: The Business of Managing and Marketing in the Age of Turbulence* (New York: American Management Association, 2009).

Figure 2: Less adaptive entrepreneurial models
and the need for Stra.Tech.Man re-orientation



The less adaptive and competitive firms face a multilevel crisis of their macro-environment: a parallel social, economic, political, and technological turmoil. At the same time, the COVID-19 pandemic has arrived and exacerbated this environment, and a successful readjustment and re-synthesis of their structural characteristics is necessary for their future survival and development. Thus, adaptability today requires a constant evolutionary and dialectical spirit, focused on internal strategic repositioning, technological strengthening, and managerial modernisation.

Fostering the adaptiveness and competitiveness of the most vulnerable firms —their ability to survive, reproduce, and develop within the evolving conditions of their external environment— must now be at the heart of developmental economic policy. In this context, and if the different socio-economic systems do not articulate appropriate policies in structural terms, we expect that underdeveloped industries and localities will become weaker in competitiveness and innovation.[81]

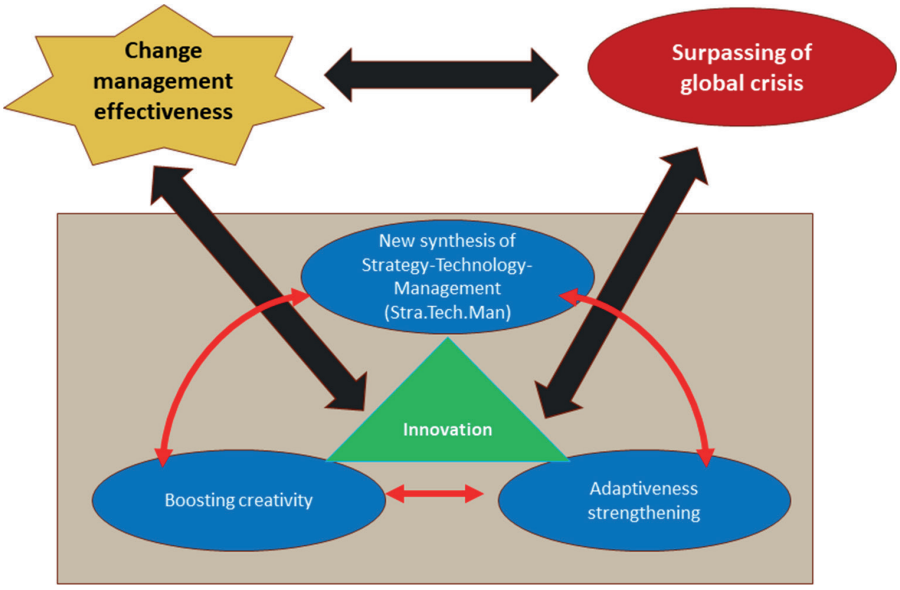
Unfortunately, the current crisis will hit the already vulnerable parts of these production systems, pushing them towards permanent necrosis. The future pro-

[81] Jörg Meyer-Stamer, 'Systemic Competitiveness Revisited: Conclusions for Technical Assistance in Private Sector Development' (2005) Working Paper 14 *Mesopartner*.

gress of these socio-economic systems will depend on the adaptiveness of the locally established firms and their ability to devise new strategies, assimilate new technology quickly, use modern management methods, and thus innovate and survive.[82] Many of them will have to follow the recovery cycle just as what happens in the recovery cycle of the 'stroke' we briefly described. They should also, in some ways, pursue 'neuro-muscular retraining' and relearn how to 'stand on their feet'.

If all socio-economic systems, on a global scale, do not embrace, absorb, and integrate a wide scale of innovations, as the concept of 'new globalisation' suggests, then our world will not overcome the global crisis and restructuring in a sufficiently stabilising way. These innovations must spread in every level of action, either private or public, through the creation, dissemination, and utilisation of efficient change management mechanisms (Figure 3).

