

Olívér Kovács

Reversing the Great Suppression

Unleashing the Catalytic Public
Sector for Innovation Dynamism



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UNIVERSITY PRESS

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Foreword

“Something did happen to me somewhere that robbed me of confidence and courage and left me with a fear of discovery and change and a positive dread of everything unknown that may occur.”

Joseph Heller (1997)

By paraphrasing one of the most well-known quotes from Joseph Heller’s famous novel, *Something Happened*, something did happen to the world economy somewhere that robbed the innovation ecosystem of confidence and courage and left it with a fear of discovery and change and a positive dread of everything unknown that may occur. There has been a growing impression that something might have happened to the world economy since there has been a lot of cacophonous noise in terms of whether the developed world has been really and irreversibly on a track toward prosperity or it has been just heading for something completely different. On the one hand, life is much better today than it was before. Violence has been on the decline for a long time mainly up until the 2022 war between Russia and Ukraine, the average age has been increasing, the proportion of people living in extreme poverty is at a historic low, as is child mortality. In 1820, 84% of the world’s population lived in poverty, their proportion was 42% even in 1981, but today it is less than 9%, even though the population has been exploding in the meantime. In fact, over the course of two hundred years, the world’s GDP increased a hundredfold, and the average GDP per capita increased twelvefold. Up until the black swan event of the outbreak of the Covid-19 pandemic in December 2019, thanks to vaccinations, medicines and the availability of clean drinking water, epidemics that decimated humanity for centuries were reduced. So, on

the one hand, there is the proposition of historical progress and the gradual improvement of the world economy, but on the other hand, there are many question marks. It seems as if we have missed some opportunities in relation to socio-economic development or as a Dutch proverb says, we have been fishing behind the net. Albeit no serious cataclysms have occurred since the 1960s in the developed world, the optimism about historical progress seems to have lost its validity. Classical left-wing thinkers see climate change as catastrophic, while authoritarian and radical populism is reviving, inequality generated by capitalism is increasing, and the end of the pandemic is thought that it is never going to be in sight. In developed democracies, growing divisions are causing increasingly serious political and social tensions being followed by more radical attitudes and even science denialism. Consequently, it is really difficult to think that there is any hopeful direction in the history and in the innovation dynamism of the socio-economic ecosystem.

There is therefore the impression that we live in unprecedented times forcing many to leave old routines behind. Without being exhaustive, enough to look at what kind of momentous things happened that were almost unimaginable before. Due to Covid-19, the European Union has committed itself with surprising speed to a huge recovery package by amending its budget and to a certain extent redirecting its crucial funds. Due to the Russian–Ukrainian war, the objective of greening out the economies has become a top priority, urging a radical change of direction in energy resources. Importantly, it was not always like that. For example, over the past decade, the Netherlands was considered the frugal member of the European Union, perpetually opposing more expansive EU budgets and fiscal risk-sharing. Nevertheless, today we see that the wind of unprecedented times has also touched the country where being innovative is a compelling necessity for survival. The age of the invariability of values that have long been treated as a virtue is also over. The newly established Dutch four-party coalition government embarked on a path that was previously considered reprehensible by bursting a good deal of public spending which represented a firm breaking with the country's traditional focus on balanced budgets and the idea of small public sector.

So, it seems that the great survivor of our time is the old motto: *navigare necesse est*. More than a decade ago, the author of this book was involved in a comprehensive European research project on inland waterways transport. During one of the interviews, a Dutch captain reminded the special features and the difficulties of shipping. In the age of great geographical discoveries, the chances of discovery were greatly endangered if the ship spent too many years at sea without clearing it of shellfish accumulating on the bottom of the ship. The shells end up being such a burden for the boat that they can even pull it into the deep. The ship needs to be freed from the shells. One innovative way to do that is to anchor the ship in a freshwater port on the Rhine where sea salt water is no longer a distraction. In these circumstances, the shells will soon loosen and fall off on their own.

Metaphorically speaking, in the socio-economic innovation ecosystem, the public sector and economic governance also help steer the economy's ship in the whipped waves of socio-economic and financial turbulences in an effort to navigate toward a flow of innovation that unburdens the ship so that it can continue its travel to prosperity. Once forces are emerging that could pull that ship into the deep, public sector and economic governance must go for dealing with the situation (in an innovative way). Otherwise, there will be no discoveries, values will sink, there will be no dynamism in the economies either. It can be the case for instance when excessive financial burdens are on the bottom of the economy's ship or when the expanding financial universe suppresses the real economy by pursuing short-term and big financial gains being tantamount to treasures. Something similar happens in Richard Wagner's opera *Das Rheingold*, where the theft of the treasure of the Rhine is actually the manifestation of the original sin by having harmful consequences for the natural order of things. Such kind of disharmony may undermine the dynamism of the socio-economic innovation ecosystem as well.

This book revolves around the issue why innovation dynamism in the socio-economic innovation ecosystem of developed countries (especially European ones) seems to have become suppressed, what distortions is the system loaded with, and how the public sector could help via innovating

itself. Since we are not satisfied with the comforting views that the problem is simply that today it is harder to come up with innovative ideas because of the complexity we face,¹ we do believe that it is right to apply a sort of systems approach when addressing the “something happened” hypothesis. Ferenc Jánosy, a Hungarian economist who dealt exactly with dynamic recovery periods² and who now seems to be undeservedly forgotten, emphasised that the social system is like a stretched net: if one grabs it only at one point, the net will peak out at that particular point. One has to pick and grab several points of it in parallel to actually be able to lift the entire net. In this spirit, we have to pay attention to the system, the configuration of its dynamic processes by focusing on several points and processes at the same time in order to really elevate socio-economic progress. When another Ferenc, the renowned Hungarian composer, pianist, conductor and music teacher, Ferenc Liszt did introduce Richard Wagner to a music-loving Viennese princess, Wagner was asked what kind of instrument He plays, He answered: I can play the piano a little, but with real dynamism I do play very well an orchestra. Perhaps we are not far wrong when we say that the public sector and economic governance must influence the interplay of cooperating parties in an effort to help creating innovation dynamism.

One of our central messages is that even if we have the levers, the public sector has to fight for innovation dynamism. It is an absolute necessity once we admit that the chain of complex challenges that are taking shape and often reinforce each other points to the unsustainability of some of our foundational social institutions upon which the stability and developmental direction of societies in the developed world have been built for decades. It is our firm belief that the state, the public sector must be aware of the institutional foundations and systemic configuration, their changes, or their unchanging nature, and must not only ring the bell, but also act imaginatively for real innovation dynamism, which requires both enthusiasm and humility. As the great connoisseur of *Ringing*, Wagner put it: imagination creates reality. Let's add right away that

¹ JONES 2009: 283–317; ASTEBRO et al. 2020.

² JÁNOSSY 1966: 282; JÁNOSSY 2018: 282.

it essentially depends on political will. However, the work of the economist ends here, as He/She has no key to the playground of politics. A scientist can do one thing: not being afraid of empty echoes. This monograph was written in this spirit and with the implicit aim of stimulating fruitful dialogue not only among economists with various backgrounds but also in a cross-disciplinary way which can lead to new ideas. It is a cliché, but it often looks like it is still worth emphasising: major scientific results were often made after observing and considering different points of views and aspects. This is no different in relation to the research topic of our book, which ultimately examines the nature of complex systems (socio-economic ecosystem) and innovation. For instance, Ilya Prigogine, who was awarded the Nobel Prize in 1977 for his contributions to non-equilibrium thermodynamics, particularly the theory of dissipative complex systems, argued that one of the most important things in his life was the discussion with his colleagues. Another deservedly recognised scientist, Philippe Aghion revealed that his work on innovation dynamism based on the Schumpeterian creative destruction narrative was the result of discussions with Peter Howitt, whom he ran into regularly when he left his office and went for a walk on the university campus. If we do our research in isolation without dialogue with others, we can get only the result we wish. This is especially true in the case of the public sector as well; a dialogue is needed with other actors in the system.

Since others may also participate in the results either one way or the other, the Author is grateful for the constructive comments of the reviewer Professor Balázs Hámori, and is also deeply indebted to his loved ones for their valuable patience and support, without which this book would not have been possible.

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Olívér Kovács

Chapter I

Introduction

According to an anecdote, Damocles was one of the flatterers of 4th-century BC ruler Dionysius II of Syracuse, a tyrant living in Sicily. In a conversation, Damocles praised the richness and the majesty of the power of Dionysius II, the abundance of its possessions, the superlatively beautifulness of His royal palace. Damocles thought that a rich man like Dionysius II must be nothing but happy. The tyrant replied by asking Damocles whether He is up to taste this happiness, and the young man immediately said yes. Damocles was then allowed to sitting on the throne, receiving the finest food and drink, and the servants provided and pampered him well. But Dionysius II ordered the servants to hang a sword hanging from the ceiling over Damocles's head on a thin thread from a horse's mane, after which Damocles could not really concentrate on anything else but the impending danger (his appetite was gone, his interest in the richness immediately dissolved into the air).

Seeing today's rather erratic world economy, we may have a feeling like Damocles experiencing paradoxical disproportions. In spite of the abundance of the financial sphere, and despite the ever-growing public sectors, the real economy in developed countries has been more and more featured with a sort of suppressed innovation dynamism. It implies that an impending danger is out there.

SETTING THE SCENE

Today the developed world lives with a protracted sense of crisis. Since the 2008 financial and economic crisis, economic governances all around the developed world have been by and large functioning in a constant crisis management mode. It still holds with the eruption of the global pandemic

of 2019. Actions imposed to curb the crises manifested as serious stimulus programmes (e.g. quantitative easing, fiscal transfer, etc.) to boost demand in overcoming painful recessions. Paradoxically, excessive stimulus and fiscal laxity have resulted in suppressed innovation dynamism in the real economy (as we call it: Great Suppression) in a time when not only managing the crises but also supporting the structural change triggered by the digital revolution and Industry 4.0 are on the table. Great Suppression alludes to the fact that what was originally intended to help the survival of socio-economic actors, stifle down market performance. The Great Suppression is given by that fact that stimulus has led to enormous public indebtedness limiting the capacity of states as well as that of the private sectors, looming and potentially uncontrollable inflation injecting additional uncertainties into the daily life of people, and led to distorted markets by supporting uncompetitive players to exist longer (i.e. zombification in case of firms, banks). The configuration of these processes has not been addressed yet, however, such configuration has suppressed innovation dynamism in the real economy being mirrored in anaemic productivity growth and innovation performances (e.g. by 2020, labour productivity in OECD countries has declined to 1.1% from the 1.5% of 2017; while it has been almost stagnating in the Eurozone by reaching 0.2 in 2018; numbers on papers looked great, such as increasing R&D expenditures, filings for venture capitals, as the Global Innovation Index 2021 suggests, but with no real positive impetus on socio-economic innovation dynamism).

In addition, a long-term systemic trend has been undermining innovation dynamism in the real economy as well, being scientifically overlooked or neglected. Such creeping phenomena developed along longer term is the diverging financial sphere from the real economy (excessive financialisation). Still, one of the most intriguing paradoxes of today is the fact that despite all the perceptible and well-documented local and global challenges we face – ranging from the after-effects of the 2008 financial and economic crisis including the Eurozone crisis, flaring populism secessionism and nationalism across the board by endangering the sustainability of the European integration process as a whole, the escalating trade war between the United States and China

affecting many other countries, the migration and Covid-19 crises, creeping military conflicts, the ever-more deciphered and publicly discussed business scandals (e.g. Wirecard, Luckin, Archegos Capital, etc.) – it is like there is no bad news at all for the financial universe (e.g. since 2019, S&P 500 registered an unstoppable upswing the index of which could book a 71% win rate after weekly losses of 2%) and still, economic growth is neither high, nor inclusive, nor green. It proves that innovation dynamism has become suppressed by creating the impression that public sectors are mostly incapacitated to effectively address serious challenges (i.e. trust and confidence in states and economic governance has really waned since the crisis of 2008 aggravating the discontent against state and politics, e.g. electoral turnout in the developed world has been declining from the 80–90% of the 1950s–1960s to 70% by 2017).

Since states are essentially suppressing the market's immune response to unsustainable processes (e.g. selecting out zombie firms at the expense of a more inclusive growth, etc.) through stimulation, we need innovative states that will revitalise and strengthen the social capital and confidence needed for longer-term structural reforms in navigating through and coordinating the processes along the ongoing digital revolution. At this point, the issue of how to enable states to act efficiently by catalysing innovation within the public sector and inside the real economy comes to the fore. Unfortunately, addressing public sector innovation has been so far approached by applying innovation terminologies developed for the private sector.³ Moreover, works on public sector innovation omits to incorporate systemic patterns that feed into low innovativeness (e.g. the runaway of the financial sector contributing to processes, such as zombification, fuelling the Great Suppression at systems level). Plus, so far, not a small part of the literature has aspired to capture the nature of innovation in the state by mentioning that there is an innovation imperative there,⁴ still, those works either did stop at identifying rather superficial drivers (e.g. external environment, people⁵), or miss to address

³ MULGAN–ALBURY 2003: 40; LEYDEN–LINK 2015: 264; FALK et al. 2017: 196.

⁴ OECD 2015a; OECD 2015b.

⁵ GLOR 2021.

the complex nexuses affecting innovation freedom within the public sector by not being barded with the aim of unleashing a catalytic state in serving innovation dynamism in the real economy along structural changes like the digital transformation and Industry 4.0 developments.

METHODOLOGY

The book builds on a verbal model using quantitative as well as qualitative data and information to decipher the true nature of innovation in the public sector. It concentrates on innovations that are in line with the goal of achieving structural change compatible (digital transformation, Industry 4.0), inclusive and green developments. Methods: (1) deep and systemic literature review (i.e. shorter and longer term socio-economic phenomena grounding the Great Suppression; complex systems, system dynamics, systemic prerequisites of private and that of public sector innovation, etc.); (2) analyses using various relevant data (e.g. Eurostat, World Bank, Public Sector Innovation Observatory, etc.) and indices (e.g. World Governance Indicators, Global Innovation Index; World Value Survey, Trust Barometer, Standard Eurobarometer, etc.); (3) semi-structured interviews with experts in mapping a) policies and initiatives as worst practices in bolstering the innovative public sector; b) policies and initiatives as best practices in becoming trendsetters (catalysing private trends, too); c) current demand for catalytic public sectors in Europe; and (4) ten illustrative case studies on public sector innovation feeding back to our narrative.

NOVELTY

The monograph seeks to fill the gaps mentioned above by introducing the major constituents of the Great Suppression, evolved along the constant crisis management in the developed world and especially in Europe, that calls for

a more catalytic public sector (i.e. an innovation trendsetter for itself and for the real economy) with the aim of reinvigorating public trust in states by contributing to a more sustainable structural change given by the digital revolution and Industry 4.0. The topic about the changing nature of the state has been with us for a while, still, the complexity of public sector innovation is not addressed sufficiently. In the discourse on innovation dynamism, the role of the state does arise, of course, but only as a regulator who can guarantee competition and exert its role of stimulating innovation through its policies. One prime case in point is the work by Aghion and his co-authors,⁶ which completely leaves out the aspect of innovations within the public sector or through cooperation between the state and other sectors. Prevailing literature even omits to a large extent the institutional architecture of the public sector. Even the Handbook of Innovation in Public Service⁷ did not address institutional setting, however, this is the underlying feature influencing many cardinal issues to innovation from the size and quality of evolving networks as sources of interorganisational learning and knowledge sharing. Albeit some discussions have been trying to shed light on the changing nature of the state and its policy horizon – ranging mainly from the narrative on the broken Westminster system advocating that reducing the size of the state or opening up towards greater and deeper collaborations would lead to inefficiencies and ever-more complicated challenges,⁸ the idea of mission orientation,⁹ or the way the public sector should consider systemic resilience¹⁰ representing the capacity of a system to anticipate, absorb, recover from and adapt to systemic instabilities – these works address neither the broader embeddedness of the public sector into the fabric of the socio-economic innovation ecosystem, nor the interlinkages among subsystems like the public sector, the financial universe and the real economy.

⁶ AGHION et al. 2021: 400.

⁷ OSBORNE–BROWN 2013: 587.

⁸ MULGAN 2007; MULGAN 2009: 320; GOW 2014; GRUBE–HOWARD 2016: 467–481.

⁹ MAZZUCATO 2021: 272.

¹⁰ BRUNNERMEIER 2021: 424; HYNES et al. 2022: 381–384.

There is an issue which has not been researched yet in a sufficient way, namely that while the state as a regulator and coordinator took its soothing arms and hands off the financial system since the 1970s, it has been indirectly bracketing the importance of the real economy through letting the financial universe expand. The book argues that this tectonic movement dismantled the fabric of the socio-economic system by requiring catalytic changes on several fronts.

Therefore, the book has four ambitions: (1) to introduce the concept of and to decipher the building blocks of the Great Suppression by applying a system view to the socio-economic innovation ecosystem; (2) to approach the nature of public sector innovation the potential of which has been entangled to the Great Suppression; (3) to address how public sector can stimulate innovation that also catalyses structural change in the real economy in a time of digital transformation and Industry 4.0 by mapping past and current innovation trends proven to be successful over a longer period of time, to identify public sector- and system-specific drivers and bottlenecks of innovations; and (4) to explore how more catalytic public sectors can be cultivated by building on illustrative case studies.

It is our hope that the book delivers added values for theory and practice as well. For economics science, our new-fangled narrative not only broadens the traditional research canvas by incorporating the dimension of the Great Suppression into the exploration of the true nature of public sector innovation, but also resonates to the ongoing digital revolution and Industry 4.0. It does not only outline a system view to decipher the basic prerequisites of innovation dynamism within the public sector, but also opens up new research avenues on how to make current structural change sustainable via more catalytic public sectors. Additionally, it enhances education approaches both to theoretical and applied economics by refining curricula and topics on innovation. For economic governance and public sector, the book enriches the knowledge base over evidence-based policymaking in reinvigorating innovation in the public sector, it maps and collects cases that have proven successful in the longer run in a balanced way by showcasing some failures

as well. Besides, the monograph is supposed to ground the catalytic public sector that is to bring directionality into the dynamism of the socio-economic innovation ecosystem geared toward socially acceptable, economically and politically feasible structural change (digital revolution and Industry 4.0).

STRUCTURE

The book is to demonstrate that there is a great deal of complex challenges faced by a socio-economic innovation ecosystem being pervaded by a non-negligible symmetry breaking among its major components (the public sector, the real economy and the financial universe) resulting in feeble innovation dynamism (The Great Suppression). Unless such disharmonious systemic configuration having low resiliency is addressed, the self-innovating capacity of the public sector itself suffers. Catalytic public sector innovation is therefore needed to be geared towards identifying resiliency-killer mechanisms and processes or at least towards mapping and deciphering redundancies, as fields of intervention, in an effort to advance efficiency and alleviate the overburdens of the public sector.

To this end, Chapter II sheds light on the polycrisis that modern economic governments and public spheres should not turn their backs on. It presents at least ten, sometimes strongly intertwined and interlinked challenges (*The Madness*), contributing to the formation of the so-called Great Suppression, to which public sectors and economic governances have mostly responded only with the aim of revitalising via stimulus. The chapter is then dedicated to the toxic nature of excessive financialisation, which is undeservingly neglected in the international literature. Such symmetry breaking acts as a tipping point, which is a systemic resiliency-killer mechanism. In an effort to make a difference, the public sector needs to grow up to do that job by fostering innovations within and over its walls by embracing also the financial universe and the real economic arena. Chapter III is devoted to the issue of the catalytic public sector and its cultivation. It first outlines the theoretical

framework of public sector innovation by incorporating the fact that the challenges have been making the socio-economic innovation ecosystem ever-more complex to be tackled via reductionist scientism, rather they are calling for a more innovative public sector with a holistic and more humble governance attitude. After presenting the scope and the methodological approach, it focuses on the *state-of-the-art* empirical evidence as well as it deciphers interesting cases (primarily positive cases as next practices, but pinpointing also some negative cases as past practices) on various public sector innovations that took place in the developed countries, especially in the European Union so far. We argue that in a living and constantly developing socio-economic innovation ecosystem, the term “best practice” loses its meaning due to the complexity we face (i.e. we just do not know how to create the best so that it can be applied elsewhere). Thus, best is impossible, while the better (as next practice) is possible. The choice of those illustrative cases may seem arbitrary, their consideration is given by the logic of presenting a sort of ‘example library’ of all types of public sector innovations mentioned in the book by reflecting upon the polycrisis identified in the previous chapter. Chapter IV concludes by juxtaposing some general lessons for both theory and practice when it comes to energising a catalytic public sector for innovation dynamism.

Chapter II

The Great Suppression

This chapter is to introduce the concept of Great Suppression by exemplifying that the analysis of subtleties of the complex configuration among the three highly interrelated and intertwined systems of public sector, financial sector and the real economy offers a more fertile ground in better understanding why innovation dynamism in the developed world is incapable of evolving along the path imagined and desired by policymakers. The chapter is to demonstrate that the broken symmetry among the three subsystems sprinkles mostly and merely malignant innovation dynamism in the public and financial spheres leading to suppressed real innovation dynamism in the real economy (*The Great Suppression*). In an effort to reverse such trajectory, addressing not only the real economy, but also that of the public sector and the financial universe alike is of paramount importance.

In so doing, the chapter first shows how the developed world faces a period in which crises are lined up and it does not seem that public policies have been able to tackle any of them once and for all through effective crisis management. It does also argue, though implicitly, that the ensuing crises have brought to life a crisis management narrative which has been based solely and exclusively on trying to revitalise via stimulus programmes. Finally, the chapter builds up a new conceptual framework to explain the aforementioned by shedding light on the fact that the succession of crises as well as the obsession to stimulus were the natural resultants of the current configuration of the socio-economic system interspersed with disharmonies among the subsystems (i.e. runaway of the public sector, the excessively expanding financial universe while the real economy was left behind and left out of special awareness) engendering suppressed innovation dynamism.

SUCCESSION OF CRISES

If there is a sector that is definitely on the verge of extinction, it is disaster tourism, because, with a little exaggeration, there is no specific destination one can travel to in the age of global crises. After the era of the so-called Great Moderation, when everything looked nothing but fine in the developed world in terms of macroeconomic stability and financial development between the mid-1980s and 2007,¹¹ policymakers as well as ordinary people of the advanced world had to face a period that is highly fragmented and in which only crises emerging again and again provide permanence.

The Great Moderation had given birth to stories and scientific narratives that do not seem to get into a more palatable whole as the developed world switched to a crisis mode later on. For a long time, it seemed that policy practitioners were successful enough to solve the problem of having continuous growth while safeguarding the full control over inflation. The story was complemented by the firm belief that the broad-spectrum deregulation during the 1970s–1980s had freed the financial sector from its chains and embarked on liquidity expansion that promotes development and growth through promising innovations. Moreover, that period resulted in a conviction that modern economics serves as an effective means for economic governance in winding up depressions (i.e. our preventive tool arsenal and theories are correct and effective).¹² What followed, however, proved that policymakers and

¹¹ STOCK–WATSON 2003; BERNANKE 2004; GADEA et al. 2015.

¹² Bringing about a so-called Great Complacency as we indicated elsewhere (KOVÁCS 2022a: 432). Great Moderation can also be seen as a quieter phase of the dynamism of the socio-economic innovation ecosystem being seemingly free from attention-grabbing and detectable anomalies. The aesthetics of silence is well known in European culture. Silence, emptiness, nothing is always more ambiguous than something (concrete). There is more to be thought of in silence, while in case of something specific, it anchors expectations to a much greater extent and decisions are more cautious. In the spirit of Susan Sontag, a renowned representative of the culture of silence in art, we can now claim that for an economy to become silent is to become opaque for economists and policy practitioners to understand its underlying mechanism, hence a period of Great

economists were just chasing dreams and we are rather far from the precise understanding of what really happens in the system.¹³

After the Great Moderation, novel and mainly interrelated crises have arisen with new quality, in higher frequency showing an ever-more complex nature. Challenges require collective actions being not necessarily initiated and maintained by the public sector, but formed along the collaboration of it together with the real economy and the financial universe that has begun to become a separate entity. Therefore, there is a growing need from the side of the public to pursue at least the continuous addressing of “The Madness” around us.

- tipping inflation
- health crisis (coronavirus pandemic)
- engaging in the next production revolution (Industry 4.0)
- migration crisis
- antibiotic resistance
- demographic quandary
- natural disasters and climate change
- emerging patterns in emerging markets
- sovereign debt crisis
- shade of populism, shadow of sanctions

Moderation opens up an array of possibilities for interpreting that silence (see Sontag’s views in SONTAG 1967: X).

¹³ The plea for a renewal in our approaches to better grasp what is really happening in the socio-economic innovation ecosystem did not come exclusively from the academic community right after the eruption of the 2008 financial and economic crisis, but also from the side of policymakers. For the previous, enough to look at COLANDER et al. 2009; KRUGMAN 2009; STIGLITZ 2010. While to the latter, the former central banker, Jean-Claude Trichet did also underline the necessity of overcoming the shortcomings of the ruling macroeconomics paradigm (TRICHET 2011: 12–22). Of course, since then many others did accentuate the need for streamlining our economic thinking, however, the road seems to be longer than we previously thought (see BURGHAUS et al. 2018: 112–163; Kovács 2022a: 54–87).

Tipping inflation

In the aftermath of World War II, only a few scholars, pundits and economic practitioners considered inflation a potential threat, however, up until to the midst of the 1980s, when the so-called Plaza Accord came to light, inflation rates were relatively high (ranging from 12% to 16% even in the United Kingdom). Until now, it really seemed like we managed to keep inflation in check (i.e. inflation's long run trend was stable – when a shock occurred inflation tended to get back to manageable levels),¹⁴ but now two black swan events (the Covid-19 pandemic sparking rising commodity prices due to the gaping gap between strong demand and constrained supply at both products and labour markets as well as the Russian–Ukrainian war leading to energy crisis) let the genie out of the bottle in the sense that record high inflation is here to stay (according to OECD statistics, in April 2022, the level of inflation hit a 31-year height of 7.2% across the OECD countries). As Covid-19 erupted and reached a critical level, many people started to eschew in person services while turned to elevated purchases of goods resulting in supply chain disturbances. Labour supply started to be on a negative trend being accompanied with the Great Resignation signalling greater bargaining power of the workers they usually had (e.g. only in the first half of 2021, 20 million workers in the United States resigned to seek out new opportunities elsewhere, and such tendency continued later, i.e. almost 4.3 million workers quit their jobs in January 2022). The Russian invasion in Ukraine did also contribute to the lift up of prices due to uncertainties over energy supply (e.g. statistics of the European Central Bank shows that in case of a European core country, Germany, the harmonised indices of consumer prices skyrocketed with the invasion from an already elevated level of 5.1% in February 2022 to a 41-year record height of 7.6% in March 2022). Moreover, both supply and demand shocks questioned the controllability of inflation in many developing countries (where

¹⁴ Another equally important feature of such era was that the Phillips curve had flattened so that policymakers were sought to have more freedom in setting interest rates and pursuing fiscal policies that are conducive to the economy.

the global imbalances engendering ever-larger current account deficits and surpluses triggered the spectacular rise in the consumer price index).¹⁵ And since bigger numbers have greater variance too, uncertainty in the global economy is growing by potentially stifling down innovation dynamism. It does also have implication on monetary policy regimes by potentially building a gradient toward going back to a world in which inflation's long run trend is considered unstable and inflation is controlled by either throwing people out of work or keeping them out of work (i.e. this is the way central banks and monetary policy can gain credibility by anchoring expectations). This is the old fashion method of monetary regime called aggregate demand management. And since public sectors in the developed world have become increasingly voluminous both in terms of functions to deliver and that of the number of public servants/workers employed, such approach appears to be adequate. However, recent development of inflation does not seem to be related to excessive aggregate demand, hence such approach is not feasible any longer. Thus, supply side procedures are also in our equation such as trade shocks, not to mention the phenomena of digital transformation and Industry 4.0 revolution working as an anti-inclusive (unemployment-heightening) mechanism with its high potential of automation and robotisation across the board. Albeit the predominant share of experts considers the sudden rise in inflation a temporary aberration since supply side shocks dissolve soon by their very nature by suggesting that regulators will under-react to it.¹⁶ This is a hot topic and a moot point of today's policy discussions and hides many innovation dynamism endangering factors to which public sectors and economic governance should adapt as soon as possible. The dominant narrative

¹⁵ According to the World Bank data, somewhere reaching two-digit inflation rate is exceptional, while there are countries where it has been the norm along the last decades such as Turkey (e.g. in March 2022, the annual inflation of Turkey accelerated up to 61.14% (!) from the level of 16.19% of 2021, let us underscore that the rate averaged 34.09% in the period 1965–2022).

¹⁶ Andrei Shleifer, a renowned Harvard University Professor, and his co-authors applied their theory on how risk is neglected psychologically in the financial sector (for their previous work see GENNAIOLI et al. 2015: 310–314).

assumes that our today's supply side shocks are nothing but temporary ones and then inflation will get back to its normal and stable levels. Such conjecture seems to be extremely phantasmagorical once the excessive fiscal stimulus (governmental spending) is also considered an inflationary factor (i.e. rising inflation is also burning wage/salary increases so public sector workers will hardly want to be more innovative and efficient). Since resistance is futile and there is no chance of forecasting precisely the future inflation rates either,¹⁷ the logical thing the public sector can do is to create monetary and fiscal spaces to become as resilient as possible while it tries to re-anchor inflation expectations. The latter is unimaginable without gaining the confidence of the public, without having its trust in the state and its institutions, which can be underpinned by fostering an ever-more efficient and innovative public sector.¹⁸

¹⁷ In December 2020, OECD forecasted a brighter outlook with a global GDP growth of 4% for 2021–2022. That report did not even mention inflation as an imminent threat (e.g. low levels of inflation rates were predicted for 2022, see the case of Germany [1.3%], Eurozone [1.0] or the United States [1.4%]). One year later, world GDP growth rate was presented to be 4.5% in 2022, while the concern over fuelled inflation was mentioned given the energy imbalance caused by the struggling supply side to keep up with demand. Projections on inflation have been repeatedly revised upwards in the various editions of the OECD Economic Outlook but still being way far away the actual and real levels of it. We have to admit that our models show very modest performance, if at all.

¹⁸ Let us add immediately that, contrary to the prevailing monetary views, anchoring inflation expectations does not seem to be as easy as previously thought since the financial actors deem it differently as opposed to the man of the street, i.e. inflation is felt differently and is affecting people being at various socio-economic levels rather heterogeneously (one index that weighs everyone similarly does not fit to the heterogeneity of democracy). If there is a problem with social trust, then the inflation perceptions and expectations of managers will be higher than what the central bank predicts, which may itself become inflationary (McCLURE et al. 2022). Managing such expectations would definitely need some additional trust building regarding the capacity of the public sector to act effectively and efficiently. It is now all the more important when the two black swan events resulted in an elevated inflation rate, just think of the yellow vests protests in France back in November 2018, which already showed that the general public does not tolerate endlessly the soaring fuel prices.

Health crisis

The coronavirus not only helped us rediscover our core values, but has also clearly demonstrated that health is a complex and multidimensional issue in the socio-economic innovation ecosystem. While the historical lesson of the health impacts of “ordinary” recessions is that they do not necessarily have negative impacts (e.g. recessions could free up time for health-enhancing activities while reducing income to be spent on health-destroying customs etc.),¹⁹ a health crisis like the Covid-19 behaves in an entirely different way. The pandemic induced a public health crisis around the globe by indirectly triggering serious disturbances on the commodity markets, while infiltrating into the financial universe, by depressing the real economy²⁰ pervaded by a societal cataclysm exposed to a good deal of mental crisis as well.²¹ Such a health crisis affects our daily economic life through many channels by underlining the crucial importance of physical and mental health in providing a fertile ground for economic growth and development. Stable and good health of the general public by itself can be seen as a sort of proof of real human developments (longer life expectancy is likely to enhance schooling and human capital). Not to mention the fact that healthy workers are still the *sine qua non* of innovation, and potentially that of higher productivity and growing incomes (i.e. this is not necessarily the case when ageing triggers higher savings over investments by leading to estate price booms but not real economic investments, etc.). After the 2008 financial and economic crisis,

¹⁹ ARTHI-PARMAN 2021.

²⁰ Albeit labour markets in Europe acted as a classic automatic stabiliser, the health effect of Covid-19 had an economic impact too (being spectacularly mirrored in trade statistics) since (1) the production breakdown across the globe resulted in non-negligible vulnerabilities in products requiring inputs from specific countries; and (2) restrictions on in-person production led also to increasing vulnerability in case of products that are more difficult to produce remotely (see BAS et al. 2022).

²¹ Studies pinpointed that permanent emergency mode is extremely stressful and has a detrimental effect on the body itself. For instance, studies showed that at least 20 to 30% of those with a severe viral infection suffer from post-traumatic stress disorder (see COCOZZA 2020).

austerity proved to be a physical and mental health destroyer in many places around the world. As it was documented carefully,²² there were over 10,000 additional suicides across the developed world since the introduction of austerity measures targeting deficit- and debt-to-GDP-rates considered optimal ones (e.g. an estimated million extra cases of depression was also registered since 2007, plus, just in the US, 5–6 million people lost healthcare provision because of job losses). Studies pointed out that job losses – especially in countries where unemployment has been traditionally low²³ – excessive indebtedness and the serious threat of foreclosure tend to rise risks of suicidal thinking within the population, of course, in a heterogeneous way by nourishing the message that recessionary times should not be aggravated further by austerity-like policies.²⁴ One could make a thought experiment with what would have happened if Covid-19 was paired with austerity and not with stimulus (that have been the widely recommended path²⁵). By the time I am writing this monograph, 6.2 million people died so far from Covid-19 (and its variants) since the outbreak of the pandemic in the midst of January 2020. Still, the death toll has been still rising in many developed and developing countries across the board (by reaching more than 991 thousand deaths in the United States, 522 thousand in India, 173 thousand in the United Kingdom, 162 thousand in Italy, 134 thousand in Germany, etc.).²⁶ Moreover, this line of gargantuan challenges did not leave unaffected the national politics and the trust infrastructure of the societies either.²⁷ The epidemic has placed an awful lot of additional burden on the health care system (i.e. causing severe

²² STUCKLER–BASU 2013: 216.

²³ CHANG–CHEN 2017: 266–278.

²⁴ REEVES et al. 2018: 246–247.

²⁵ See WEDER DI MAURO 2020; BALDWIN – WEDER DI MAURO 2020.

²⁶ Data are taken from the University of Oxford database (<https://ourworldindata.org>).

²⁷ Although the pandemic has highlighted the flaws in the approach that people need to be manipulated to make the right decisions, trust and confidence in experts has decreased significantly due to expert proposals being full of complex contradictions leading to dissatisfaction of many about the crisis management imposed.

capacity problems, risking medical overload, etc.).²⁸ It was the case even in some welfare states of Europe. Due to the underinvestment activities in the hospital sector and in the entire health care system, as Eurostat (2019) demonstrated, in recent years, most EU Member States have reported a significant decrease in the availability of curative care beds in hospitals. In doing so, it reduced the chances of effectively and sufficiently controlling the spread of the disease, while treating the infected people appropriately as much as possible. In other words, the vulnerability of the healthcare system by itself may have prolonged the epidemic, especially in countries where the public acceptance of stricter policies against Covid-19 was relatively low (e.g. policies like stricter lockdowns resulting in a significant decrease in pandemic-related deaths being accompanied with stay-at-home campaigns, closures at the workplace and various schools, restricted public gatherings and limits imposed on international travel²⁹). It is well known that confidence in democratic institutions and the elite has been declining for decades. Yet, the coronavirus could make the situation worse – research shows that teleworkers are becoming distrustful of each other.³⁰ Another aspect of trust is that, in general, it seems true that trust in the government determines the propensity to vaccinate more than

²⁸ For instance, the Italian health system faced a collapse-close state in early 2020 (see ARMOCIDA et al. 2020).

²⁹ These were found to be quite conducive in halving the reproduction rate, i.e. to slow down the spread of the virus (see CONYON et al. 2020: 17–42; DEB et al. 2020). Others did also quantify the impact of governmental policies on the progress of Covid-19 (ÉGERT et al. 2020). Let us add immediately, such policies are more likely to be effective if and when they are organically designed and are in line with the informal institutions of the given society, i.e. where the Albert Schweitzerian (1987) ethical principle of living – “I want to live, but with respecting the lives of others” – is deeply appreciated and cherished by the critical mass of the population (SCHWEITZER 2009 [1987]: 387).

³⁰ A large-scale survey of Finnish workers conveyed the message that trust among others in teleworking is significantly reduced (VAN ZOONEN et al. 2021). After six months of working from home, employees also had less trust in each other and their superiors than before. An Australian survey came to a similar conclusion (PARKER et al. 2020). Of course, this is not surprising – IBM stopped its two-decade experiment with telecommuting in 2017, before the coronavirus came out, because it thought it had a bad impact on work efficiency.

the fear of side effects. That is, the proportion of those being hesitant to be vaccinated (or the intensity of anti-vaccination movement) is significantly higher where confidence in the state and the elite is low. This is why bolstering an innovative public sector that recreates and rehabilitates trust infrastructure is of immensely importance for instance by systematically incorporating the issue of health effects of public policies of all kind.

*Engaging in the next production revolution
(Industry 4.0)*

According to Nobel laureate Paul Krugman, productivity is not everything, but in the long run it is almost.³¹ Productivity growth makes it possible to ensure prosperity, including the fulfilment of the welfare promises of states for the sake of the citizens, hence to realise a sustained improvement of the general standard of living. And productivity requires transformation and change. Technological revolutions are not rare in the modern history of economies. Typically, almost every 40–60 years, a new general purpose technology (or a set of general purpose technologies) emerges as a Big Boom event and starts to unfold by grounding and building up a qualitatively new techno-economic paradigm. It has been happening mainly since the 1st industrial revolution of the 18th century followed by the age of steam and railways by engendering the next revolution resulting in the emergence of the age of steel, electricity and heavy engineering to be then followed by the paradigm built on oil, automobiles and mass production, which was then replaced by the age of information and telecommunication (i.e. big boom event was the discovery and application of Intel chipset of the 1970s) an important beam of which is the advancement of various technologies including Artificial Intelligence, machine learning, and others constituting the anew production revolution aka the so-called Industry 4.0 as well. To cut a long story short, Industry 4.0

³¹ KRUGMAN 1997.

is nothing but a protrusion of the information and communication age being with us from the 1970–1980s. This historical scenario already reflects the lack of uniformity in the literature regarding the numbering of the revolutions. Nevertheless, still, the next production revolution (Industry 4.0) is brought to life in a Schumpeterian sense by being formed as a new combination of already existing and new-fangled technologies and being applied on a larger scale. Without being exhaustive, we confine ourselves to a broader definition of Industry 4.0 encapsulating and embracing the ongoing development and ever-wider application of artificial intelligence as well. According to such definition, the warp and woof concept of Industry 4.0 means that independent and self-optimising production processes are realised via a new manufacturing philosophy and mode of operation based on the Internet of Things and Services (IoT), in which smart factories are created by connecting resources, machines and even logistics systems into an online integrated system, a kind of cyber physical system. Fundamentally, Industry 4.0 builds upon at least nine to ten technologies such as *the application of ICT* for digitalisation of information and the integration of various systems (production and customer sides) within companies and across companies; the widespread use of *sensors* for more effective control and monitoring of virtual (cyber) and physical systems; application of *robotics* and *additive production* (3D printing); digitised, *Internet-based continuous communication and interaction* not only between people or people-to-machines interaction, but also in machine-to-machine relation; *simulation* and (virtual) modelling during production processes and design; the usage of *cloud-based services*, *augmented reality* and *data mining*, and data scientists to leverage *Big Data*. Since the very beginning of the professional discourse on Industry 4.0, the view has been held that the revolution is leading to a spectacular productivity boom. Analysts, scholars, pundits and even policy practitioners are still having a predilection to envision perceptible and revolutionised productivity growth.³² A study commissioned

³² See AICHHOLZER et al. 2015; VAIDYA et al. 2018: 233–238; World Economic Forum 2018. A paper prepared by the European Commission on the French transformation did emphasise that *Industry of the Future* is expected to create new sources of growth and jobs

by the European Parliament and prepared for the Industry, Research and Energy Committee stated that: “[...] If successfully implemented, the potential benefits of Industry 4.0 relate to productivity gains, revenue growth, and competitiveness. The implementation horizon is to have pilots running in 2016 and full implementation as of about 2025.”³³

By the writing of this book, there has not really been a perceptible breakthrough in Europe, rather only the big companies could afford some definite steps towards partly installing and relying on cyber-physical systems-like operation. Productivity stagnation at best is ubiquitous across the European Union given by the declining trend in manufacturing being coupled with the cumbersome productivity performances of the service sector.³⁴ As a consequence, there has been a gaping gap between what was once envisioned and what could be realised from it. There have been complex interactions taking the form of blind spots that we did not anticipate and thus omitted from our models at the time and that have significantly suppressed the expected productivity boom.³⁵ Let us briefly and succinctly mention only a few suppressive processes or *quelling forces* (henceforth *q force*) that have been working behind the curtain deterring many from investing intensively in Industry 4.0, thereby hindering its spread and thus delaying the emergence of the desired productivity enhancement.

Q force No. 1: Growing uncertainty over ensuring effective defence against cyberattacks make the transformation economically unsustainable: as Industry 4.0 would necessitate the rising Internet-based interconnectedness coupled with the generation of ever-more (even real-time) sensitive data (Big Data), the issue of cybersecurity has become a priority since the lack of its proper addressing make business operations economically costly and potentially

(European Commission 2017a). In comparison, other countries were to recommend the deeper installation of Industry 4.0 in an effort to increase productivity, see the Danish case in STENTOFT et al. 2017.

³³ SMIT et al. 2016: 7.

³⁴ European Commission 2021a.

³⁵ We explored the topic in more detail (see KOVÁCS 2017a: 823–851; KOVÁCS 2017b: 970–987; KOVÁCS 2018: 140–145; KOVÁCS 2019; KOVÁCS 2022b).

unsustainable. And since cybersecurity is far from being resolved (i.e. think of the series of malwares and ransomwares, Petya, Wanna Cry, SQL injections resulting in high-profile security breaches, etc.), and since manufacturing is the second most attacked sector, business players have been mainly eschewing great front-load investments geared toward Industry 4.0 development. A survey of 1,452 corporate decision-makers across ten EU Member States made it clear again that, mainly due to the uncertainties over cybersecurity, more than half of the companies surveyed have not even developed a strategy or roadmap for introducing and tapping the potential of Industry 4.0.³⁶ It seems that the view holds hard that there is still much room for improvement in the field of cybersecurity,³⁷ hence the spread of Industry 4.0 will be much more limited than previously thought questioning the spectacular productivity boosting character of the revolution. Importantly, in the light of the last decade and today's cyber activities (e.g. in 2007, Estonia was almost paralysed by a series of cyberattacks targeting the parliament, the banking system, some ministries, even newspapers and broadcasters; in 2008, the Russian military action against Georgia was also preceded by a serious cyberattack; while Russia was using cyberattacks in Ukraine to support military strikes during its invasion in the first half of 2022³⁸), one should not be therefore surprised at all about the hesitation of the business sector regarding the introduction of the digitalised network system with the aim of exploiting the full scale of Industry 4.0.

Qforce No. 2: Rapid diffusion is likely to make the transformation socially unacceptable. Since overarching digitalisation and the broad-based application of Industry 4.0-related technologies appear as a disrupting force with respect not only to the prevailing business models and practices but also to the mental health of people, the further progress can become easily undermined.

³⁶ TeamViewer – Handelsblatt Research Institute 2022.

³⁷ COPIC–LEVERETT 2019.

³⁸ A special report on the Ukrainian cyberattack context, prepared by Microsoft (2022: 1), stated that: “[...] At least six Russian Advanced Persistent Threat (APT) actors and other unattributed threats, have conducted destructive attacks, espionage operations, or both, while Russian military forces attack the country by land, air, and sea.”

The burgeoning of new platforms *as means of connections*³⁹ (Airbnb, Hitch, Liquidspace, Neighborgoods, Spotify, Uber, etc.) to a large extent eroded the triumphant position of well-established professions and spheres of businesses, and resistance developed in several places (e.g. Airbnb resulted in protests in the US housing market; Uber caused demonstrations and resistance from the side of taxi companies, etc.). What is more, pervasive digitalisation has been affecting our seemingly intangible dimensions as well, that is to say, intensive usage of ICT both at work and home is thought to be a continuous stress-fuelling factor by provoking depression and other mental and even physical diseases (e.g. continuous monitoring and control of workers, not to mention the coercion to compete with robots creates the culture of anxiety).⁴⁰ Despite the crucial importance of knowing more on the mental and physical consequences of Industry 4.0 development, studies addressing this phenomena are still in an embryonic state.⁴¹

Qforce No. 3: The anti-inclusive character of Industry 4.0 makes the state support of the transformation politically impractical. Given the complex configuration of at least three perplexing trends (state overload, chronic and growing inequalities, anti-inclusive digitalisation), Industry 4.0 development

³⁹ MOAZED-JOHNSON 2016: 272.

⁴⁰ For more on ICT stress see JOHANSSON-HIDÉN et al. 2003. Thomée and his co-authors found that online availability and activities did typically prolong stress, and e-mailing and online chatting were associated with symptoms of depression, while Internet surfing increased the risk of developing sleep disturbances (THOMÉE et al. 2007: 1300–1321). Addressing also the issue of how Big Data may become a trust demolisher channel would go well beyond our scope, however, we mention that if we have a sufficiently large and sufficiently structured data set, then with the help of computer data mining we can very easily find statistically significant correlations that are only randomly due to the law of large numbers. The purpose of such data analysis is not to support or refute any hypothesis, but merely to find coincidences to support an unscientific statement wrapped in a scientific method. Thus, Big Data may be a window into the world of arbitrary correlations. Big data makes statistical analysis faster than ever before. But large data mines also facilitate charlatanism, which can further erode the credibility and authority of science as a real and reliable source of our knowledge-building without which there is no such thing as socio-economic innovation dynamism.

⁴¹ WALDMANN et al. 2020: 284–293.

can make the future of inclusiveness even darker with menace, hence the conscious, transparent and spectacular state support of such development seems to be politically dangerous and impractical. Those who have read Arnold Toynbee's pioneering works on the English Industrial Revolution know very well that one of the important conclusions of the English historian and philosopher was that as technology advances, new systems are created and there is never a return to the former. Furthermore, Toynbee also showed that certain societies rise up thanks to technological developments and collapse when they are unable to create and develop social cohesion.⁴² Crucially, social cohesion falls short especially when chronically increasing income and wealth inequalities have become a part and parcel feature of today's developed economies being coupled with lessening fiscal capacity of the states to intervene and to broaden the social safety net due to their growing indebtedness acting as a straitjacket.⁴³ But while previous revolutions have been characterised by the ability of other sectors to absorb labour lost due to mechanisation, it is getting more and more reasonable to think that for the time being this trend will be broken with the overarching automation and robotisation potential in the digital age.⁴⁴ In other words, the current digitalisation milieu has already been on an anti-inclusive trajectory – by

⁴² The 12-volume universal history over the rise and fall of human civilisations written by Arnold J. Toynbee conveys such insights. There were two volumes of abridgments to the volumes, see for instance TOYNBEE 1987.

⁴³ For almost 30–40 years, the gap between the top earners (TOP 1%) and those that are at the bottom of the social ladder has been increasing inexorably. OECD documented that the richest 10% earns almost 10 times more than the poorest 10% as compared to the 1980s when that difference was only sevenfold (CINGANO 2014; see more on the chronically increasing inequalities in ATKINSON 2015: 400; PIKETTY 2017: 816). We will get back to the issue of inequality later on in this book when for instance the growing incredulity at the diminishing progressivity in tax systems across the OECD will also be incorporated.

⁴⁴ For instance, Acemoglu and Restrepo showed that such absorption mechanism would require a level of retraining and upskilling from the side of the workers that do not seem to be feasible (ACEMOGLU–RESTREPO 2019: 3–30). According to earlier estimations, job replacement rate due to automation can reach the following levels: 57% in OECD countries, 47% in the US and 54% in the European Union, while 77% was estimated for China (see LOESCHE 2016).

limiting the tax revenue side of the state putting it on a delicate and swampy fiscal position – which is likely to be exacerbated further by an intensively unfolding Industry 4.0. What is more, according to OECD (2021a), the lion's share of the risk of automation is on low-skilled and low-educated workers, and, there are certain signs that the recent pandemic catalyses automation too (i.e. companies tend to reduce their reliance on human labour and the number of contacts between their employees, or re-shore some production).⁴⁵ What is even more thought-provoking is that, given the already existing gender inequality, a greater fraction of females than males in occupations are at high-risk of automation.⁴⁶ These processes altogether call for inclusiveness requiring an innovative public sector in an effort to control the unfolding of Industry 4.0 and to offer opportunities for many to use their increased leisure time meaningfully and in conjunction with higher level pro-social goals (e.g. fostering sustainable development).⁴⁷ Although there are voices arguing that automation may entail a positive direct effect on employment,⁴⁸ they argue that automation makes the firm more productive allowing it to pay higher wages whereby it could steal the businesses of its competitors – it is not clear, however, why an automatising firm would continue to strive to pay a dime of human labour costs. Nonetheless, when inclusiveness is at stake, which is currently the case, we do not have to be a fortune teller to expect that economic governance is going to refrain from supporting Industry 4.0 with full steam rather than promoting it in all sorts of way whereby delaying the emergence of the desired productivity enhancement.

⁴⁵ Covid-19 resulted in a perceptible rise in new and digitalised working arrangements. A report by the German Trade Union Confederation showed that 20% of employees in unskilled or semi-skilled jobs faced the usage of new software, while digitalisation was more pronounced in case of highly complex jobs (78% of workers with a university degree found themselves in an excessively digitalised job, see DGB 2021).

⁴⁶ See CHERNOFF–WARMAN 2020.

⁴⁷ Automation and robotisation will definitely reduce working time by increasing the leisure time to be spent meaningfully. This is a question and a good deal of nudging from the side of the innovative public sector that needs to meet such goal.

⁴⁸ AGHION et al. 2020; AGHION et al. 2022: 15–39.

Migration and refugee crises

The author of this book was invited to a study trip to Brussels in 2011, where it was already discussed that, in addition to dealing with the aftermath of the 2008 financial and economic crisis, it would be increasingly urgent to meticulously tackle the problem of forthcoming waves of millions of immigrants flowing toward the EU in the years to come which is going to be a real tensile test of the European integration as a whole. Even though the chance for a fully uncontrollable immigration was relatively well known in the circle of experts, the surprising migration crisis of 2015 gave the general public an impression that national and European decision-makers did sidestep that more than problematic issue for a relatively long time. With 2014 and 2015, Europe had to respond to the worst migration challenge since the end of World War II (only in 2015, more than 1 million asylum applications were submitted by immigrants coming mostly from Syria, Afghanistan, Pakistan and Iraq). The EU agenda was then suddenly updated and a new reform package containing priority actions was also prepared by the European Commission in addressing such unprecedented time.⁴⁹ By now, it is crystal clear that there will be a substantial expansion in immigration toward the EU, especially from the second largest as well as second most populous continent worldwide, Africa. Albeit there are authoritative studies carried out by international organisations on the potential positive side of mass immigration,⁵⁰ yet, to our best knowledge, there is no convincing evidence about the feasibility of sustainable and productivity-enhancing integration of the masses of relatively unskilled or less-skilled immigrants. Moreover, opposing views that have been at war for a long time seem to be beginning to converge. Let us mention for instance that the narratives of the two distinguished sociologists-linguists, the French Dominique Schnapper and the Italian Raffaele Simone, that have been in sharp contrast to each other, started to show something in common, namely that, for instance, we can trust that French citizens will defend the values of

⁴⁹ European Council 2015.

⁵⁰ IMF 2021.

the republic and the children of immigrants will integrate, but we have to acknowledge that this is not knowledge but faith, merely.⁵¹ The migration crisis and its ensuing future waves can easily be a fatal event for Europe.⁵² Surveys were recurrently confirming that European citizens, let them be either in the Mediterranean, Central and Eastern European or Northern part of the EU, were relatively dissatisfied with the way the EU dealt with the refugee crisis. Moreover, Europeans tended to believe that inflowing refugees will entail the growing likelihood of terrorism in Europe (in addition to the fact that respondents were to express their concern that refugees are placing an intolerable economic burden on their states as well as private sectors whereby they lose their job).⁵³ This is for many reasons and undoubtedly the flip side of immigration. First, in case of the inflow of relatively unskilled immigrants, R&D&I related investments suffer as Norway showcased where the immigration shock dampened significantly such activity.⁵⁴ Second, under the current context when real wages have been mainly stagnating since the 1980s by being pervaded by a slightly but firmly declining trend in productivity growth, massive influx of immigrants might further lower the level and growth of productivity, and so reduce the level and growth of real wages often considered a primary motivator for innovation (i.e. it is an issue because as Covid-19 made it clear, investing in R&D&I by building on innovative and creative thinking is a prerequisite of developing new antibiotics, vaccines and that of streamlining diagnostics, etc.).⁵⁵ In this way, the dynamism of the European socio-economic innovation ecosystem is becoming fundamentally impaired.

⁵¹ SCHNAPPER 2021.

⁵² SIMONE 2018: 188.

⁵³ For a comprehensive survey on this issue see WIKE et al. 2016.

⁵⁴ HEGNA–ULLTVEIT-MOE 2021.

⁵⁵ There have been voices arguing that wages should be increased via direct governmental interventions in an effort to reinvigorate productivity growth (see WOLFERS–ZILINSKY 2015). However, a kind of suggestion does not count with the cost-reducing opportunity with respect to automation and robotisation (digitalisation) especially in cases when the cost of labour is relatively high or will potentially increase due to governmental interventions. Higher wages spurt higher willingness to invest in efficiency-enhancing automation/digitalisation, hence job losses are in the cards by injecting lower wages

Antibiotic resistance

Despite significant increases in life expectancy due to modern medical and welfare state efforts (i.e. life expectancy at birth in years was in the range of 30–32 in 1900, it has more than doubled since then by reaching 72–73 years by 2020), and despite the observable improvement in human development index (HDI) around the globe between 1980 and 2017, the WHO continues to treat increasing antibiotic resistance as a serious and global systemic risk factor. It happens when bacteria become able to resist and defeat the drugs designed to destroy them. The death toll of such drug resistant bacteria has been rising significantly in the last decades. For instance, a global survey showed that in 2019, nearly 5 million people died around the world from illnesses in which antimicrobial resistance played an active and non-negligible role (of which almost 1.3 million deaths were a result of the direct effect of antibiotic resistance, which number exceeded the value of death toll caused by HIV/AIDS or malaria altogether).⁵⁶ It is a hot topic simply because such death toll could have been prevented.⁵⁷ According to cautious estimates, by 2050, as many as 10 million people are inclined to die each year due to antibiotic resistance unless serious public (and private) health innovations do not happen (of course it inevitably requires that the state increases the rate of medical spending which has been on a downward trend since the end of the

for the average worker (i.e. the authors found that an additional robot per thousand workers lowers the employment-to-population ratio by 0.2% and wages by 0.42%, see ACEMOGLU–RESTREPO 2020: 2188–2244).

⁵⁶ Antimicrobial Resistance Collaborators 2022: 629–655.

⁵⁷ With respect to the issue of combatting superbugs, in a Hearing before the Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce, House of Representatives, One Hundred Fourteenth Congress on 14 June 2016, a representative in Congress advocated that one of the really intriguing and pressing health problems over the world is the emergence of bacterial infections that are resistant to antibiotics since “[...] each year, 2 million Americans become sick with antibiotic-resistant infections, and of that, about 23,000 dies. Globally, some institutions estimate up to 700,000 die each year from antibiotic-resistant infections [...]” (TSUNODA 2021: 157).

1980s).⁵⁸ Infections that we thought were resolved turn out to be fatal resulting in a potential and significant decline of trust in our medical capacity, in our states. The spread of antibiotic resistance is not limited only to the health and healthcare sector in general, but the issue percolates into almost all spheres of our life (e.g. in agriculture, antibiotic resistance did also appear when using drugs as growth promoters or preventive medicine, it infiltrates into the wastewater systems and diffuses around us as we travel and gather). Importantly, it affects us heterogeneously. As the 2020 edition of the Handbook of Environmental Chemistry stated, “[...] the most dramatic and concerning scenarios are observed in regions with poor or nonexistent sanitation, poverty, and weakened health systems or low healthcare expenditure [...]”.⁵⁹ The largest scale literature review in this topic, to date, was delivered by Jit et al. (2020) and the authors found *inter alia* that growing antibiotic resistance has and will have complex negative impacts (still underestimated costs of antibiotic resistance) on our socio-economic innovation ecosystem ranging from growing unemployment, increasing spending on healthcare,⁶⁰ through worsening productivity to escalating inequality and depressed growth levels.

Demographic quandary

The economic profession has a predilection to explain complex processes in the socio-economic innovation ecosystem by narrowly reducing the narrative to a specific and well-documented process. This is exactly what happens when they want to explain the development of complex socio-economic processes (e.g. inflation, productivity slowdown, increasing inequality and

⁵⁸ The antibiotic revolution of the 1930s–1960s is going to be treated as ancient history (CATILLON et al. 2018).

⁵⁹ MANAIA et al. 2020: X.

⁶⁰ For instance, the effectiveness of Covid-19 vaccines weakens when the patients had previously obtained serious antibiotic treatment. Antibiotic resistance evolves mostly along excessive antibiotic treatment, thereby the immune response triggered by vaccines may fall short in a more dedicated way (see CHAPMAN et al. 2022).

even the potential reversal of globalisation, etc.) to the extreme with purely demographic trends.⁶¹ There is at least two partially contradicting narratives over demographics, one states that there has been an overpopulation of the world and the size of the population itself is the alpha and omega of many complex challenges today, while the second one accentuates depopulation as a ruling trend threatening modern civilisation.⁶² It is more likely that the truth is somewhere in between if the Hegelian principle of synthesis can be treated as a guide. The population boom has been really happening,⁶³ however, not with the consequences that were envisioned for instance by the great American biologist couple, Paul R. Ehrlich and his wife Anne H. Ehrlich back in 1968, who argued that worldwide famine will emerge due to overpopulation (e.g. in India, overpopulation will result in a collapse around 1980;⁶⁴ let us add immediately that today, the population of the Earth is double that of India, but life expectancy has risen and living standards have been growing as well). In a nutshell, such Malthusian populationist views were regularly overwritten by socio-economic development highlighting the fact that the real problem is not overpopulation, but overconsumption, let us add that, being

⁶¹ For instance, there is a rather reductionist view to secular stagnation being associated with the changing demographic structure of the population in the developed world leading to a situation when the elderly prefers savings over investments (see GOTTFRIES-TEULINGS 2015).

⁶² William Reville, Emeritus Biochemistry Professor at University College Cork, Ireland, often argued that pursuing an environmentalist view (i.e. saving the biosphere, including mankind) via significantly reducing world population would perversely hurt human development and the Earth alike. Stanton (2020), in conjunction with Reville, pointed out that the current trend of depopulation and the predictions over its speed up along the 21st century, especially in developed rich countries (e.g. according to estimates, by 2100, 23 leading developed countries' population will be halved), is already an alarming sign not to be put under the carpet (STANTON 2020).

⁶³ It took 120 years from the early 1800s to double the world population by 1920 reaching 2 billion, then it took only 40 years to reach 3 billion by 1960, and today there are 7.7 billion people on Earth and by 2045 we are likely to be well over 9 billion (see the World Bank database).

⁶⁴ See EHRLICH 1968: 201.

relied primarily on excessive credit consumerism and pervaded by ageing.⁶⁵ Of course, the line of thinking goes on by considering that the current state of the socio-innovation ecosystem being pervaded by geographical and entrepreneurial concentrations⁶⁶ creates and bolsters overconsumption engendering increasing inequalities as well as the dynamic process of trust demolishing impoverishment. Additionally, the age distribution has also been changing since ageing societies are here to stay by putting innovation dynamism under pressure (elderly saves more than invest in innovation) to keep pace with time and their needs (of course, ageing and its ensuing lowering active labour force regime is burdensome for the sustainability of the welfare states as well). The gap between the richest and the poorest keeps widening while the masses in the middle have been sliding further down by diminishing a solid middle class base being a real danger to the stability of politics and that of the real socio-economic development. All in all, curbing overpopulation in a way of giving up a good deal of consumption tailored toward zero economic growth would be tantamount to accepting that our well-being may deteriorate, the number of people living in poverty may increase and, say, child mortality may rise again.⁶⁷ Overpopulation is therefore often used nothing but as a tool for evasive scapegoating,⁶⁸ it is with a lack of awareness over broader complex processes of which severity can and should be differentiated. At the other end of the spectrum, there is the concept of depopulation interspersed with ageing, which is definitely here to stay.⁶⁹ Many fear that developed countries

⁶⁵ Bricker and Ibbitson (2019) provided a comprehensive account on why the Malthusian view was wrong (BRICKER–IBBITSON 2019: 304).

⁶⁶ With few exceptions, the profession hardly draws attention to the crucial role of geography and location and that of concentration of activities in a small number of critical nodes by contributing to the emergence of systemic risk. The book by Goldin and Mariathan (2015) touched upon this issue in a more comprehensive manner (GOLDIN–MARIATHAN 2015: 320).

⁶⁷ It is worryingly shallow from the representatives of degrowth theory that they omit from their narrative such basic trend like child mortality is closely linked to GDP: the richer a country is, the fewer children will die (see Oxford Database 2022).

⁶⁸ See NORTON 2000: 23–45; CLARK 2016: 7–26.

⁶⁹ JANICKI 2017: 89–96.

will suffer the fate of Japan. The gravity of the situation is well illustrated by the fact that the Chinese Communist leadership has already broken with the one-child policy and started to increase the number of births by encouraging population growth and even restricting abortion (it let couples to have two children since 2016, while there may be even three children in the family since 2021). The topic of depopulation with ageing societies were touched upon by Charles Goodhart and Manoj Pradhan by giving a relatively new slant on an old insight over demographic dynamics, namely that with the intensified globalisation in the last 30–40 years, low-skilled and low-wage-based workers have flooded the global labour market, especially in the US, Europe and China, resulting in an oversupply of labour, hence the return on capital and the interest in capital-related investments have, unsurprisingly, been growing.⁷⁰ An important side effect of that process is the declining bargaining power of workers leading to real wage stagnation and growing inequality. A potential conclusion arising from the authors' analysis is that, owing to ageing and declining share of labour force as the demographic trend suggests, over the coming three decades, inflationary pressures, higher real interest rate and increased labour force power regain significance whereby inequality dampens. It is a pity that there is a grain of sand in this prophecy machine simply because, as we have indicated earlier, interest rate hikes in the wake of elevating inflation and the growing bargaining power of the labour are already very well exposed at the time of writing this book, while the prediction on moderating inequality is not in plain sight. The so-called Great Resignation has been happening as indicated before, meaning that workers are becoming more and more willing to voluntarily quit their jobs to find better paid jobs with improved working conditions elsewhere (e.g. offering higher wages besides opportunities for full time or part time home office, etc.).⁷¹ If one digs deeper, not only does it turn out that particularly low-paid manual workers leave their jobs (e.g. according to monthly statistics,

⁷⁰ GOODHART–PRADHAN 2020: 290.

⁷¹ According to the data compiled by the US Bureau of Labor Statistics, on average, 4.4 million quits were registrable on a monthly basis between March 2021 and March 2022

every 15th worker in hospitality industry quits), but also that just over half of them plans to seek another job in a year.⁷² Interestingly, studies do not sufficiently emphasise the link between the resignation fever and rising inflation. This is because many workers do not simply change jobs but leave the labour market. One of the underlying factors behind soaring inflation is that more than four million Americans have not returned to the labour market to date. With fewer workers, supply and production are likely to remain stagnant, and wages are rising rapidly due to labour shortages, threatening to create a price-wage spiral by feeding back to the elevation of inflation. Many analysts and the cited work of Goodhart and Pradhan believe that we are very close to an inflexion point when the process of growing inequality will be reversed due to demographic trends, triggering the Great Resignation as well (increasing wages for blue-collar workers by moderating inequality).

It is unfortunate to forget the phenomenon documented by many that more confident positions do not necessarily reflect accuracy and precision at all.⁷³ That is why we are taking a much more cautious stance. Unfortunately, there are good reasons to think that this will remain at the level of wishful thinking, especially in light of the advancement of digitalisation and Industry 4.0, as discussed earlier, accelerating automation and robotisation may reduce the chance of quitters to keep their bargaining power by contributing to the global trend of increasing inequalities both within and between countries.⁷⁴ Thus, the trend, when people started to feel that they are more and

(www.bls.gov/news.release/jolts.to4.htm). Plus, lacking career advancement has become the primary reason for quitting jobs (DE SMET et al. 2022).

⁷² Bankrate 2021.

⁷³ On our ability to predict precisely and on to what extent can our predictions be “good”, see Kahneman and his co-authors’ work when writing about the distorting effect of noise causing lack of objective knowledge (objective ignorance may then appear, KAHNEMAN et al. 2021: 344).

⁷⁴ Although there were convincing pieces of papers on the declining global (between countries) inequality (e.g. RAVALLION 2014: 851–855; RAVALLION 2018: 620–642; MILANOVIC 2018: 320), that argument today does not seem to be as robust as it was years ago (see YONZAN et al. 2021; DEATON 2021: 1–10). Moreover, some found that global inequality will rise again (KANBUR et al. 2022).

more left behind, and the globalisation does not work for all, can easily regain traction which calls for an innovative public sector to break such self-defeating mechanism being embedded into the socio-economic system.⁷⁵

Natural disasters and climate change

According to the common view of ecologists, mankind's only chance of survival is to provide the sustainability of the Earth's biosphere. There is now a firm belief that climate change is because of a series of human induced activities affecting all spheres and processes of living systems on Earth. The history of humanity has reached a new chapter, we are no longer the children of nature, we are influencing it, we have become the progenitors of climate change. A 2022 UN Report documented that climate change has been leading to a rapid increase in the number of disasters worldwide.⁷⁶ Every year for the past twenty years, there have been 350 to 500 disasters of medium or greater magnitude. Their costs have risen to an average of \$170 billion a year over the past decade. By 2030, the annual number of disasters could increase and millions of lives could be threatened by drought, extreme weather anomalies and floods by triggering a great deal of suffering and migration. A self-destructing spiral is therefore here to stay. Climate change fundamentally affects all aspects of our lives (e.g. migration, health, security, demography, etc.). In terms of demographics, for example, fewer and fewer people dare to have children (40%

⁷⁵ Impoverishment and the share of poverty can rise again even in case of the US where those numbers are not on our poverty radar (it is the case when using the standard poverty line of \$1.9). Measuring poverty by building on traditional and ingrained methodological approaches falls short in capturing reality simply because of a lot of inbuilt conceptual failures of such methods (e.g. poor country poverty lines multiplied by PPP are infinitesimally low in case of rich economies, in other words, relying on the poverty line of \$1.90 is definitely not enough in the US or other rich countries, consumption patterns can be extremely different between northern colder countries and the Mediterranean ones, etc.).

⁷⁶ See United Nations Office for Disaster Risk Reduction 2022.

of young people do not dare). A study found that almost 60% of Americans between the ages of 27 and 45 are seriously afraid that their children's quality of life will deteriorate due to global warming, and 6% have already regretted having had a child.⁷⁷ Thus, anthropogenic climate change is a call for collective action and one of the last expressions of which was the ratification of the Paris Agreement that came into force in 2016 with the goal of limiting global warming approximately to 1.5 degrees Celsius, compared to pre-industrial levels. Let us underscore immediately that climate change is a complex phenomenon, taking opinions and recommendations to the extremes does not take us anywhere. We should therefore have neither a Panglossian optimism (and even negligence) over its happening nor an apocalyptic mindset proclaiming the inevitability of the end of the world as it is known.

On the one hand, while it is true that development has led to a reduction in pollution in developed countries (e.g. 26% in Europe and 22% in the United States in 15 years), moreover, technological development has been enhancing the efficiency of our production too,⁷⁸ this is not yet a cause for hurray optimism, we have no scientific evidence that the downward trend is sufficient to contain climate change. On the other hand, extreme environmentalists, who like the Cassandras of apocalypse, often recommend that inexorable and inevitable extreme cuts in consumption and production are the good way forward omitting the central role of innovations and new technologies that can really help.⁷⁹ Let us add that often unexpected black swan events speed

⁷⁷ SCHNEIDER-MAYERSON-LEONG 2020: 1007–1023.

⁷⁸ We can list a number of advancements as well since the chance to create and consume more for less has become ever-higher due to technological development (see MCAFEE 2019: 352). For example, in the UK, between 2000 and 2017, the volume of resources used per capita fell from 12.5 tonnes to 8.5 tonnes. Essentially, despite global economic growth, humanity is using less and less raw materials. In 1959, 85 grams of aluminium were needed to make a can of beer, but today it is only 13 grams, and it comes mostly from recycled sources. Still, mankind uses as much ecological resources as if all people lived on 1.75 Earths. The ecological footprint has been deteriorating signalling that the improvements so far are not enough.

⁷⁹ There is a belief that banning plastic is an instructive way toward sustainability, however, this is a proposal that reflects a vastly simplified worldview and very solid knowledge.

up the process and put forecasts in parentheses.⁸⁰ True, some moderation is fine, but forcing sustainability does not seem sustainable at all if and when it sacrifices individual freedom to be an indispensable constituent of public trust in the state and economic governance alike.⁸¹ But we should also beware of mediocrity in the sense that we must not sit back in a complacent way shooting at the averages (e.g. 1.5 degree Celsius), either. Pursuing such target number globally would assume that global warming on our planet is taking place perfectly evenly, which is a bold and utterly unrealistic assumption given the complexity we live in. In a nutshell, the ecosystem is a complex adaptive system being pervaded by non-linearities, non-ergodicity, spillovers, positive

The plastics industry really uses a lot of oil: a total of 169 million barrels was registered in the US in 2007. However, this was only 3% of all US oil consumption. It is estimated that plastics require a total of 70% less energy use compared to paper bags production because paper is heavy and takes up more space, consuming seven times as much gasoline as it transports. What is more, using plastic components in automotive industry is also conducive to reach out a declining emission rate (i.e. since plastic components do typically weigh 50% less than similar components made from other materials for every kilogramme of weight reduction, a car will emit 20 kg less CO₂ over its lifetime, see Plastics Europe 2022).

⁸⁰ With respect to the evolvement of carbon neutral age, Jeremy Rifkin, who was an advisor to the European Commission and now is the President of the Foundation on Economic Trends, anticipated that such new economy can emerge as soon as 2023 or as late as 2035 by also mentioning that it would require a conspicuous redevelopment of power grid network being equipped with decentralisation (RIFKIN 2015: 448; RIFKIN 2019: 290). The Russian–Ukrainian war, however, as a black swan event of early 2022, might fasten the pace of such transition as more and more developed countries and integrations are to detach from Russian energy sources.

⁸¹ It seems that climate change awareness movements appear in a form of waves but dissolves to a certain extent into the air when a perceptibly even greater shock hits land. With 2006, a relatively new climate change awareness wave started to unfold on the horizon of the developed world (i.e. large companies vowed to stop consuming carbon dioxide, the French turned down the lights on the Eiffel Tower, big oil companies started feverishly spending on green energy technology, etc.); however, it was then overshadowed by the financial and economic crisis of 2008. Since then, some progress has been made, but the process is apparently taking place in a crossfire of very strong forces of inertia and we still have to wait for the real *breakthrough* in the Nordhausian and Shellenbergerian (2007) sense of the word (see NORDHAUS–SHELLENBERGER 2007: 256).

and negative feedbacks, bifurcations – that are often called tipping points where our ability of influence ceases to exist and the chance to get back to an earlier systemic configuration becomes almost impossible – when cumulative causations, fluctuations are intrinsic while phase transitions (based on irreversibilities) can emerge making the whole system a far-from-equilibrium configuration with increasing entropy. And nothing else can follow from targeting certain averages thought to be optimal and anchoring ones is nothing more than gaming with numbers to reassure ourselves by hypothesising a fully homogenous world.⁸² All in all, both microscale and macroscale efforts are needed to curb climate change in a globally coordinated way by encapsulating the complexity we live with, and in this process public sectors do play a central role either as initiators and demonstrators or collaborators with private and civic undertakings.

Emerging patterns in emerging markets

So far, the available literature has largely remained silent on the complex interplay between structural changes in developed and emerging markets which is of paramount importance in understanding the suppressive forces over the dynamism of the socio-economic innovation ecosystem. There are structural changes unfolding in emerging markets, while structural changes do also occur even in developed countries by having an impact on the competitiveness paradigm of emerging ones, too.

There is a pattern of structural transformation within some emerging markets the impetus of which is reaching the spheres of developed countries

⁸² Enough to look at the oeuvres of the Nobel Laureates Giorgio Parisi or Ilya Prigogine. Parisi, who got the prize for the discovery of the interplay of disorder and fluctuations in physical systems from atomic to planetary scales, pointed out that living systems have a property of replica symmetry breaking meaning off-equilibrium (e.g. PARISI 1992: 316–321; PARISI 2002: 1–15). Another Nobel Laureate in chemistry, Ilya Prigogine discovered far-from-equilibrium systems being featured with dissipations (e.g. PRIGOGINE–STENGERS 1984: 349; PRIGOGINE 1967: 147).

as well. This is not an outlandish phenomenon but the natural feature of a living socio-economic innovation ecosystem which advances itself along technological revolutions creating and grounding anew techno-economic paradigm. After a certain level of quantitative growth, qualitative growth breaks out. A prime example of such transformation is the development of India which country leapfrogged over industrialisation-based growth model to straightforwardly cultivate a services economy⁸³ achieving enviable and even increasing growth rates in the last four decades (according to World Bank data, average annual growth ratios were as follow: 5.69% for the 1980s; 5.76% for the 1990s; 6.28% for the 2000s; and 6.63% for the 2010s). That route was long considered a blasphemy for many development economists who thought that one of the timeless conventional wisdoms of economics is that developing countries can and must follow a linear development from an agricultural economy through a manufacturing-led to a service-driven economic paradigm offering qualitative not primarily quantitative growth. An important element of such structural change was the decisive steps initiated by the economic governance to open up the country for a better suited integration into the global economy (i.e. this requires some sort of resilience with an innovative public sector). In case of India, the ability of the governance to adapt to changes through flexible policies (i.e. resiliency) was a key leitmotif behind the structural change simply because a “[...] constraint will cede its place to others once it is successfully lifted”.⁸⁴ Both the theoretical and applied scientists from the academia and economic policy calmed down with the development of services and services innovations in India simply because while services-oriented business activities are relatively more limited as compared to manufacturing establishments, this did not prove to be a vital factor when it comes to fostering productivity. Services firms can glaringly scale up via innovations without sizing up through investments in intangible capitals and then can leverage the diffusion of information and communication and today’s digital technologies (e.g. according to The Observatory of

⁸³ GHANI 2010; GHANI 2011: 352.

⁸⁴ RODRIK 2012: 346.

Economic Complexity,⁸⁵ computer and information services represents one of the most prominent shares within the total exported services, followed by other business services and personal travel).⁸⁶ Service-orientation not only contributed to the productivity growth of the Indian services sector as well as manufacturing sphere,⁸⁷ but also supported the business dynamism of other developed countries placing part of their activities into a low-cost country like India.⁸⁸ Importantly, India's process of becoming a service economy had to go hand in hand with the structural shift in the developed world, when an ICT-based knowledge economy emerged with a predominance of the service sector. However, as an improperly neglected consequence, voluminous outsourcing allowed real wages growth to be infinitesimally low in the last 35–40 years in the US⁸⁹ exacerbating further the inequality, as indicated earlier.

Another equally important structural change has been happening in China being a promising and a rather disquieting tendency alike. Chinese structural change has been associated with a perceptible slowdown in economic growth (lowering productivity growth) resulting in a phase transition to an economic model built on more internal consumption as well as the performance of the services sector, which is now more than just a dormant source of global inflation.⁹⁰ Forgetting the qualitative change of China would be a Hayekian fatal conceit if for no other reason than because it does already have and will presumably have further significant impetus on the economic performance of the developed world such as the European Union and the United States, as well. The Chinese economic paradigm has not

⁸⁵ SIMOES–HIDALGO 2011.

⁸⁶ See the central role of service innovation in KOVÁCS 2010. Moreover, the role of the investments in intangibles is non-negligible too in favouring a fertile ground for service-led development (see NAYYAR 2021). For more on economic complexity with respect to trade see <https://oec.world>.

⁸⁷ MUKHERJEE 2018: 192–209.

⁸⁸ See the productivity gains of US outsourcing to India in AMITI–WEI 2009: 203–220.

⁸⁹ KOMLOS 2016.

⁹⁰ The Chinese slowdown will have perceptible impact on the European export dynamics (see World Bank 2016).

been shifting by accident, because a system based exclusively on the manufacturing sector and export-led growth do not seem to fit the requirements of the country and that of the world economy any longer. This has been not an issue only for outside observers but also for Chinese experts. If one takes a mere glimpse on the Five-Year Plans of the last 40 years, it becomes clear that even the Chinese leadership has started to enshrine the idea that the growth rate of the country is fading significantly. The 12th Five Year-Plan (2011–2015) alluded to the required shift towards a more consumption and service sector-based paradigm, it was discernible *expressis verbis* in the plan.⁹¹ Due to the shift, the economic growth has been going through a dampening process (real GDP growth of China was 10.4% in 2011, it then plummeted to 7% by 2015 to hover around 5.9% in the last pre-pandemic year of 2019). It is more telling that the 13th Five-Year Plan contained a new narrative over the advent of a “new normal” meaning that a medium-high growth rate of 6.5% annually seems to be feasible, merely;⁹² while the last 14th Five-Year Plan (2021–2025), for the first time in the history of the plans, has not set an explicit growth rate to be pursued. It is more than intriguing since the Chinese Government has published a white book in declaring that the country is a *Democracy That Works*,⁹³ and one of the glorious proofs of which is *inter alia* the strong and rapid growth. It was quite naïve to think that a country with a population of 1.4 billion being pervaded by undeniable human development⁹⁴ and that of an expanding and stabilising middle class with higher, and most importantly, more sophisticated import demand would

⁹¹ ROACH 2011; ASH et al. 2012.

⁹² See LU 2017: 89–113.

⁹³ The book is about how the governing system of the “People’s Democratic Dictatorship” works (see www.news.cn/english/2021-12/04/c_1310351231.htm).

⁹⁴ As UNDP (2020) observed, between 1990 and 2019, China’s HDI value increased from 0.499 to 0.761, an increase of 52.5%. Despite the fact that there is still much room for improvement on many grounds regarding human development (e.g. the share of people suffering from deprivations in health, education and standard of living is still relatively high, the report also showed that the share of those being vulnerable to multidimensional poverty is still severe relative to the region), still, during the hair-raising growth period, about 800 million Chinese escaped poverty (see UNDP 2020).

still be able to achieve double-digit export-led growth dynamics.⁹⁵ Albeit we had some evidence on how fast-growing economies slow down, predicting the Chinese decline was not successful at all. A study by Eichengreen et al. (2011) assumed that China will reach an inflexion point and shift to a deteriorating economic expansion in 2015 when its GDP per capita surpasses the level of \$17,000 (even in 2020, this value was only around \$10,500⁹⁶). One possible way to explain why it slowed down earlier than expected is to incorporate the fact that, in the meantime, the demographic bomb, acting in the manner of creeping normalcy in the background, has also been directing the country towards such structural change. China's population growth has been slowing and is expected to come to a complete halt by 2035 and then decline. The fertility rate is only 1.3 – well below the 2.1 needed to keep the population at a constant level. It is surprising just because the fertility rate did not drop below 1.6 during the one-child policy. If there are, and will be, so few children born, China's population will not shrink to 1 billion by 2100, as previously predicted by the UN, but to 700 million, merely. The working age population has shrunk by 40 million in ten years and according to cautious estimates by stifling down the economic potential of traditional blue-collar worker-based export sectors. Let us note that this demographic trend shows a close co-movement with the socio-economic configuration insofar as one thinks of the fact that the increase in prosperity for many is typically leading to a decline in population growth.⁹⁷

Only a few studies went beyond superficial conjectures about the major drivers of the spectacular growth rates and that of the decline.⁹⁸

⁹⁵ For more on the Chinese slowdown see CHEN–GROENEWOLD 2019; WU 2020: 137–167; HONG 2017; QIAN 2017: 65–83.

⁹⁶ See World Bank Database.

⁹⁷ In addition, few children became a cultural norm. Those who grew up alone are less likely to be engaged in a large family. Women have also emancipated since they want a career and prosperity, so they would marry later and have fewer children (see ROSSI–XIAO 2021).

⁹⁸ Traditional works on the Chinese development had a predilection to overemphasise the role of internal processes in explaining the development path (see HUANG 1980: 132). However, the world outside China had also changed a lot affecting the country

Industry-focused sectoral studies tried to scrutinise the sources of growth and revealed that the salient growth performance was fuelled mainly by physical capital investments.⁹⁹ It implies that the voices calling for the culture of investing in intangibles such as talents and skills that foster the evolvement of knowledge-based innovation-pursuing economy (including digital, organisation and managerial know-how), fell on deaf ears for a long time.¹⁰⁰ It has become all the more important since the slowdown could put increasing pressure on companies to invest in automation and robotics to replace rising labour costs (education has improved significantly in recent decades, and the proportion of university graduates has doubled in ten years to 40% leading to better educated workers with enhanced technical skills demanding higher and higher wages).¹⁰¹ The rapidly evolving mechanisation, on the other hand, allows firms to get rid of the increasing labour costs. Additionally, in principle, as digitalisation and Industry 4.0 unfold, production processes and technologies will become increasingly cheaper even for China, automation and robotisation will then give an even greater impact to the weakening of the concept of wage-based competitiveness by also triggering a structural shift. And it is not a future scenario envisaged on paper, because China today manifests as the top high-tech manufacturer, what is more, China is now acting as a serious competitor in the cutting-edge technologies of Industry 4.0 and the digital economy itself such as artificial intelligence, 5G, quantum information science, semiconductors, biotechnology and green energy.¹⁰²

and provoking changes. The processes act back and forth, the external influence affects the internal basic mode of operation and thus always just a cumulative development takes place.

⁹⁹ The contribution of total factor productivity improvement to GDP growth has been relatively dwarfed (0.6%), while the growth of capital input explained 89.2% of the real GDP growth in the period 1991–2016 (see WU 2020).

¹⁰⁰ CAI 2015: 1–12; FAN 2015: 88–104; LU–XIANG 2016: 25–50.

¹⁰¹ Hourly manufacturing wages have been rising as the share of better educated workers flooded the labour market (see YANG–MAYSTON 2012: 65–89; YAN 2017).

¹⁰² ALLISON et al. 2021.

Although there are positive impacts of the slowdown (mitigating burden on the environment, potential reversal of the declining US manufacturing jobs due to the ever more limiting Chinese export dynamism;¹⁰³ and even a sort of curbed hyper-globalisation with more emphasis on inclusive prosperity at home and peace and security abroad), it resulted in spillovers negatively influencing the real GDP growth rates of the European Union as a whole via direct trade, financial as well as commodity price channels;¹⁰⁴ it has triggered changes in the European import structure, and it has made the price-moderating effect of the cheap Chinese products smaller. Not to mention that China has now become a substantial naphtha of rebelling inflation partly due to the protracted and cyclically recurring Covid-19 crisis strongly affecting the Asian country's growth potential (e.g. the great havoc induced by the coronavirus is visible in many ways, for instance, enough to look at the fractures in the real estate market signalling serious structural problems in the Chinese economy that are per se directing toward soaring inflation as well).¹⁰⁵ Rebalancing the world economy by fostering the synchronisation between the structural changes happening in developed and emerging countries is of particular importance. One of the key lessons of economic history and economic theory itself is that participating in globalisation feeds back to prosperity since international trade benefits a country, but only as long as distributive concerns are addressed. To this end, innovative public sectors and

¹⁰³ For a long time, the rise of Chinese trade was responsible for the widely documented decline in the US manufacturing jobs after 2000 (see PIERCE–SCHOTT 2016: 1632–1662; AUTOR et al. 2013: 2121–2168). It held in case of 18 OECD countries in sectors that were exposed primarily to Chinese import (see THEWISSEN–VAN VLIET 2019: 215–232).

¹⁰⁴ See CASHIN 2017: 164–175.

¹⁰⁵ The collapse of the Evergrande Group in 2021, one of the largest real estate developers in China, nourished the message that the real estate sector can be considered a ticking time bomb for the entire economy. Of course, the trade war between China and the US, which started in 2018, did not provide a cushion for a healthy structural transformation in case of China, either. The unpleasant scenario that uncertainty over trade policy is perfectly suited to reduce growth performance in a range of 0.22% and 1.07% whereas real GDP can be mitigated by between 0.76% and 2.37% as a result of tariff war (see BEKKERS–TEH 2021: 129–154).

economic governance are needed to take part in such a grand reconfiguration of hyper-globalisation.

Sovereign debt crisis

Today, we need to realise that the world economy has entered into a special era with non-linear systemic risks alerting us to be careful about our unconditional faith in conventional wisdoms of economics. The financial and real economic crisis of 2008 and the coronavirus epidemic with a completely different pathomechanism not only parenthesised a number of previous findings, but also overwrote them. It is now clear that we were wrong when we believed that price stability automatically leads to economic stability; easy money always stimulates demand; the functioning of the economy is such that it ‘adjusts’ itself to the balance; or when we believed that inflation is always dangerous, and so on.