Figure 3: The triangle of global crisis and restructuring, innovation, and change management. Based on Vlados et al.[83]



Every socio-economic actor must perceive innovation as an organic process generated by adaptiveness, creativity, and efficient synthesis of strategy, technol-

[82] Charis Vlados, *Stra.Tech.Man (Strategy-Technology-Management): Theory and Concepts* (KSP Books, 2019).

[83] Vlados, Deniozos, Dimos Chatzinikolaou (no 23).

ogy, and management (Stra.Tech.Man). The surpassing of global crisis requires, in systemic terms, this generation of innovation, accompanied by the appropriate change management mechanisms. According to Vlados,[84] the cycle of change management is a dialectic[85] process, always consisting of strategic, technological, and managerial transformation, followed by innovative synthesis and successful assimilation of change.

Therefore, in any crisis that will eventually arrive, all socio-economic actors need to handle change efficiently. Firms, and especially the less adaptive ones, do not only need low-interest loans or subsidies, as some scholars and international organisations suggest.[86] In our perspective, they need 'clinical care' focused on developing the required potential of change management quickly and effectively.[87] An 'anti-crisis' economic policy must be ready to provide the necessary infrastructure and coverage at the local and national level.

These firms also need to avoid illusions. Things will not be fixed automatically, and we will not live just like we used to. The conventional stereotypes of massiveness, spontaneity, easiness, amateurism, sloppiness, cheapness, improvisation, and laxity are dimensions that, seemingly, can no longer be efficient in the new global era. Besides the 'highly-advertised' digital transformation, we believe that security, trust, reliability, accuracy, de-materialisation, teleworking, online production, distribution, consumption, and, above all, adaptiveness, are the new critical capacities for our societies, economies, and businesses.

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[84] Charis Vlados, 'Change Management and Innovation in the "Living Organization": The Stra.Tech.Man Approach' (2019) 7 *Management Dynamics in the Knowledge Economy* 229-256.

[85] In the dialectic perception of change, every balance is always temporary, and all phenomena are dynamic and 'confrontational'. In dialectics, everything starts from a state of balance (the 'thesis'), which appears to be firm and unshakable. However, an 'antithesis' emerges inside this 'thesis', eventually. The 'antithesis' causes the balance to unsettle gradually and the fundamental features of the 'thesis' have no other choice but to change. Then, a new era of balance built on an entirely new qualitative base is always born, which provides a unique platform of quantitative accumulation of the phenomenon, which, in the dialectic terminology, is called 'synthesis'. Charis Vlados, Nikolaos Deniozos, Dimos Chatzinikolaou, 'Dialectical Prerequisites on Geopolitics and Geo-Economics in Globalization's Restructuration Era' (2019) 6 *Journal of Economic and Social Thought* 65-92.

[86] Winarsih, Maya Indriastuti, Khoirul Fuad, 'Impact of Covid-19 on Digital Transformation and Sustainability in Small and Medium Enterprises (SMEs): A Conceptual Framework' in Leonard Barolli, Aneta Poniszewska-Maranda, Tomoya Enokido (eds), *Complex, Intelligent and Software Intensive Systems* (Switzerland: Springer International Publishing, 2021) 471-476.

[87] Charis Vlados, Dimos Chatzinikolaou, 'Crisis, Institutional Innovation and Change Management: Thoughts from the Greek Case' (2019) 6 *Journal of Economics and Political Economy* 58-77.

Overall, the question arising from the preceding analysis is how these aptitudes can be diffused in societal terms. The problem of empowering the adaptability and competitiveness of production becomes a priority. The fast-paced diffusion, assimilation, and activation of new knowledge for the various business organisations to develop their innovation potential appear to be critical. To this end, it can be argued that a drastic enhancement of educational structures aimed towards reinforcing the knowledge potential of all actors in the various socio-economic systems is required. This new economic policy must concern both the employed by offering them the required skills and the unemployed who must find new ways to insert themselves in the new post-COVID-19 dynamics. Without a doubt, international hierarchical power relations and global governance mechanisms (formal and informal)[88] will play a significant role in this pristine environment. However, as historical reality proves, entrepreneurial and institutional innovation is the force that ceaselessly upsets the equilibrium of power and functions as the 'real revolution'.

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