For a long time, it was a clear view that public debt is immensely bad. Suffice it to say that Millennials and Generation Z did directly watch and even experience the debt crisis looming after the 2008 crisis, the subject of public debt, which has often been the subject of discourse only among narrow experts, has not remained so esoteric. The possibility of Greek bankruptcy, the more than lurking Italian banking crisis, the potential debt trap in the Mediterranean as a whole meant that indebtedness had virtually become a topical issue at the dinner tables. There was a belief and even a consensus among experts that increasing indebtedness is from the devil. By the end of 2020, for instance, as World Bank statistics reveals, global debt skyrocketed to \$226 trillion, producing a rate of growth the world has not seen since World War II by lifting global public debt-to-GDP rate to a record height of 99%.

Still, as Eichengreen et al. (2021) suggested,¹⁰⁶ one can vituperate the conventional wisdom of economics saying that public debt is always and under all

¹⁰⁶ EICHENGREEN et al. 2021: 320.

circumstances dangerous and avoidable. Somewhere it is part of our human nature, as can be seen from Daniel Kahneman's oeuvre,¹⁰⁷ to assume that familiar and much-lipped things are more likely to be true.¹⁰⁸ Such an observed feature of public debt is that it is accompanied by a slowdown in economic growth as it crowds out a high magnitude of important investments from the real economy.¹⁰⁹ Not to mention that it will be a greater burden on future generations through debt service, and their opportunities for development will suffer. Thus, according to this experience and perception, the increase in the debt ratio is by no means an enemy of a straw man, but a real source of danger. So, the well-known verdict has developed in the profession: *not being afraid of curbing debt is OK*.¹¹⁰ This view has also been validated in the field of institutionalisation, think only of the debt rule of the Maastricht Treaty

¹⁰⁷ See KAHNEMAN 2013: 499.

¹⁰⁸ The situation is probably even worse, namely that mainstream economics is struggling to win the "hard science" token through mathiness. It privileges formal mathematical statistical modelling over practical and reality-congruent policy by discarding the rich tradition of qualitative and deep drilling case-study-oriented research, hence mainstream economics misses the synergies, complex linkages and systemic effects that constitute the glue bonding the socio-economic innovation configuration together.

¹⁰⁹ An authentic reference in this regard is the paper by Reinhart and his co-authors, who, based on 200 years of experience in case of 44 countries, have shown that the countries have always seen lower growth coupled with rising debt rates, and the negative cumulative effect of debt accumulation on a given economy has been 23 years (!) on average (REINHART et al. 2012: 69–86). The negative impact on real GDP growth is higher when the increase in debt-to-GDP ratio is unanticipated, as it was the case most of the time in 178 countries between 1995 and 2020 (see DE SOYRES et al. 2022).

¹¹⁰ Let us notice that the meaning of the sentence "not being afraid of curbing debt is OK" varies depending on whether we put the comma after "not being". To the history-savvy reader, this immediately reminds Archbishop of John Merania's famous ambiguous letter about the conspiracy against Andrew II's first wife, Gertrude of Merania. That sentence was as follow: *Reginam occidere nolite timere bonum est si omnes consentiunt ego non contradico*. And depending on the commas used, the meanings are totally different. In free translations, it can be read as: "There is no need to kill the queen, you should be afraid, if everyone agrees, I do not, I oppose", and in this way too: "You should not be afraid of killing the Queen, if everyone agrees, I do not oppose."

or the United States Budget Execution Act of 1990.¹¹¹ Today, however, we see that the above verdict was quite light-hearted. Today, in the shadow of Covid-19, developed countries have let go of the reins, increased indebtedness and responded to the challenge with unprecedented speed.¹¹²

Indebtedness is sometimes a means of survival and is ultimately the key to the functioning and subsequent development of the political, economic and social system. Throughout history, governments have repeatedly borrowed to combat a wide variety of wars, natural disasters, financial crises and economic downturns, when the public policy response required more resources than could be mobilised from current revenues. However, as usual, no pain, no gain, that is to say the loan does not come for free, creditors certainly have expectations that are good to be met in an institutionalised way by governments tending to increase the debt ratio. These include building and maintaining a system of checks and balances, central bank oversight of inflation, setting up and safeguarding institutions that minimise the possibility of ad hoc and irresponsible fiscal policies, and providing a secondary liquid market.

As states borrowed, they grew. The size of the state and thus the portfolio of its services has increased over the centuries.¹¹³ Moreover, sovereign debt generation has further served as a catalyst for the development of the financial system. By the end of the 19th century, international debt trading appeared all over the world. The shockwaves of the bestial episodes of the 20th century (the two world wars) have driven European countries towards the emergence

¹¹¹ The 1990 Budget Execution Act was passed by the United States Congress. The law guaranteed the reduction of the deficit and the intellectual heir of the Gramm–Rudman–Hollings I and II laws that required a balanced budget at the federal level from the second half of the 1980s.

¹¹² Think of the EU's recovery and resilience-building funds for the Member States in fighting against the severe impact of the Covid-19 epidemic. But there is also the suggestion that central bank funding is needed to replace budget transfers, which is direct and non-refundable (helicopter money).

¹¹³ Obviously, it is not unimportant what causes the size of the state to grow and which areas it spends on by using its redistributive function (e.g. public spending on education and health care has typically increased the potential GDP growth in the long run, see FOURNIER 2016; FOURNIER–JOHANSSON 2016; MURAKÖZY 2012: 368).

of welfare states (driven by the intention as well as desire to build and expand social safety nets) when debt was no longer used to finance wars, but to design and maintain ever wider and deeper social programs and transfer payments.

Our historical experience is that economic growth will be stalled rather than boosted by debt mountains. Prominent authorities have gone so far as to come up with a concrete numerical turning point: long-term experience in developed countries has shown that debt-to-GDP ratios above 90% have been coupled with weak growth almost without exception.¹¹⁴ This realisation has led many toward an ill-considered austerity policy following the 2008 crisis.

For our part, we note with particular regret that criticisms of the 90% debt threshold, which has been concretised and perceived as detrimental to growth, have been thrown into the clutter of superficial conjectures by the majority of the profession whereby neglecting the historically verifiable fact that this 90% is actually an arbitrary choice, and in fact it happened that as debt grew, it was always coupled with weaker and weaker growth. The growing debt stock has not resulted in weakening economic expansion, but in non-linear back-and-forth mechanisms that have been and continue to prevail.¹¹⁵ For example, the chain of responses to interest rate increases due to higher and higher debt stocks strongly determines the content and shape of processes (distorting taxes, inflation, uncertainty, declining and deferred investment, declining productivity and innovation dynamism, etc.). The crisis of 2008, but rather the crisis of Covid-19 from 2019, must be seen as a turning point in this respect as well, as interest rates have *not* risen at the same

¹¹⁴ REINHART-ROGOFF 2010: 573–578.

¹¹⁵ We can say that there is no clear and unambiguous causality that Western (economics) culture has set up for. With some irony, in the West, if someone goes into the bathroom and presses the light switch, He or She immediately knows that the light that comes on will necessarily turn on. In the East, however, we are well aware that if we go into a bathroom and press the light switch, a lot of things can happen: (1) the house can burn down; (2) the boiler may explode; (3) the commando can come in through the window and arrest us; (4) Babrak Karmal applies for and receives political asylum from Czechoslovakia, etc. Consequently, for us Easterners, our thinking is much more organic and holistic.

pace as expected, which would have essentially underpinned and maintained the mechanism juxtaposed above.

With the financial and real economic crisis of 2008, and especially with the aftermath of the Eurozone crisis, developed countries were sought to stimulate their economies by increasing debt and raising money in a “relatively coordinated manner” with the underlying aim of demonstrating their ability to act and control the processes, i.e. to legitimise their existence. The global financial crisis of 2008 reinforced the view that indebtedness does not necessarily lead to automatically escaping inflation, low interest rates and fiscal crises. We should not be surprised then that the public health emergency caused by the coronavirus epidemic, which began in 2019 and then became global, which in a sense can be apostrophised as a war for the survival of the present generation, has led to an increase in debt rates (e.g. the average debt-to-GDP rate of the Eurozone was above 100% of the GDP by 2021), with the world now collectively turning a blind eye over moral hazard (e.g. Germany has suspended the debt brake rule and reached a deficit of 4.2% in 2020). The only question is whether the current higher level of tolerance and attitude towards increasing public debt will change, and whether those who predict that inflation will elevate more after the pandemic (but rather in the meantime), whether the historically low interest rate environment will end, whether the “accumulation” of debt mountains will begin, which will then have to be consolidated in some way. In fact, it is not from the Covid-19 crisis, not even from the financial and real economic crisis of 2008, that the new concept of public debt is worth considering. The roots of this more tolerant approach go back to the 1970s. From that decade onwards, a more spectacular and broader dismantling of the obstacles to the flow of international capital was taking place, not to mention that the marked deregulation of the financial markets paved the way for investment banking activity, moreover, a significant reduction of the weight of progressive tax systems started to materialise that otherwise were to counteract inequalities, thus, an excessively rapid financialisation began (i.e. the expansion of the financial sphere into the real economy) by encoding the rise of public debts.

Stimulus-driven crisis management following the 2008 crisis (e.g. fiscal easing and the use of quantitative easing in monetary policy) has only further fuelled the financial universe, complemented by the cryptocurrency world, but real economic performance has remained lagging (there has been no dramatic improvement in productivity or an increase in productive investment spending instead of a social dimension, zombification¹¹⁶ has started to intensify which has been marked by the fact that there have never been so few insolvency proceedings in Europe as in recent times, etc.). The result was a vicious circle. With the abandonment of the stimulus by returning to austerity-based crisis management, it is more likely that masses of companies will go bankrupt, unemployment will soar, the hard-won demand side will collapse and an economy with an increasingly anti-inclusive character would only suffer from an even deeper employment problem (especially because Covid-19 has become almost a driver of automation and robotisation in the era of the completion of Industry 4.0), which would result in gathering anomalies in financing public debts (e.g. keep in mind that the debt ratio in the Eurozone exceeds 100% of GDP by 2021).

The message of the above, by the way, is not that from now on we can see debt accumulation as a path to salvation and ordinary happiness. Rather, due to the complexity of the socio-economic system, there are no prescriptions independent of time and space, a dynamic approach, continuous monitoring and sometimes self-correction are needed to account for broader interactions. There are no easy solutions. It is no coincidence that the fight against the coronavirus epidemic in developing countries has so far failed in financing the increase in deficits via the help of the central banks in such a way that it does not immediately become a major focal point for inflation.¹¹⁷ It is no coincidence that OECD countries with larger fiscal buffers have been able to

¹¹⁶ The increase in the number of companies with low productivity and often insufficient profits to finance interest on loans, i.e. companies that would have long been selected out from the market under normal market conditions but have remained on the market as “living dead” (zombies) owing to the economic policy measures imposed.

¹¹⁷ IMF illustrated it in the case of Sub-Saharan Africa (see NGUYEN et al. 2021).

do more for the survival of companies and households during a coronavirus epidemic. And inflation can only be healthy to the extent that we can control it. But we do not know exactly how high this level is. The exact location of the thin red line in this regard can only be determined after crossing it.¹¹⁸ This is especially important at the time of writing this monograph because many people assume that some of the debt can be inflated. In our view, this might be the case in peacetime, but rising inflation is not usually the property of peacetime; what is more, as income and wealth inequalities have been increasing in the socio-economic innovation ecosystems of the developed world, as impoverishment increases, as the middle class shrinks, the demand for wage growth has become more visible and permanent, but the latter is easily burned by growing inflation. With this in mind, in this way, however, it is not the image of the acting state that can unfold. In other words, the path through letting inflation rise is extremely self-defeating.

That is why we would think that debts can grow out if there is real economic dynamism that needs to come from the real economy. However, it seems that in most of the socio-economic systems that emerged in most developed countries, as a result of aging, the need for savings overcompensates investments, after which a policy of low interest rates may have prevailed.¹¹⁹ This implied that less and less productive investments were pursued in the real economy, that is, further expansion of the financial system can be projected to the detriment of real economic performance. We therefore call for a much-needed reform of the global financial system so that it can return to be at the disposal of the real economy after which individual states will be more capable of taking successful approaches toward sustainable debt management. Obviously, primary surpluses and

¹¹⁸ Do not get us wrong, we know very well that even negative things can also be phrased in a way that many like (mainly through the framing effect known from psychology). We could also say that inflation is ultimately a good thing because it allows tens of thousands of people to live in more expensive neighbourhoods without having to move.

¹¹⁹ As Blanchard (2022) stated, there has been a shift in demand towards safe assets (BLANCHARD 2022).

fiscal buffers are needed to deal with the next crisis; in our view, however, without the reform of the financial system and without establishing some directionality into it, neither the digital transformation, nor the more inclusive development, nor the building of a climate neutral economic structure can be organic and realistic. By then, public debt can be used more clearly to finance long-term investments in the fight against climate change and in enhancing energy efficiency. This would then reveal the truly innovative nature of fiscal policy.¹²⁰

Cicero already testified that: “A country is strong only if it has credit” (in terms of solvency and not indebtedness, of course!). Consequently, fiscal balance cannot be an end, but a mean: an instrument to safeguard the feasibility of economic policy. However, in order to realise that increasing debt is neither good nor bad in itself, a broader approach is needed, which recognises that much depends on the ability of the public sector to innovate.

Shade of populism, shadow of sanctions

The peculiarity of the period from 2008 to the present is the arc that has led us from populism, guarding against harsh economic reform and favouring short-term pleasures, to a world of sanctions showing unprecedented hardness and short-term pain.

As a starting point, and as it was partly emphasised earlier, we need to realise that for decades, conventional economics wisdom, which has been favourably preferred, has proved flawed, not navigating the world economy towards the desired balanced and sustainable growth and development, but playing an active role in coding critical instability. The most significant of these dreams is liberalisation in the broadest sense, which has manifested itself in the following areas: (1) tax cuts (consciously reducing the progressivity of tax systems in order to stimulate investment, i.e. economic

¹²⁰ See KOVÁCS 2015: 310.

dynamism);¹²¹ (2) deregulation of the financial sector; and last but not at all least (3) the dismantling of trade barriers. According to the prevailing economic narrative, these are all designed to guarantee the availability of higher profits and thus the viability of the wage-based competitiveness concept. As a result, many economic contexts that were believed to be true at the time have not been identified and substantiated, and these are processes that will certainly have a negative impact on the infrastructure of social trust.¹²² The increase in the number and level of systemic risks and the idea of unequal development have fuelled anti-globalist movements and sprouted widespread dissatisfaction, mistrust of governments along which – often only temporarily – populist ideology or, in some cases, autocratic ideologies showed up.¹²³

Demand for populism is by and large an autochthonous part of human nature. We always try to get an understanding of the processes of the complex world through reductionism. Since we do by nature wary of uncertainty, so we always axiomatically seek for certainty assumed to be the only truth in town.¹²⁴ Amidst the longing for certainty, we live by the rules of thumb and believe things that we already have some knowledge of. It also follows from the latter that democratic economic governance, struggling with today's complex system of challenges, finds itself in an extremely difficult position, because

¹²¹ The highest income earners in OECD countries faced an average tax rate of 66% in 1981, which was merely 51% in 1990, while 47% in 2000 and 41% in 2008 (www.oecd.org/social/OECD2014-FocusOnTopIncomes.pdf).

¹²² In the old days, when employment increased, government revenues were expected to rise; once upon a time, if productivity increased then wages were also rising; we once believed that *homo oeconomicus* prepares for a worse period and saves in advance to smooth out its consumption later; these earlier ideas are no longer living with us today.

¹²³ See GUIISO 2020. Suffice it to think of the following parties in the member states of the European Union: Syriza (Greece), Podemos (Spain), AfD (Germany), Golden Dawn (Greece), Freedom Party (Austria), Freedom Party (Netherlands), 5 Stars (Italy), etc.

¹²⁴ Our Zeitgeist tells us that the path toward wisdom is to find out and reveal new truths by chasing certainties. However, as one of the most famous poets of the Edo period in Japan, Matsuo Bashō stated, we should not seek to follow in the footsteps of the wise, instead, we should seek what they sought.

in the midst of interactions affecting our lives through multiple metastases and nonlinear feedbacks, it is very difficult to even raise the issues to be solved simply enough, yet precisely. What is more, it seems to be almost impossible. All of this could pave the way for a post-factual world, authoritarian regimes with a charismatic leader who provide simple answers to complex problems, a simulacrum well known from the work of Jean Baudrillard.¹²⁵ That is, chasing a basket of myopia, short-term pleasures, and longer-term pain during our evolutionary development is one of our unselected traits to date.¹²⁶ It is not just that populism cannot solve real social problems in a sustainable way, but that, despite all the rumours to the contrary, populism leads to socio-economic instability, a social crisis, a dramatic restriction of democratic rights.¹²⁷ Paradoxically, escalating populism leads to inflation of economic uncertainty (e.g. populist and demagogic parties coming to power, that promised to raise people's life prospects as soon as possible, divert society and the state itself toward indebtedness, and when anew crisis hits in – e.g. after the crisis of 2008 battering the faith in global capitalism – again, only the more populist and even more extreme can break forward, as society will find it harder to give up its already acquired rights than to fight for what may be available in the future). In the view of Amartya Sen, or Deirdre McCloskey, this means a real shrinkage of the possibilities of unfolding human possibilities, the expansion of which would be equal to real development. And then economic-social spontaneity

¹²⁵ This is the triumph of apparentness, of deceit, which replaces factuality. The term itself is known from the work of the renowned French sociologist-philosopher Jean Baudrillard (see BAUDRILLARD 1983: 159). There were many such cases. For example, during the US presidential election, a number of false news spread on Facebook. But the effects of pseudo-scientific research results can also be included here (e.g. as a result of a scientifically unsupported, airborne research finding, fewer and fewer people had been vaccinated against HPV in Japan).

¹²⁶ Just think of the political budget cycles driving a great proportion of the population into the slavery of debt, the political myopia with the growing size of the state, or even the area of trade.

¹²⁷ Suffice it to look at Venezuela or Bolivia, where decades-long populism led to hyperinflation, capital flight, emigration, gigantic poverty and unprecedented consumption restrictions.

also becomes more limited, which should be the basic motive for development. Thus, society and the state can become the servants of increasing liabilities (e.g. increasing debt service, household indebtedness, increased dependence on remittances, excessive exposure to foreign direct investments, etc.). Yet, we must say that populism alone is neither good nor bad, it all depends on how it can fulfil its function. And the big question is what comes after populism.¹²⁸ If the answer is autocracy or a lengthy anti-democratic path, innovation dynamism suffers because the inclusive character of democratic institutions will be left behind by prioritising extractive institutions that are stifling down innovation.¹²⁹ Populism could also be a “blessing” if and to the extent that economic governance, let it be at national or supranational level, listens to areas for intervention where deep-rooted socio-economic (systemic) problems are hidden. In our view, the real problem associated with populism starts when it no longer matters to the society whether its members or the politics itself seek factuality or not; when at the same time *unreasonable reasonableness* can dominate in the sense that following and sanctifying rationality becomes unreasonable, hence meaningful and often sacrificial innovation in the public sector and economic governance is becoming ever more hurdled.

The era of flaring populism was then followed by a sort of moderation, which unfortunately could last only until the eruption of the Russian–Ukrainian war which started in February 2022. That step has triggered unprecedented economic sanctions against Russia, the effects of which are still impossible to be assessed with sufficient scientific precision. It is by no means our intention to take a position on what the war may be about (e.g. some see it as one of the manifestations and beginnings of the competition

¹²⁸ Let us note that such process is undoubtedly contributing to the phenomenon of the Great Suppression. According to the 2021 Democracy Index developed and published by the Economist Intelligence Unit, only 45.7% of the world’s population now live in a democracy of some sort, there has been a significant decline from 2020 (49.4%). The lack of inclusive institutions, that are otherwise part and parcel of the democratic regimes, in large part of the world implies that there is untapped and stifled innovation capacity around the world (see DONGES et al. 2021).

¹²⁹ ACEMOGLU–ROBINSON 2012: 544.

between Western liberal democracy and authoritarian illiberalism),¹³⁰ we are simply emphasising that the series of sanctions have serious consequences already. There is a narrative that economic sanctions motivated by geopolitical considerations can lead to a permanent decline in global trade and thus production. Not to mention that it is not entirely clear yet whether the sanctions are preventing the escalation of the war or will they stop it, or they are leading to an even harsher war.¹³¹ A well-known theorem of political economy may come to mind, namely that politics can override or resist the interests of the economy and society.¹³² The current world of sanctions will reveal how economic sanctions do or do not shape political outcomes such as a black swan event like war.¹³³

With February 2022, Russia's large-scale invasion of Ukraine manifested as a world-historical event. In times of war, it cannot be disputed that there is more to do than virtuous posing (i.e. it is important and virtuous to show solidarity with the suffering party, but that is not enough), hence imposing economic sanctions on the aggressor country is fine. The sanctions send a message that those imposing them are willing to make sacrifices, which builds trust and thus may deter the aggressor from continuing its serious act of war.¹³⁴ Sanctions adopted following Russia's military aggression against

¹³⁰ See FUKUYAMA 2022; KRÁSTEV 2022.

¹³¹ Mulder (2022), a well-known historian, revolves around the role of economic sanctions as tools of modern warfare (MULDER 2022: 448).

¹³² It is not necessarily an exaggeration to state that we can count on politicians to make smart, wise and statesman-worthy decisions for long-term and prosperous social, economic and environmental sustainability, but only when all opportunities have been exhausted.

¹³³ The invasion against Ukraine was predicted by barely a couple of experts simply because the models used are calibrated for rational agents making no irrational decisions (as mistakes). The war against Ukraine crystal clearly demonstrated that Russia made a mistake (Russia has belittled the resistance of Ukraine, underestimated the reaction of the West, and overestimated its own forces – this kind of behaviour is more inherent in populist arrangements). Let us add immediately that the conflict in Eastern Ukraine has been going on since 2014 and was only of low intensity between 2015 and 2022.

¹³⁴ That narrative was described by MARTIN 1993: 406–432. This should be especially a guiding one once hyper-globalisation and the growing socio-economic interlinkages among countries (so that among the aggressor and the rest of the world) are taken into

Ukraine came as a result of an unprecedented global effort (even the Swiss leadership decided to impose sanctions on Russia). In the beginning, mostly financial warfare was unleashed against Russia via various sanctions. As time flew, by April 2022, sanctions have become a complex amalgam of financial and economic punishment restrictions (ban on energy import, etc.). In case of the European Union, comprehensive packages were initiated (between 23 February 2022 and June 2022, there have been six packages of sanctions on areas like coal ban, full financial transaction ban and asset freeze on certain Russian banks, full transport ban regarding Russian and Belarusian freight road operators working in the EU, assets freezes for a number of individuals and entities, etc.). While the United States and the G7 did also resort to severe sanctions against Russia with the aim of exacting an immense toll on the country's economy and cutting Russia's access to critical technology and to supply chains that would otherwise be indispensable in sustaining Russia's military ambitions (e.g. discriminatory tariffs have been activated on imports from Russia, facilitating the cross-border financial transactions via the SWIFT system has been suspended). What is more, to date, embargo on Russian oil and gas is not just a rumour, but an increasingly likely reality.¹³⁵ The war made it clear that reducing dependency on Russia for key food and energy imports (e.g. Ukraine and Russia are altogether responsible for producing 30–40% of the world grain production) is a vital task for Europe. Importantly, this time is different in the sense that while there were no sanctions against Russia during and after the Georgian war (after August 2008), sanctions now have a

consideration being pervaded by asymmetrical interdependencies (see SILVA–SELDEN 2020: 229–251).

¹³⁵ In early May 2022, the president of the European Commission announced that a gradual embargo on Russian oil will take place even though it is going to be a rather cumbersome issue for certain Member States depending on Russian energy resources in a more dedicated way. On 30 May 2022, the EU agreed upon imposing embargo on two thirds of Russian oil. Till the end of May 2022, the negative effects of trade restrictions (boycott) on the Russian oil revenues did not materialise (e.g. Russia's oil revenues were up 50% till May 2022 even as trade restrictions following the invasion of Ukraine spurred many refiners to shun its supplies, see SMITH 2022).

fundamental impact on countries that impose them as well.¹³⁶ For instance, economic governance and the operation of public sectors itself should focus more on ensuring energy security and designing incentives in place to pursue the transition to a greener socio-economic innovation ecosystem (i.e. greening the economies out indirectly serves the efficient implementation of monetary policy in order to mitigate inflation).

Despite the challenges described, we can say that the last more than 200 years have been a period of spectacular development. Life is much better today than it used to be. Violence is declining,¹³⁷ the average age is rising, and the share of people living in deep poverty is at a historic low, as is child mortality. In 1820, 84% of the world's population lived in poverty, and even in 1981, 42% lived in poverty, but today only less than 9%, despite a population explosion we described earlier. World GDP has grown a hundredfold in two hundred years and the average GDP per capita increased twelvefold. Thanks to vaccinations, medicines and the availability of clean drinking water, epidemics that have decimated humanity for centuries have been by and large pushed back. All this suggests that the configuration of the three major subsystems within the socio-economic innovation ecosystem (public sector, real economy and the financial sector) has propelled development. Still, and especially in light of *The Madness* exposed earlier, there is an increasing feeling that Damocles's sword hovers over our heads.

Bearing the complexity of the challenges in mind suggests that there are no full-proof and perfect solutions to them. The public sector alone is not enough to address either challenge. At the same time, there is a need for a state that recognises its limitations, plans more modest interventions, defines itself as an integral part of the socio-economic innovation ecosystem, and is constantly able to keep tackling complex challenges lasting (i.e. it is not to solve the challenges once and for all) by strengthening the system's resiliency via innovating itself further. All in all, *The Madness* is a form of

¹³⁶ BERNER et al. 2022; OECD 2022a.

¹³⁷ With a masterly effort, Pinker showed that violence has declined over the centuries (PINKER 2011: 832).

polycrisis and should be on our economic radars to reach out some sort of controlled madness.

Available literature does regularly exclude from the analyses the incorporation of the interplay between the public sector, the financial universe and the real economy that one way or another determines the overall dynamism of the socio-economy innovation ecosystem. Examining this also makes the system of relationships and interactions between system-level challenges more understandable. In the next part (Section *Suppression of the innovation dynamism*), the book is to fill this lacuna by addressing the interplay among the state, the real economy and the financial sector by highlighting the unvarnished fact that their configuration is featured with a good deal of symmetry breaking that fundamentally suppresses innovation dynamism.

SUPPRESSION OF THE INNOVATION DYNAMISM

One of the most intriguing paradoxes of today is the fact that despite all the perceptible and well-documented local and global challenges developed countries are facing,¹³⁸ it is like there is no bad news at all for the financial universe (e.g. since 2019, S&P 500 registered an unstoppable upswing the index of which could book a 71% win rate after weekly losses of 2%) and still, economic growth is neither high, nor inclusive, nor green.

It is all the more surprising since what has become crystal clear for us today is that the financial sector and stock markets in particular face radical uncertainty given by the cascade of unforeseeable events generating

¹³⁸ Ranging from the long-lasting and to some extent still unresolved consequences of the 2008 financial and economic crisis including the Eurozone crisis such as flaring populism, secessionism and nationalism across the board (today, one in four nations is governed by a populist leader/party) endangering the sustainability of the European integration process as a whole, the escalating trade war between the United States and China affecting many other countries, the migration and Covid-19 crises, creeping military conflicts, the ever-more deciphered and publicly discussed business scandals (Wirecard, securities fraud by Chinese-based companies like Luckin, Archegos Capital, etc.).

nonlinear changes in expectations on and narratives about future returns in the socio-economic innovation ecosystem. And such unpredictable events are in blossom right now ranging from the pandemic, unprecedented stimulus programme in the US, supply chain disruptions, the sneaking need for remote life (working, commerce, etc.) driving the digital revolution and Industry 4.0 developments; oil wars, creeping inflation presumably triggering some tapering, etc. All these events are happening in the context of the backlash against globalisation which has been developing endogenously due to its dispiriting distributional consequences,¹³⁹ against the democratic and liberal order. Electoral turnout rate has been secularly declining by reaching approximately 70% in the developed world, including the European core countries, from the heights of 80–95% of the 1950s–1970s.¹⁴⁰ In short, it seems that the financial universe has by and large remained intact and has become the *ruhenden Pol*.¹⁴¹

Notwithstanding the above, the financial sector is doing nicely well and is capable of unprecedented performance, so in principle the financial universe should be an efficient servant of the real economy in supporting, for instance, the fast diffusion of Industry 4.0, aka the next production revolution, still, most of the heightened ideas about the impressive transformative power of Industry 4.0 have been so far mirroring some sort of a dreamlike naïvety.

Thus, something beyond peradventure deeper is amiss since the dynamism of the socio-economic innovation ecosystem has been hampered, i.e. the healthy market entry and exit of companies and thus Industry 4.0 developments that are productivity- and inclusive growth-congruent are inhibited. In other words, either the self-movement of the financial sector is such that it deliberately forgets the service of the real economy, or something diverts it from that purpose. *State-of-the-art* literature on Industry 4.0 mainly focuses

¹³⁹ In addition to Atkinson (2015) and Piketty (2017) cited earlier see COLANTONE et al. 2022: 405–477.

¹⁴⁰ DIAMOND 2015: 152 illustrates that fact exquisitely. The rates were as follows: Austria (1962: 93.77%; 1995: 85.98%; 2019: 75.59%(!); Belgium (1961: 92.34%; 1995: 91.15%; 2019: 88.38%); France (1967: 81.12%; 1997: 67.96%; 2017: 48.70%); Germany (1972: 91.11%; 1994: 78.97%; 2021: 76.57%); Italy (1963: 92.88%; 1996: 82.91%; 2018: 72.93%).

¹⁴¹ “[...] sucht den ruhenden Pol in der Erscheinungen Flucht” by Schiller, *Der Spaziergang*.

on its impacts on various domains either in the real economy¹⁴² or in the financial sector itself¹⁴³ without considering the link between these two worlds and its influencing power on how I4.0 enhances. This section addresses the issue whether Industry 4.0 is able to autochthonously bring back the real economy (non-financial corporate sector) into the consciousness of the financial universe. It asks whether there is an intimate link between *zombifying financialisation* and Industry 4.0 development. To this end, it incorporates the phenomena of zombification accompanied with financialisation with the aim of pinpointing the crucial need for making the financial universe directional in the interest of the healthy diffusion and development of Industry 4.0.

As for our methodological approach, the present section builds a verbal model by relying on quantitative as well as qualitative data and information from a wide array of domains (e.g. data from OECD, the World Bank, Eurostat, etc.). As for methods, it sheds light on the complex nexus among Industry 4.0 and the disharmony between the financial universe and the real economy interspersed with zombification, considered an analytical conceptual framework. The section defines zombie firms as companies aged ≥ 10 years supported by the state or the financial sector (including the banking sector) to be alive despite their inability to realise enough earnings before tax to cover their interest expenses (i.e. interest coverage ratio < 1 over three consecutive years).

Industry 4.0 – Sweet dreams?

Since the midst of the 2010s, with the appearance of Industry 4.0 (henceforth I4.0), mankind has been experiencing a new era of industrial development.¹⁴⁴

¹⁴² On servitization see FRANK et al. 2019: 341–351; with respect to energy efficiency NOTA et al. 2020; while on education 4.0 see, SHARMA 2019: 3558–3564.

¹⁴³ MACHKOUR–ABRIANE 2020: 496–502.

¹⁴⁴ The first industrial revolution dates back to the 18th century when power generation started to gain momentum (e.g. facilities with water power and steam engine), the second appeared in the 19th century with the discovery of electricity and assembly line (mass) production (e.g. automotive industry), the third one entered the world stage with the

The *raison d'être* of I4.0 is the creation of self-optimising *cyber-physical systems* by building upon various technologies, starting from the wide application of Information and Communication Technologies (ICTs), sensors, robotics, through additive production, Internet-based uninterruptible communication and interaction, simulation and virtual modelling, cloud-based services, augmented reality, data mining and artificial intelligence, as well as machine learning. The prevailing literature attributes at least two features to the nature of Industry 4.0. First, it generates and satisfies old as well as new needs via various positive effects (e.g. by leading to energy and resource efficient operation, shorter innovation cycle even for more complex products, generation of large amounts of valuable data for production management, customisation in all sectors); second, and related to these impacts, it will lead to spectacular productivity boom.¹⁴⁵

Observers tend to expect the spread of I4.0 and digitalisation in general to be spectacular and fast. This belief omits to incorporate two major intertwined and interrelated trade-offs and uncertainties that are looming around Industry 4.0 manifesting as a great deal of inertness within the socio-economic innovation eco-system questioning the magnificent productivity-boosting character of such process. In addition, evaluating the usage of I4.0, especially in case of SMEs as a hotbed for wide application, does also convey that it was naïve to hope for a spectacular diffusion. Let us briefly recall our previous views (Kovács 2019) on processes bringing a plenitude of inertness into the development and diffusion of Industry 4.0.

First, there is a trade-off between fast diffusion and stable social trust simply because Industry 4.0 improvements are hurting the trust infrastructure (i.e. re- and upskilling, necessitated by automation and robotisation coming

fast diffusion of information and communication technologies from the 1970s based on smart chipsets (e.g. internet, robots, automation opportunities).

¹⁴⁵ Convincing empirical backing is rather poor (see BALDASSARRE et al. 2017: 632–643). Still, improved productivity via Industry 4.0-related technologies (e.g. robotics) and non-technological solutions in the real economy and the financial sector alike is widely expected in the literature (see ZAMBON et al. 2019). For the case of the financial sector see MEHDIABADI et al. 2020.

with Industry 4.0, in an effort to be successfully absorbed elsewhere in a sustained way seems to be much harder than ever before in history) by leading to disappointment of many, a significant loss of confidence, and a more cautious attitude toward I4.o.¹⁴⁶ If it holds, the indebtedness of the corporate and household sectors will do nothing but deteriorate further by aggravating inequalities (possibly undermining political stability and legitimacy). Undoubtedly, due to hyper-connectedness and the emergence of cyber-physical systems, to date, vulnerability of cyber-physical systems is an unresolved and risky area. Thus, the still interruptible and destructible character of I4.o, mainly due the problematic cybersecurity, manifests as another trust demolishing channel. It fuels an increasing fear in the society regarding how fast we should desire a fully digitised and interconnected industrial ecosystem, and a digital economy as a whole.¹⁴⁷ Fast diffusion may exacerbate mental diseases since ever-more digitalisation is often triggering negative impacts on people's mental and physical conditions (e.g. non-stop availability and ICT-based monitoring increase workers' stress level, upset the work-life balances and competing with robots is also disruptive, etc.).¹⁴⁸ Thus, direct, remarkable and permanent policy support in speeding up digitalisation and the enhancement of I4.o may depreciate the social trust infrastructure toward both the transformation itself and the state.

¹⁴⁶ For more on upskilling see DE PLEIJT – WEISDORF 2017: 1–30; KRZYWDZINSKI et al. 2016.

¹⁴⁷ A survey conducted by Chapman University in 2016 showed that, after corruption, what Americans fear the most is cyberterrorism (www.usatoday.com/story/news/nation-now/2016/10/12/survey-top-10-things-americans-fear-most/91934874). It is hardly by chance that Richard Piggini documented that not only the number of reported industrial control incidents, but also the number of cyberattacks against manufacturing firms have been conspicuously growing, initiated by ransomwares, malwares and various types of phishing activities, engendering smaller-scale and also full disruptions (e.g. in public services as well, see PIGGIN 2016: 34–35).

¹⁴⁸ Not surprisingly, IBM stopped two years of experimenting with telecommuting in 2017, before the coronavirus came out, because telework had a negative impact on work efficiency.

Second, there is a *trade-off between flexible labour markets and inclusive Industry 4.0*. Today, the profession believes that the more flexible the labour market, the easier it is to hire the right professionals and get rid of the under-performing ones, thus contributing to innovation dynamism and productivity growth (this is the way to incentivise workers to seek out efficiency increasing opportunities along innovations and smart adaptations, while getting higher and higher wages and salaries). This is of key importance in a time of a digital revolution and that of the improvement of I4.0 as well.¹⁴⁹ However, if one takes a mere glimpse on the US, having one of the most flexible labour markets around the globe (i.e. relatively low level of employment protection regulation¹⁵⁰), it can be shown that the US workers' real wages have been almost stagnant for decades; plus, the income of the middle class did not increase either during the period 1979–2013 – and it has been accompanied with lowering productivity growth (less innovation dynamism).¹⁵¹ A more flexible labour market is therefore by no means a granite solid basis for innovation dynamism especially when the financial universe forgets about the real economy. Studies even estimated that introducing a US-like labour market flexibility in Europe would cause a decrease in the share of highly-skilled employees within the total employment.¹⁵² And considering the job losses effect of rapid automation and robotisation (e.g. in OECD countries the job

¹⁴⁹ For more on the reallocation channel see MARTIN–SCARPETTA 2012: 89–116. Of course, not only the tangible (salaries/wages, bonuses, etc.), but also the intangible (e.g. autonomy, space for self-realisation, increased responsibility) part of the incentive regime matters (see BECK-KRALA et al. 2017: 17–27), whose power can be curbed in the case of extensive ICT-based monitoring and control, encoding the culture of anxiety mentioned above. For instance, UPS follows every move of its drivers via ICT devices, or, at Amazon, harrowing work conditions have been revealed as an undercover journalist reported after visiting an Amazon warehouse where workers are using bottles when they have to pee because fulfilment demands are too high at the company.

¹⁵⁰ OECD 2004: 47.

¹⁵¹ Not to mention the welfare growth side of the same coin, between 1979 and 2013, welfare growth was substantially slower than income growth and that the middle class quintiles fared worse (see KOMLOS 2019: 1–19).

¹⁵² See CETTE et al. 2018: 181–188; KURZ 2017: 785–792.

replacement rate is approximately 57%, 47% in case of the US, while 54% in the EU and 77% for China),¹⁵³ inclusive growth can be hacked, especially when stagnating real wages, dispiriting productivity growth and chronically increasing inequalities are an integral part of our everyday life.

Paradoxically, wage increases are required to motivate workers for innovation (to bolster productivity); however, it would mean a significant increase in corporate costs and would force companies to choose cost-cutting measures such as intensified automation and robotisation. Such a direction would be stimulated even more with the making of more flexible labour markets.¹⁵⁴ Since the principle of inclusiveness has become one of the focal points, not only in the EU,¹⁵⁵ but also in the view of other international organisations,¹⁵⁶ there is an inherent counterincentive to the rapid diffusion of Industry 4.0-related technologies. Not to mention that the existence and needs of European welfare states mean that the rapid job savings resulting from Industry 4.0 and digitalisation should not happen too soon. One can also say that Industry 4.0 is in the pallet of the welfare state itself. All in all, expecting the spectacular

¹⁵³ Source: Statista, Citigroup, World Bank. For more on the negative association between adopting robots and manufacturing employment in the OECD countries see CALÌ–PRESIDENTE 2022.

¹⁵⁴ In a survey carried out by the Capgemini Research Institute, 58% of company respondents reported that the positive impetus of automation on productivity was actually invisible (www.capgemini.com/wp-content/uploads/2018/11/Report-%E2%80%93Upskilling-your-people-for-the-age-of-the-machine.pdf).

¹⁵⁵ The growing importance of ageing and its multifaceted consequences have become a deeply researched topic today, when life expectancy has reached 70 years in the world (and has even exceeded it in many countries), and for the first time in the history of mankind, the number of individuals aged 60 or older has eclipsed that of the number of children under the age of five. On the increasing European awareness over the issue of inclusion see Europe 2020 Strategy or the Annual Convention for Inclusive Growth.

¹⁵⁶ See OECD Inclusive Growth Initiative. Not to mention the Sustainable Development Goals of the United Nations accentuating the promotion of sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all. A recent work, among others, offers work–life balance in a more dedicated and flexible way, which is required more and more by generation Y (see ROBAK 2017: 569–584).

return of productivity growth via extensive deregulation of EU labour markets in a one-size-fits-all manner is just a forlorn hope.

*Cumbersome diffusion of I4.0:
Dreaming no more*

Readiness surveys¹⁵⁷ convey that although awareness over I4.0 has been growing, the lion share of companies has been still looking at this phenomenon as the sheer observers of it. Deloitte's Industry 4.0 Readiness Report of 2020 suggested that 9% of companies surveyed have done some sort of business update to be in line with the needs of an Industry 4.0 introduction and utilisation, while none of the firms in question did chose it as a crucial priority.¹⁵⁸ Just for getting a more nuanced picture, in 2018, 86% of C-suite company representatives across 19 developed countries thought that their organisations were on the right track to provide and create the appropriate workforce for I4.0, while, one year later, that share plummeted to 47%, merely.¹⁵⁹

One of the latest far-reaching I4.0 mapping projects (4STEPS, Interreg, Central Europe) did also confirm the impression that the spread rate and intensity of use of I4.0-related technologies fall short of expectations.¹⁶⁰ The project was a transnational analysis of 355 SMEs with respect to Industry 4.0 development throughout seven EU countries (Austria, the Czech Republic, Germany, Hungary, Italy, Poland and Slovenia), of which almost 60% was operating in industry (metal products, machinery and equipment). There were at least two important insights obtained along the research by the end of 2020: (1) innovations at SMEs are typically driven by customers as opposed

¹⁵⁷ Let us note that these readiness-related analyses have a predilection to concentrate primarily on the technology side of Industry 4.0 potential in case of countries/companies. For more on such bias in Industry 4.0 assessment methods see HIZAM-HANAFIAH et al. 2020.

¹⁵⁸ Deloitte 2020.

¹⁵⁹ See Deloitte 2019.

¹⁶⁰ See www.interreg-central.eu/Content.Node/4STEPS.html.

to larger ones where the internal resources and processes are the backbones of innovation; (2) SMEs do typically show a rather limited adaptation in 9 critical areas of Industry 4.0 development and digitalisation since the share of those SMEs, whose persons employed goes up to 49, that are not showing any usage at all in the following areas: cybersecurity (28%), augmented reality (38%), simulation (28%), Industrial Internet-of-Things (28%), cloud technologies (27%), autonomous robots (33%), additive manufacturing (24%), system integration (23%), big data analytics (33%). Despite the growing efforts to support the investments in further developments and the more widely usage of Industry 4.0-related technologies,¹⁶¹ the share of SMEs using Industry 4.0-related technologies very intensively are infinitesimally low and were as follows: cybersecurity (2%), augmented reality (0.3%), simulation (1.3%), Industrial Internet-of-Things (1.0%), cloud technologies (1.3%), autonomous robots (1.78%), additive manufacturing (0.3%), system integration (1.7%) and big data analytics (1.0%). For instance, in case of Austria, a country being ranked as 18th among the 49 high-income group economies in the Global Innovation Index¹⁶² or being ranked as 11th among the 39 economies in Europe, most of the suppliers do not use I4.0-related technologies at all (92% of the suppliers do not use cloud technologies or additive manufacturing, while the volume of those not applying augmented reality or cybersecurity is also high with its 83% as well as 79%, respectively); in case of Austrian end-users, that share is also high (autonomous robots, 58%; augmented reality, 84%; IoT, 48%; additive manufacturing, 48%), while the share of those using some I4.0-related

¹⁶¹ Just to name a few more spectacular efforts, and beyond the level of communication and visionary narratives (For a European Industrial Renaissance of 2014, Task Force on Advanced Manufacturing for Clean Production of 2013, Strategic Policy Forum on Digital Entrepreneurship, Grand Coalition for Digital Jobs, EC's Digital Single Market Strategy), S3P-Industry initiative, or the more general Horizon 2020 offered more than €80 billion for supporting industrial leadership between 2014 and 2020, more than €100 billion were also available via European Structural and Investment Funds for the Member States to reinvigorate innovation in line with smart specialisation. For more on EU policies toward Industry 4.0 see Dosso 2020: 214–237.

¹⁶² See www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020/at.pdf.

technologies very intensively was merely 9.6% in case of simulation and 12.9% for cybersecurity. Even in Germany, often considered the growth engine of Europe, it is not necessarily obvious that the prevalence and intensive use of I4.0 technologies would have been outstanding (e.g. in case of suppliers, 73% of companies did not use autonomous robots, 82% of them were not engaged in cybersecurity at all, or even 90% of them were not applying additive manufacturing and 59% of them did not use big data analytics, either; in case of end-users, the share of companies that were not engaged in such technologies at all was relatively still high: autonomous robots, 60%; additive manufacturing, 60%; augmented reality, 75%; and merely 5–10% of them were using simulation, system integration, cybersecurity, additive manufacturing intensively). Just for comparison, Italy, a country being one of the top four European economies having a large number of high-tech manufacturing companies (e.g. 5,400, according to Eurostat), has been struggling to increase the activity of firms in Industry 4.0 developments (e.g. 40% of the companies screened was primarily using and concentrating on additive manufacturing, while firms surveyed are not to plan to use cybersecurity, cloud technologies, augmented reality or big data analytics since only 4–6% of them are to initiate actions toward that direction).

An important implication of the above mentioned *inter alia* is that the absorption capacity of market actors (e.g. SMEs) in the socio-economic innovation ecosystem has many shortcomings becoming systemic patterns. In principle, the financial sector would be in a good shape to support the spread of I4.0 (the expansion of the financial universe has been taking place for more than 50 years and can be illustrated by many indicators such as the loans granted by banks and other financial intermediaries as a percentage of GDP which was 75% and 33% in the US and the Euro area, respectively in 1961 while it exceeded even the levels of 180% and 150% by 2011).¹⁶³ For instance, the annual average real return on S&P index was –0.2% between 1901 and 1921, 0.4% between 1929 and 1949, while 1.9% between 1966 and

¹⁶³ OECD 2015c.

1986. Since then, such returns started to soar. In the period of 2011–2021, S&P 500 offered a real annual return of 13.6%, even through 2021, which was still a Covid-19 stricken year, the index has booked a return of 10.5%. Yet, as we indicated, I4.0 development falls short. One can reasonably state that I4.0 *per se* seems to be unable to autochthonously bring back the real economy into the very consciousness of the financial universe. The self-movement of the financial sector (*excessive financialisation*), being influenced by economic policy measures too, diverts it from that purpose.

There might be an intimate and still neglected linchpin between *financialisation* and cumbersome I4.0 development. To this end, this section incorporates the phenomena of zombification accompanied with financialisation with the aim of pinpointing the crucial need for making the financial universe directional in the interest of the healthy diffusion and development of Industry 4.0.

Financialisation and the landmines inbuilt

One way or another, *modo palpatim, modo saltatim*¹⁶⁴ refers to the phenomenon of financialisation when an increasing attention is devoted to financial activity within the non-financial sector (i.e. financialisation is meant to follow a more financial income-seeking activity rather than pursuing productivity increasing innovation/investments, whereby the growing proportion of financial assets within the total assets, cash flow exceeding income from financial activity, escalating payouts to stockholders compared to equity are in the cards, etc.).¹⁶⁵ The early stages of financialisation were already recognisable during the first half of the 20th century,¹⁶⁶ while it really accelerated from the 1980s onwards with the deregulation of financial markets and the intensifying globalisation

¹⁶⁴ Sometimes seriously stepping, sometimes jumping.

¹⁶⁵ See the consensual view given by many scholars, such as ORHANGAZI 2008: 863–886; LAPAVITSAS–POWELL 2013: 359–379; DAVIS 2018: 270–307; SOENER 2021: 817–831.

¹⁶⁶ FASIANOS et al. 2018: 34–61.

driven by the development of ICT as general purpose technology. Albeit there is no single definition for financialisation, it essentially means that, along that course, debt-to-equity ratios started to increase whereby the share of financial services relative to other sectors within the national income followed a continuously growing path. Although, the state-of-the-art literature is non-conclusive on whether financialisation is a drag on economic growth and development or not; economic and financial history suggests that, in line with one of the most prominent researchers of industrialisation, Alexander Gerschenkron, there were discontinuities in the development of the financial sector when its rate and scale changed rapidly (great spurts) by triggering instabilities and, most importantly, slow and fragile growth.¹⁶⁷

After 2008, yet another financialisation era gained momentum when making money by money has heightened a lot: with booming stock as well as real estate markets by also approaching negative returns in government securities markets, there were also negative returns for retail clients (in fact, Covid-19 generated negative oil prices). The Zeitgeist has embraced the motto of “In Investing We Trust”.¹⁶⁸ So, the scale of the financial universe outgrew the real economy¹⁶⁹ by triggering a record high reliance on debt financing as well as by debunking the long-standing empirical fact that real wage growth is entangled to productivity growth.¹⁷⁰ And, most importantly, *it does not seem to be shaken by bad news*. For example, the price earnings have been growing as the famous Shiller PE Ratio was above \$40 in early January 2022

¹⁶⁷ See more on the Gerschenkronian *great spurts* in GERSCHENKRON 1962: 456. Of course, eye-catching readers of how financialisation has developed can observe that the literature on the interaction between growth and financialisation has shifted with the 2008 financial and economic crisis. After the Great Recession, voices about the more negative impact of financialisation on economic growth started to gain traction. The crucial importance of excessive global financialisation in the slowing down of economic growth becoming ever more fragile was emphasised by many (see STOCKHAMMER 2012: 39–70; CECCHETTI–KHARROUBI 2015).

¹⁶⁸ By updating the version of *In God We Trust!* that has prevailed primarily in the US.

¹⁶⁹ SAWYER 2017: 5–20.

¹⁷⁰ For a more comprehensive account on these issues see PALLEY 2013: 234.

(being the second highest rate since 1870 after the value of \$44 of 1999).¹⁷¹ Of course, the widely used Warren Buffett indicator, measured as the ratio of total United States stock market valuation to GDP, has also reached its all-time high value of 218% since 1950 by the end of 2021, which is 70% higher than its long-term trend(!).¹⁷²

Unsurprisingly, the financial sphere has not been so attractive to the younger generation since the 1990s than as of today.¹⁷³ There must therefore be a firm belief that governments end up intervening and helping out, not leaving anyone on the side of the road.¹⁷⁴ As a consequence, there is no adjustment or reversal in the process of financialisation in plain sight, which already hides a number of systemic landmines as a harbinger of future uncertainties or, in some cases, serious crises.

General landmines of financialisation

In the following, by transcending the *state-of-the-art* literature, we purport to illustrate that the socio-economic configuration of the financial and real economy has evolved into complex nexuses due to financial exuberance in the developed countries over the last decades. In doing so, the following six dimensions are considered briefly and succinctly as important positive and negative feedbacks (landmines) of the ongoing financialisation: (1) expanding markets of corporate and sovereign debts; (2) rising credit flow without

¹⁷¹ See www.multpl.com/shiller-pe.

¹⁷² See www.currentmarketvaluation.com/models/buffett-indicator.php.

¹⁷³ See MCBRIDE 2021.

¹⁷⁴ Although there were approaches in the US and Europe being diametrical opposition to each other, programmes now seem to have been worthwhile. For instance, in the US, where the government allowed workers to lose their jobs, jobless aid was offered to more than 56 million workers between January and August of 2020. The European Union and the Member States did also start their furlough programs with the aim of preserving the workers as much as possible (see www.bloomberg.com/graphics/2021-furlough-jobs-unemployment-europe-united-states).

spectacular productivity improvements; (3) increasing socio-economic divergences (i.e. increasing inequalities, big concentrations, etc.); (4) financial exuberance as a cushion in time of a black swan event (Covid-19); (5) encoding critical instability and distrust via unresolved cybersecurity; and (6) altered economic wisdoms.

1. Expanding markets for corporate and sovereign debts with shifting mindsets: Debts have always served as a kind of refuge for societies sometimes to survive, sometimes to develop further. With hyper-globalisation partly driven by the ICT revolution of the 1980s–1990s as well as the worldwide deregulation of financial markets in parallel, the market for corporate and sovereign debts has become solidified by feeding back to the rise of the international financial universe. In doing so, prevailing credo changed course by shifting from the sentiment of ‘rescuing indebted countries’ to ever-more preferring ‘saving (foreign) creditors’ portfolios’ in *stabilising the global market for sovereign debt*. At another level, it is also true that with excessive financialisation in a time of continuous challenges, the tolerance level of financial markets (as well as regulators)¹⁷⁵ to unsustainable sovereign public finances has softened, i.e. debt rates did not need to be strongly stabilised and moderated as it was the case previously, they could have reached higher levels without causing more serious economic vulnerability. The crisis of 2008, but rather the Covid-19, must be seen as a turning point in this respect, as debt service (interest payment) has not grown at the pace we expected in line with soaring debt levels. With the financial and real economic crisis of 2008, and especially with the aftermath of the Eurozone crisis, developed countries were sought to stimulate their economies by increasing debt and raising money in a “relatively coordinated manner” with the underlying aim of demonstrating their ability to act and control the processes, i.e. to legitimise their existence. The global financial crisis of 2008 reinforced the view that indebtedness does not necessarily

¹⁷⁵ Note that in Europe, the institutionalised fiscal rules and regulations have not been sufficiently followed and, most importantly, noncompliance has been the rule rather than the exception (see European Fiscal Board 2019; GASPAR–AMAGLOBELI 2019).

lead to automatically escaping inflation, low interest rates and fiscal crises. We should not be surprised, then, that the public health emergency caused by the coronavirus epidemic, which began in 2019 and then became global, which in a sense can be apostrophised as a war for the survival of the present generation, has led to an increase in debt rates (e.g. the average debt-to-GDP rate of the Eurozone was above 100% of the GDP by 2021), with the world now collectively turning a blind eye over moral hazard (e.g. Germany has suspended the debt brake rule and reached a deficit of 4.2% in 2020). Economic history teaches that financial crises were by and large followed by rises in debt-to-GDP ratios of at least 20% of GDP in the OECD countries¹⁷⁶ simply because of a learning process: future uncertainties required larger and larger fiscal space (buffer) to intervene and to calm the markets. The only question is whether the currently observable more permissive attitude towards increasing (public) debt will change (i.e. the number of insolvency proceedings has never been so low in Europe), whether inflation will skyrocket after the pandemic (but rather in the meantime), whether the historically exceptional low interest rate environment will end up, whether the accumulation of debt mountains will start triggering serious fiscal consolidations across the board (i.e. it would entail a shift from financialisation-driven growth to a more real-economy-led and often export-oriented growth).¹⁷⁷ In other words, excessive financialisation acted as a Janus-faced phenomenon prolonging the sustainability of welfare states on the one hand, while becoming an important landmine to them, on the other. The result has been a vicious cycle. If the stimulus is abandoned by returning to austerity, it is likely that many companies will go bankrupt, unemployment will soar, the hard-won demand side will succumb and the increasingly anti-inclusive economic feature of today would fall into deeper

¹⁷⁶ European Commission 2021a.

¹⁷⁷ For an example see the case of Iceland (GUDMUNDSSON 2016: 292–322; RAZA 2016: 1–19). Let us note that putting European debt-to-GDP rates altogether on a more sustainable path is of crucial importance since high discrepancies in Member States indebtedness does also mean differing fiscal spaces deployable in mitigating shocks and to dynamise structural transformation (i.e. into green, inclusive and more sustainable growth/development).

employment-challenges (when Covid-19 has become almost a driver of automation and robotics in the era of the completion of Industry 4.0), which would result in non-negligible anomalies in public finances.

2. *Rising credit flow without spectacular productivity improvements:* There was an underlying idea behind liberalising financial markets, namely: reaching out infinite capital mobility in space and time; however, the financial system figured out that there is no need for the real economy to realise higher and higher profits in the short term, it has therefore become a self-propelling mechanism.¹⁷⁸ A relatively new stream of economic literature focuses on secular stagnation meaning the permanent deterioration observable in the growth trend of productivity, thus that of innovation performance in the advanced world.¹⁷⁹ Secular stagnation is associated with increasing uncertainties leading to increasing instability of the socio-economic system. There is a growing body of evidence that increases in uncertainty are mainly associated with protracted negative impetus on economic activity,¹⁸⁰ so secular stagnation (a declining growth rate of labour productivity) is associated with increasing uncertainties. For instance, such uncertainties come from the fact that more and more entities started to function as ones in the financial sector circumventing the regulatory framework. Following the collapse of the Bretton Woods system, financial globalisation jumpstarted

¹⁷⁸ The parasitic-like nature of the financial universe unleashed new systemic patterns: (1) the *share of capital* in national income has been rising, while that of the labour share has been declining since the 1970s (see MILANOVIC 2019: 287); (2) it can be captured by looking at the growing trends in *share buy-backs* thereby the players are to boost the stock market artificially. It implies that they are not looking for riskier, but productivity-enhancing investments in the real economy (40% of S&P 500 firms bought back shares in 1990, their proportion was 60% in 1997–2003, while 85% as of today). It is hardly by chance that a global *saving glut* of the rich has become a well-researched field (i.e. over more than 40 years, top earners have been accumulating savings instead of seeking out financing investments in the real economy, see MIAN et al. 2021). It also generates a bias towards larger companies at the expense of the middle ones (see ANDREWS et al. 2016).

¹⁷⁹ See GORDON 2012; TEULINGS–BALDWIN 2014: 165; EGGERTSSON et al. 2019: 1–48.

¹⁸⁰ BAKER et al. 2013; BACHMANN et al. 2013: 217–249.

(e.g. decoupling of banking assets from GDP growth; steadily growing volume of loans, while productivity has barely improved meaning that credit efficiency has conspicuously declined, etc.). And behind the curtains, non-bank financial institutions showed up in the shadow leading to bubbles and overvalued assets of EU banks (i.e. shadow banking entities delivering banking services are out of the eye of regulators). As many studies pointed out, shadow banking exposure has become very significant.¹⁸¹ Thus, as if one is witnessing some sort of expulsion of the real economy from the consciousness of the financial sector feeding back to secular stagnation. Importantly, one can emphasise that secular stagnation is one of the thorniest challenges the advanced world faces today simply because it can be seen as a sort of failure of all economic policy initiatives (e.g. expensive R&D and innovation support measures) as well as financial system activity acting with the aim of dynamising the real economy in the last decades (i.e. leading to distrust in economic governance and the financial sector in general on the side of the private sector). Paradoxically, one can recognise that we have never devoted as many (financial and other types of) resources to supporting productivity growth as in recent decades, but not only the boom is waiting for itself but productivity growth rate has been shrinking (see Figure 1). For instance, domestic credit flowing to the private sector provided by banks in OECD countries was 61.32% of GDP in 1981, while it has risen by almost 38% up to 84.48% by 2020 (in EU countries, 86% of 2001 was then followed by a rate of 92.20% in 2020).¹⁸²

¹⁸¹ See ABAD et al. 2022. According to comprehensive research of the European Banking Authority on the exposure of European banks to shadow banking entities, German institutions, serving an economy driving the European growth potential substantially, reported the second largest exposure (see European Banking Authority 2015: 13).

¹⁸² While, in the US, based on World Bank data, domestic credit provided by the financial sector (in % of GDP) has also been growing without an inflexion point (it was 218% in 2010, 228% in 2018, 242% in 2019, and more than 280.5% in 2020).

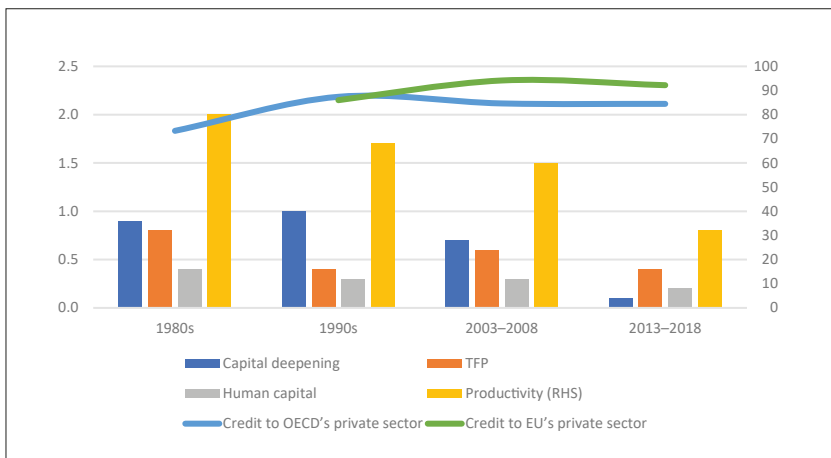


Figure 1. Contributions to productivity (left axis, %) and domestic credit flow to private sector by banks (right axis, GDP %)

Note: Contributions to productivity refers to advanced countries, such as OECD countries.

Source: Data are stemming from the World Bank, World Development Indicators 2022

3. *Increasing socio-economic and political divergences:* First, extensive deregulation of the financial markets in promoting financialisation not only meant that financial actors, which had hitherto been subject to strict supervisory rules, will continue to do the same but in greater volumes, but it opened the door to new solutions by reflecting a completely new approach to lending.¹⁸³ For instance, on the one hand, deregulation led to the so-called predatory lending, being pervaded by high-interest-rate credit cards with fees and penalties, payday loans and subprime mortgages, etc.; on the other hand, deregulation of capital markets put the richer in an easier position to avoid paying high taxes by forcing governments to go for public debts in a more voracious way. These

¹⁸³ Affecting also the incentive structure of investment managers by directing them to take more risk (see RAJAN 2005: 313–369).

all did contribute to increasing inequalities. *Second*, with the outbreak of the 2008 financial and economic crisis rising inequality has become the defining challenge of our societies. There is therefore an inherent dynamic between financial development and inequality, up until a certain point financial development seems to be conducive to growth and moderating inequalities but after that point the financial sphere becomes more cautious turning away from riskier customers and preferring larger and less risky companies having relatively higher net value (i.e. inequality rises).¹⁸⁴ Wealth inequalities are ten times larger than inequalities in the flow category. With the intensifying financialisation (i.e. together with the easier financing), house prices were exposed to rise in a much powerful way limiting the room for manoeuvre of younger households to buy a home (i.e. young households are not better off than a similar household was two decades ago)¹⁸⁵ presumably engendering disappointment in the ruling governments and elites. What is more, in OECD countries, it takes an average of 4.5 generations for a child born to a poor family to reach the middle class (even the corresponding German and French figures are 6!); in practice, the growth rate of median household net income has been negligible since the mid-1970s. Komlos (2016) pointed out that the middle class has not only been shrinking but partly disappearing, and its income grew at almost zero rate between 1979 and 2011 (0.1% and 0.7% per year), while the top 1% has been realising an annual income of 3.4%–3.9% during the 32 years studied. In addition, the proportion of the population living in households whose per capita consumption and income does not reach the poverty line (\$3.2 per day), for example, in Germany, which has a significant impact on EU growth, has been stagnating or even declining (from 0.23% in

¹⁸⁴ See LA PORTA et al. 1999: 471–517 or KANG-KOOK–SIDDIQUE 2021: 121–145. Owing to the fact that cash flows are risky in a competitive industrial environment, banks take competition risks into consideration when making lending decisions (GASPAR–MASSA 2006: 3125–3152; IRVINE–PONTIFF 2009: 1149–1177). Thus, banks prefer less risky companies with big net value.

¹⁸⁵ FAVARA–IMBS 2015: 958–992. For a more comprehensive account on this nexus see PAZ-PARDO 2021.

2000 to 0.24% in 2019).¹⁸⁶ Moreover, the shrinkage of the middle class – most of which tend to slip towards lower-profit jobs – also means that this social stratum is losing its political importance (i.e. it has been empirically proven that people from the middle class are more likely to enter the political system and governance, thus supporting political stability).¹⁸⁷ The thinning of this group is worrying from a development perspective, because it is precisely the class that has the critical level of desire to move upwards, which is essential at the system level (for investment in research and development and innovation thanks to intellectual and other resources and savings, self-improvement/self-education) and the desire, in addition to its systemic importance, not to want to fall behind, and therefore it is the class supporting the healthy system of checks and balances, hence it is the refuge of democratic order (dampening inequality, corruption, etc.). The middle class is predominantly a believer in political stability and good governance,¹⁸⁸ helping to prevent excessive political polarisation and fostering trade-offs within government. And if, in spite of all this, slippage and layer shrinkage take place, one can suspect that the configuration of the socio-economic system is in an evolutionary state that is incapable of providing “good jobs” in this form, both in quantity and quality. Illiberalism, populism and nationalism can then gain traction more easily as it happened across the board.¹⁸⁹ Third, with a shrinking middle class and middle-income jobs, (corporate giants) are dominating increasing and maintaining a large productivity dispersion across firms.¹⁹⁰ As one of

¹⁸⁶ See <http://iresearch.worldbank.org/PovcalNet/povDuplicateWB.aspx>.

¹⁸⁷ For a sensitive account on this see PUTNAM–GARRETT 2020: 480; TANKERSLEY 2020: 320.

¹⁸⁸ BIRDSALL 2016: 25–32.

¹⁸⁹ For instance, see the emergence of the Donald J. Trump administration in the United States, the case of the Brexit in the European Union which definitely made the UK a less open economy with increasing prices (PORTES 2022: 93). Other populist leaders-led economic governance did show up in a more dedicated way. More on illiberalism see SAJÓ et al. 2021: 1024.

¹⁹⁰ Larger companies are much better able to design vertical restraints and use their patents to reduce the risk of their often very costly R&D and innovation activities (see SOVINSKY et al. 2016). This is also the reason why, after five years, a maximum of 8 out

the greatest Hungarian economists, János Kornai, once emphasised, if a phenomenon can be detected in many places, it is not a disease. And still, the growing presence of divergences can be treated as a systemic pattern given the systemic tectonic movements such as the exuberance of the financial sector. The predominant part of scholars and economic practitioners have been considering inequality as mainly a national issue, now it should be clear that it is internationally determined and interdependent.

4. *Financial exuberance as a deceptive cushion in time of a black swan (Covid-19):*¹⁹¹ With the runaway of the financial universe meaning the build-up of an ever-more blurring and lengthier bridge between the two sectors with all its repercussions, (e.g. resulting in higher concentrations with larger dominating companies), Covid-19-induced economic crisis could not spread quickly to the financial sphere, which is often regarded as a positive development. Yet, there are at least three interlinked underlying phenomena injecting critical instability into the socio-economic system. a) *Big concentrations have become even more pronounced by exerting ever more influence and fuelling inequality across firms.* Financial exuberance has led to a financial real economy configuration in which debt and equity financing are easily and widely available and low interest rates prevailed across the globe for a relatively unprecedented period when companies equipped with the necessary financial capacity started to intensify their mergers and acquisitions by maintaining their growth (even inorganic).¹⁹² True, this process, *per se*, served as a cushion for business players shaken by the new socio-economic context (excessive digitalisation, lockdown effect of Covid-19, etc.) in a way they could find a relatively easy way out (exit).

of 100 micro-enterprises entering the market will be able to have more than 10 employees, while 26–56% of them no longer exist (see KOVÁCS 2020a: 54–87; KOVÁCS 2020b: 181–205).

¹⁹¹ By black swan we mean events with very low probability to happen but having tremendous impact afterwards.

¹⁹² KOOLI–LOCK SON 2021: 102–114.

Although a proxy for capturing this trend is the trajectory of non-performing loans across the European Union which, in spite of the Covid-19, has continued to decline even along 2020–2021 together with the fall in bankruptcies as well (Figure 2);¹⁹³ with the end of cheap money and government support, banks are facing a conspicuous deterioration in their asset quality due to the emergence of household and corporate defaults in a more vigorous way. This *per se* will hamper the banking sector to be an efficient contributor to the recovery later on.¹⁹⁴ b) *Forced digitalisation, but no positive signs in plain sight*. On the one hand, Covid-19 bolstered the usage and development of alternative smart and cheap, and what is more, digitalised payment methods by resulting in higher risk of cybersecurity.¹⁹⁵ On the other hand, the financial and banking sphere, as a major employer, did make a shift toward a more digitalised employment model with the introduction of remote work in case of 40–60% of a working week whereby the labour market shock given by Covid-19 was limited to the real economy. It nurtured a misleading feeling of comfort by assuming positive impacts on productivity and business activity. Still, employment in the financial and banking sector has been declining further, plus there is no clear-cut evidence whether the broad introduction of home office has had a positive impact on productivity, workers' job satisfaction or innovation activity in general.¹⁹⁶ c) *No healthy contraction, but a gathering inflation storm*. There is also a widespread belief that since the financial and economic crisis of

¹⁹³ Some core European countries did suspend the obligation to file for bankruptcy for part of 2020 as a reaction to Covid-19 by allowing entrepreneurs and SMEs to defend their market existence despite the pandemic (i.e. insolvency started to decline along 2020 and 2021 as compared to 2019, see OECD 2022b).

¹⁹⁴ In Q4 2014, the average gross non-performing loans and advances in percentage of total gross loans and advances in the EU was 6.7%, while it was merely 2.3 by Q2 of 2021 (see ECB, CBD2.Q.Bo.Wo.11._Z._Z.A.F.I3632._Z._Z._Z._Z._Z.PC). Still, a growing trend in corporate and household defaults has been out there as OECD (2021b) documented.

¹⁹⁵ See <https://home.kpmg/xx/en/blogs/home/posts/2020/07/payments-deals-soar-despite-covid-19.html>.

¹⁹⁶ See European Parliament 2021. Further details at www.igmchicago.org.

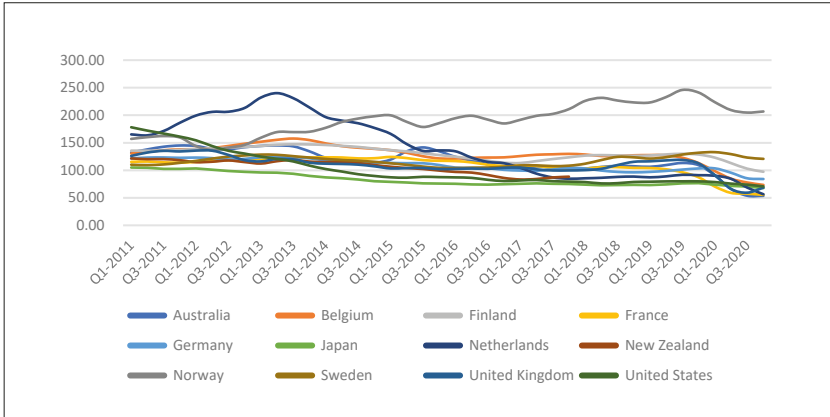


Figure 2. *Declining number of bankruptcies (Quarterly, 2007 = 100)*

Source: OECD Stats

2008, being uninterrupted by the Covid-19, the banking sector, including the European one, has been going through a healthy contraction in the spirit of increasing efficiency and cultivating stability.¹⁹⁷ However, there is an underlying inertia for such contraction, namely that more and more workers have been intentionally leaving the financial/banking universe (as well) without even reappearing in the labour market by contributing to the so-called (and inflationary) *Great Resignation* (i.e. labour shortage is an ubiquitous phenomenon even in the financial system). Labour shortage, by its very nature, fuels scary inflation especially in the aftermath of Covid-19 (i.e. hiring requirements have been lowered, there is a pressure on increasing wages and salaries ever-more spectacularly).

¹⁹⁷ According to the European Banking Federation, the total number of credit institutions continues declining: since 2008, the number of credit institutions has fallen by one-third. Compared to 2019, the number of branches decreased by almost 8% as banks intensify the use of digital banking. Nevertheless, the number of branches of non-EU banks has increased by 20%. Meanwhile, employment in the sector is decreasing at a slower pace. The sector employed over 2.2 million people in the European Union by the end of 2020 (see www.ebf.eu/facts-and-figures-2021/).

5. *Encoding critical instability and distrust via unresolved cybersecurity*: excessive financialisation driven by digitalisation has triggered enormous cyberattacks in the broadened financial sector (financial sphere, banking sphere and the growing share of non-banking payment service providers and apps). Excessive digitalisation has increased the channels along which private and business customers are available and can be manipulated in many ways. It is hardly by chance that misinformation and disinformation were mentioned among one of the most intriguing and withering challenges of today's democracies around the globe. Only during the first half of 2020, the number of cyberattacks targeting exclusively the financial universe rose surpassingly (a 238% increase was registered by VMware, and according to the calculation of IBM, the average cost of a data breach happened to a financial institution accounted for approximately \$5.7 million, while the attacks geared toward apps also went up vehemently by 22% since 2020). In short, both the number of ways and the extent of potential (financial and confidence-related) damage have jumped significantly (i.e. think of phishing emails, ransomware attacks paralysing even public services and financial/banking actors,¹⁹⁸ SQL injections,¹⁹⁹ DDoS attacks, supply chain attacks,²⁰⁰ or bank drops).

6. *Altered economic wisdoms*: First, according to the traditional monetarist theory, we should expect higher inflation in parallel with the increase in the money supply. Contrary to theory, however, one can recognise that high inflation did not emerge from the volatile but precisely the relatively stable money

¹⁹⁸ The banking sector experienced an outstanding increase of ransomware attacks since that number increased by more than 1,318% in the first half of 2021 compared to the same period of 2020 (see Trend Micro 2021).

¹⁹⁹ Cybercriminals started to focus more on application programming interfaces (APIs) (see www.prnewswire.com/news-releases/akamai-security-research-apis-are-now-target-of-choice-for-cybercriminals-attacking-financial-services-organizations-301007128.html).

²⁰⁰ Meaning that a victim is attacked (breached) in an almost completely unnoticed way via a compromised third-party vendor in their supply chain. More than 66% of the compromised suppliers either did not know or failed to recognise in time the fact of the breach (see European Union Agency for Cybersecurity 2021).

supply from the 1960s onwards, i.e. it did not emerge as a result of money supply-increasing periods.²⁰¹ What is more, not primarily as a combination of monetary but other factors. This calls for a refinement in our theory since the old one omits to consider an underlying condition for that postulation, namely that the theory may be true if and if the relationship between the financial system and the real economy is stable, that is, the former is an efficient financial intermediary system for the latter. Currently, unfortunately, this is not the case. Importantly, mainly because of the distorted harmony between the financial universe and the real economy, stock market indices correlate more with money supply than traditional CPI metrics. *Second*, according to mainstream economics, a more intensive and deeper financial intermediation cultivates economic growth and development, i.e. credit growth feeds back into increasing economic growth in terms of GDP. Albeit with the shift from the Great Moderation to the Great Recession, due to the financial and economic crisis of 2008, there has been voices trying to rethink and refine that finance and growth narrative; those works are still remaining in the same paradigm in the sense that they tackle the financial universe as an immense part of the real economy without considering its runaway (as a disguised real sphere²⁰²). And even though seemingly there is evidence on the strong positive relationship between credit growth and GDP growth, it is more likely to encode critical instability into the system that will eventually cause loud tectonic movement in a form of crisis. For instance, excessive credit growth is now treated as one of the most pivotal signals of a forthcoming decay. During the Great Moderation (approximately 1992–2007), the socio-economic environment pervaded by low fluctuations (i.e. moderated level of unemployment, inflation, stable GDP growth) gave a misleading feeling of comfort whereby people tended to go after more and more credit (in terms of credit card filings, usage and the volumes of transactions as well). It encoded a process of growing excessive indebtedness with an *above-the-optimum-boom-cycle* marching

²⁰¹ On a sample of 47 countries, since 1960, high inflation did not straightforwardly follow periods pervaded by rapid money supply growth (see VAGUE 2016).

²⁰² BOFINGER et al. 2021.

toward a *below-the-necessary-recession* with full steam (*The Great Recession*). As a corollary, easing the external financing constraint for households and firms is neither good, as the basic literature suggested,²⁰³ nor bad, but can be both.²⁰⁴ *Third*, conventional theory postulates that credit (and leverage) is worthwhile for companies when it comes to further developments (i.e. net debt benefits the company). But, and by feeding back to growing concentrations, as mentioned earlier, in the configuration of the financial universe and real economy emerging, the business-as-usual way of bank lending started to contain an underlying preference over internal sources of funds in case of small and medium companies as compared to more powerful giants. Unsurprisingly, there is a declining trend in leverage in the last decades by even approaching zero as well (also known as zero-leverage mystery).²⁰⁵ And *fourth*, economics theory on the nexus between technological advancement (technological revolutions leading to new techno-economic paradigms) and financial sector seems to have been ill-based. The role of the financial sector in the technological-economic paradigm shift cannot be properly grasped by the prevailing theories of economics. One prevailing economic theory assumes that innovations are the achievements of the real economy and the financial sector is responsible for the diffusion and widespread use of such innovations;²⁰⁶ while the other theory emphasises the primacy of liquidity-enhancing power in financial sector innovations leading to ones in the real economy.²⁰⁷ The basic underlying assumption of both theories is the existence of a harmonious relationship between the two spheres, based on which we

²⁰³ BECK et al. 2000: 261–300; LEVINE 2005: 865–934.

²⁰⁴ What is more, financial development may foster growth via expanding opportunities (see LEVINE 2021), but insofar as we are dealing with a world economy filled exclusively with *homo oeconomicus*.

²⁰⁵ See HADDAD–LOTFALIEI 2019: 165–170. Leverage, measured as debt-to-equity, has been on a decreasing trend. In the EU27, albeit corporate debt increased from 97.7% of GDP to 99.8% in the period 2009–2019, while EU27 corporate financial leverage fell from 73.6% to 53.3% during the same period.

²⁰⁶ PEREZ 2003: 224; PEREZ 2009.

²⁰⁷ MINSKY 1982 [1957]; MINSKY 1986: 372; MINSKY 2008; WRAY 2018: 288.

should see innovation dynamism one way or another, but this relationship no longer exists in today's socio-economic innovation ecosystem. Insofar as the financial universe has outgrown the real economy (e.g. banks went beyond the sheer operation of lending by becoming qualitatively new players in town by asking *to whom to sell* the loan),²⁰⁸ that is to say it does not function as an integral part of it, it suggests that the financial sector's traditional liquidity creating methods via financial innovations (engineering) has lost its orientation by not contributing to the deployment of Industry 4.0 and the real transition to the digital economy, but what it has been producing is just a side effect and unintended consequences of such liquidity-creation, (i.e. creating and preserving uncompetitive and stagnating zombie firms).

Financialisation has its own landmines. It has led to ever-expanding markets for corporate and sovereign debts by providing ever-growing liquidity via credit abundance contributing not to shared but an increasingly unequal and unsecured growth path which complex process and its side effects, such as zombification, are incomprehensible with old economic approaches.

Zombies – Sunspots for Industry 4.0?

Importantly, zombies are mainly those firms that are still able to remain on the market alive without realising any significant advancement in terms of profits, productivity or employment growth.²⁰⁹ In other words, firms can be regarded as zombies having negative interest coverage ratios over the last years (i.e. they were unable to meet their debt service through their profits along the past three years). Although the number of studies on zombie firms has been growing, those works have a predilection to believe that, especially in the light of the Covid-19

²⁰⁸ KREGEL 2012: 203–220. Let us mention that the aspect of *becoming* has not been addressed at all by mainstream economics, either. It refers to irreversible processes emerging as a result of far-from-equilibrium systems, such as the open, adaptive and complex socio-economic innovation ecosystem.

²⁰⁹ See CABALLERO et al. 2008: 1943–1977; MCGOWAN et al. 2017.

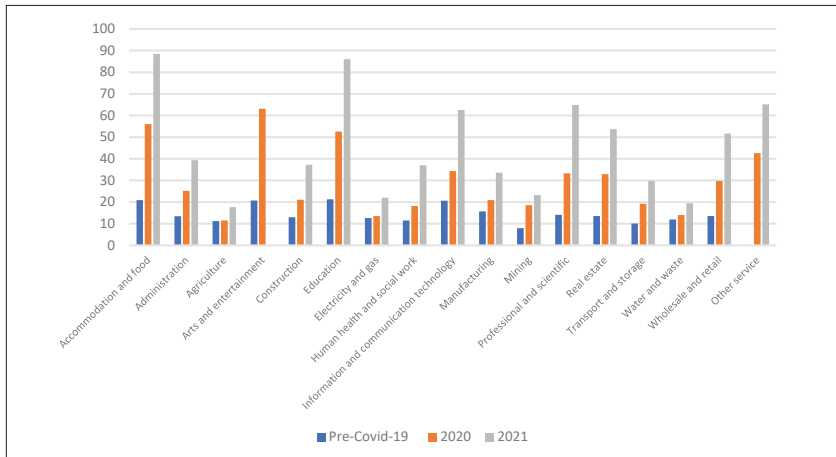


Figure 3. *Share of company debt with interest coverage ratio less than 1 worldwide from 2019 to 2021, by sector*

Source: IMF, Orbis Research 2022

crisis management, zombies are not posing a particular systemic problem (as was depicted, for instance, by the Swedish and the US cases).²¹⁰

We are the dissonant voice in this chorus when arguing that zombies have become a systemic feature making our socio-economic innovation ecosystem noisier,²¹¹ hence stifling down the innovation dynamism, hampering real development. In other words, zombies might be seen as sunspots (sunspot

²¹⁰ CELLA 2020; FAVARA et al. 2021. For instance, Gagnon (2020) articulated that: “Some economists are concerned that these “zombie” firms will drain resources from the healthy parts of the US economy, slow the recovery, and inhibit productivity growth. These fears are fundamentally misguided. Zombies are a consequence of a weak economy, not a cause” (GAGNON 2020). While, for instance, the correlation between healthy firm performance and zombies might be just a mechanical consequence of an increase in the fraction of zombies with no causal meaning (see SCHIVARDI et al. 2020: 569–592).

²¹¹ Noisier in the sense that zombification makes it harder to take a decision without errors (e.g. misinformation leading to wrong decisions when choosing suppliers that are, in turn, zombies, etc.).

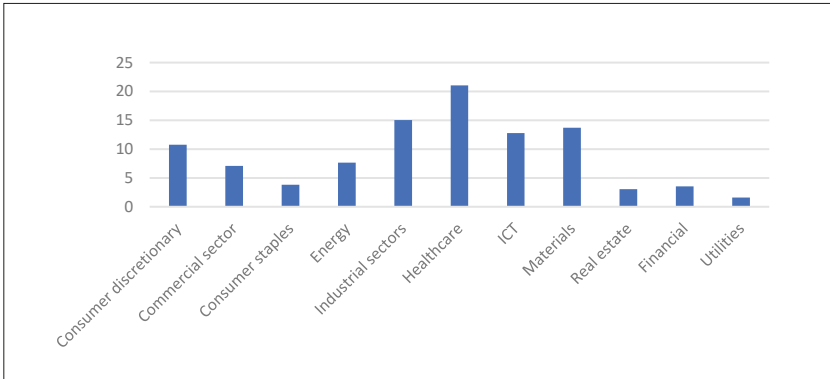


Figure 4. *Share of listed companies in Europe with an interest coverage ratio less than 1 per sector (%), 2022)*

Note: The total number of companies listed 162,841, while the share of zombie firms within was 3.7% (6,039).

Source: Compiled by the author based on finbox.com database

economic variables not having direct and sudden impact on fundamentals), they are important contributors to critical instabilities emerging especially if enough people start worrying about them in the manner of learning-by-experience (the growing presence of zombies restrains innovation and price increases, and does also limit the possibility of raising wages, thus deterring new entrants by making them demotivated); while, on the other hand, in a time of rising interest rates like during the first half of 2022, zombie firms are extremely exposed to such interest rate hikes by going to be materially impacted by triggering unpredictable spillover effects across industries and for the public sector itself). In this respect, there is a scope for extensive experience because the channels of zombification seem to have already formed and the number of zombie firms has been increasing mainly since the 1980s (even in core EU Member States like Germany).²¹²

²¹² See BANERJEE–HOFMANN 2021; in case of Germany see BITTNER et al. 2021.

Zombification has become an integral part of the system by showing self-sustaining and self-reinforcing features (i.e. zombification stimulates further credit prudence-breaking since higher share of zombies depresses productivity engendering lowering interest rates that is also reinforcing credit consumerism by sustaining and even increasing zombie activities). Without being exhaustive, at least, the following five pivotal and intertwined channels of zombification can be identified:

1. *Noisy expectations*: When the volatility of trends becomes very low, people tend to consider moderated trends as a period of calmness which is very likely to continue in the future without significant interruptions.²¹³ People are therefore filing for credit cards and using them in a good deal of quantity in those times by expecting the best. In other words, higher-risk taking behaviour, both from the side of banks (i.e. in a form of poor risk management practices) and that of the side of the private/business sectors, is encoded in a time of moderation (e.g. 1992–2007) when abundant liquidity and relative calmness of financial and banking players instil zombification.²¹⁴ And that leads to the fact that the boom phase of the business cycle is running even higher, while when the recession hits, the bust phase is falling even deeper (because there has been excessive indebtedness and credit consumerism viewed as systemic risk factors).

2. *Noisy lending*: Even the same company's credit rating (i.e. assessments of creditworthiness) may be subject to completely different assessments from different banks.²¹⁵ And since banks are more and more to avoid writing down

²¹³ Because of shared norms and that of the ruling narrative over how the socio-economic system works, which was presented confidently by respected experts in a way as KAHNEMAN et al. 2021 suggested, people tended to assume that such a moderating period will continue in the near future. For more on how such economics narrative backfired by neglecting underlying phenomena resulting in noise, see KOVÁCS 2022a.

²¹⁴ See DUVAL et al. 2020: 475–503; BLATTNER et al. 2019; STORZ et al. 2017; ACHARYA et al. 2019: 3366–3411; ARROWSMITH et al. 2013: 296–303; PEEK–ROSENGREN 2005: 1144–1166.

²¹⁵ For instance, large and small banks may judge creditworthiness differently. By the same token, rating agencies are more prone to assign positive ratings to larger banks – especially

significant losses that would otherwise worsen the bank's reputation, zombification is just a means to do so (not to mention the fact that banks could allow more and more indebted and non-viable zombie firms to live longer by offering them new loans to repay older debts due to loose monetary policies and increasing liquidity available), while financialisation is a means of pursuing more profits at the same time.²¹⁶ All this happened in an environment pervaded by excessive liquidity, thereby access to credits became ever-more simple and easy by resulting zombification entailed with worsening average productivity performance.²¹⁷

3. *Noisy institutional, regulatory and business incentives:* Weak insolvency regimes contribute to the survival of zombie firms whereby zombie lending may continue;²¹⁸ government supports and loose monetary policy to prop up lending result in a behaviour change in the day-to-day operation of banks since the flood of liquidity increases their risk tolerance (i.e. riskier loans are soaring even toward less productive and probably unviable firms with a greater chance); and there might be a culturally driven zombification channel, i.e. increasing tolerance with respect to allowing less productive firms to get credits if and when their market existence safeguards a more inclusive society pursued by economic policy (i.e. their employability becomes a priority when assessing their creditworthiness).²¹⁹

4. *Noisy asymmetrical information:* Zombie lending and zombification together builds up a business environment pervaded not only by asymmetrical but also noisy information flow to be relied on when it comes to important

because those banks often ask them to provide securities rating businesses as well (see HAU et al. 2012).

²¹⁶ See ANDREWS–PETROULAKIS 2019.

²¹⁷ See AGHION et al. 2018.

²¹⁸ See MCGOWAN et al. 2017. Many European core countries did change and ease insolvency laws in coping with Covid-19.

²¹⁹ See KOVÁCS 2022b. Pursuing inclusive growth entails zombification (see ZHANG et al. 2020: 51–77).

decisions, i.e. it is harder to identify whether the partner company is creditworthy or actually a zombie which could be a malicious landmine in the future. Companies may become misinformed by zombie lending masking the creditworthiness of one or more of their suppliers by resulting in a business network soaked with a good deal of contagion risk that sprinkles the mourning among them (i.e. a large company prefers creditworthy suppliers who, due to the tendency of banks to zombie lending, are not necessarily proven to be zombies in advance). Similarly to what happened in George Akerlof's famous 'market for lemon' model: there will be an immanent tendency for companies of deteriorating quality and efficiency to dominate the market, which will feed back on zombification and zombie lending.²²⁰

5. *Noisy crisis management*: The financial and real economic crisis of 2008, and its ensuing Eurozone crisis, have meant that the economies of the developed world have sought to stimulate the economy by increasing debt and by providing excessive liquidity flooding the markets in a "relatively coordinated manner". Through this, nation states could demonstrate their ability to act and keep the processes under control, i.e. legitimising their existence. The global financial crisis of 2008 reinforced the view that indebtedness does not necessarily lead to automatically escaping inflation, low interest rates and a fiscal crisis. What is more, authoritative studies argued that fiscal policy offers the best policy response in a form of stimulus.²²¹ Rescuing weaker banks, via offering liquidity, recapitalisation, nationalisation, etc., is equivalent to creating and maintaining their competitive advantage (i.e. fending off their exit) by presumably destabilising the entire financial system since such unviable zombie banks may crowd out real competitors, too.²²² Importantly, there was a belief that rescuing weaker banks is not the devil's work since

²²⁰ As STORZ et al. (2017) documented, weaker banks, primarily on the Mediterranean region, typically have business relations with more zombie firms, who in turn are more likely to be sub-optimally indebted, making the bank even weaker.

²²¹ WEDER DI MAURO 2020; BALDWIN – WEDER DI MAURO 2020.

²²² See CLAESSENS 2009: 263–284.

such intervention increases competition by incentivising banks to lending more to the real economy to be materialised in a form of more real investment entailing positive impetus on growth and innovation.²²³ But once the financial sector shows a runaway described along this section, such effect can be nothing else just a phantasmagory. We should not be surprised, then, that the public health emergency caused by the coronavirus epidemic erupted in 2019, has led to an increase in debt ratios, with the world now collectively turning a blind eye to moral hazard (e.g. Germany has suspended the debt brake rule and reached a deficit of 4.2% in 2020). However, with the help of the ECB (Single Supervisory Mechanism, SSM), the classification rules for non-performing loans were also relaxed during the pandemic. Initially, this was only a recommendation up until when more specific guidance/regulation came from the European Commission and the European Banking Authority. Importantly, bankruptcies have been suspended in many cases, moratorium has been also launched and other direct state supports and guarantees have been used. All this is supportive of zombification, especially in countries where interventions were not adequately addressed and/or banks do not have sufficient capital buffers to write off losses.²²⁴

It would be a wrong inference that zombie firms must be eliminated one by one, because of at least two things. On the one hand, some of them may become able to recover from that zombie status if and when proper support measures are initiated.²²⁵ On the other hand, unless excessive financialisation is addressed, a certain level of zombies helps to prevent the so-called *competitive release process*.²²⁶ It is not unfounded to assume that if all zombie companies were to be eliminated, it would be easier for the bigger ones to reach even

²²³ See CALDERON-SCHAECK 2016: 1391–1436.

²²⁴ Albeit the ECB (SSM) has increased the loss absorbing capacity of banks (incentivising banks not to delay their write-offs) by significantly easing their capital requirements, so far, it has not counteracted enough the zombification effects of these steps.

²²⁵ See GOTO-WILBUR 2019: 105–112.

²²⁶ Competitive release happens in living systems such as the socio-economic innovation ecosystem. For instance, in cancer research we know that when treatment-sensitive cells die *en masse* due to intensive chemotherapy, the resistant subpopulations, that were

greater concentrations by further exacerbating the disharmony between the financial and real economy, by heightening income and wealth inequalities, not to mention the weakening of inclusive growth. While there were policy measures to reduce the share of zombie firms across the board since the 2008 financial and economic crisis (e.g. in Germany, Greece, Italy and Spain), whereas large concentrations rose,²²⁷ i.e. the share of large companies in manufacturing could increase even further²²⁸ by potentially fossilising innovation dynamism and boosting inequalities.²²⁹

All in all, in the course of this section, it has become clear that there are problems with the prevailing economic wisdom saying that the financial system is harmonious and is an efficient intermediary system for the real

previously controlled, begin to explode rapidly and the end result will be much worse than without treatment (see, for instance, SETON-ROGERS 2016: 199).

²²⁷ Due to the tectonic movement of the financial universe at the expense of the real economy, large companies tend to dominate, i.e. there are leader firms that are potentially inhibiting innovation at firms not being superstars by suppressing innovation dynamism in general. This type of reasoning is related to the conception of AGHION et al. 2021: 400. Just to avoid misunderstanding: some may say that the dominance of large companies was already pointed out by Galbraith (1967), however, the current situation is qualitatively different: while the key problem with dominance described by Galbraith was that dominating large companies had influence on the state (but basically did not affect the innovation dynamism of the real economy), today the situation is exactly the latter (GALBRAITH 1985 [1967]: 518).

²²⁸ As Eurostat data suggest on annual enterprise statistics by size class for special aggregates of activities (NACE Rev. 2), the number of large companies (employing 250 employees or more) has been increasing since 2011 across the EU27. The regulation on insolvency regime was changed in Greece, Italy and Spain in an effort to dampen the number of zombies since 2010, and the data imply that as certain zombies were taken out from the system, medium and even larger companies could dominate in a more conspicuous way. For example, the number of large companies in manufacturing in 2011 was as follows: Greece (120), Italy (1,269), Spain (814) and EU27 (14,600); while it rose by 2019: Greece (138), Italy (1,431), Spain (981) and EU27 (15,800). It is all the more telling that the number of medium sized enterprises has been dwindling (that number was 102,000 in the EU27 in 2011, while it declined to 100,000 by 2019), see Eurostat (SBS_SC_SCA_R2).

²²⁹ This fact has a myth-destroying power meaning that the old theory over the crucial importance of large firms in giving dynamism to the economy, of which Bennett Harrison's work said much, is now belonging to the past (HARRISON 1994: 324).

economy, what is more, in the end, it is the silent mechanism of socio-economic development. On the contrary, by expanding its own framework, the financial system has been outgrowing the real economy.²³⁰ True, it has begun to function as an absorption mechanism for global imbalances. The bad news is that it is one of the main causes of the imbalances. The expanding financial universe made the socio-economic ecosystem ever noisier. For example, it is therefore hardly by chance that studies dealing with the competitiveness of the EU recurrently emphasise that the old continent lags behind its front-line players in putting and transforming knowledge onto marketable and competitiveness-enhancer innovations.²³¹

Addressing the suppression of the innovation dynamism

Section *Suppression of the innovation dynamism* has purported to illustrate the existence of general landmines of financialisation entangled with the intertwined and still burgeoning noisy channels of zombification whereby creating a noisy socio-economic configuration for Industry 4.0 development by hampering its healthy unfolding. Due to the disharmony documented, public sector and economic governance alike is unable to relatively easily identify Goldilocks zones on which it could focus on advancing sustainable structural change (digital economy, Industry 4.0, more inclusive, greener circular economy). Consequently, Industry 4.0 does not seem to be able to autochthonously bring back the real economy (non-financial corporate sector) into the consciousness of the financial sector unless systemic landmines (including zombification) are addressed.

²³⁰ The financial system in most countries fails to adequately channel credit towards productive investment in the real sector (see UNCTAD 2013).

²³¹ See HÁMORI–SZABÓ 2016: 397–407; BUGHIN et al. 2019. Innovation performance keeps improving in EU Member States and regions, while South Korea, Canada, Australia, the United States and Japan have a stable performance lead over the EU (see European Commission 2021b).

Noisy expectations, as we have shown, are out there since many scholars, pundits and policy as well as business practitioners tend to believe that Industry 4.0 will bring innovation dynamism to a new level being pervaded by a productivity boom. The disharmony between the financial sector and the real economy, coupled with a liquidity-expander lax crisis management, resulted in a configuration in which firms that are open to Industry 4.0 may find themselves misinformed and misguided because the excessive financialisation and zombification come with a set of disguised landmines as indicated (e.g. weak insolvency regimes, zombified suppliers, etc., not to mention the unresolved issue of cybersecurity forcing even more firms to refrain from the voluminous front-load investments, in which debt financing is inevitable, in Industry 4.0 choosing zero-leverage functioning instead).

The bridge between the financial and real economy spheres is already crumbling and appears to be farther and farther. The punchline of our section is that a set of policies is needed that are targeting both ends of that bridge, both the financial universe and the real economy in supporting a sustained Industry 4.0 development.²³² Economic policy (in Europe) is chasing a mirage and does not even notice the landmines lurking in the socio-economic innovation ecosystem when designing funding programmes to support Industry 4.0 developments while not eliminating systemic inertia forces.²³³ Zombies are more than mere sunspots but are the real obstacles to real socio-economic development. The documented micro- and macro-level noises accumulate and make the socio-economic innovation ecosystem noisier. At the micro level, the existence of zombies makes the decision of other actors noisier (more

²³² As Brigadier General Gavin got the answer for his question “What’s the best way to take a bridge?” in the classical movie *A Bridge Too Far*, the best way is to take both ends at once.

²³³ Let us add that our approach is also suitable for raising a new line of research, namely the issue of systemically important companies. It is an open and highly complex issue whether the public sector should collaborate with and support systematically important companies since it is not clear whether these companies should be allowed to emerge at all, or they are the ones where disruptive innovations come along that are important for the qualitative development of the system. This research avenue is still in an embryonic state, see e.g. POLEDNA et al. 2018; MA et al. 2020.

expensive, riskier) and they may find themselves in a more difficult situation, while at the macro level, zombie lending is embedding the system and it is becoming increasingly difficult for the states to find so-called Goldilocks zones the actors of which could be promoted in favouring a more sustainable Industry 4.0 development and transition to the digital economy.

The world economy is now facing particularly great challenges. If there is one thing we can learn from history, it is that during crises things are born that we could not have imagined before. Thus, we can hope for a new mind-set. A game changer approach would be a delicate regulation of the financial universe by taking into account its runaway with zombification. An approach which sees the performance of the financial system in terms of how successfully it supports the industrial revolution in the real economy by bringing some sort of directionality into the financial system to be more conducive to the healthy unfolding of Industry 4.0 requiring longer term and larger front-load investment culture (i.e. analysing and identifying zombie activity both in the business sector and in the banking sphere,²³⁴ aligning short- and longer-term goals; offering management knowledge and other kind of support for SMEs to overcome their zombie status).²³⁵ That approach should also acknowledge that competition in the banking sector does not have an optimum level, but its level should be taken as a moving target (i.e. increasing competition within the banking sector can foster the organic and sustained elimination of zombies, however, an excessive level of competition is likely to give birth to malignant financial innovations in pursuing ever-higher risk avoidance by making the entire financial system more fragile). Finally, the approach chosen shall very much depend on the ruling or desired societal contract in the given country, because it seems that fostering Industry 4.0 is not without the costs of disappearing inclusiveness from the socio-economic system. In this sense, systemic zombification might be seen as side effects of pursuing inclusive growth, while inhibiting the development of I4.0 with

²³⁴ Machine learning is sought to better predict zombie activities (see BARGAGLI-STOFFI et al. 2020).

²³⁵ Applying Industry 4.0 technologies in the financial system itself is also of essence.

full steam. Addressing zombified Industry 4.0 therefore has to be on today's policy agenda but not in a helter-skelter fashion.

Keep in mind that one of the key insights emerging from studying the challenges (*The Madness*) is that they are all the more systemic and any kind of resistance is doomed to fail, hence economic governance should go for increasing and strengthening resiliency in a new-fangled way. And since the financial sector exiled the real economy to the event horizon by creating and maintaining a huge disharmony, tackling the challenges in an old-fashioned way would easily become a futile undertaking. For instance, addressing inflation by withdrawing from the stimulus and reducing the amount of money to trigger lower inflation expectations while dynamising the real economy is not in the cards in a socio-economic system interspersed with broken symmetry among the subsystems.²³⁶

Another implicit punchline is that, if the financial universe happens to largely forget about the real economy, when recession hits, a much larger than optimal stimulus will be needed during a recession (e.g. quantitative easing, lowering interest rates, state budgetary transfers and subsidies, etc.). The latter requires the public sector to become ever-more efficient via continuous innovations to offer enough fiscal latitude in an authentic way. This is particularly important because the stimulus cannot be maintained for a long time, since in such a system configuration, the "easy money" (i.e. abundance of liquidity) created by the bigger-than-optimal stimulus, on the one hand, can only be done if the state is becoming way too overburdened;²³⁷ on the other hand, such stimulus is likely to reduce the efficiency-improving power

²³⁶ Needless to say that inflation has also been driven by deeper trends such as ageing society the willingness of which to pursue investments is way lower than its predilection to accumulate savings, whereby contributing to inflationary forces (e.g. the elderly is more likely to spend their savings on real estate generating price booms). Rising real estate prices and the value of other investment assets in turn further increase inequality and the wealth that can be invested by the rich. This suggests that curbing inflation in a sustainable manner would require that inequality is reduced (and aging is slowed down).

²³⁷ For a classical argument against overburdening the state see the work of Wilhelm Röpke, also known as the father of social market economy (RÖPKE 1948: 238).

of competition, lower aggregate efficiency and to facilitate non-viable activities (e.g. zombies)²³⁸ by contributing to the suppression of the innovation dynamism (i.e. decreasing overall productivity and development levels, that is to say, stifling down qualitative structural changes such as the emerging and diffusion of Industry 4.0, etc.).

It goes without saying that after the 2008 financial and economic crisis, when the global capitalism lived through a near-death experience, an often-invisible battle started between technocratic elites and populists. However, both sides assume that there is a unified will of the people, and politics must enforce this instead of making some kind of compromise between different social groups. This is the perceived reality of technopopulism,²³⁹ which is not in a relationship with reality: populations are heterogeneous requiring diverse and pluralistic approaches in addressing *The Madness* we face. Therefore, the state will do better if it makes its own operation more efficient and innovative, to provide a wider and higher quality public service, to become a system that serves the diverse needs, whereby it not only strengthens the social trust base but also that of the resilience of the socio-economic innovation ecosystem.

The concept of public sector innovation arises here the underlying characteristics of which is the continuous self-reflection, i.e. the constant questioning about our narratives and behaviour via monitoring and criticising things and processes that are taken for granted, in other words: public sector innovation is nothing but a manifestation of the state responsibility for social development partly with the aim of catalysing the reversal of the Great Suppression. Catalytic public sector innovation is therefore needed to be geared towards identifying resiliency-killer mechanisms and processes or at least towards mapping and deciphering redundancies, as fields of intervention, in an effort to advance efficiency and alleviate the overburdened public sector.

²³⁸ A study proved how the low interest rate environment and the stimulus increased the proportion of zombie companies (except in countries where competition is already strong and high-quality institutions operate, such as the German economy), see BLAŽKOVÁ–CHMELÍKOVÁ 2022.

²³⁹ BICKERTON–ACCETTI 2021: 265.

Chapter III

The Catalytic Public Sector

Chapter II has so far exemplified that humanity has been captivated by old as well as new complex mechanisms. Beyond the crucial importance of such challenges in encoding critical instability, the chapter has also uncovered that the Great Suppression of the innovation ecosystem in the developed world cannot be understood if the imbalance among the major subsystems is neglected. The nucleus systemic factor behind the Great Suppression then is the disharmonious interplay between the real economy, the financial universe and the public sector. As we illustrated, the expansion of the financial universe has its own landmines, hence even the new industrial revolution in itself is unable to put the real economy back into the consciousness of the financial universe to palliate the symmetry breaking. In an effort to make a difference, the public sector needs to grow up to do that job by fostering innovations within and over its walls embracing also the financial universe and the real economic arena.

Chapter III first outlines the theoretical framework of public sector innovation by incorporating the fact that the challenges have been making the socio-economic innovation ecosystem ever-more complex to be tackled via reductionist scientism, rather they are calling for a more innovative public sector with a holistic and more humble governance attitude. After presenting the scope and the methodological approach, it focuses on the *state-of-the-art* empirical evidence as well as it deciphers interesting cases (primarily positive cases as next practices, but pinpointing some negative cases as well as past practices) on various public sector innovations that took place in the developed countries, especially in the European Union so far. The choice of these may seem arbitrary, their consideration was given by the logic of presenting a sort of ‘example library’ of all five types of public sector innovations encapsulating the challenges (*The Madness*) we identified earlier (service,

technological, management, governance and collaborative innovations), which can be grouped under three overarching objectives as cost reducing innovations (more for less), innovations targeting the broadening and deepening of the accessibility to public services, and innovations geared toward qualitative enhancement of the public services.

THEORETICAL FRAMEWORK

The scope and inevitability of the catalytic public sector

If one takes a mere glimpse into the evolution of the theory of economic development, it may be concluded that this field has drawn a full circle since its prominent contemporary theorists put their focus again on the role of the state and its institutional setting by going back to the origins. As a consequence, the public sector in general has a critical role in economic development as it was echoed by many.²⁴⁰ For instance, the second largest category of owner in case of largest listed companies around the globe, is the public sector, which holds 14% of the global market capitalisation at a total value of USD 10 trillion (i.e. central and lower tiers of governance account for 56% of public sector ownership in listed firms, while sovereign wealth funds, pension funds and state-owned enterprises do also represent fine shares).²⁴¹ Additionally, in Europe where the public sector represents a high share in almost all relevant dimensions (it constitutes an increasing share of EU's GDP, the share of

²⁴⁰ EVANS et al. 1985: 390; ADELMAN 1999.

²⁴¹ DE LA CRUZ et al. 2019. As the cited report revealed, the public sector in China represents 57% of the total public sector investments in global equity markets. More than 8% of the world's listed companies have public sector ownership that exceeds 50% of the equity capital. Beyond China, the public sector is an important owner of listed companies in stock markets such as Saudi Arabia, Malaysia and Norway where they hold between 34% and 46% of the total market capitalisation. A paper showed that the share of state-owned enterprises was, all the more, increasing between 2002 and 2015 across 27 European countries (see DE LANGE – MERLEVEDE 2020).

government employment in the EU has been around 18% of total employment since 2000; the average public spending ratio in the EU reached 49.54% of the EU GDP by 2020²⁴²) the need for better and more efficient public services provision is ever more emphatically arising as a key challenge. The challenges are arising from a variety of conditions:

- In general, the role of the state and the vision of public services becomes user-centred, the public service of the 21st century shall not serve the governments *per se*, but rather the users – let those be the business sector, citizens or employees and actors within the public sector itself. There is therefore an increasing need for developing innovative tools to feel the pulse of the citizens.²⁴³
- Although there has always been innovative potential in the public sector, New Public Management (NPM) has changed the terms of how innovation is pursued and where ideas are developed. The difference seems to be more that the pre-NPM paradigm was few top-down innovations heavily driven by central government, to a more diffuse model where local actors are given liberty to experiment for themselves. In many European countries (definitively for most of the New Member States, even though the transition started two decades ago), public services have still not had undergone the necessary transformation, leaving behind the old structures. Public sector and public services reform questions are on the table on a daily basis and innovative solutions can aid these changes to happen, and also can add to raising the necessary political support.
- Public eServices play an increasing role in public service provision. eGovernment, Local eGovernment, eHealth, eEducation and G2B eBusiness services are developing fast, and are of key policy priorities of the EU as well.

²⁴² Not to mention the trend in the general government expenditure by function (COFOG) which was hovering around 49% of the GDP in 2011 to be followed by a sort of adjustment period (by reaching for instance 46.5% in 2018) and then it has climbed up to 53.1% by 2020 (see Eurostat [gov_10a_exp]).

²⁴³ For instance, in the US, the policy started to become more and more responsive to policy-specific opinions as a fight against democratic deficit (see LAX-PHILLIPS 2012: 148–166).

- The introduction of eServices forces governments to process reengineering the existing models, workflows, procedures, in order to be able to operate effectively the back-office system for the eServices. This – regardless of front-office service delivery – raises the role of innovative solutions in the mechanism of public services.
- The growing focus of Pan-European eServices connected to public actors is an additional layer of pressure towards finding innovative solutions both on the European level, and in the national level as well – as identifying and realising the best options to connect to the Pan-European services.

Beyond the above mentioned, state/public sector as society-shaping institutional structure also encounters grand challenges (*The Madness*) that can to a large extent undermine either the quality of public services offered or the sustainability of the state itself resulting in observable dissatisfaction with the democracy and potentially inducing political tribalism.²⁴⁴ The latter one, that is to say, the democracy deficit, which largely reflects the worsening confidence and trust levels of citizens towards the state and its institutions,²⁴⁵ has become a persistently analysed phenomenon in the European Union, as well.²⁴⁶ What is more, the Great Suppression is also able to plant a thought in

²⁴⁴ Tribalism encourages people (for instance in the governing parties) to skilfully avoid information that could refute the group's beliefs by leading to fundamental misconceptions about the reality, thus the resulting economic policy actions are doomed to failure rather than the opposite. A well-known philosopher, Allen Buchanan stated that "[...] If the trend toward tribalism continues, it's not just that civility and respectful discourse won't survive; democracy itself will collapse" (BUCHANAN 2020: 296). For more on the hollowing and the backsliding of democracy as well as on the rise of illiberal economic policies, see GRESKOVITS 2015: 28–37; CSABA 2021: 674–690.

²⁴⁵ See the series of the Standard Eurobarometer provided by the European Commission which conveys not only that almost half of all Europeans trust the European Union (47%), a decline of two points since the Standard Eurobarometer EB95 of spring 2021, but also that current trust levels are still below that of the heights of the pre-2008 financial and economic crisis in 2007 (see <https://europa.eu/eurobarometer/api/deliverable/download/file?deliverableId=81214>).

²⁴⁶ See AZMAN 2011: 242–250; DOBSON 2012: 843–859; VESNIC-ALUJEVIC-NACARINO 2012: 63–70; BEETZ-ROSSI 2017: 22–41; KRATOCHVÍL-SYCHRA 2019: 169–185.

the voters' mind that the public sector (including the economic governance) has been neglecting to a large extent the deterioration of the harmonious relationship between the real economy and the financial system, thus it has become a mechanism for maintaining systemic distortions including the Great Suppression itself.²⁴⁷

As a logical consequence, innovation policy's clarion call for fostering all forms of innovation should be addressed not only in case of the private sector but also that of the state itself in an effort to make it innovative to reinvigorate its institutional setting and public services offered. Innovation in public service provision is essential in meeting the growing demand of citizens being socialised within a business sector having increasing services quality. It is clear that citizens are not differentiating in the standards of services they receive between the public and private sectors – therefore as the private sector gets better at innovating and improving the quality of its provision, this necessarily ramps up the expectations of public services. In the current fiscal environment, as it was also depicted in Chapter II, this is putting untenable strains on state funding, hence the need for innovation.

Another point worth mentioning is a psychological phenomenon called “hedonic adaptation”.²⁴⁸ This means that, what was once an outstanding

²⁴⁷ It is hardly by chance that modern monetary policy is also forced to take on tasks such as supporting green real estate investment. This already indicates that the financial system is relatively unmanaged and does not strive to contribute to the development of the real economy as it did decades ago (see for instance the roadmaps toward greening monetary policy at the European Central Bank, www.ecb.europa.eu/ecb/climate/roadmap/html/index.en.html).

²⁴⁸ For example, there is a growing body of evidence that taxpayers start to prefer tax evasion as tax rates are increasing due to such reference dependent preferences that are subject to hedonic adaptation (see BERNASCONI et al. 2014: 103–118). Of course, as information and communication technology has become in our pocket, social media and the groups on it can influence the power of hedonic adaptation, for instance, social audience (i.e. the presence of others and the perception that those others are noticing you) can slow hedonic adaptation by cuing consumers to believe that others are admiring their product (see CHUGANI–IRWIN 2020: 1554–1570). It is not difficult to imagine that perceptions about the quality of public services can also be influenced in favour of market services.

service merely becomes the new norm and baseline against which all other services are measured – i.e. all services must now start from this elevated level as people's expectations are upwardly revised.

In short, innovation in the public sector means the creation and implementation of new ideas that can be manifested as new processes, products, services and methods of delivery with the aim of achieving significantly improved efficiency, effectiveness or quality of outcomes.²⁴⁹ Since the term “innovation” can be portrayed as a very elusive one in case of public service provision, the Readers should be aware of the fact that there is no unique and standard approach at hand which would exhaustively illustrate innovation in the public sector, but a diversity of approaches and perspectives (e.g. top-down, sideways, bottom-up) whose combination could offer supporting hands in exploring the real picture with a greater diligence and clarity.²⁵⁰ Furthermore, policymakers should also take into account the fact that policy is a perpetual motion thing; stimulating innovation within the public sector needs a holistic and dynamic approach over time by having a sort of directionality in addressing the Great Suppression or at least some of the great challenges mentioned earlier.

Innovation in the public sector provisions is widely analysed in the economic literature, if for no other reason than because challenges establish an intensifying pressure on public service provision. Despite the growing literature on public sector innovation, there has not been long discussed whether the policy engineering in this regard is directing the developed world, especially Europe, towards a more efficient public sector without neglecting the systemic challenges ahead. In an effort to transcend prevailing approaches,²⁵¹ the book makes a rational restriction by building on the basic considerations of Chapter II, namely that *The Madness* together with the neglected systemic symmetry breaking among the subsystems are mainly responsible for the Great

²⁴⁹ MULGAN–ALBURY 2003: 40.

²⁵⁰ See BORINS 2001.

²⁵¹ BEKKERS et al. 2011: 263; CUNNINGHAM–KARAKASIDOU 2009; FINKA et al. 2019: 283; OECD 2017; WINDRUM–KOCH 2008: 251.

Suppression of the innovation dynamism. These challenges are making the entire socio-economic innovation ecosystem noisier, hence the public sector and policymakers get into an even harder situation when they want to assess what is really going on in the economy with the aim of bettering prosperity.

Without being repetitive, the systemic challenges are affecting the public sector's performance and they are all also calling for bolstering innovation activity within and among the subsystems.

- Tipping inflation: Since resistance is futile and there is no chance of forecasting precisely the future inflation rates either, the logical thing the public sector can do is to create monetary and fiscal spaces to become as resilient as possible while it tries to re-anchor inflation expectations. The latter is unimaginable without gaining the confidence of the public, without having its trust in the state and its institutions, which can be underpinned by fostering an ever-more efficient and innovative public sector.
- Health crisis: It sheds light on the crucial importance of a well-functioning and trust-enhancing public sector. Trust in the government determines the propensity to vaccinate more than the fear of side effects. That is, the proportion of those being hesitant to be vaccinated (or the intensity of anti-vaccination movement) is significantly higher where confidence in the state and the elite is low. This is why bolstering an innovative public sector that recreates and rehabilitates trust infrastructure is of immense importance.²⁵²
- Engaging in the next production revolution (Industry 4.0): It is a delicate issue since it can easily be in conflict with a higher social goal: achieving and tapping the full potential of inclusive development (see the *q forces* described in Chapter II). The next production revolution in the real

²⁵² Not to mention the role of the public sector in creating capacity to finance and invest in mental health programmes since mental disorders like depression, anxiety, dementia have been becoming ever more burdensome for most developed countries (was further aggravated by Covid-19-induced stress and isolation). The economic costs of mental disorders can be expressed in the form of lost productivity (see CHISHOLM et al. 2016: 415–424).

economy calls for inclusiveness requiring an innovative public sector in an effort to control the unfolding of Industry 4.0 and to offer opportunities for many to use their increased leisure time in conjunction with higher level pro-social goals (e.g. fostering sustainable development).

- Migration and refugee crisis: it does also touch upon the inevitability of fostering inclusive development via social innovations in which public sector agents play a key and demonstrating role (e.g. untraditional partnerships, helping the deprived and hard-to-teach immigrants, etc.).²⁵³
- Antibiotic resistance: owing to the high likelihood of negative repercussions of the antibiotic resistance on innovation dynamism (i.e. complex negative impacts on our socio-economic innovation ecosystem ranging from growing unemployment, increasing spending on healthcare, through worsening productivity to escalating inequality and depressed growth levels), the public sector needs to build up capacities to holistically intervene in taming antibiotic resistance.
- Demography quandary: the public sector shall definitely do more (for less or at least for the same) in broadening and deepening the accessibility to public services, and qualitatively enhancing the service provision with the aim of mitigating the feeling of more and more people that they are left behind. The demographic challenge which is closely linked to the so-called ageing society and other societal problems such as climate change raises delicate issues for public service provisions in the sense that more and more financial burden has to be addressed by the states in the interest of pursuing collective impact (e.g. ageing population entails a society demanding at least new types of public services as well as more prolonged treatments for the elderly, but its ultimate consequence is the unsustainable pension and social systems – as the sustainability of European pension systems is still a concern).²⁵⁴

²⁵³ See IOM 2020. Besides, a study underlined the importance of public administrative capacity when it comes to the effective absorption of the European Fund for the integration of migrants (see VAN WOLLEGHEM 2022: 640–658).

²⁵⁴ European Commission 2017b.

- Natural disasters and climate change: both microscale and macroscale efforts are needed to curb climate change in a globally coordinated way by encapsulating the complexity we live with, and in this process public sectors do play a central role either as initiators and demonstrators or collaborators with private and civic undertakings.
- Emerging patterns in emerging markets: Rebalancing the world economy by fostering the synchronisation between the structural changes happening in developed and emerging countries is of particular importance. One of the key lessons of economic history and economic theory itself is that participating in globalisation feeds back to prosperity since international trade benefits a country, but only as long as distributive concerns are addressed. To this end, innovative public sectors and economic governance are needed to take part in such a grand reconfiguration of hyper-globalisation.
- Sovereign debt crisis: although there was a moment of sobering after the advent of the Great Recession²⁵⁵ in the sense that the European crisis management started to be dominated by fiscal consolidations (austerity). Overall, these adjustments do not appear to have had a lasting positive effect, moreover, they have prolonged the recovery from the recession,²⁵⁶ improvements in fiscal indicators were observable mainly after the recession (when nominal GDP growth regained some momentum), today, the

²⁵⁵ COIBION–GORODNICHENKO 2010. With the advent of the “Great Recession”, the issue of sustainable public finances had become a hot potato since more and more European countries faced serious liquidity problems (e.g. Hungary, Latvia and Romania in 2008) and even threats of sovereign debt crisis (Italy, Spain, Ireland, Greece and Portugal in 2010). Importantly, even creditor countries (Germany, France) did not prove to be immune to the phenomenon of indebtedness, as their debt-to-GDP ratios started to increase at record heights (and still growing). It is hardly by chance that Reinhart and Rogoff (2011) considered the period 2007–2018 a decade of debt (REINHART–ROGOFF 2011: 4). With the benefit of hindsight, we now know very well that their prediction was overly optimistic.

²⁵⁶ The fiscal consolidations initiated in the Eurozone were largely responsible for the elongated recession (see RANNENBERG et al. 2015; HEIMBERGER 2016; HOUSE et al. 2020: 37–63).

level of deficits and public debt is higher than before the 2008 crisis, but also higher than the levels temporarily reached in the post-crisis consolidations. This implies that there has been a fervent need for prolonged and persistent, what is more, gentle fiscal consolidations. As a consequence, policymakers should aspire to extenuate the “pains”, i.e. the fiscal consolidations induced decline *via* innovation in the public service provisions in a more dedicated way, as well. There is no optimal and ready-to-use consolidation method at hand that can be applied in each case. In the absence of this “Whitworth cannon”, public sector innovation may offer a reasonable opportunity to “proclaim war” against fiscal laxity since it may provide a considerable way for the public sector to be more efficient by rehabilitating and maintaining the trust level of citizens and end-users towards governments and state institutions at a time when painful and perceptible changes are needed. The ultimate goal of the public sector is not to increase cost-effectiveness but to increase prosperity. If public sector innovation comes at a higher cost but helps with that, it is a smart fiscal expansion.²⁵⁷ Importantly, fiscal balance cannot be an end, but a mean: an instrument to safeguard the feasibility of economic policy. However, in order to realise that increasing debt is neither good nor bad in itself, a broader approach is needed, which recognises that much depends on the ability of the public sector to innovate.

- Shade of populism, shadow of sanctions: radical populism deters and distorts public sector innovation in a more conspicuous way (populism does often advocate antipathy to evidence-based inquiry, to collecting real-time data, to pursuing efficient dialogue within the public sector, etc.). Populism can become hostile to,²⁵⁸ and obstruction of public sector innovation. Still, responsible grassroot and bottom-up innovations within the public sector are more important than ever and they can shape populist flares.²⁵⁹ An emphatic way to fight against (or at least, lean

²⁵⁷ For more on the right fiscal expansion see LARCH et al. 2022.

²⁵⁸ BORINS 2018: 1858–1871.

²⁵⁹ See LONG–BLOK 2017: 64–70.

against) populism is to deliver proper and high-quality public services that require continuous openness to self-correction and self-development via innovations. This can be a way forward when fundamental uncertainties are growing with respect to the future and over the final impacts of the economic sanctions of today.

- Additionally, symmetry breaking between the financial universe and real economy: it does suppress rather than stimulate innovation dynamism by maintaining and strengthening systemic distorting forces. As we argued, even the current production revolution (Industry 4.0) does not seem to be able to autochthonously bring back the real economy (non-financial corporate sector) into the consciousness of the financial sector. A healthy diffusion of Industry 4.0 is doomed unless economic governance with the public sector behind inveighs against the expanding financial universe by not being lackadaisical any longer (i.e. designing some directionality with respect to financialisation as well as making its own functioning more efficient via innovations to rehabilitate and cherish public trust).

In addition to the fact that the challenges have reached the coast of public sector related economic literature by leading to lengthy discussions over the role of academics that should identify, analyse and theorise both the gains and the losses,²⁶⁰ the challenges are establishing a claim for public sector innovation the primary aim of which is not to deliver significant cost reductions but is to address at least some of the grand challenges in the spirit of *non numerantur, sed ponderantur* reaching out improvements both in service quality as well as accessibility that constitute a trust builder and maintainer channel.²⁶¹ This calls the policymakers' attention to the

²⁶⁰ POLLITT 2010: 17–31.

²⁶¹ Without trust the results of the consolidations will more likely be infinitesimal. Complying with the new fiscal rules and discipline assumes a good public service quality and accessibility which could maintain the trust in the governmental institutions and decisions from the side of citizens (see GYÖRFFY 2007: 236; VIGODA-GADOT et al. 2008: 307–329).

importance of innovations resulting in bigger positive changes complementing the incremental and slowly evolving ones.

The bedrock of analysis

Chapter III is pervaded by the view expressed previously influencing the design of our theoretical conceptual framework in addressing public sector innovation as an essential value generated by the public sector in reversing the Great Suppression. The focal points are:

- mapping current policies targeting public sector innovation inside and outside the EU
- identifying barriers and drivers of innovations sought to deal cost reductions (more for less), the broadening and deepening of the accessibility to public services, and the qualitative enhancement of public services which may mean smart fiscal expansions
- exploring the trust building potential of multi-actor innovations in addressing the polycrisis
- contributing to the better understanding on how more efficient and reflexive public service provisions can be achieved via various types of innovation (irrespective if the innovation means an adoption of a promising business practice) and how can these processes be used for identifying resiliency-killer processes thereby being conducive to address *The Madness* and to reverse the Great Suppression

To this end, Chapter III focuses on public sector innovation by going beyond prevailing approaches that either have not addressed the entire socio-economic innovation ecosystem or have not considered the co-evolving systemic challenges together with the systemic symmetry breaking between the real economy and the financial sector and their implications on public sector innovation. In doing so, the Chapter looks at issues such as what were the main targeted fields of public sector innovation, what kinds of tools seemed

to be more conducive to deliver the goods, what kinds of innovation milieu with what preconditions were out there, and whether collaborative mindset played a game changer role.

Methodological considerations

Along the Chapter we build a verbal model based on quantitative and qualitative data and information, stemming from authoritative national and international organisations, by building on the basic definitions of the key terms (public sector and public sector innovation).

Defining the public sector/government sector

Although the topic of innovation in the public sector has been ranked with the series of issues addressed by nowadays discipline of Innovation Economics,²⁶² defining the “public sector” adequately by a standard and hence widely used single definition is more than beset with difficulties and may be a Herculean task. Nonetheless, the “System of National Accounts”²⁶³ (SNA) emphasises that there are at least two criteria to be considered when it comes to the issue of defining public sector: (1) market/non-market; and (2) control and financing. By using permanently these criteria we can elaborate the boundary between public and private sector in a more vigorous way. Substantively, the public sector embraces all government activity and its consequences or can also be treated as state general decision-making and its outcomes via governmental consumptions and investments.²⁶⁴ As a corollary, the public sector can be defined as all activities (let it be either market or non-market) that are controlled

²⁶² HALL-ROSENBERG 2010: 600.

²⁶³ See www.oecd-ilibrary.org/economics/system-of-national-accounts-1993-glossary_9789264180871-en.

²⁶⁴ LANE 2000.

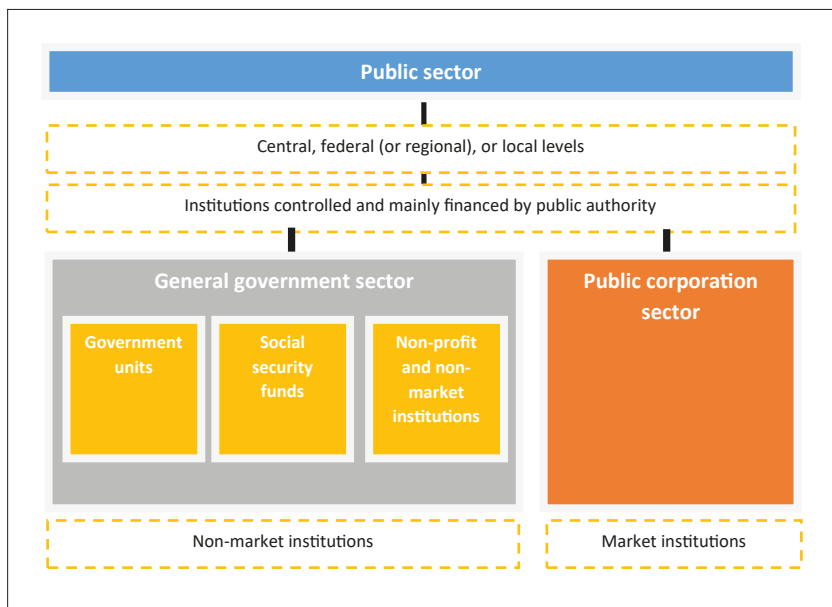


Figure 5. *Structural basics of the public sector (SNA 93)*

Source: Compiled by the author based on HAMMOUYA 1999: 4

and dominantly financed by a public authority at different institutional levels of governance.

Based on SNA, public sector consists of, on the one hand, the general government sector, and, on the other hand, the public corporation sector (Figure 5). The general government sector refers to all governmental units, social security funds and non-profit, non-market public or private institutions that are controlled and mainly financed by a public authority; the public corporation sector in turn comprises all of the institutional units which produce for the market and are controlled and mainly financed by a public authority.²⁶⁵

²⁶⁵ HAMMOUYA 1999.

01 General public services	06 Housing and community amenities
02 Defence	07 Health
03 Public order and safety	08 Recreation, culture and religion
04 Economic affairs	09 Education
05 Environmental protection	10 Social protection

Figure 6. *COFOG classification (1-digit level)**Source:* UN, COFOG

Bearing in mind that finding an always adequate and supreme definition for public sector is nothing but problematic, it is hardly by chance that the profession tends to define the “government sector” instead. In this regard, among the abundantly endowed literature dealing with the government sector, for a long time, one of the most pivotal one was the OECD’s definition available in the previous Frascati Manual,²⁶⁶ as it was also used by the EPSIS Report (2012), as well. According to the Manual, the government sector encompasses “[...] all departments, offices and other bodies which furnish, but normally do not sell to the community, those common services, other than higher education, which cannot otherwise be conveniently and economically provided, as well as those that administer the state and the economic and social policy of the community. (Public enterprises are included in the business enterprise sector.)”²⁶⁷

The 2015 edition of the Frascati Manual gave a new slant on defining the government sector by distinguishing more explicitly among various levels of government, accordingly, “[...] government sector comprises all units of

²⁶⁶ OECD 2002.²⁶⁷ OECD 2002: 62.

central/federal, regional/state and local/municipal government, including social security funds, except those units that fit the description of higher education institutions [...] as well as other government bodies performing and/or funding agencies and all non-market NPIs that are controlled by government units, and that are not themselves part of the higher education sector”.²⁶⁸

As for the functional breakdown of governance we use the so-called COFOG (Classification of the Functions of Government) classification developed by the OECD²⁶⁹ being a futureproof guiding method for international organisations (e.g. European Commission, Eurostat, OECD,²⁷⁰ etc.) (Figure 6). This is of great help when it comes to deciding the sphere of interest or the intersection of spheres in case of a concrete public sector innovation.

Defining public sector innovation

According to the Oslo Manual, “an innovation is the implementation of a new or significantly improved product (goods or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations”.²⁷¹ In the context of the public sector, the minimum requirement for an innovation is that it must be new to or significantly improved to the public sector at different institutional levels (central, federal [or regional] and local levels). Following feverishly the full panoply of the Oslo Manual’s definition on innovation would not be an instructive undertaking in case of public sector innovation. If for no other reason than because using the categories of product or marketing innovations may entail escalating interpretation-related problems later on due to the specific features of the public sector.

²⁶⁸ OECD 2015d: 33.

²⁶⁹ See OECD 2021c.

²⁷⁰ For instance, it is used at the IMF’s Government Finance Statistics, or within the conceptual framework of the OECD’s Government at a Glance (see OECD 2021d).

²⁷¹ OECD 2018: 46.

There were initiatives that initially looked promising, but then did not remain long-lived for several reasons (European Public Sector Innovation Scoreboard as well as European Innobarometer, while the first proved to be a one-off initiative for 2013, the latter lived a little bit longer but the last version of it of 2016 has not even considered public sector innovation any longer),²⁷² building on these, it was possible to define public sector innovation for a long time. Nowadays, the Observatory of Public Sector Innovation, as an OECD initiative, underscores that public sector innovation must be *something* novel to the context and be implemented by bringing about impact (e.g. change in public value). In short, public sector innovation can be defined as the process of generating new ideas, and implementing them to create value for society either through new or improved processes or services. Still, the challenges juxtaposed earlier as well as the increasing complexity of the world socio-economic innovation ecosystem call for an even broader concept that recognises at least the followings:

- the complexity of the challenges (*The Madness*) humanity faces calls for addressing the critical exigencies via overarching missions without working relentlessly on giving the ultimate and only solutions to the world²⁷³
- the changes in the structural configuration of the socio-economic innovation ecosystem affecting each subsystems' innovation capability (i.e. symmetry breaking and the growing financial universe at the expense of the private and public sectors)
- the fact that eventually all forms of innovation shall be supported especially because there might be exaptations²⁷⁴ (innovations without strategic plan)

²⁷² See <https://op.europa.eu/en/publication-detail/-/publication/69e52157-2ba9-11e6-b616-01aa75ed71a1>; while for EPSIS see <https://op.europa.eu/en/publication-detail/-/publication/fe2a3b4b-3d7e-444d-82bc-790a0ab33737>.

²⁷³ See more on such mission-oriented and complexity-acknowledging governance in DELEIDI–Mazzucato 2021; Kovács 2022a.

²⁷⁴ The term originates in evolutionary biology coined by Stephen Jay Gould and Elisabeth S. Vrba in 1982. A prime example of exaptation is the bird's feathers the original role of which was to keep the animal warm, but it turned out later on that flying can also be a function of them. In case of technological development and knowledge accumulation,

- arising to be used for an entirely new function by entirely different agents in an area which is completely different from the original area of use; thus
- the crucial role of brain health and brain capital²⁷⁵ in socio-economic renewals and resilience (to have more knowledge to gauge trend spots and alternative usages of innovative ideas, etc.)
 - the imperativeness for unleashing and liberating sustainable innovations (do not harm the trust base of the innovation ecosystem), meaning “[...] any incremental or radical change in a socio-technical system that leads to positive environmental, economic and social transformations without compromising the needs, welfare and wellbeing of current and future generations [...]”²⁷⁶
 - in principle, public sector innovation must compete with business innovation, still, the Great Suppression signals that business dynamism falls short and public sector innovation should take the lead on many grounds, including the addressing of the financial exuberance²⁷⁷

As a consequence, at least five but still interrelated and intertwined categories can be deciphered and used:

- *Services innovation*: A service innovation is the introduction of a public service that is new or significantly improved compared to existing ones in the given public organisation or the innovation ecosystem as a whole. This includes significant improvements in the service’s characteristics, in customer access or in how it is used.

just think of the case of Johannes Gutenberg who just converted wine press to printing press by turning inked letters into books, that technology by and large remained the same for more than 500 years (see more on exaptations with a view to social sciences in GANZAROLI et al. 2014: 254–274).

²⁷⁵ See www.oecd.org/naec/brain-capital.

²⁷⁶ POPPER et al. 2020: 205. For a more detailed discussion over responsible innovations see SCHÖNHERR et al. 2020: 85–97.

²⁷⁷ It is hardly by chance that a recent article in *Nature* on resilience in economics highlighted that if the global society is to strive for a resilient economic system in the coming years, the financial system’s core stakeholders must lead the way (see HYNES et al. 2022: 382).

- *Technological innovation and process innovations:* Technological innovation is putting technological development related ideas into practice via the support of the public sector to be used within the public sector in an effort to increase the well-being of the citizens and to transform how citizens interact with the government. This is inseparable from process innovations meaning the implementation of a method for the production and provision of services and goods (e.g. installing and making available Industry 4.0-related technologies for the players of the real economy) requiring a good deal of process rationalisation and refinement. This may involve significant improvements in, for example, equipment and/or skills. This also includes significant improvements in support functions such as IT, accounting and purchasing.
- *Management and organisational innovation:* By grounding on the INNOVA Final Report,²⁷⁸ organisational innovation refers to changes in the structures and processes of a public organisation that result from implementing new managerial and working concepts and practices with the aim of searching for and identifying redundancies and resilience-killer processes within the public sector and across the innovation ecosystem.
- *Governance innovation:* Governance innovation indicates the continuous efforts in searching for new paradigms to resolve social conflicts and strengthen cooperation across different sectors and among people. It can, for example, range from institutional redesign (dedicated foresight departments, etc.), imposing non-traditional and out of the box policies by triggering a new or significantly changed attitude of the general public toward the government and its institutions.²⁷⁹
- *Collaborative and communication innovation:* This type of innovation, in the context of public service provision, refers to the implementation of a new method of promoting the organisation or its services and goods, or new methods to influence the behaviour of individuals or others. These must differ significantly from existing communication methods in traditional

²⁷⁸ See RUBALCABA–HIPP 2010.

²⁷⁹ See <http://governanceinnovation.org/what-is-governance>.

organisation. In addition, involving all the subsystems' representatives (public, private and financial sectors and the civic as well) shall be based on modern communication methods simply because it grounds collaborations needed to get a more precise knowledge on complex challenges ahead.

Methodology

The Chapter builds on a verbal model that consists partly of quantitative as well as qualitative information and dataset collected by authoritative international (and national) organisations (e.g. OECD, Eurostat, World Bank, data from national statistical offices, etc.). In addition to synthesising the state-of-the-art theoretical and empirical knowledge over public sector innovation, the chapter deduces the key insights from the case studies prepared for this chapter as well as it builds on the inputs obtained via semi-structured interviews with key stakeholders (from the public sector, the real economy, the financial universe and from the civic sector).

Conceptual framework

Our starting point is the insight deducible from Chapter II on the symmetry breaking of the real economy and the financial systems. It has shed light on the crucial importance of underlying systemic interplay when trying to address particular macrotrends such as productivity slowdown, zombification, etc.

As we have seen, disharmony brings many distortions into the system and also affects innovation dynamism. Of course, building on various composite indices, we can find correlations between the performance of the public sector, the financial universe and the real economy. For example, (1) it can be seen whether it is true that the society and financial system actors are more willing to take risks by borrowing and lending relatively large volumes in terms of GDP in an environment where the effectiveness of government is considered sufficient (e.g. comparing the

government effectiveness index of the Worldwide Governance Indicators of the World Bank with the trend in domestic credit to the private sector in terms of GDP % obtained similarly from the World Bank); or (2) it can also be seen whether real economic dynamism (e.g. in terms of productivity, the rate of new entry or inequality proxied by GINI, etc.) moves together with a goal of the economic governance increasing incentives to direct financial resources towards long-term investments, strengthen stability and expand inclusion (e.g. an index that can be obtained from the World Economic Forum's Global Competitiveness Report on economic transformation priorities).²⁸⁰ But these will not lead to clear-cut and universal (context-independent) results but mainly to correlations representing co-movements, merely (which is also illustrative).

For instance, if one takes a mere glimpse on how the government production costs have developed between 2010 and 2020,²⁸¹ it can be pointed out that such costs, that are to a large extent considered a good proxy for describing the public sector's productivity via innovations resulting in cost savings through efficiency gains, has been taking larger and larger shares from the GDPs of the economies (Figure 7). To put it very simply, the higher the value of the indicator, the better it perceives that the public sector in a given country provides higher quality, more extensive but more expensive services to its citizens and for their satisfaction. To the latter, it is enough to recognise that citizens' satisfaction with the functioning of their public sectors tends to be higher in northern countries having higher production costs as well (e.g. all Scandinavian countries have the highest production costs in terms of GDP: Sweden [29.7%], Finland [29.6%] and Norway [28.8%]). It follows that it is a complete mistake to rock ourselves under the illusion that the only viable way for the public sector to boost civic trust is to reduce the production costs.

²⁸⁰ See SCHWAB–ZAHIDI 2020.

²⁸¹ Basically, those costs encapsulate the followings: compensation costs of general government employees, costs of goods and services produced by non-government entities paid for by the government (including procurement of intermediate products such as accounting or information technology services), and social transfers in kind via market producers. Consumption of fixed capital also counts as a production cost for the government.

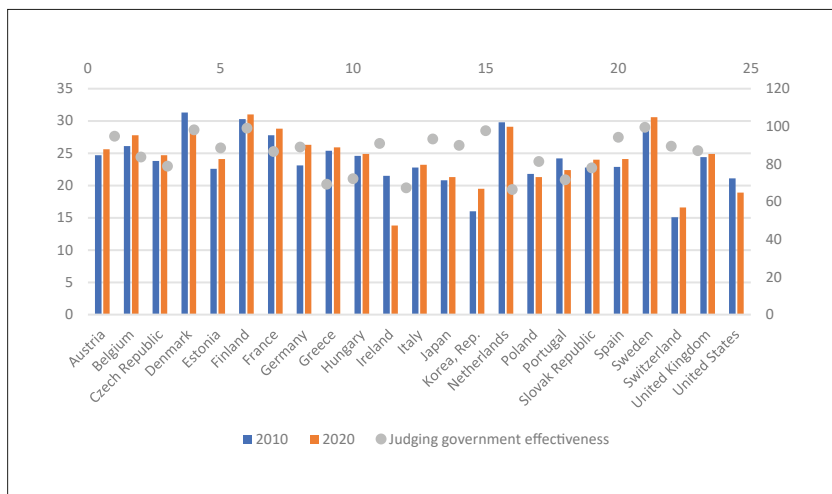


Figure 7. *Production costs as a percentage of GDP, 2010–2020*

Note: Judging government effectiveness refers to the score values of the Government Effectiveness pillar of the Worldwide Governance Indicators of the World Bank. It captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Source: Compiled by the author based on data stemming from OECD 2021c

As a corollary, if and when system-level patterns are worth incorporating (just like when addressing distortions in the system through taking into account the symmetry breaking between the real economy and the financial sphere), a systems approach cannot be avoided here either when mapping the innovation capacity of the public sector. In this respect, we focus on the embeddedness of the public sector into the broader institutional architecture.

Of course, a plethora of authoritative studies have established concepts for analysing the innovativeness of the public sector. Although most of them have analysed the issue from various aspects, there is still need for bridging

our knowledge gap on the nature of innovation in the public sector which is often seen as the “successful exploitation of new ideas”.²⁸² This definition is not able to convey a more realistic picture of innovation happening in the public sector.²⁸³ The literature is not inclined to devote specific attention to the issue of institutional setting framing all forms of innovation occurring in the public sector; however, it has a key role in putting new ideas into practice.

Importantly, it would be hard to overlook the fact that the basic institutional architecture is a result of the often century-long development of formal and informal institutions (e.g. traditions, norms, values).²⁸⁴ “Institutions as durable systems of established and embedded social rules that structure social interactions, rather than rules as such. In short, institutions are social rule-systems, not simply rules.”²⁸⁵ Minimising the discrepancy between formal and informal institutions has to be one of the state’s roles, because economic history teaches that formal ones have to follow evolutionarily the informal ones.²⁸⁶ In this regard, innovation in the public sector may have a non-negligible role in fitting the two together. An organic harmony between the macroeconomic institutional framework and the company and industry levels is essential, because nothing but the microsphere is competing on the global scale. But, without a peradventure, institutions influence the quality of governance which can be regarded as a substantial determinant of international competitiveness.

Figures 8–9 illustrate the relationship between the quality of governance and international competitiveness with an underlying view to (formal) institutions

²⁸² See The Stationery Office Limited 2008.

²⁸³ See BAXTER et al. 2010.

²⁸⁴ The evidence so far is not clear, but it is safe to say that the interplay between the two fundamentally determines the content and shape of development (which, of course, has an impact on them). For the crucial role of formal institutions see NORTH 1991: 97–112; ACEMOGLU et al. 2005: 385–472; LEVCHENKO 2013: 1145–1181. There are also scholars with a firm belief that informal ones may even be more important as RODRIK et al. 2004: 131–165; WILLIAMSON 2009: 371–387; WILLIAMSON–KEREKES 2011: 537–572.

²⁸⁵ HODGSON 2006: 13.

²⁸⁶ VON HAYEK 1988: 194.

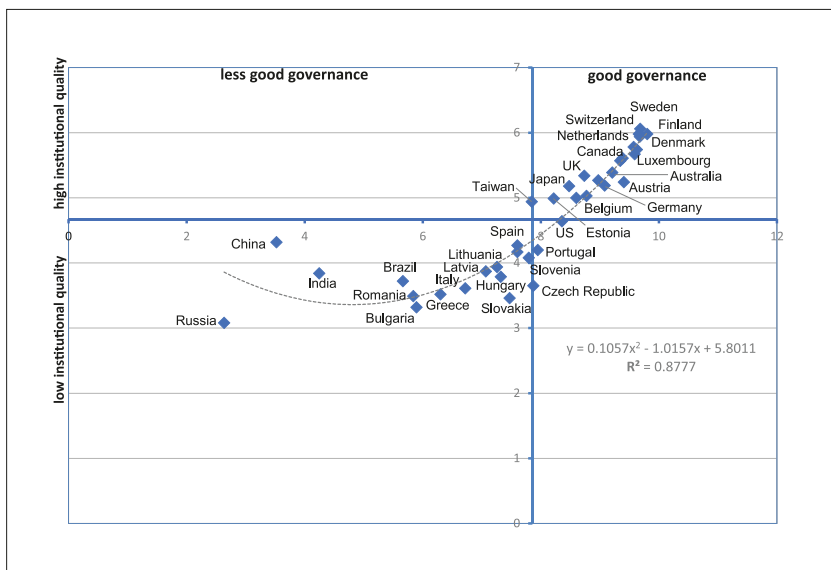


Figure 8. *Institutions and governance quality in selected countries (2010)*

Note: The vertical axis refers to the institutional competitiveness of countries prepared by the World Economic Forum in its Global Competitiveness Report 2011–2012, while the horizontal axis represents the aggregated Worldwide Governance Indicators prepared by the World Bank (see KAUFMANN et al. 2010). The intersection reflects the averages of the two indicators.

Source: Compiled by the author based on data mentioned above

for the period 2010–2020. In so doing we rely on the World Bank Worldwide Governance Indicators as well as the sub-index for institutions of the World Economic Forum Global Competitiveness Report 2011 and 2020. The first one is to capture the quality of governance by using six indicators that are ultimately geared towards political, economic and institutional dimensions.²⁸⁷ The latter

²⁸⁷ These dimensions are as follows: (1) Voice and Accountability; (2) Political Stability and Absence of Violence/Terrorism; (3) Government Effectiveness; (4) Regulatory Quality; (5) Rule of Law; and (6) Control of Corruption (see KAUFMANN et al. 2010).

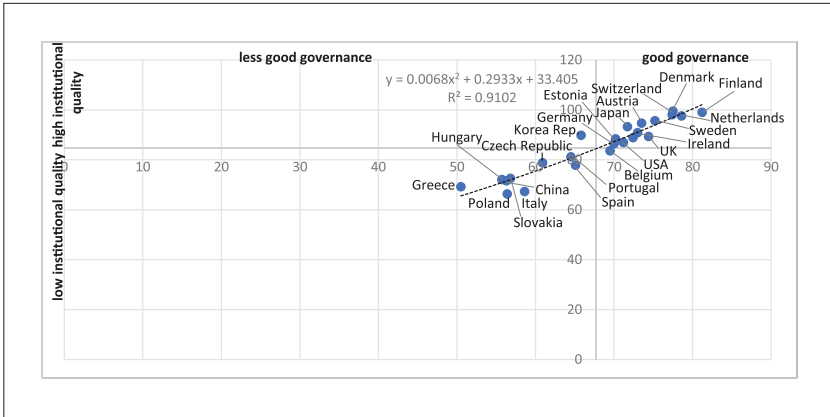


Figure 9. *Institutions and governance quality in selected countries (2020)*

Note: The vertical axis refers to the institutional competitiveness of countries prepared by the World Economic Forum in its Global Competitiveness Report 2020, while the horizontal axis represents the government effectiveness indicator as part of the Worldwide Governance Indicators prepared by the World Bank. The intersection reflects the averages of the two indicators.

Source: Compiled by the author based on data mentioned above

one offers us an opportunity to contemplate how the given economy performs in case of international competitiveness with special attention to its institutions. This makes it possible to see the distribution of countries across these indicators according to whether they have *good* (above the average) or *less good* (below the average) governance as well as whether they have either *high* (above the average) or *low* (below the average) institutional quality.

Without neglecting the fact that measuring governance quality has its own limitations,²⁸⁸ one may conclude that the chart conveys at least two messages that are as follows: (1) On the one hand, there is a strong correlation between good governance and internationally competitive institutional setting; on the

²⁸⁸ OMAN–ARNDT 2010.

other hand, (2) the size of the state does not seem to matter in the sense that good governance and better international competitiveness are not necessarily associated with small states in terms of centralisation, i.e. the redistributed share of GDP. Instead, the quality and efficiency of governance and that of the institutions are more important as the case of the Nordic countries represents with relatively enormous centralisation.

It seems to be an open and shut case that the best performing countries having good governance and high institutional quality are “happened to be” those that are either innovation leaders or at least followers (according to the methodology of the Innovation Union Scoreboards). As the 2021 edition of the Scoreboard accentuated, Sweden continued to be the EU Innovation Leader, followed by Finland, Denmark and Belgium, all with innovation performance well above the EU average.²⁸⁹ It is also worth noticing that the circle of countries bearing the stamp of good governance and that of high institutional quality shows a non-negligible proportion of federal states (e.g. Austria, Belgium, Germany, Switzerland and even the United States can almost be ranked with this group in addition to Canada and Australia not analysed here).

Moreover, it is mostly true that these federal countries are always at the forefront of various competitiveness or innovation and even well-being related rankings (e.g. the World Economic Forum Competitiveness Reports, the IMD’s World Competitiveness Yearbooks, the World Bank Doing Business Reports, the WIPO’s Global Innovation Index or even in the OECD’s Better Life Index). It is discernible that the quality of governance indigenously depends on the institutional framework in which innovation takes place. It is hardly by chance that these countries are mostly not those of being the leading innovators according to the definition of Innobarometer 2010, hence not the frequency of innovations, but the framework is more essential.²⁹⁰ Additionally, there is no gainsaying the fact that ordinarily, these states had relatively better

²⁸⁹ See https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3048.

²⁹⁰ In terms of innovation intensity, Greece and Bulgaria are among the top (see European Commission 2010: 16).

fiscal conditions after the 2008 financial and economic crisis and its ensuing sovereign debt crisis partly because their public sectors were more in line with the needs of their real economy.²⁹¹ The dynamic of public debt accumulation of federal states (such as Australia, Austria, Canada, Belgium, Germany, Switzerland, Spain and the United States) was relatively lower than in case of non-federal ones in our sample (75% of federal states faced lower-than-average growth rate of the total sample's debt rate from 2007 to 2010 and from 2007 to 2015 as well, while those rates were less than 70% for non-federal ones).²⁹² What is more, there is a growing body of evidence suggesting that increasing federal welfare spending tends to stimulate real economic performance alongside since it motivates lower tiers of governments (states) to enhance their innovation capacity.²⁹³ It directly corroborates the inference that any analysis that does not address the institutional architecture, which largely determines the complexity of the system and provides the fundamental incentives for innovation, is doing nothing more but being in a daze.²⁹⁴

Our monograph is completely aware of the fact that federalism and decentralisation are not without doubts especially in case of new democracies,²⁹⁵ because it is often argued that spillover effect and the economy of scale requires

²⁹¹ Not to mention the fact that federal or just highly decentralised states have been showing larger economic complexity as compared to highly centralised countries (i.e. economic complexity refers to trade structure and to the multifaceted feature of export sectors of countries) as well that safeguards the economies' resiliency when gloomier periods are coming (along which global trade could prove to be more resilient during the Covid-19 crisis than after the 2008 financial and economic turmoil, see WTO 2021). See the economic complexity at the Observatory of Economic Complexity, <https://oec.world>.

²⁹² See the historical public debt database of the IMF at <https://data.imf.org/?sk=806ED027-520D-497F-9052-63EC199F5E63&slId=1390030341854>.

²⁹³ In case of the US see SHIN 2019: 349–381.

²⁹⁴ For instance, although Arundel and his co-authors did a cluster/component and regression analysis and found that bottom-up agencies are of key importance, they not even addressed its underlying driving factor such as the level of decentralisation in the broader institutional framework (see ARUNDEL et al. 2015: 1271–1282).

²⁹⁵ RODDEN 2002: 670–687; TANZI 2001; CAI–TREISMAN 2004: 819–843; FERRAILOLO 2007: 488–514.

centralised structure.²⁹⁶ Nevertheless, we emphasise that the institutional architecture of better performing countries having federal structure (or highly decentralised one like Sweden) has evolved historically over centuries.²⁹⁷ Thus, incorporating this evolutionarily developed institutional form as well may provide reasonable considerations in trying to better understand public sector innovation.

Bearing the above mentioned in mind, our theoretical framework intends therefore to be based heavily on a more complexity-aware approach encompassing the investigation of various general economic policy frameworks' ability (precondition) to spark public service innovations. In order to unveil the vortex of various types of innovations in the public sector, our approach also embraces the issue of (fiscal) decentralisation by distinguishing among public sector innovation patterns taking place in federal (including the variety of federalism) and non-federal states. If we accept the theoretically and empirically orchestrated view that institutional architecture, namely the federal state structure may influence innovation activities in the public sector and public policymaking in a more dedicated way relative to the unitary states,²⁹⁸ broadening our approach by incorporating the basic institutional setting seems to be a must. Justifying the importance of fiscal decentralisation is not necessary; studies point out that the lack of information on local preferences due to information asymmetry can be significantly moderated by decentralisation. In other words, at this certain point, we depart to a large extent from the prevalent approaches to public sector innovation by

²⁹⁶ PRUD'HOMME 1995: 201–220. For a well-elaborated and comprehensive picture on federalism and fiscal decentralisation see RIBSTEIN–KOBAYASHI 2007.

²⁹⁷ Needless to say, the role of values is also playing a great role in the behaviour of the society under a given institutional architecture. For instance, federal countries typically have a society showing high score in self-expression values (a contributor to individual initiatives, decentralised initiation) according to the Inglehart–Welzel Cultural Map developed by the World Value Survey.

²⁹⁸ As Susan Rose-Ackerman states, “[...] federalism may produce a search for new ideas simply by generating a more competitive low-level political system” (ROSE-ACKERMAN 1980: 614).

investigating the innovation patterns in public service provision by broadening the research canvas. Let us consider that the role of the institutional architecture is of essence:

- The socio-economic innovation ecosystem is an open, complex and adaptive system being interspersed with positive and negative feedbacks, spillovers, fluctuations leading to phase transitions to become something new (in quality, in structure). We do talk about a system of systems in which the major subsystems are continuously interacting with each other (public sector, real economy, financial universe). Once innovation ecosystem view is to be incorporated, economics on innovation, especially on public sector innovation, must be therefore relational, processual by taking into account the institutional architecture as a special underlying incentive regime. The system's complexity and adaptive capacity depends a lot on whether it is a highly decentralised one with relatively surpassing local autonomies to design, to act upon, to react to and to lead to changes.
- It has been long echoed that public sector organisations are embedded into the institutional framework influencing heavily the innovation activity.²⁹⁹
- Summoning the main message of the new institutionalism ("institutions matter"), and thus taking into account the federal versus non-federal character of the public sector analysis seems to be conducive to our research. It is all the more important since state-of-the-art literature on innovation considers the role of institutions primarily in case of the real economy.³⁰⁰ The distinction between federal and non-federal states is quite inevitable, because in federal systems each layer of the government has an autonomous constitutional existence, while in unitary systems regional governments are created by central institutions. Still, some unitary countries are more decentralised than some federations.³⁰¹
- A hypothesis states that a country based on a federal system and a more general political decentralisation is more likely to benefit from better policies

²⁹⁹ GLOR 2001.

³⁰⁰ As it was the case in HARPER 2018: 975–1001.

³⁰¹ ANDERSON 2008: 192.

than a centralised one because of the greater efficiency in identifying the best policies.³⁰² Additionally, since non-federal states can also be either centralised or decentralised, the distinction offers us an opportunity to analyse not only the preconceptions of bottom-up innovation (mainly emerges under decentralised service provision), but also to consider the nature of top-down innovation.³⁰³

- Importantly, the theory emphasises that decentralisation and federal political and fiscal structure are more likely to lead to higher economic growth and decreasing regional inequalities owing to the optimal provision of public services.³⁰⁴ It is also worth noting that a federal structure is more likely to trigger direct democracy which in turn tends to be associated with stronger fiscal prudence as the case of Switzerland suggests.³⁰⁵
- All things considered, one may notice that the outlined approach goes beyond the theories on public sector engagement in creating value for the public. None of the existing and interdependent theories considered it vital to incorporate the role of institutional architecture. Thus, our line of

³⁰² OATES 1999: 1120–1149; WEINGAST 2006; WEINGAST 2009: 279–293; SAAM–KERBER 2013.

³⁰³ By considering the origins of the concept and implementation of the New Public Management (i.e. originally, the implemented public administration reform, modernisation and new public administration policy were called NPM in the United Kingdom, New Zealand and Australia, see FÁBIÁN 2010: 36–45), one may claim that that bottom-up innovation is witnessed more in countries that have modernised public management systems, whereas the top-down approach relates to a more 20th century statist approach.

³⁰⁴ MARTINEZ-VAZQUEZ–MCNAB 2001.

³⁰⁵ See FUNK–GATHMANN 2012. Of course, we do by no means argue that fiscal federalism work like a charm. We just emphasise that a highly decentralised system has more effective inherent incentives to be innovative in the sphere of the public sector as compared to a highly centralised system. Fiscal problems can even arise in case of federal states as well (on the fiscal unsustainability of some of the German Länder see BURRET et al. 2017: 103–132); however, the issue of sustainability should be taken with better care and cautiousness (see KOVÁCS 2015). All in all, context-dependent analyses are in order to figure out the real outcomes of fiscal decentralisation (e.g. in case of the health sector, a recentralisation tendency has been happening in OECD countries because of the growing sector consequence of the more and more decentralised systems, see ARENDS 2017: 144–174).

thinking transcends not only the old wisdoms decipherable along the former theories such as the *New Public Administration* (started in the 1970s),³⁰⁶ the stream of *New Public Management* (associated with public service reforms in the 1990s),³⁰⁷ the theory on *Public Value* (emerged also in the 1990s³⁰⁸), the school of the *New Public Service* (started with the millennium), the literature on the *New Public Governance* (with its network-narrative of the 1990s–2000s),³⁰⁹ but also the core tenets of the co-creation-oriented and currently dominating theory of *Public Service Logic*³¹⁰ (emerged in the aftermath of the 2008 financial and economic crisis).³¹¹

More precisely, distinguishing between innovation patterns taking place both in federal and non-federal (unitary) states' public sectors also implies that we take into account the fact that framework and incentive conditions differ across state structures. It is notably important from the aspect of grand challenges requiring more flexible framework and better incentive regimes in an effort to trigger collective impact in the favour of certain broad-based missions.

As a corollary, our approach gives us an opportunity to go beyond the dominating and output-oriented approaches neglecting the fact that the characteristic of state described above influences not only the service delivery but also the policy formulation. In other words, it can either foster or hamper the realisation of innovative ideas within the public sector. The more complexity-aware approach (Figure 10) may be able to capture the basic frameworks that are shaping the policies, and thus it lends us a supporting hand in exploring

³⁰⁶ See KAUL 1997: 13–26.

³⁰⁷ See RICCUCCI 2001: 172–175; PETERS et al. 2011: 13–27.

³⁰⁸ O'FLYNN 2007: 353–366.

³⁰⁹ See OSBORNE 2006: 377–387.

³¹⁰ Public sector and private sector values can easily be different, an aspect that is not embraced by the Public Service Logic approach (see SØNDERSKOV–RØNNING 2021). See more on how the public administration literature transitioned from public service-dominant logic to public service logic, in OSBORNE 2018: 225–231.

³¹¹ It would have been really important, especially for those that are studying the performance of the European integration. Papers in this regard go into seldom count. One welcome exception was BEST 2021.

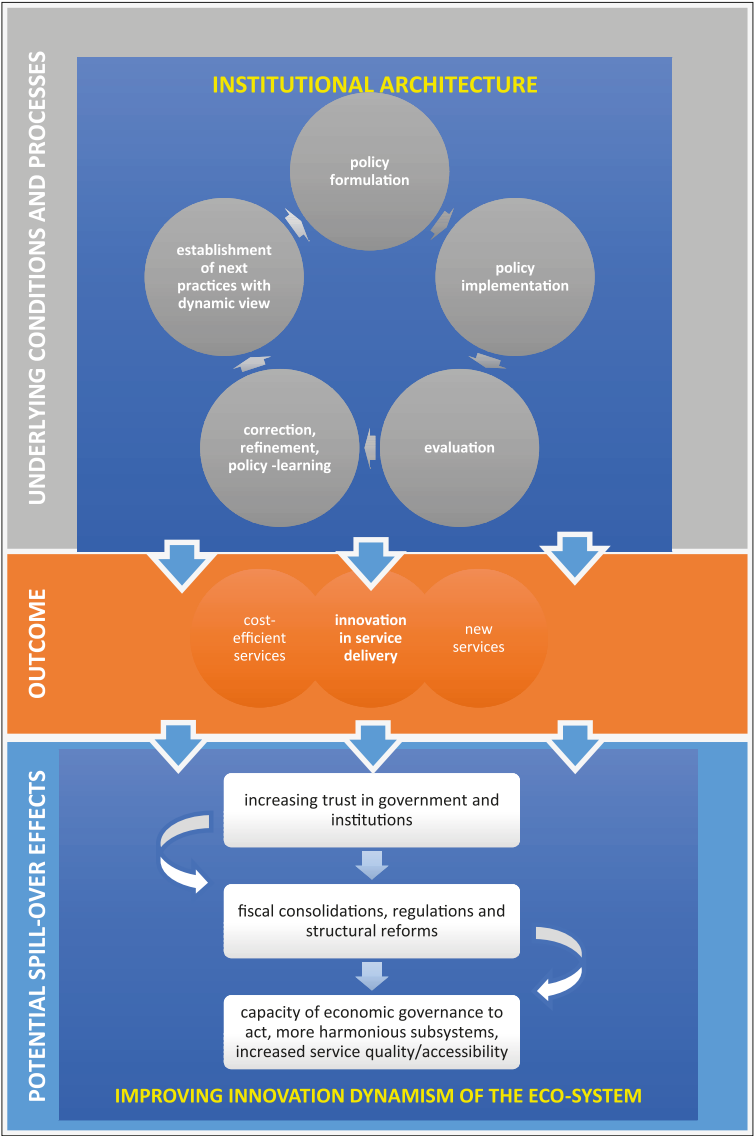


Figure 10. *Theoretical framework for analysing public sector innovation*

Source: Compiled by the author

the latitude of policies in supporting innovation in different state structures with different level of service provisions.³¹²

From the perspective of innovation, the institutional background largely determines and influences at least the following dimensions that are profoundly intertwined by showing different patterns in case of federal states and non-federal (including highly decentralised and centralised) ones:

- *Sources of innovation in the public sector:* (1) external or internal partners (e.g. public or private organisations); (2) citizens; and (3) employees. All of them are crucial; still, emphasising the pivotal role of employees in pursuing better policies and public services is inevitable. As the extent of decentralisation grows, the opportunity to involve others in order to foster a better matching of citizen preferences and policies through sorting³¹³ becomes a real perspective. This line of thinking goes back to Friedrich August von Hayek³¹⁴ emphasising the role of proper information about the preferences of citizens which is more likely to be given in a more decentralised system.³¹⁵ In this way, citizens cannot be seen to be poorly informed, which in turn is necessary in playing an active role in normative policymaking.
- *Motivation behind innovation:* The institutional setting can be either enabling or hindering in the sense that it can substantially influence public servants' motivations to indicate if they perceive ill-performing and inefficient policies. If the public sector is largely decentralised and transparent for the public or the used information technology in a centralised system is

³¹² Unsurprisingly, the issue of how to streamline the interaction of different levels of government in an effort to spark innovative efforts within is a key (innovation) policy challenge (see BENZ–EBERLEIN 1999: 329–348; KOSCHATZKY–KROLL 2009: 132–149; GUIMÓN 2018). It *per se* reconfirms the crucial importance of looking at the underlying institutional design of the public sector when dealing with its innovativeness.

³¹³ RODDEN 2004: 481–500.

³¹⁴ VON HAYEK 1939: 131–149.

³¹⁵ It gives us a good basis for refining the theory about politicians preferring to be ambiguous what was accentuated by Alesina and Cukierman (see ALESINA–CUKIERMAN 1990: 829–850). The authors' finding may be more convincing in a more centralised setting but not in a highly decentralised one.

tailored towards a more transparent governance, public servants are more likely to make efforts to identify ill-performing and inefficient policies/services (i.e. since they are well-known at local level, pursuing better policies and initiatives leading to better public services can be accompanied with greater public esteem and potentially longer time of employment in the public sector).

- *Organisational characteristics*: The institutional layer also determines to a large extent the characteristics of public sector organisations. There is a widespread consensus in the organisation theory related literature that decentralised structure with smaller organisational units has greater potential for achieving effective internal knowledge flows and intra-organisational knowledge sharing³¹⁶ since they are more likely to be in conformity with the local needs of citizens (e.g. these are bottom-up public agencies³¹⁷). This would presumably shape not only the core values of the organisation, but it also has the potential to transform the organisational culture into a more innovative one.
- *Capabilities to adopt innovation strategies or riskier innovative initiatives/policies*: By capabilities we mean on the one hand the necessary human capital that can determine partly the willingness of organisational culture to carry out evaluative researches (i.e. create a learning environment) before and after the introduction of policies and initiatives, on the other hand, we also mean necessary financial backing which is crucial at least because innovative initiatives are often riskier ones entailing potentially arising expenditure lost. Innovation depends on risk taking but also learning from the risks that have been taken – what has and has not worked. An organisation that uses risk as a learning process inherently is geared to be more innovative as opposed to one which sees failure in absolute terms, does not learn lessons and therefore stymies further risk taking. An institutional background

³¹⁶ SERENKO et al. 2007: 610–627.

³¹⁷ ARUNDEL et al. 2020.

like fiscal federalism,³¹⁸ can serve as a cushion in the sense that it operates an interregional fiscal transfer system (e.g. the so-called ‘Finanzausgleich’ in Germany, Austria, etc.) to lower tiers of government³¹⁹ with the aim of dampening the fiscal shortcomings on the basis of solidarity (which is a constitutional principle, and it can also be substantially supportive for certain members in time of fiscal shocks). Basically, this mechanism – complementing other characteristics described in the footnote – may provide good fiscal condition for local governance which is of paramount importance from the point of view of riskier (costly) innovations by providing a better basis for such learning environment.

- *Potential for fastened policy learning:* In theory, highly decentralised governance can stimulate the governance innovativeness through permanent and more efficient policy learning process. Highly decentralised structure allows local governances to carry out parallel experiments when addressing socio, economic and environmental challenges, hence parallel learning is fastened and there might also be greater chance for the emergence of exaptations as well mainly due to a more extensive involvement of people with various backgrounds (i.e. the number of connections available for policy learning is higher in a more collaborative decentralised setting *vis-à-vis* a highly centralised one suffering from chaotic connectivity poverty).³²⁰ However, empirical evidence on the effect of decentralisation on policy

³¹⁸ In case of fiscal federalism, there are four elements which constitute its operation: (1) sub-central political entities enjoy independence/autonomy to decide taxes and expenditures; (2) these governments face fairly hard budget constraints, that is a no bail-out rule is consistent with the ideal type of fiscal federalism; (3) there is a common market based on free trade and mobility within the fiscal union, thus there is scope for competition among sub-central governments; and (4) the system of fiscal federalism is institutionalised in a set of rules (see SORENS 2008; BORDO et al. 2011).

³¹⁹ DARBY et al. 2004.

³²⁰ As Justice Louis D. Brandeis stated, who was an American lawyer and associate justice on the Supreme Court of the United States back in the 1920–1930s: “It is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country” (New State Ice Co. v. Liebmann, 1932). Allowing citizens to

innovation is often pervaded by caveats.³²¹ Nonetheless, recent strand of literature suggests that decentralisation leads to a more reasonable availability of multiple experimental policies that can be useful for the central government in providing the public good of disseminating the lessons.³²²

As shown in Figure 10, the institutional architecture – as part of the underlying systemic conditions – exerts influence on the processes of policy formulation where innovation can also take place ranging from policy formulation and implementation through evaluation, correction and policy learning to the establishment of “best” (or rather “next”) practices with dynamic view.³²³ Dynamic view refers to the learning-based policy formulation since policy is a perpetual motion thing, i.e. an open-ended experiment, that has to be used to a great extent in reacting to both old and new challenges by learning from the experience of existing ones and concentrating on “sequencing of initiatives”.³²⁴

As far as the outcome is concerned, innovation in the public sector (including the policy formulation) can also infiltrate into the service delivery where, of course, other innovations can occur by leading to more cost-efficient old and new services. This type of outcome is extremely crucial from the point of view of our complexity-aware approach recognising *The Madness* ahead we outlined earlier.

become political actors promotes social learning-by-doing in a more conspicuous way (see FAGUET–PÖSCHL 2015).

³²¹ STRUMPF 2002: 207–241; TAYLOR 2007: 231–257. Without being exhaustive we can recall the messages of (new) political economy emphasising that a policymaker is to maximise the votes, consequently, policymakers are not so benevolent as it was expected in early works, for example in Keynes’ papers. See more on the issue in DOWNS 1957: 135–150; NORDHAUS 1975: 169–190; or in the context of federalism, see SCHNYDER 2011.

³²² See NEWGOV – New modes of Governance Workshop Report on: Policy learning and experimentation in EU economic governance: Laboratory federalism in practice? (www.eu-newgov.org/database/DELIV/D19aDo3_Workshop_Laboratory_Federalism_in_Practice.pdf).

³²³ Repeatability is of key importance as a way of continuous monitoring of the repercussion of the efforts to make improvements (see HUGHES et al. 2011).

³²⁴ OECD 2009: 54.

It is worth noting that democracy is an extremely important framework condition.³²⁵ Most challenges require the state to eliminate or at least dampen the democratic deficit felt by citizens especially in time when painful interventions are needed demanding social acceptance which in turn is closely associated with trust in governmental institutions determined heavily by citizen's satisfaction with public services. It has been argued unequivocally that the lack of trust impedes economic development.³²⁶ What is more, trust fosters voluntary compliance with regulations and laws, without which there would be no tenable democratic government.³²⁷ Since public sector innovation conspicuously affects citizens' trust in governance and their satisfaction with the state and its institutions – these kinds of outcomes and potential spillover effects, i.e. positive externalities, have to be pursued at policymaking level. Theoretically, this is even more emphatically arguable when we are assuming what was mentioned earlier: as the private sector gets better at innovating and improving the quality of its provision, this process necessarily ramps up expectations of public services. Unfortunately, the disharmony (symmetry breaking) among subsystems, as we illustrated earlier, acts against that theoretical assumption. Still, optimally, it *per se* calls for harmony between the perceived quality of services given by services innovation in the private sector and that of the services offered by the public sector. A huge gap biased towards private sector's services may hamper the satisfaction of citizens with the services they receive from the state; therefore, the likelihood of further deterioration of the democratic deficit might be a realistic option. Rehabilitated and strengthened trust level from citizens may provide the necessary ammunition

³²⁵ BHATTA 2003: 1–12; POLLITT 2003: 216.

³²⁶ BANFIELD 1958: 204; ARROW 1970: 1–30; PUTNAM et al. 1994: 280.

³²⁷ For more on the trust–democracy relationship see SCHOLZ–LUBELL 1998: 398–417; TYLER 2006: 320. Anyway, measuring trust in government and institutions does also have its shortcomings. Let us give an example: a survey on trust offers an option to the question: “Do you trust in the government?” as “only some of the time”. This makes the analysis of how trust changes over time extremely difficult simply because a respondent might trust the government 10% of the time when initially surveyed and then 30% of the time during the next survey. That respondent would respond to the question with “only some of the time” in all cases by not signalling that there has been a non-negligible increase in the trust level.

for the implementation of painful measures (e.g. fiscal consolidations in taming excessive indebtedness, regulations in giving directionality into the financial system by better aligning it to serve the real economy, and the gargantuan task of structural reforms³²⁸ geared towards the long-term sustainability of public finances as well as services).³²⁹ As a consequence, the increased capacity of economic governance to act (larger fiscal latitude) – which increases the flexibility of various levels of governance to carry out innovative ideas by encouraging local policy experiment³³⁰ – coupled with more harmonious subsystems as well as increased service quality/accessibility may also improve the general framework of the innovation eco-system from the side of the public sector. Cultivating the innovation ecosystem is a must in light of grand challenges requiring collective impact, and it may create a “virtuous cycle” – i.e. an improving innovation eco-system feeds into and improves institutional architecture itself by keeping the “becoming” mechanism alive (i.e. the emergence of qualitatively new – renewed – public sector structures and inherent processes being initiated and requested by the age of complexity we live in).³³¹

Public sector innovation as a Maverick

Ultimately, we could even say that innovation is the property of living systems, in fact, life is nothing more than a history of more than 3.5 billion years of innovation. Innovation is also a feature of the socio-economic living system.

³²⁸ OECD 2012.

³²⁹ It is not surprising that Akerlof and Shiller emphasised in their riveting book the central role of trust in trying to explain how the real economy works (see AKERLOF–SHILLER 2009: 264).

³³⁰ HARRINGTON 2010: 7.

³³¹ The term “becoming” originates in biochemistry where Ilya Prigogine showed that far-from-equilibrium systems exist with irreversibilities by leading to becoming, as we mentioned earlier in this monograph. Becoming is a feature of living systems, of course, we can see many examples to it in living organisms, ecosystems and societies, when qualitative development happens including an increase of complexity, sophistication and maturity.

With the specificity of economists, we can say that innovation has been long attributed to the private sector. This argument is mainly rooted in the belief echoed by Hayek³³² that innovation is a market process, hence innovation always refers to the entrepreneurial activity which, as Israel Kirzner stated, is nothing, but the continuous discovery (and utilisation) of arbitrage opportunities.³³³ Utilisation of an arbitrage opportunity always means improvement in the efficiency which is the ultimate goal of each entrepreneur.

Nonetheless, innovation has been infiltrated into the public sector, as well, with the aim of enhancing public sector efficiency, improving the service quality and accessibility as well as providing salutary impetus on the private sector that presumably leads to significant productivity improvement. As Solow (1957) emphasised in his seminal work and Easterly and Levin (2001) confirmed later that significant productivity improvement is essential in the interest of long-term sustainable growth,³³⁴ and, what is perhaps equally important in time of severe fiscal anomalies, improving productivity can entail potential increase in tax base in the future. In sum, discussions about the role of innovation in the public sector are becoming more and more pronounced conveying the message that innovation can be seen not just a market process, but also as a core activity of the public sector and a meaningful supporter of public sector reforms, as well.

It has been broadly discussed that there are several similarities between private and public sector innovation.³³⁵ For instance, there is greater transferability in the fields of business process improvements and many aspects of information and communication technologies that would be useful for the public sector in a similar way.

Apart from this, one of the most fundamental differences between public and private innovations is linked to the issue of *evolution of innovations*, i.e. the rise and, most importantly, the fall of innovations. In the private sector,

³³² VON HAYEK 1978: 179–190.

³³³ KIRZNER 1973: 256.

³³⁴ SOLOW 1957: 312–320; EASTERLY–LEVINE 2001: 177–219.

³³⁵ HALVORSEN et al. 2005.

prevailing and dominant innovations are resultants of a strong selecting process provided by the market competition.³³⁶ While some innovation proves to be successful, some of them fail to cope with market competition. By contrast, there is no such strong “invisible hand” in the public sector that would select out the failed innovations as an embedded mechanism, and the concept of contestable market³³⁷ does not apply, either. At this certain point, the role of *measuring public sector performance* based on continuous feedbacks and systematic monitoring is appreciating, because it can serve as a basic reference point to review and reassess ex-post the outcomes of a given public sector innovation. Let us add immediately, transforming the lessons learnt into practice is the *sine qua non* of such activities, otherwise metrics are nothing else than time and energy consuming actions.³³⁸ Albeit, measuring the outcome of public sector innovation would be salutary, still, public organisations tend to pursue failure avoidance because it might be particularly costly (be in terms of budgetary means, political consequences or human costs that are the most important costs). The human cost of failure in the public sector is massive – i.e. failure of public services can lead to disrupted lives, unemployment, ill-health and even death. These are not the costs that most of the private sector has to deal with.

This alludes to the value base of public organisations, which is an important determinant of innovation – public servants are value driven and seek to help the people they work with. The cost of their failure is great and they therefore tend to stick to known options that work even if performance is not great, rather than risk failure and the costs that ensue. What is more, public organisations are very visible in what they do and when they fail. The public sector is accountable³³⁹ and so does not like to be seen failing. Thus, it is the visibility of failure that is a means through which innovation is avoided. Since failure is costly and monitoring also needs significant financial resources,

³³⁶ MATTHEWS et al. 2009.

³³⁷ BAUMOL 1982: 1–15.

³³⁸ VAN THIEL – LEEUW 2002: 267–281.

³³⁹ POTTS 2009: 34–43.

public organisations tend not to be so innovative. *Innovation in the public sector becomes cumbersome, i.e. clumsy and often inconvenient.*

In elaborating this line of thinking further, one should not neglect the fact that market competition having coercive power forces on private sector organisations (for-profit enterprises) to pursue the following activities in a much more dedicated way: (1) decision-makers have to be crystal clear of the current status through the analysis of accurate and real-time data on relevant internal and external factors; (2) this requires that all the necessary data to be rapidly collected, organised, stored, processed and analysed; (3) on the basis of analyses, decisions and action plans are made with the aim of optimising capacities and processes; (4) the essential element of all this is, on the one hand, the efficient implementation, that has to be later accompanied with the measurement of results and collecting and assessing feedbacks; on the other hand, (5) these activities have to be an integral part of day to day running in order to contribute to the innovativeness of private organisations. Since “[...] competitive incentive is a very weak force in the context of public sector innovation”,³⁴⁰ the public sector does not bear the stamp of these activities as much as it is observable in the private sector. One can therefore conclude that the public sector has so far much *less innovation experience vis-à-vis* the private sector. Let us add immediately that it cannot be interpreted as if the innovativeness of the public sector would be non-existent.³⁴¹

The above mentioned also calls our attention to an additional feature of public sector innovation which is linked to the issue of how to *measure the outcome of such innovation*. In case of the private sector, prominent international organisations with support of national statistical offices have established standard methodologies in measuring for example the productivity on which innovation has a non-negligible impetus. Simplistically, private sector innovation can be measured in terms of turnover, profit, market share, return on investment, etc. Where such metrics are used in the public sector they fail to adequately capture the essence of what public services are trying to achieve.

³⁴⁰ POTTS-KASTELLE 2010: 123.

³⁴¹ OSBORNE-BROWN 2005: 272; MULGAN 2007.

In case of the private sector, methodologies are in favour of comparability, however, this is not the case in the public sector, where measuring public sector innovation had received attention,³⁴² still, recent literature on international experience in measuring public service productivity suggests that a unified institutional background with elaborated and widely used methodology is still missing and the measurement of the output of public sector innovation is often sporadically addressed.

As a corollary, there is a strong paucity of comparability in case of measuring the results of public sector innovations.³⁴³ Behind the curtain of the missing measurement methodology is the fact that the outcome of an innovation within the public sector may not be inevitably expressed in terms of algebraic sum, rather it can be for instance reflected by the improved responsiveness to clients/citizens. This is because public sector outcomes tend to be of the “softer” sort, and therefore quite often very subjective.

With a view to the European Union, the fact that no meaningful and comprehensive measurement experiment/project has been launched in the EU to assess and evaluate public sector innovation since the publication of the European Public Sector Innovation Scoreboard (EPSIS) in 2013 which is already telling in itself.³⁴⁴ It is true that there have been some country-specific attempts, but they are not comparable.³⁴⁵ Attempts were also made to integrate a few questions on public sector innovation into the Community Innovation Survey,³⁴⁶ but in the end they were left out. It is particularly interesting to see and perceive the disinterest that surrounds the hot topic of public sector innovation on the part of EU Directorates-General. The ugly truth is that the profession does not know how to assess public sector innovation as there are

³⁴² SEARLE-WAITE 1980: 333–356; JÄÄSKELÄINEN–UUSI-RAUVA 2011: 252–267.

³⁴³ FOUNTAIN 2001: 55–73.

³⁴⁴ Another EPSIS Report was expected to be completed and published in 2015, but this was not the case due to major calculation problems.

³⁴⁵ But such attempts were also coming outside the European Commission’s circle, see the Danish report prepared by the OECD (<https://oecd-opsi.org/wp-content/uploads/2021/03/Public-Sector-Innovation-Scan-of-Denmark.pdf>).

³⁴⁶ See <https://ec.europa.eu/eurostat/web/microdata/community-innovation-survey>.

no (granular) data to do that (we had two Innobarometer surveys about 10 years ago, but these were the last ‘large scale’ attempts to measure innovation within the public sector in Europe). These circumstances are particularly intriguing especially in times when the public sector should communicate about its efficiency improvements to fight against flaring populism,³⁴⁷ to counterbalance post-factualism, to mitigate the simulacra to which we devoted attention earlier.

In addition to the specific features of public sector innovation mentioned above, it is also worth noting that the public sector is *not homogeneous*. Homogeneity would putatively be important from the perspective of policy learning, because of a high variety of influencing factors, and therefore, an extensive variety of innovation attributes in a heterogeneous and complex system might make policy learning more difficult.³⁴⁸ Heterogeneity can be observed for several reasons, just to name a few.

First, mainly due to the institutional architecture, there are different levels of governance and public administration with differing size of organisations. Second, the public sector cannot be homogeneous, because the public sector, private sector and the third sector (not-for-profit organisations) heavily overlap. And last but not at all least, another potential factor influencing the public sector in not being so homogeneous is the perpetual rotating feature of governance that does not necessarily offer long-standing leaderships the characteristics of which is crucial in pushing or triggering innovations.³⁴⁹

³⁴⁷ A threatening danger of populism as a private informal institution, along with institutional corruption (see CHUNG 2022: 496–518), is that its establishment and spread in the public system leads to a general deterioration in the institutional quality.

³⁴⁸ The more heterogeneous a system is, a higher degree of learning investments is likely to be needed (see ZOLLO–WINTER 2002: 339–351).

³⁴⁹ A comprehensive study on the relationship between managers’ characteristics and the adoption of innovations revealed that “personal characteristics play a more crucial role in the adoption of innovation than demographic characteristics” (DAMANPOUR–SCHNEIDER 2008: 515). Furthermore, as Christopher Hood in his monograph stated that politicians and public sector managers often claim credit from their employees in their organisational units, this type of manner is able to shape the standard operating routines of public sector organisations (see HOOD 2011: 224).

Alternatively, the phenomena of creeping normalcy – when year-by-year deteriorations along a new initiative or policy are proved to be hardly imperceptible by public servants – coupled with the aforementioned problem of long-standing leaderships also make it difficult to identify bad policies.

If we take a glimpse into the major objectives followed by the private and public sector we can see major differences, as well. While the private sector is the arena for profit maximising market actors, the public sector is the sphere where policymaking and implementation are to achieve the ultimate welfare objectives as well as to reasonably contribute to the socio-economic development.³⁵⁰ Importantly, we associate positive externalities to most public sector innovation. In terms of objectives, private sector organisations have to live with shorter planning horizons, while the public sector has the opportunity to set plans not only within the electoral cycle, but also in a longer time frame.³⁵¹

Although the differences between public and private sector mentioned are not exhaustive, these altogether are able to transmit the message that the issue of transferability regarding the adoption of successful private sector practices does not seem to be feasible in all cases simply because the private sector itself has also become extremely complex on the global scale with its 50 million companies, 2 billion households, 3.3 billion workers, and billions of contracts and other contacts. It can and should be seen that copy-and-paste logic cannot work.³⁵²

³⁵⁰ KOCH-HAUKNES 2005.

³⁵¹ For example, in Singapore, *The Strategic Economic Plan Towards a Developed Nation* considered 30–40 years (see http://app.mti.gov.sg/data/pages/885/doc/NWS_plan.pdf).

³⁵² Of course, adoption relies on the vigilance and willingness of policymakers as well as that of public sector workers (see FAN et al. 2022). For example, policy attention was paid to the Irish whiskey industry in 2021 with the aim of making some amendments in the regulation to provide increased efficiency in production processes, which will provide additional flexibility to the whiskey producers. Without policy attention, the real economy would have suffered from inflexible whiskey production and the world could not see a blossoming innovation in case of that spirit which would be a bitter experience, the “whiskey with raindrops” experience (see www.thespiritsbusiness.com/2021/12/how-new-irish-whiskey-rules-could-boost-innovation).

Positive and negative feedbacks of public sector innovation

The vast majority of literature dealing with driving forces and blockages of public sector innovation has often emphasised those factors that can be organised around our more complexity-oriented framework that also recognises the importance of the underlying institutional architecture. To this end, we are now moving from the market to the state, i.e. we are taking a road from the real economy to the public sector in trying to illustrate the major positive feedbacks of impulsive innovation dynamism in the market with the aim of highlighting the differences in case of public sector innovations. In this way, potential positive and negative feedbacks (as drivers as well as barriers) of public sector innovation can also be unravelled out in a more vigorous way.

In doing so, we pay tribute to the oeuvre of the famous Hungarian economist, János Kornai, who passed away in October 2021, who intended to conceptualise the major prerequisites of an impulsive innovation dynamism of capitalism.³⁵³ If these boundary conditions are given, the system encourages serial innovation, i.e. these preconditions can be perceived as positive feedbacks on innovation dynamism and vice versa (the lack of such preconditions serves as a negative feedback) and innovation dynamism in the public sector would disappear from the horizon and would therefore be just as much fiction as Shangri-La was in the famous novel.³⁵⁴ According to the major findings, the following fundamental prerequisites are to be considered when it comes to the issue of innovation: (1) decentralised initiation; (2) high rewards; (3) competition; (4) opportunity for serious play (experimentalism); and (5) flexibility of financing.

Decentralised initiation

In the context of the real economy, decentralised initiation means that every business actor (e.g. an SME) has the opportunity to determine themselves what

³⁵³ KORNAI 2010: 629–670.

³⁵⁴ See HILTON 1933: 160.

they want to invest in. In case of a public sector organisation, decentralised initiation relies mostly on whether the given institutional architecture allows the organisation to initiate what it wants. A public sector organisational unit being in a centralised institutional setting has less authority and resources to initiate innovations by its own. In a more decentralised or federal system, a public sector organisation is more likely to have a fertile institutional ground favourable for being much closer to the public³⁵⁵ which is important from the aspect of getting feedback and ultimately reaching better innovative organisational culture.³⁵⁶ A more decentralised institutional background tends to serve as a *status quo*³⁵⁷ breaker in the sense that it motivates public servants and managers to be innovative (e.g. to identify ill-performing and inefficient policies/services and to make efforts for better policies/services) by leaving behind the cumbersome feature of public sector innovation as we indicated earlier.

However, capability for decentralised initiation can also be hampered by many factors. Public choice theory and political economy literature suggest that politicians and bureaucrats are nothing else, but vote and budget maximising machines.³⁵⁸ Subsequently, the leadership in the public sector organisational units may not aspire full steam to be innovative by pursuing

³⁵⁵ DE MELLO 2004: 4–35.

³⁵⁶ An organisational culture can be treated as innovation friendly when trust-based relationship pervades the working environment thereby employees are encouraged to bring up their ideas, etc. in the interest of permanent improvement through innovations (see MARTINS–MARTINS 2002: 58–65).

³⁵⁷ Preserving the *status quo* is often forced by various Olsonian interest groups (see OLSON 1971: 186). Although theoretical discussions do not argue that decentralisation is always the solution (see FJELDSTAD 2004; REDOANO 2007), still, we have to recall the fact that sub-national governments' ability to tax is essential (i.e. not depending so decisively on the transfers coming from the central government) in explaining why bigger social capital can be associated with these types of decentralised structures (see BARDHAN–MOOKHERJEE 2000: 135–139). The latter one can support the assumption on the positive impetus of decentralisation on corruption, as well. There is some theoretical and empirical backing emphasising the role of decentralisation in curbing interest groups (see CHEIKBOSSIAN 2008: 217–228).

³⁵⁸ NISKANEN 1971: 241; TULLOCK 1980: 97–112.

better and more cost efficient old and new services as well as administration. This *per se* contributes to the persistence of inherent willingness towards ‘dysfunctional’ leadership meaning that performance-related activities (e.g. the cycle of feedback and performance-related review) is not vividly prioritised in a “public service as usual” way. Let us add immediately that no one wills themselves to be dysfunctional neither in the public nor in the private sector organisations. The dysfunctionality can be interpreted as a product of a corporate inertia that prevents steady state over rapid change. It is also the manifestation of a system that actively rewards steady state over dynamism. As Donald Schön rightly described in his seminal work that there is a “dynamic conservatism”³⁵⁹ – that is, an active striving not to change. This concept neatly captures much of the problem with innovation in the public sector but makes it clear that this is not a public sector issue *per se*, but rather one of organisational culture. This also plays a significant role not only in maintaining the risk aversion of public servants documented by many,³⁶⁰ but also in contributing to the evolvement of tensions that can inhibit innovation. In addition, one may also highlight that these processes are influencing the political will (the political push) in case of innovation which is required when strategic changes are needed in the public sector.

From the perspective of decentralised initiation and with the view to the importance of a dose of creative workers³⁶¹ into the public sector organisation in favour of the professionalisation of the whole sector, there are a lot riding on proper, passionate and committed leadership. Public sector leaders have to be aware of the fact that “knowledge workers”³⁶² (e.g. high skilled, creative experts) require greater autonomy and particularly different management techniques and approaches that has to be obtained *via* smart knowledge management.

³⁵⁹ SCHÖN 1973: 260.

³⁶⁰ BELLANTE–LINK 1981: 408–412; BUURMAN et al. 2009.

³⁶¹ BASON 2010: 288.

³⁶² DAVENPORT 2005: 240.

*Box 1**Non-technological innovation on knowledge management in the public sector*

Adequate knowledge management is bridging the knowledge-doing gap. Although knowledge management is a multifaceted field because it encapsulates at least the following areas: HR, informatics, accounting and legal issues; the human factor, as the source of all knowledge, is in its centre.

Knowledge management is not only about the establishment of a wide range of ICT solutions invoked to collect, assess as well as store knowledge, but adequate knowledge management is expected to reach the souls of public employees to be motivated for knowledge sharing (especially, non-codifiable tacit knowledge), vital disputes and dialogues with all relevant stakeholders. Under this angle, technology is “just the maid servant”, while human factor is the key in transforming ideas based on collected and assessed data into practice.

Improved knowledge management plays an inevitable role at national, regional or local levels alike, because public sector organisations can be regarded as knowledge-based organisations. According to comprehensive studies on knowledge management in developed³⁶³ and developing countries,³⁶⁴ the human factor might have not been so accurately under the viewing angle in most of countries, i.e. it was underestimated in the efforts to build up knowledge management. It *per se* demonstrates the necessity of non-technological innovations tailored towards the human factor (e.g. organisational innovation, new management practices through coaching, interim management to create better organisational resilience, etc.) in favour of the cultural “innovation” towards an advanced collective intelligence required by complex challenges.

³⁶³ OECD 2003.

³⁶⁴ YUEN 2007.

High rewards

The issue of risk aversion is to a large extent able to lead us to the next positive feedback mechanism: high rewards. In the real economy, the most successful innovations are accompanied by an enormous amount of financial reward, as well as a long-lasting reputation (e.g. Amazon, Facebook, Google, Spotify, Tesla, etc.). Reward is given in a market competition situation, hence, there is no such accurate incentive within the public sector at hand.³⁶⁵ As it was rightly pointed out by many, for example in case of Germany, public servants/workers are risk averse; in turn, “[...] risk taking is rewarded with higher wages in the private but not in the public sector”.³⁶⁶ It may fundamentally maintain the *culture of risk aversion* that relates to a number of things – no incentive to innovate, a culture which punishes failure, a culture which does not seek to learn positive lessons from failures, that trying new things is not a condition for promotion, etc. It underlines the specificity of the public sector, where private sector reward methods has a limited role in boosting innovation. Public servants work in the public sector not because of significant financial rewards – found primarily in the private sector – but because they want to contribute to social progress. Still, dampening the de-motivating factors within the public organisation by engaging public servants in public mission (e.g. solving puzzling issues, make use of wasted resources, etc.)³⁶⁷ should be the major leitmotif of the efforts aiming at reaching a positive and innovative organisational culture. Fostering public servants’ motivations is also possible either by offering career opportunities (e.g. internal upward mobility) or deploying automated internal performance management. The latter one is essential in supporting public organisation management not only to deliver

³⁶⁵ Public sector managers are less likely to encourage innovation or give decision autonomy to their workers when they are just reaching their goals relative to other performance conditions (see NICHOLSON-CROTTY et al. 2016: 603–614).

³⁶⁶ PFEIFER 2011: 85.

³⁶⁷ MILES 2012.

accurate feedbacks, but also to develop employees through proper coaching³⁶⁸ based on adequate performance measurement. By resorting to incentives, the public sector may become a place where employees and also senior leaders may also compete with each other.³⁶⁹ In this way a *diversified and most importantly creative staff* can be compiled as a driver of innovation.

Box 2

*Positively incentivising the motivation of those working in the public sector*³⁷⁰

Financial incentives: payment, cash transfers, insurance, allowances, subsidies, etc.³⁷¹

Non-financial incentives: gift, travel, rewards, increased work flexibility, constructive feedbacks and coaching, increased responsibility with salient rewards and advancement opportunities, etc.

Non-materialistic incentives: psychological benefits through esteem, appreciation as well as status of power; increasing transparency in decentralised governance leads to less scope of corruption which otherwise could be rather destructive for organisational culture, and thus for innovativeness³⁷²

³⁶⁸ UNDP 2006.

³⁶⁹ Korea introduced the so-called Open Competitive Position System (OPS) in 1999 to attract the best available leaders and employees both from public and private sectors (see OECD 2001). The program proved to be a first big leap towards an open and more efficient government (see NAMKOONG 2003: 53–66).

³⁷⁰ Compiled by the author based on UNDP 2006.

³⁷¹ The public sector works for societal well-being and prosperity in the broadest sense. Many public sectors innovate in pursuing that goal. Although the sector's willingness to innovate can be increased through financial incentives, it should be borne in mind that this is not the last resort. Financial incentives overshadow virtuous, altruistic, socially desirable decisions and innovations. If we reward a socially desirable behaviour with money, people are more likely to act more selfishly (see BOWLES 2016: 288). The more the financial incentive, the more people act on the basis of an individual interest calculation, the weaker the civic virtues and the less selflessness. And the more people act on individual interests, the more the culture of selfishness solidifies by limiting the interest of public workers in working for the society.

³⁷² Fiscal decentralisation in government spending is significantly associated with lower corruption (see FISMAN–GATTI 2000).

It is also worth mentioning that *extending the horizon* by looking outside the public sector's wall would also be instructive. In this respect, some adoptable business practices with contextual customisation (business HR solutions, business-type performance management techniques, large-scale digitisation programmes) might also be supportive in putting the public sector performance onto an improving trajectory. Apart from these types of outward orientation, involving end-users can also be supportive in obtaining a spate of new ideas and guiding preferences. This is of great importance if for no other reason than because innovation is not in any public servants' job description. There is therefore no such incentive. Furthermore, innovation does not feature as a part of the employee's performance review and neither does it lead to their promotion most of the time.

Competition

The term "lack of competition" in the public sector means that the purpose of achieving bigger market share does not apply, however, the public sector also has to strive for its long-term existence through aspiring to reach sustainable public sector and service provision system.³⁷³ It is true if for no other reason than because in case of unsustainable public services, the public finance also becomes unsustainable endangering the feasibility of any socio-economic objectives. As a consequence, innovation as a key driver of continuous development has to be placed professionally into the forefront within the public

³⁷³ For a long time, it is well known that the key driver of capitalism, which is a competition-driven grow-or-die market system, is innovation. In this sense, the public sector may seem as a *corpus alienum* to capitalism in which competition does not play a constructive role. And yet, the public sector must fight for higher social goals because the *grow-or-die* market system does not consider social and environmental sustainability. As Karl Polanyi emphasised, "the substance of society" is subordinated "to the laws of the market" (POLANYI 1944: 123). In a similar vein, all aspects of the public sector and that of the financial universe shall be subordinated to the laws of sustainable development in mitigating ecological degradation.

sector to enhance efficiency, public sector performance and thereby to reach better public services. Let us add that by now the truism “competition is not in town” in case of public sector becomes quite obscured since competition has been introduced into the public sector/services via different ways leading to a more business-like public sector³⁷⁴ (e.g. creating market through privatisation, competitive tendering, aspiring for collaborations through public–private partnerships and public procurement pervaded by fair competition, etc.). These collaborations are based on trust exuded by citizens and private sector enterprises towards government and state institutions. Thus, signalling credibly the commitment to permanently improve the public services is crucial.

Importantly, since efficiency gains and better services with improved access emerge organically, they will optimally lead to better fiscal (i.e. due to rationalised expenditures allocated in a more efficient structure) and thus economic performance that will be observable in the trajectory of risk premium, as well. More precisely, improving the public sector efficiency entails a more disciplinarian fiscal policy that can lower the burden of debt service over time. The ameliorating trend in risk premium can be to a large extent regarded as the “profit” of the public sector when it pursues innovation. One may add to this interpretation that there is no harm in such consideration stating that fiscal consolidations underpinned with credible commitment, which are needed in the EU, can be among the drivers of public sector innovation.³⁷⁵

Opportunity of serious play

Despite the hypothesis that federal and more decentralised countries seem to have greater opportunity *to detect, modify, or filter out ill-performing programmes* and policies because of the more intensified policy learning (i.e. there is a greater degree of opportunity to start parallel innovative initiatives by lower tiers of governments

³⁷⁴ LAWTON 2005: 231–243.

³⁷⁵ It is worth mentioning that Innobarometer 2010 found that one of the major driving forces of public sector innovation were the significant budget decreases.

leading presumably to a more rapid and efficient policy learning on best practices), there is a solid basis to assume that, in general, there is less opportunity for experimentation in the public sector.³⁷⁶ First, citizens and consumers of public goods and services are more likely to be inclined to prefer stability rather than hectic and non-predictable changes in public services that may be a collateral phenomenon of intensive innovation activities within the public sector.³⁷⁷ This raises the issue of what is the public's appetite for innovation in public services? Citizens can be wedded to old forms of provision and can resist change or can be hostile to public money being spent in new ways on new things.³⁷⁸ The public's appetite is more likely to differ across various services, which has to be addressed. Preferring stability is primarily due to the fact that citizens and consumers are not in the position to switch quite easily to another public service. Increasing transparency by dampening information asymmetry could trigger more frequent feedback from citizens about service quality since the feedback is crucial because of the longer feedback circle in case of public services.

Box 3

System's memory and public sector innovation

Most of the studies on public sector innovation neglects the fact that we are living in an open, adaptive and complex socio-economic ecosystem having memory. Exactly this memory is one of the factors that makes priming important that should also be addressed simply because public opinions affect directly or indirectly policy or public sector innovation outcomes through the emerging attitudes on risk and uncertainties

³⁷⁶ The term "serious play" was famously coined by Michael Schrage (see SCHRAGE 1999: 272).

³⁷⁷ The public sector, by its nature, must respond to the dictate of citizens and the likely inertia of citizens prevents innovation. A good example is hospital care. Increasingly, health care does not need to be hospital based but the public are very wedded to accessing health services in a particular way according to a certain paradigm. Attempts to shift health provision away from hospitals have therefore run into significant resistance.

³⁷⁸ It is not surprising that co-production of public services is developing in a gradual way (see OECD 2011a).

associated to public policy issues.³⁷⁹ To this end, one should incorporate that mitigating complex problems is challenging since expectations over the effectiveness of innovations within the public sector or that of newly introduced policies as well as initiatives are heavily influenced by memory. This kind of reasoning resonates to that of Stefan A. Musto who demonstrated that complex, open and dynamic systems like the economy and society have memory.³⁸⁰ Introduced and implemented policy actions, initiatives, statements either from the government or the independent central bank can be by no means completely removed from the system and cannot be neutralised either. They become part of the memory of the given socio-economic-political system (i.e. part and parcel of the memory of actors) which memory in turn impinges on psychological factors and behaviour.³⁸¹ By and large, perceptions, interpretations and opinions over policies may vary across citizens (voters) and experts leading to *uncertainty-generating inconsistency*; and what is perhaps even more important, their reactions to public sector innovations or novel policies cannot be estimated *ex ante* with certainty. This maintains the wicked-feature of policymaking especially in turbulent and unprecedented times when old routines and standard procedures do not appear to be useful any longer which gives rise to risk and uncertainty priming. Consequently, the cumulative impact of a policy often evolve along a complex way in which partial impacts are transmitted and may be strengthened in a Brownian motion like way. It is mainly the reason behind the phenomena when macroeconomic news on policy consequences has a big impact on the economy.³⁸² Risk and uncertainty priming also matter when politicians or influential leaders declare something. It is important both in case of monetary policy³⁸³ and fiscal

³⁷⁹ ECKLES-SCHAFFNER 2011: 151–171.

³⁸⁰ MUSTO 2010: 5–18.

³⁸¹ The aggregated memory of actors may remind us of the concept of the so-called *psychic capital* (see BOULDING 1950). Psychic capital is a powerful motivating force simply because it embraces memories of pleasure, success, achievement, recognition as well as memories of failures, disasters, atrocities, or perceived injustices and indignities. The support of economic policy actions depends a lot on the current status of psychic capital.

³⁸² E.g. increasing volatility, substantially changing asset prices (see FOSTEL-GEANAKOPOLOS 2012: 501–525).

³⁸³ GREENSPAN 2008.

policy.³⁸⁴ For example, when the President of the European Central Bank was to free the ECB from its shackles by stressing that “do whatever it takes” to safeguard financial stability and the survival of the Eurozone by launching the unlimited purchase of debt instruments from debt crisis stricken states from July 2013, uncertainty, on the one hand, was reduced because of the powerful institutional signalling that boosted trust and confidence of markets. On the other hand, this declaration also had an uncertainty-generating feature since it was crystal clearly unlawful, that is to say, equivalent to breaching Article 123 of the Treaty on the Functioning of the European Union and might have therefore served as a catalyst for further non-compliance in case of other actors by paving the way to intensifying uncertainty. It is therefore a rather gargantuan task to get a shared understanding of the causes and consequences of problematic events and even that of the reactions they trigger. However, with the lack of a consensual view, risky public sector innovations and policy hysteresis and thus uncertainty may prevail.³⁸⁵

This *per se* is an influencing force to be reckoned with, because it may also imply that the learning curve is much longer along which policymakers are discovering policies performing better or badly. Second, and related to this, since the success of innovation within the public sector is also defined retrospectively, the cumbersome character of public sector innovation mentioned earlier (often risky, time consuming, there is less innovation experience, moreover, significant risk aversion is also registrable) also seems to direct towards the existence of less room for experimentation. Owing to the way the public service is designed, public workers mostly follow old routines. The system is engineered to produce stability and to keep routines alive. There is something, therefore, about the very nature of public institution design and management that creates this problem. The inexorable willingness of public workers to follow old routines, procedures³⁸⁶

³⁸⁴ HOLLMAYR–MATTHES 2013.

³⁸⁵ This is partly why necessary epochal transformations in the public welfare systems are often deferred that would have positive impetus on the socio-economic development in the medium and longer run.

³⁸⁶ BARRADOS–MAYNE 2003: 87–136.

supports neither the learning culture nor the role of experimentation; instead, it maintains the phenomenon of organisational “unlearning”.³⁸⁷ Additionally, the political voluntarism prone to populism often leads to longer term contracts and legal obligations that impede the cost savings effect of innovations. This even implies the side effects of the counterselection of innovative initiatives. Thus, extending the *scope of experimentation* by providing a “serious play” is a fundamental enabling factor of public sector innovation.

Flexibility of finance

Normally, the actors of the real economy can find many financial sources to initiate, maintain and develop even further their innovations with the purpose of putting them into practice (bank credits, state supports, crowdsourcing, etc.). This is in stark contrast to the situation one can find in the public sector. The flexibility of finance, i.e. the availability of necessary financial resources for innovations – that are often time consuming requiring budgetary allocations – as inputs either in case of policy formulation or service delivery is a basic prerequisite of a healthy innovative capacity of public organisation being at different levels of governance. If we also consider that organisational budget constraints are getting even tighter and tighter with the fiscally derailed public finance management and sovereign debt crisis calling for cutting corners more emphatically, on the bright side, there is still an opportunity to emphasise that budget constraints are important in explaining the adoption and spread of employee involvement techniques.³⁸⁸ Still, as a result of vote and budget maximising purposes, politicians and bureaucrats have a strong *myopic thinking and its ensuing short-term budget and planning horizons* (e.g. the well-known end-year-run). These are the basic constituents of the cumbersome innovation activity of the public sector.³⁸⁹

³⁸⁷ HEDBERG 1981: 3–27.

³⁸⁸ See LONTI–VERMA 2003: 283–309.

³⁸⁹ Of course, there is need not only for financing innovation in the public sector, but also for innovations in public finances to deliver the goods (and potentially, to build up

EMPIRICAL EVIDENCE AND ILLUSTRATIVE CASES

Elemental innovation patterns

As we pointed out earlier, the EPSIS Report(s) drew heavily on the data from two of the Innobarometers, one asking organisations in the public sector on their innovation activities, the other asking enterprises about their perception of innovation activities in the public sector. Not surprisingly there was a more positive view on public sector innovation in the first than in the second survey. Unfortunately, the work was discontinued and it seems to be the case that public sector activities as such are not at the heart of the European Commission's Directorate General on Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) unless they have direct or indirect impacts on business activities. Nevertheless, a few years ago there were recommendations to incorporate some questions on public sector innovation into the Community Innovation Survey, but these questions were dropped as national representatives did no longer consider them relevant for a business enterprise survey and too many countries also did not include these questions in their national survey as the questions were not mandatory. It was entirely to be expected that the prevailing literature would continue to call for new and more appropriate set of standards or benchmarks to measure the performance of the innovation system.³⁹⁰ By bearing in mind the shortcomings on the availability of data on public sector innovation, and also by keeping in mind the fact that the institutional architecture of a country tends to change rather slowly over decades (of course, there are certain examples when the change is observable), in an attempt to have an avowedly not exhaustive but still reasonable introductory view on public sector innovation patterns

capacities to finance public sector innovation as well, see MONDA–GIORGINO 2014). What is more, the public sector may attract private sector workers that are in favour of low effort works. This was especially the case between 2004 and 2017 in Germany (see EHLERT–GARCÍA-MORÁN 2022: 394–409).

³⁹⁰ See LEWIS 2021: 97–114.

throughout selected European countries, we use Innobarometer 2010, the only by and large reliable database.

Our intention is to emphasise that the basic institutional architecture should not be shrugged off when it comes to better understanding elemental innovation patterns in the public sector. This viewing angle rests upon the recognition that assumed commonalities between public sector organisations become unverifiable once we consider them within a broader context.³⁹¹ By building on our approach, we juxtapose the patterns decipherable from the Innobarometer 2010 along the inextricably intertwined dimensions influenced by the institutional architecture described earlier. The institutional architecture is captured by the degree of decentralisation in countries selected (Figure 11) by using the decentralisation index prepared by the Assembly of European Regions (2009).

Four groups of countries are decipherable (the higher the index, the more decentralised is the country): (1) federal states as constitutionally decentralised ones; (2) highly decentralised countries with above-the-average decentralisation index; (3) less decentralised countries; and (4) highly centralised ones. Although the Assembly of European Regions does not measure decentralisation any longer, the European Committee of the Regions initiated the project called “Division of Powers” in creating an interactive tool with a perspective on different dimensions of decentralisation (political, administrative and fiscal) across the 27 EU Member States. In order to have an insight into a newer condition of decentralisations, we use the results of such undertaking and show that the degrees have not changed a lot by 2022 (Figure 12). Let us add immediately that, of course, in some cases, the degree of decentralisation has seemingly changed a lot as the cases of Austria and Latvia illustrate.³⁹²

³⁹¹ ABERBACH–ROCKMAN 1987: 473–506.

³⁹² See European Committee of the Regions [s. a]. Even though Austria is widely considered a federal state, the lower tiers of governance has been getting less and less level of autonomy over the past decade by becoming relatively low. The odd one out is Latvia the overall decentralisation of which seems to have become higher – mainly thanks to the fact that fiscal expenditure and revenue autonomies of local governance is higher than the EU average, still, Latvia is a highly centralised country. In 2018, 75% of total government

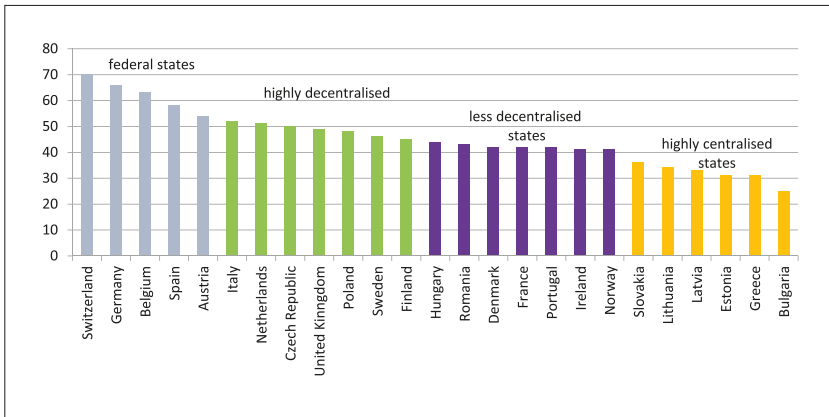


Figure 11. *Level of decentralisation across selected European countries*

Note: Data for Cyprus, Malta, Luxembourg and Slovenia were not available.

Source: Data stemming from the Assembly of European Regions 2009

Since the subsequent Innobarometer surveys focused solely on the real economy (in particular on various sizes of businesses) by omitting the aspect of innovations happening within the public sector or in a cross-system way (i.e. beyond the borders of subsystems – public sector, financial universe and the real economy), and since, to date, there are no other reliable official sources on public sector innovation,³⁹³ the following rudimentary analysis,

expenditures came from the central government. Local governments are not free to levy own taxes or to modify marginal rates on shared taxes. As the interactive tool stresses: regions in Latvia were abolished in 2009 – they exist only as a planning unit sharing competences with central and local authorities. The Danish position has also changed due to the Local Government Reform of 2007, while the Local Government Reform Act of 2014 did also modify the structure in Ireland by becoming a more centralised country. Estonia is also another case in point where reform of the public administration affected the degree of decentralisation where the Administrative Reform Act of 2016 aimed at increasing the capabilities of local government units, the municipalities and to ensure a more consistent regional development.

³⁹³ For instance, none of the comprehensive questionnaire surveys launched since 2010 focus on public sector innovation. And because they are surveying business executives,

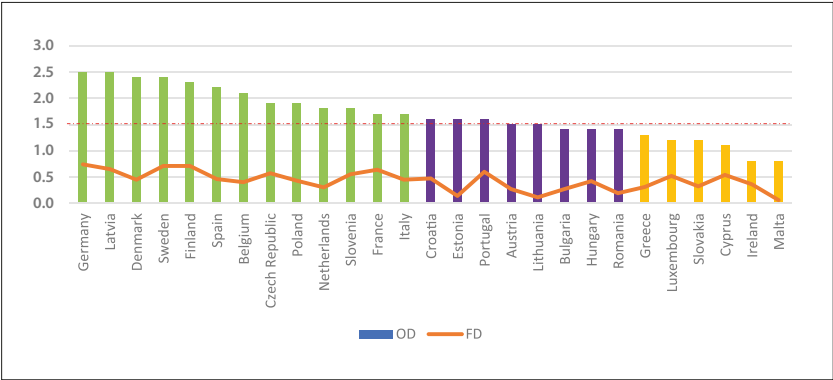


Figure 12. *Level of decentralisation across selected European countries (score values)*

Note: OD refers to overall decentralisation, while FD represents financial decentralisation in terms of revenue autonomy of lower tiers of governance.

The red dotted line represents the average value; countries above this value have a relatively highly decentralised institutional framework, while the rest of them are mainly centralised ones. Since Switzerland has never been and the United Kingdom is no longer a part of the European Union since 31 January 2020, the measurement does not cover them.

Source: Division of Powers, Decentralisation Index 2022

equipped with the groups described in Figure 11, builds on the relevant dataset of Innobarometer 2010³⁹⁴ in showing the elemental patterns of innovativeness

these reports repeatedly convey the message that the driving force behind innovation is the business sector and not the government or the public sector (see the project of Global Innovation Barometer at www.commart.com/webpicks/the-ge-innovation-barometer). Let us mention that Australia and Canada have public sector surveys touching upon innovation (see the Australian People Matter Survey at <https://vpssc.vic.gov.au/data-and-research/people-matter-survey-data-2021>, or the Canadian Public Service Employee Survey at www.canada.ca/en/treasury-board-secretariat/services/innovation/public-service-employee-survey.html).

³⁹⁴ The period used in the Innobarometer 2010 is from January 2008 to the survey date of October 2010.

interspersed with the dimensions outlined in our theoretical framework (see Sub-section *Conceptual framework*).³⁹⁵

The *Sources of innovation in the public sector* organically refers to the issue of information sources through which innovation can leap within the public sector. For this reason, we use the dataset of Innobarometer 2010 on “Source of information to innovations”. Figure 13 illustrates that federal and highly decentralised states on average are more likely to obtain information essential to innovation within the public sector from other organisations, enterprises or events in the given country.

The dimension of *Motivation behind innovation* has accentuated that highly decentralised systems may potentially accompany with public servants that are more likely to pursue permanent development and refinement of policies/initiatives mainly due to the coercive power of greater transparency. From this point of view, contemplating whether public servants and staff have the necessary incentive system seems to be a more vigorous way forward. In doing so, we use the data from the Innobarometer 2010 on “Staff have incentives to think of new ideas and take part in their development”. We devote attention primarily to the proportion of staff not having incentives and to the share of those being affected by an incentive system and they are fully involved in the development process.

Figure 14 allows us to demonstrate to a certain extent that on average a greater proportion of public workers are incentivised in case of federal and highly decentralised states in boosting their ideas-creation and hence to be part of their realisation process.

It is also important to note that the investigated proportion is the highest in case of less decentralised countries conveying the message that should never be ignored: decentralisation is not a panacea – when it comes to decentralisation, policymakers always have to bear in mind that a broader context is needed

³⁹⁵ Let us underline that the work of the Observatory of Public Sector Innovation is still in an embryonic state in the sense that its valuable Innovation Barometer survey still applies to only five countries (Denmark, Finland, Iceland, Norway and Sweden, see <https://innovationbarometer.org>).

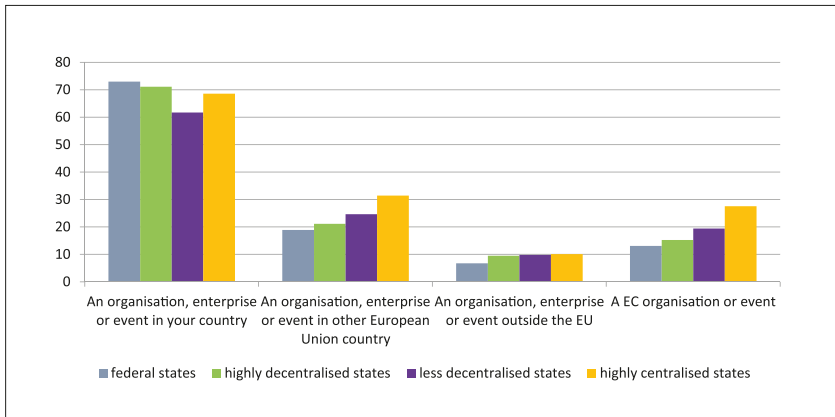


Figure 13. *Information sources to public sector innovation*

Source: Data obtained from Innobarometer 2010

to get a better understanding on it, e.g. by incorporating inter alia its design and the institutional arrangements³⁹⁶ together with the human capital and its complex configuration with local and cross-departmental processes, not to mention the managerial and staff attitudes³⁹⁷ – without that, even a formally highly decentralised setting is doomed to fail in stimulating innovation, hence the chance of developing an effective decentralised system possessing healthier “diffusion milieus”³⁹⁸ is beset with often insoluble difficulties.

³⁹⁶ AZFAR et al. 1999: 44; BARENSTEIN – DE MELLO 2001.

³⁹⁷ Needless to say that not only attitude but the number as well as the position of managers do matter. A paper offered evidence on the crucial role of middle managers in providing bridging activities for cooperation-based innovations within the public sector (see SAARI et al. 2015: 325–344).

³⁹⁸ The term “diffusion milieu” was coined in the 1970s (see MENZEL–FELLER 1977: 528–536). According to the authors, diffusion milieu contains those elements external to the organisation that are more likely to bring perceptible pressure on the organisation to alter its existing practices, that are defining the range of feasible alternatives to these practices, and that are conditioning the information flow on the performance characteristics of the proposed innovation(s).

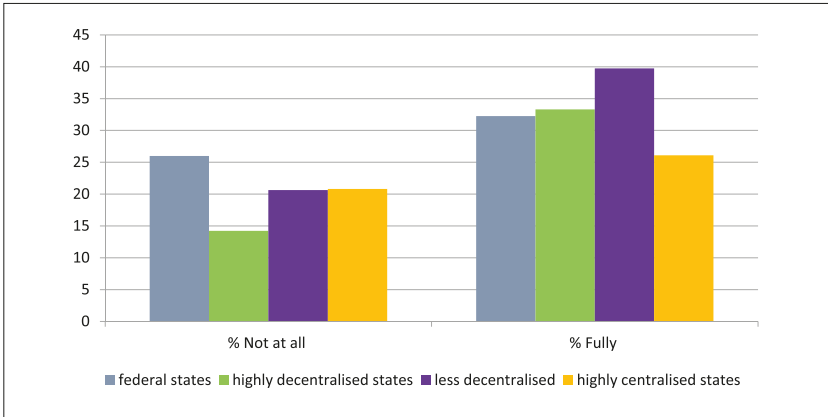


Figure 14. *With and without incentives for pursuing new ideas and their realisation in case of public workers (%)*
 Source: Data obtained from Innobarometer 2010

Regarding the *Organisational characteristics*, in order to capture the patterns of knowledge sharing, i.e. using internal or external information in the interest of innovation (a sort of Chesbroughian open innovation), we concentrate on the opportunity to carry out collaborations. This can be addressed by focusing on the issue of who was the developer by using the Innobarometer 2010 dataset on “New or significantly improved processes or organisational methods developed by...” (Figure 15).

As one would have instinctively expected, federal states are tended to treat good relations with private sphere in a more intensive way compared to the practice of more centralised countries (Figure 15). This phenomenon, however, is a complex array of issues since collaborations with the civic and real economic sectors have become ubiquities but not successful all the time. The primacy of federal architectures can be better understood by considering the fact that this institutional setup is more inclusive.³⁹⁹ Since local level governance having

³⁹⁹ Acemoglu and Robinson (2012) showed us that innovation dynamism relies primarily on inclusive institutions (i.e. those that are to decrease inequalities by broadening the access

greater autonomy in a federal state is *much closer to the enterprises* as compared to the case of hierarchical and centralised systems, the essential aspects of having *mutual understanding and shared goals* are much more likely to evolve under such federal setting.⁴⁰⁰ For instance, highly decentralised governance allows lower tiers representatives to be more engaged in co-creation – a process when the end-user is placed into the centre as well as the design of public service provision, the end-user's needs determine the way where the given service is developed further with the maximal involvement of the user from the very beginning of the service delivery – as compared to highly centralised ones. Unfortunately, the lion's share of public sectors across the EU receives its innovative ideas mostly from internal sources and less than 10% gets those ideas from outside the public sector's wall from local citizens, firms or the civic sector. The predominant share of EU countries has been investing heavily in training digital skills in better serving co-creation processes, but training in co-creation methods is almost absent. Still, this institutional closeness helps public sector organisations to carry out projects in a more iterative and collaborative way with people whereby they maximise learning and often minimise risks. Thus, the collaborative capabilities of public organisations differ across institutional settings.⁴⁰¹ Let us add that even in a relatively decentralised institutional setting showing flourishing collaborations, finding real solutions to complex socio-economic challenges is rather scarce through such innovations, which *per se* calls to the issue of the Great Suppression we have been addressing along this book. For example, in Denmark, despite a variety of partnerships and ambitions across the regions,

to socio-economic opportunities in better serving real development), while extractive institutions stifle innovation and socio-economic development. We just add that when inequality in terms of access to public services such as health decreases, the overall system's resilience is enhanced.

⁴⁰⁰ On the indispensable character of mutual understanding and shared goals in the success of any collaborative efforts between the public sector and the real economy, see CINAR et al. 2022: 379–400. What is more, shared goals often entail shared responsibilities by building on shared resources which maintain and cultivate trust over the longer run (see SKÅLÉN et al. 2018: 700–714).

⁴⁰¹ See HUXHAM–VANGEN 2005: 11.

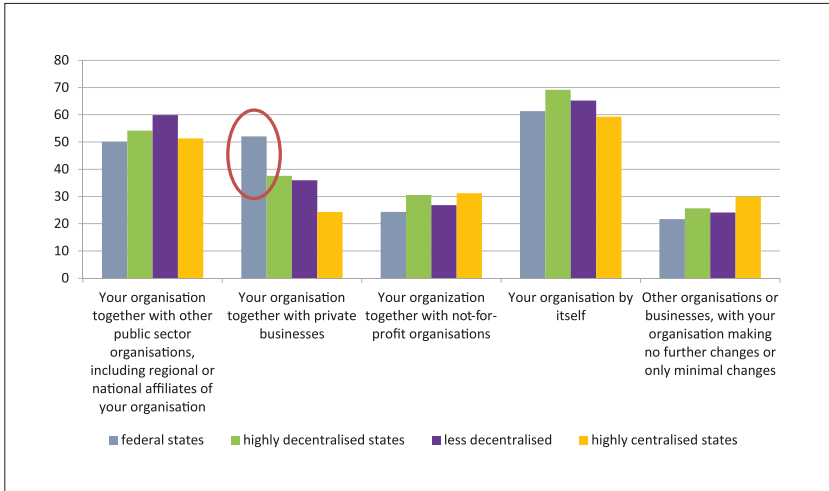


Figure 15. *Collaborative efforts for innovation*
 Source: Data obtained from Innobarometer 2010

new and bold solutions to complex problems are scarce.⁴⁰² The study showed that such networking work on innovation may fail because network partners from the region do not get the financial support from the financial system to unfold the innovation promising longer term returns, merely. The financial system as such exceeds the real economy by pursuing high returns over the short term most of the time.

In reflecting upon the dimension of *Capabilities to adopt innovation strategies or riskier innovative initiatives/policies*, we do consider that it has been tantamount to the necessary financial background to implement riskier, but necessary innovations. In this regard, it is admissible to use the dataset of Innobarometer 2010 on “Effect of various factors on the ability to introduce new or significantly improved services: Mandated decrease in organisation’s budget” (Figure 16).

⁴⁰² VAN GESTEL – GROTENBREG 2021: 249–265.

Figure 16 conveys the message that the greatest proportion of respondents who are expecting neither positive nor negative impact of mandated decrease in the organisational budget are found in federal states. Additionally, the salient share of respondents envisaging negative impacts are affiliated with highly centralised states. This is mainly due to the typically more disciplinarian fiscal policy that are registrable in case of federal states, as was indicated earlier (of course, the Covid-19 pandemic and the Russian–Ukrainian war have significantly overwritten such a typical fiscal pattern as Chapter II documented). As a corollary federal states like Austria, Germany and Switzerland have relatively and typically better fiscal conditions thereby they can abide spending cuts in the public sector without endangering the inherent innovation activities. The opposite is happening in those countries having a fiscally derailed public finance position, hence who have higher fiscal consolidation exposure.⁴⁰³

As far as the *Potential for policy learning* dimension is concerned, the dataset on “Importance of examples of best practice by another government organisation for development of innovation” is used. Figure 17 illustrates that reviewing best practices and learning from them are regarded as very important elements of public sector innovation both in federal and highly centralised states.

As was shown, the institutional setting has a pivotal role in influencing and determining the different innovation patterns within the public sector be it either in policy formulation or service delivery. Our short analysis also confirms the significant findings on decentralisation and fiscal federalism

⁴⁰³ Note that albeit the impact of fiscal consolidation on lower tiers of governance depends on the institutional architecture, the role of politics and vested interests should not be underestimated which can override trends that are thought to be institutionally determined. For example, in the Spanish federal system, between 2004 and 2017, governments reacted to fiscal imbalances by reducing expenditures, but this reaction depended on the electoral budget cycle and the potential change due to elections. Fiscal consolidation in Spain tended to be suspended or even stopped especially in election years and was re-boostered by the replacement of the ruling cabinet (if any) (VAQUERO-GARCÍA et al. 2022). By contrast, institutional architecture did not necessarily play a role in the dynamics of fiscal consolidations.

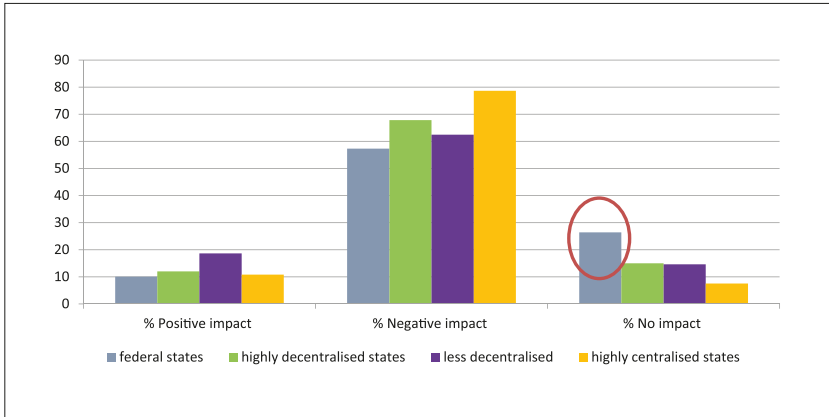


Figure 16. *Impact of foreseeable budget cuts on innovation activity over the next two years*

Source: Data obtained from Innobarometer 2010

that should not be neglected by policymakers. Since policy is an open-ended experiment, opening towards the private sphere in gauging the real preferences and needs in a more vigorous way could bring closer to a better public sector at least to get mutual understanding over *The Madness* and to develop shared goals to be pursued and addressed via collective innovative actions.

It is more than important to note that the philosophy of “best practices” stresses that such examples are ready to serve as standards for followers from which learning is straightforwardly achieved during the adopting process. Still, the growing complexity of the socio-innovation ecosystem and the complex nature of the challenges ahead do not really allow us to rely on “best practices” since their perceived neutrality and sturdiness as policy-making instruments have become questioned.⁴⁰⁴ With *The Madness* in sight, as we implicitly argued earlier, pluralist knowledge-building is a *de rigueur* aspect simply because natural sciences and other softer disciplines convey the lesson in the case of

⁴⁰⁴ BLAKE et al. 2021: 1251–1271.

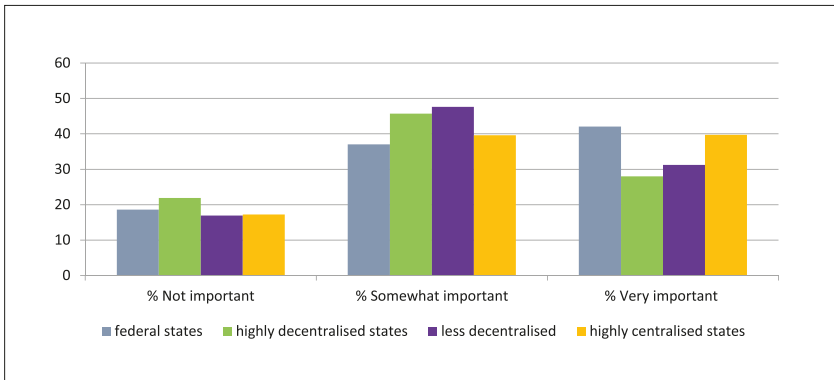


Figure 17. *Potential for policy learning via adopting best practices by public organisation*

Source: Data obtained from Innobarometer 2010

complex living systems such as the socio-economic innovation ecosystem (public sector, real economy, financial sector and civic sphere) that the more the observer (e.g. economists, or especially economic policy practitioners) intervenes in an effort to optimise the complex system, the more he/she encodes critical instability into it. In other words, in a system of interactive network of interdependent parts (heterogeneous agents), where adaptive agents and the system itself are co-evolving by interacting with each other in grounding self-organisation, there is no such thing as optimal institutional design and easily adoptable best practices, either. This is why our book will prefer *next* (and/or past) *practices* over the concept of best practices.

In the following, we dwell briefly on what types of innovation methods are associated with what degree of decentralisation. Basically, there are at least two types of innovation methods: top-down and bottom-up. The first one is the case when innovations are driven by policies (i.e. innovations are triggered for example by the introduction of a new regulation or government program that is to trickle down to/incorporate the grassroots of the public sector). On the other hand, bottom-up innovation method appears when a public

agency concentrates on enhancing its innovative capability by itself building on local knowledge, intention and willingness to reach out efficiency gains via innovations.⁴⁰⁵ In doing so we utilise the major findings of Arundel and Hollanders (2011)⁴⁰⁶ who did also rely on the Innobarometer 2010 survey. We organise their findings according to our four groups of countries to illustrate whether our basic assumption, stating that countries having highly centralised institutional architecture are more likely to follow a more policy driven way, can be justified or not (Figure 18).

Figure 18 shows that the greatest average share of respondents stating that innovation is more likely to be born in a top-down way is associated with highly centralised states, whilst the bottom-up approach is more dominant in case of countries with decentralised institutional architecture. By way of example, the institutional setting and the associated environment of trust also determine the nature of responses to unexpected challenges like Covid-19. In Greece, there was a centralised and highly hierarchical response to the pandemic, while at the other end of the decentralisation spectrum in Sweden, “[...] the highly managerial style combined with the high trust in the political elites and decision-makers crafted the highly decentralized response”.⁴⁰⁷

In further demonstrating the non-negligible role of the institutional architecture, the major findings of the study prepared by the Assembly of European Regions is at our disposal. It is important to note that vertical decentralisation in a country, i.e. the number of tiers (fragmentation), is not a very telling one about the institutional setting and its potential to inherently incentivise innovation. So far, we have used the aggregate decentralisation index which contains administrative (the manpower resources of the sub-national tier), functional (it reflects the balance between decision-making and implementing

⁴⁰⁵ This method was borrowed from the innovation concept regarding the private sector, as Eichengreen (2013) showed us the way grassroot innovations happened. Many scholars articulated already the likelihood of failure in case of policy-driven top-down innovation initiatives in case of the innovation ecosystem (see HENREKSON et al. 2022: 867–890).

⁴⁰⁶ ARUNDEL–HOLLANDERS 2011.

⁴⁰⁷ ZAHARIADIS et al. 2021: 61.

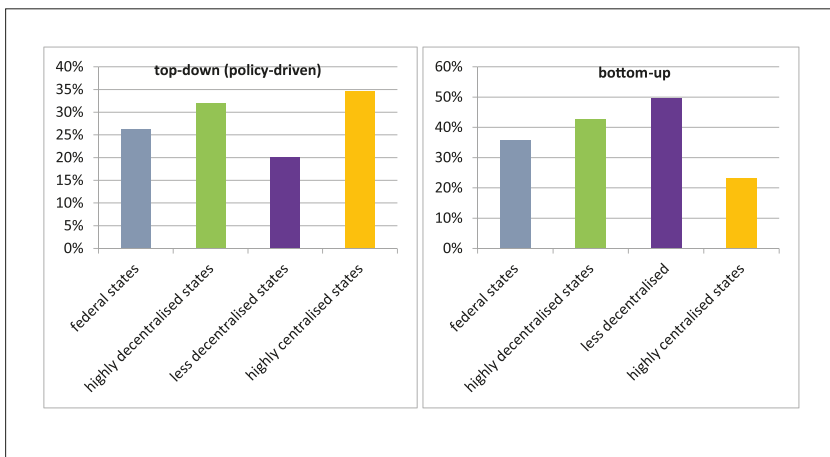


Figure 18. *Dominating innovation methods in various institutional architecture (average share)*

Source: Compiled by the author based on ARUNDEL–HOLLANDERS 2011

power), political (it is to capture how independent is the given sub-national tier politically) and financial decentralisation (it reflects the degree of power to levy taxes, financial debts, incentives autonomously) sub-indexes. It goes to platitude that financial decentralisation without functional power (to decide and implement) is economically irrational. However, policymakers should take into account that the decision-making and implementing power are not so outbalanced throughout the selected European countries as one would intuitively expect in case of lower tiers of government.

As Figure 19 shows, sub-national tiers tended to have more implementing power than decision-making power, because of the intention of the central level to keep the decision-making power at hand by delegating primarily implementing power to lower tiers (reflected by the fact that each country is above the 45°-line). The data suggests that there were perceptible discrepancies between decision-making and implementing powers at sub-national tiers (the only exception was Austria where the two indexes were very close to each other).

If one takes a look at the data of 2022 provided by the European Committee of European Regions, it can be seen that spectacular improvement has not been achieved in each case (however, some countries are now facing less discrepancy as before) (Figure 20).⁴⁰⁸ Taking into account this institutional feature before trying to stimulate innovation within the public sector is of paramount importance if for no other reason than because the process of policy learning may be hampered in countries having lower decision-making competencies with lower implementing power since decisions on the basis of evaluations cannot be carried out as easily as in case of countries having higher decision-making and implementing competencies.

Another relevant aspect is the relationship between the functional and financial autonomy which shows whether the given country has the necessary financial competency required by decision-making and implementation (Figure 21). Notwithstanding the fact that less decentralised as well as highly centralised countries are more likely to be associated with lower level of financial autonomy is not surprising, there are substantial differences in terms of functional autonomy among these countries (e.g. on Figure 21, Slovakia and Latvia have by far the lowest level of functional autonomy, while Portugal and Lithuania are much above the average). This conveys the message that there are countries in Europe having relatively huge discrepancies in case of sub-national tiers between functional and financial power (e.g. Portugal and Greece are encountering significant mismatch in the sense that they have relatively higher level of functional autonomy with significantly smaller financial competencies).⁴⁰⁹

⁴⁰⁸ The usefulness of those sub-indexes is given by at least two things: (1) administrative decentralisation reflects on the degree of delegation of competences to the sub-national authorities; (2) political decentralisation not only embraces the legal basis for the principle of self-government, or the representation of sub-national levels at national level, but it also captures the ability of the lower tiers of governance to influence higher level governments' legislation and policymaking.

⁴⁰⁹ Of course, autonomy is also understood at the level of public services, for example higher education autonomy which is of crucial importance from the point of view of human capital development and innovativeness (KOVÁCS–OROSZ 2011: 94–113). An example:

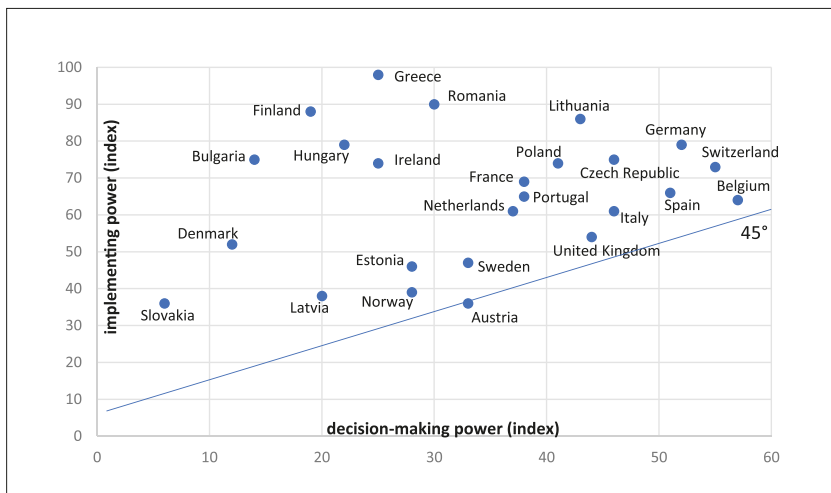


Figure 19. *Discrepancy between decision-making and implementing power in the public sector of selected European countries*

Source: Index data are stemming from the Assembly of European Regions 2009

This mismatch may cause significant negative impetus on public sector (governance) performance, especially in terms of fiscal conditions since a bias towards fiscal indiscipline is more and more likely if functional tasks (aims) are coupled with a lower level of financial competencies (resources). For this reason, the role of public sector innovations triggering either significant cost reductions within the public sector or significant increases in productivity in the real economy – which presumably lead to larger tax base in the future – gain traction in a more dedicated way in these countries.⁴¹⁰

if the professors and heads of departments of the University of Glasgow did not have sufficient autonomy, they would not have been able to allow a certain James Watt to open a workshop on the university campus in 1757, and then the steam condenser would not have been invented.

⁴¹⁰ Neglecting the fact that this mismatch was one of the driving forces behind the implementation of various fiscal policy innovations in some European countries (e.g. responsibility

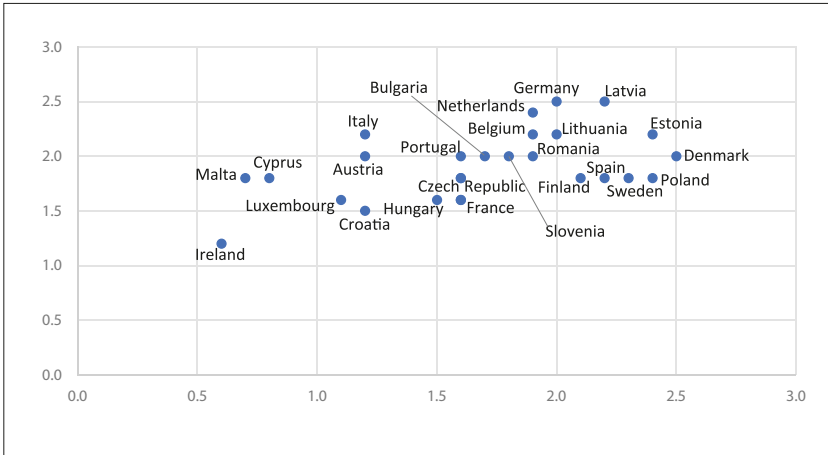


Figure 20. *Discrepancy between administrative decentralisation (decision-making power) and political decentralisation (implementing power) in selected European countries in 2022*

Source: Compiled by the author based on the Decentralisation Index of the European Committee of European Regions

By the same token, the sustainability of this mismatch may mirror to a certain degree that there are certain semi-innovations out there but aiming merely at signalling⁴¹¹ the quality of intelligence and leadership within an internal promotion game in the hierarchical public organisations. It is hardly by chance that prominent organisations are still to advocate the need for significantly enhancing policy alignment and co-ordination across levels of government even in case of federalist institutional structures.⁴¹² Consequently, policymakers that are encouraged to pursue innovation in the public sector should not bypass the fact that the basic institutional

laws, fiscal rules and independent fiscal institutions) would be a naïveté. These institutional innovations are *inter alia* counterbalancing the deficit bias.

⁴¹¹ SPENCE 1973: 355–374.

⁴¹² See OECD 2020b.

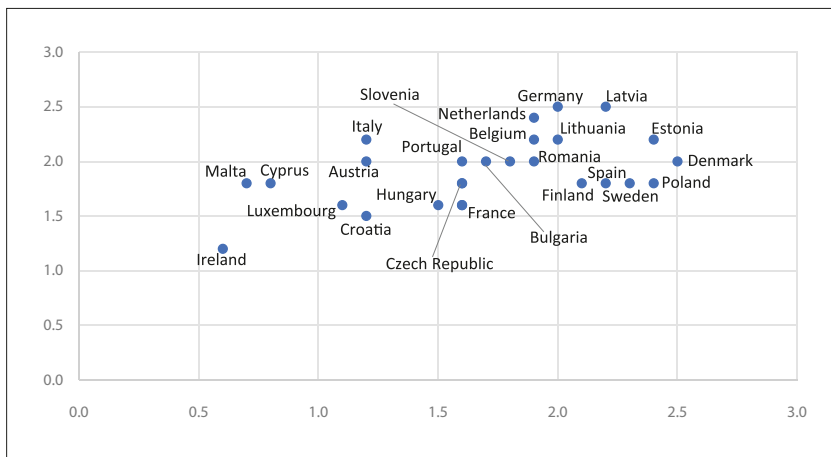


Figure 21. *Functional and financial autonomies in selected European countries*

Note: Functional index contains the decision-making and implementing sub-indexes. The intersection represents the averages of the functional and financial autonomy indexes.

Source: Data obtained from the Assembly of European Regions 2009

architecture is obviously able to determine elemental innovation patterns, including the dominant innovation method.

Importantly, *these are the compatible ones with the given institutional setting*.⁴¹³ This does not necessarily call for differentiation, however, policymakers should bear in mind that pushing a policy-driven approach does not automatically result in the outcomes expected (e.g. efficiency gains, cost savings in a sustainable way) within an institutional setting having good conditions for incremental, bottom-up innovations. And, in certain cases, a policy-driven approach should also address the huge discrepancies between functional and financial competencies at various governmental levels (i.e. when functional

⁴¹³ By using the case of Germany, Preissl (2012) pointed out that adopting market-related tools (e.g. performance-based payment) without adapting them to the public sector's mission might be rather problematic (PREISSEL 2012).

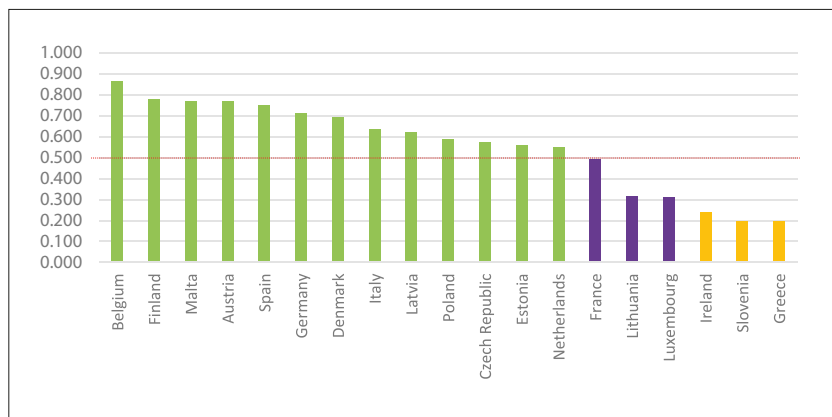


Figure 22. *Spending autonomy of local governance in selected European countries (score values)*

Note: The red dotted line represents the average value; countries above this value are found to be highly decentralised (with higher spending autonomy at the local level), while the rest of them have more centralised structures.

Source: OECD Federalism Indicators

competency eclipses to a large extent the given financial competency). Nevertheless, innovation policy should consider at least three things:

- Albeit the public sector is often considered one sector, it is heterogeneous. As institutional settings differ, public organisations do also differ by suggesting that a specific feature of innovation in a certain public sector organisation does not inevitably apply to other parts of the public sector.
- The bottom-up method can be seen as the cradle of policy learning which is essential to get a better understanding of public sector innovation.⁴¹⁴
- Analysing innovation ecosystems with greater share of bottom-up innovation method may carry important messages, especially about the issue of

⁴¹⁴ See RØSTE 2004: 20.

what kinds of institutional architecture seems to have inherent incentives for innovation.⁴¹⁵

Global trends and perspectives on the public sector innovation mindset

While the previous section has made it clear that no mere public sector innovation initiative could thrive in a sustainable way without incorporating the institutional fundamentals that determine elemental innovation patterns and even the method of innovation emergence, this section delves into some of the major innovation trends observable in the public sector of selected countries that are of immense importance from the point of view of addressing directly or indirectly some of the wicked challenges mankind faces (*The Madness*).

The cases imply that local level governance is of paramount importance because it is more conducive to receive and utilise valuable information about citizens' preferences and needs. It is important in at least two regards: first, decentralisation of responsibilities for key services to local governments is of particular interest, what is more, it has been well underway;⁴¹⁶ second, fostering inclusion by opening towards citizens and customers in a more intensified way seems to be instructive from the point of view of public sector innovations, as well.

As far as the *decentralisation of responsibilities* is concerned, it often entails mismatching problems between expenditures and revenues by calling for innovative resourcing or responsibility sharing.⁴¹⁷ For example, during the

⁴¹⁵ Arundel and Hollanders (2011) also argued that bottom-up innovation methods do seem to be more successful than the policy-driven approach. Additionally, considering these is crucial since the Innobarometer 2010 also ascertained that "a top-down approach of innovation or innovation support has been prevalent in developing innovations. A bottom-up innovation culture was the least characteristic of the government sector" (European Commission 2010: 8).

⁴¹⁶ See DIRIE 2005.

⁴¹⁷ Let us allude to the case of the Finnish public sector reforms since the 1970s until the early 1990s. The Finnish governments resorted to decentralisation by building greater flexibility into the system and emphasised the financial and fiscal crisis as an ideological weapon triggering more social acceptance over the need of reform. When the crisis came,

culmination of the 2008 financial and economic crisis, the UK developed policies (Planning Act 2008) in the interest of streamlining infrastructural development that would otherwise have been difficult under the previous system. The Community Infrastructure Levy (CIL) is a capital cost payable by (local) developers towards the cost of local and sub-regional infrastructure to support development in fields like transport network, environmental and social infrastructure, schools and parks.⁴¹⁸ It is therefore exclusively levied by local authorities (lower tier of governance) on new development in their area. Some developments may be eligible for relief or exemption from the levy. This includes residential annexes and extensions, and houses and flats which are built by ‘self-builders’. In addition, as a reaction to the challenge of migration, the instrument was adopted to the new circumstances given by the Russian–Ukrainian war that has been forcing many to leave their country and to immigrate into other European countries including the UK. Accordingly, the local government is offering a payment of £350 per month for up to 12 months to persons who have offered their homes/rooms to Ukrainian refugees. This payment is not made as a form of rental payment but rather as a thank you to persons willing to host Ukrainian refugees in this time of crisis. This project can be ranked with the waves of innovative collaborations like public–private partnerships as well; however, the registrable delays in payment of CIL should have been addressed much earlier (a revision of the instrument came to life with new regulations over the delays in 2019). Delays in payment can create such problems that are endangering the feasibility of the entire project as it was the case with the National Program for Information Technology in the NHS (see Box 6 later).

In Belgium, the federal system is to build anticipatory capacities in tackling ongoing and future migration. To this end, the Belgian state and local governances pursue at least two things. *First*, the public sector has been testing

local governments were in relatively good fiscal positions to cope with financial constraint (see NIEMELÄ–SAARINEN 2009).

⁴¹⁸ See more at www.gov.uk/guidance/community-infrastructure-levy#full-publication-update-history.

Skills Mobility pilot projects that are in conjunction with the so-called “Skills Mobility Partnerships” that are an organic part of the European Union’s Pact on Asylum and Migration. Along these pilots, the Belgian public sector (at all levels) has been developing new partnerships with countries of origin and emerging economies to favour co-development and facilitate upgrading of skills. Since addressing migration is a complex set of issues, actors must recognise that the borders of the public sector is blurring by appreciating the changing roles in governing migration of local authorities and non-state actors, such as large companies. Due to the highly decentralised nature of the Belgian system, local governance may treat better relations with SMEs and larger companies in addressing immigration collectively for the sake of innovation dynamism. *Second*, migration requires some sort of foresight activities, in this spirit, Belgium is to conduct forward-looking analyses about the future of migration and outline different development scenarios for policy development, strategic planning and decision-making. These altogether form a kind of mission oriented integrated innovation policy affecting both the public and private sectors.

The mission to foster more inclusive development is also at the heart of an initiative launched in 2017 being at a more supranational level. UNESCO’s Inclusive Policy Lab is to pursue that aim. With the adoption of the 2030 Agenda, a new level of commitment has reached to stimulate inclusive and equitable development. Six out of the 17 development goals, articulated in the UN’s Sustainable Development Goals, are focusing on inclusive development. Since such mission has been long non-operationalised, the UNESCO Inclusive Policy Lab is to make up that backlog by working in the emerging areas of knowledge crowdsourcing and its translation into inclusive and equitable policies in 11 countries.

As for *innovative public–private partnerships*, which forms another relevant trend in public sector innovations, more and more local government actors have become committed to pursuing smarter decision-makings in order to tackle the challenges of the 21st century. Birmingham (UK), Dortmund (Germany), Eindhoven (Netherlands), Syracuse (Italy) and Málaga (Spain) – all are located

in countries having either federal or highly decentralised institutional settings – have demonstrated that their leadership aspires to reach smarter cities by city-wide collaborations with relevant actors (financial institutions, service providers and other stakeholders). Owing to their singular commitments to smarter cities, IBM selected them in 2012 – within the confine of its Smarter Cities Challenge programme – to be granted in fostering the achievement of their goals. In addition to the financial support which amounts to 50 million USD allocated to 100 cities selected throughout the globe, IBM will also delegate and send experts to the municipalities by providing reasonable helping hands to understand, interconnect and manage their core operational systems such as transport, communication, water and energy on the spot in a more vigorous way. The journey always begins with only one step, which can be followed by many more. This was the case exactly in some of the cities mentioned. For example, Eindhoven has been trying to keep alive and bring the smart city concept onto another development level with the contribution of the Eindhoven University of Technology (TU/e). The Smart Cities Innovation Space project of TU/e for the period 2008–2021 aimed at reaching out 9 departments and 50 teachers participating in the program of providing more interdisciplinary knowledge on smart cities, annually delivering 50 interdisciplinary engineering projects, and educating 1,500 students yearly, of whom 950 will find employment in SMEs.

Partnerships are the resultant of a cohort of *collaborative efforts* which also manifests a major trend in public sector innovation.⁴¹⁹ For example, inter-municipal collaborations can be identified in the Netherlands. In the case of the Netherlands, as a comprehensive study rightly pointed out by using the cases of four Dutch regions, collaboration should be credible over time which needs continuous communication, what is more, a constructive and reflective way of conversations especially in time when conflict of interests emerges, i.e. when “[...] participants realize that collaboration may no longer

⁴¹⁹ One of the best-understood areas is the fight against climate change, where collective action is needed. See for example the case of Milan in Trivellato et al. (2020), where collaborative efforts resulted in the introduction of Congestion Charge Zone (Area C).

be in their best interest or deliver on expectations of innovation”.⁴²⁰ It is hardly by chance that the so-called Dutch Flood Protection Program, which aims at reinforcing dike infrastructure, recognises the crucial importance of continuous innovation based on collaborations (i.e. it includes a framework for stimulating cross-sector collaboration).⁴²¹ It is also worth noting that there are programmes initiated by local level governance aiming at monitoring and assessing collaborative efforts. The newest *Failing Forward* initiative and campaign in the United States is based on the idea that municipalities and public workers have to first admit when they are failed in innovating within the public sector and then collaborate to find a solution to or at least address continuously the problem.⁴²² Furthermore, the City of Alma, Michigan created a program called Economic Vitality Incentive Program (EVIP) and one of its declared requirements is the permanent reporting about how the collaboration among local, state and federal agencies, citizens and businesses perform. The city of Alma therefore also created the 2011 Collaboration Plan and was committed to reporting that puts emphasis on effective and potential cost savings stemming from collaborations.⁴²³ EVIP made statutory revenue sharing contingent on meeting a range of criteria, and further funding cuts resulted in even fewer localities receiving EVIP payments. By 2015, even though the name of EVIP changed to CVT Revenue Sharing, the original criteria on accountability and transparency were still valid.

The issue of *open governance* has been well among the ruling trends of public sector innovation developments started in the United States in 2009 and has been diffusing throughout the globe. For example, it has been on the European Union’s agenda as well where an Open Data initiative was also

⁴²⁰ METZE–LEVELT 2012: 11.

⁴²¹ For more on the Dutch Flood Protection Program see https://theses.ubn.ru.nl/bitstream/handle/123456789/11571/Kerk_van_der%2C_Isabel_1.pdf?sequence=1.

⁴²² See <https://failforward.centreforpublicimpact.org/p/1>.

⁴²³ See www.michigan.gov/formergovernors/recent/snyder/press-releases/2013/08/08/regional-initiative-to-coordinate-service-delivery-grow-economy-through-local-collaboration.

promoted by the European Commission.⁴²⁴ In 2018, the project Smarticipate Horizon 2020 developed a survey on open integrated governance as a part of the e-government project.⁴²⁵ The aim of the survey is to provide input and support for DG Connect Open Governance Initiatives. Open governance can also help in creating, rebuilding and maintaining the trust level of citizens and end-users in governmental institutions through greater openness and collaborations which could bring bigger leaps, i.e. more significant impetus into the system of public service provision in response to challenges. The waves of open governance have reached the many parts of the world so far ranging from well-developed Nordic countries through Romania⁴²⁶ to the African continent as well (e.g. a number of innovation measures have been adopted in South Africa in reinvigorating trust in governance⁴²⁷). Under the angle of trust building, open governance is not just about making the public sector transparent, it can also be interpreted as a tool for demonstrating that the state is still able to achieve some valuable objectives. All in all, open governance is now in a relatively good shape. A telling example is the development of the Open Government Partnership (OGP) platform for governments and civil society actors in promoting transparent, participatory, inclusive and accountable governance around the world. The fact is that governments and thousands of civil society members have, together, co-created nearly 5,000 commitments to opening up governance in various ways across more than 350 action plans in 77 countries within the confines of OGP.⁴²⁸ The evaluation report⁴²⁹ on the programme revealed that 66% of all national members

⁴²⁴ See more on the issue of Public Sector Information in the European Union at http://ec.europa.eu/information_society/policy/psi/open_data/index_en.htm.

⁴²⁵ See <https://smart-cities-marketplace.ec.europa.eu/news-and-events/news/2018/open-integrated-governance-survey-smarticipate-horizon-2020>.

⁴²⁶ The so-called Romania Action Plan 2020–2022 contains the extension of open government initiatives to the local level (RO0068) (see www.opengovpartnership.org/members/romania/commitments/RO0068/).

⁴²⁷ See NEL–MASILELA 2020: 33–47.

⁴²⁸ See www.opengovpartnership.org/a-decade-of-impact-ogp-2021-annual-report.

⁴²⁹ See www.opengovpartnership.org/documents/independent-evaluation-of-ogp.

shared 127 implementation experiences with other members only in 2021 with a primary focus on topics like anti-corruption, digital governance and democratic processes. Still, in an era of emerging digital economies with the parallel development of Industry 4.0, sharing data to obtain useful big data is still beset with difficulties, especially if those data would be from public bodies. As the Co-VAL project emphasised, government agencies are reluctant to share data that they perceive as “theirs”.⁴³⁰

The Great Recession brought a new élan into the process of opening up the governance in many countries such as Iceland. The crisis put the country onto the brink of economic collapse in 2008. By 2011, Iceland was on the road of recovery, in which the role of public sector innovation was non-negligible. Iceland intended to create a new constitution geared towards the 21st century by relying heavily on citizens’ involvement through the intensive usage of social media, i.e. the Constitutional Council was quite active on Twitter, Facebook, YouTube and Flickr with the purpose of receiving relevant suggestions from the society. By using social media, the government was also able to identify and incorporate useful recommendations regarding the introduction of innovative tourism campaigns. With the benefit of hindsight, as a result of the deployed innovative practices, the inflowing tourism started to increase strengthening further the trust level of citizens towards the government (which is extremely important in time of painful consolidations and reforms). To date, the Icelandic configuration of the institutional background together with the media and politics has been slowly but perceptibly transmogrifying into the Nordic type.⁴³¹

Of course, not only advancement but also weakening can happen with public sector innovations with respect to opening up the governance. For example, in early 2012, the Hungarian Government started an online forum on good governance (joallam.kormany.hu) in the spirit of adopting best practice of other European countries. By using this platform for good governance, citizens

⁴³⁰ “Understanding Value Co-Creation in Public Services for Transforming European Public Administrations” project, or Co-VAL, a 12-partner research consortium, co-funded by the European Union (see www.co-val.eu/download/2307).

⁴³¹ See ÓLAFSSON–JÓHANNSDÓTTIR 2021: 51–68.

could express their thoughts and suggestions – on how to rationalise governmental operation with the aim of cost savings – directly with decision-makers who are in charge of improving the quality of governance in fields covering the whole gamut of governance, such as: health care, public administration, environmental protection, etc. Decision-makers are also encouraged to feed-back to display suggestions. It was thought that all valuable ideas incoming will be processed by working groups of sectoral ministries later on. Despite the fact that a series of Good Governance Report has come to life, not much progress has been made, the website has been phased out and no significant official commitment to open governance is out there that would appear to be meaningful and instructive.⁴³² As a consequence, Hungary's aggregate innovation performance has many shortcomings – see WIPO's Report on Hungary's position in the Global Innovation Index (GII), WIPO (2020), which ranked Hungary 33rd among the 49 high-income group economies⁴³³ – not to mention the case with public sector innovations.⁴³⁴

⁴³² On the changing characteristics of state–business relations in Hungary, with a special attention to the so-called plebiscitarian leadership democracy feature of the country, see KOVÁCS 2016: 231–250; KOVÁCS 2021: 198–215. Another study underlined the following: “In Hungary's hybrid regime, the Western model of market economy and the dominance of private enterprise have been at stake. It implies blurring the boundaries between state and market, and between public and private interests for the sake of resource reallocation and elite change” (MARTIN 2022: 1).

⁴³³ The Report also underlined the strengths and the weaknesses of the Hungarian innovation performance. On the one hand, there is only one GII pillar in which Hungary proved to be a better-than-average performer, namely: Knowledge & technology outputs. Conversely, Hungary scored below average for its income group in six of the seven GII pillars: Institutions, Human capital & research, Infrastructure, Market sophistication, Business sophistication and Creative outputs. The evolving and current state of institutions is more likely to stifle rather than liberate innovation dynamics in Hungary. Still, we do not have valuable data on public sector innovation and there is no public sector/governance-wide discussion over the topics. As Makó and Illéssy (2014) pointed out, there were no perceptible repercussions of the EPSIS Report in 2013, the Hungarian public sector did not formulate and consider the lessons available in that report, either (MAKÓ–ILLÉSSY 2014: 4–20).

⁴³⁴ The Co-VAL project highlighted not only that the proportion of public administration units that seem to be innovative, in terms of the number of innovations, lags far behind

Another Visegrád country, the Czech Republic was also to go for more transparent governance by launching a series of initiatives, however, the main goal was to reduce red tape to a significant extent (including the administrative burdens on businesses in the real economy). To this end, a dedicated web page (zjednodusujeme.cz meaning “we reduce”) was created, where entrepreneurs and other citizens were able to point out redundant legislation, absurdities or other red tape, so that the government in theory could make the necessary steps to cut those burdens down. Single Registration Forms were created being designed both for legal and natural persons in order to simplify the process of starting up and conducting a business in the Czech Republic. Forms can be used for example for trade notification, licence application, or tax registration (VAT, road tax, real estate tax, etc.). In dealing with cutting red tape, reducing the administrative burden on businesses in general has been one of the priorities of the all-time Czech government. Another equally important program toward opening governance was initiated in 2018 and was named as National Open Data Catalogue of the Czech Republic. It is an open-source solution developed on GitHub by building on and encompassing various other open-source projects. It is available to be reused by all tiers of governance in addressing important issues with currently available data. The key users and beneficiaries are ranging from citizens (cities like Prague, Brno, Pilsen, Ostrava, Bohumin, etc.) through government officials (Czech Police, Ministry of Finance, Ministry of the Interior, Ministry of the Environment, Czech Telecommunication Office) to the civil society (Open Society Fund Prague) and businesses (DHL Company, Finance.cz, etc.). With the enrichment of open-source data, one might think of a bettering performance management in the Czech public sector. True, among the Visegrád countries, the Czech Republic has also been pioneering in introducing and

the levels of other countries analysed (Spain, France, the Netherlands, Norway or the United Kingdom) (e.g. 56% was innovative, while 79–92% was the case in other countries), but also that the top-down method dominates (i.e. more than half of public sector innovations have been forced or initiated by the top, especially from powerful politicians, higher ranked officers or other strong government organisations, see <http://unipub.lib.uni-corvinus.hu/6667/7/Political%20and%20Cultural%20Determinants%20of%20Public%20Sector%20Innovation.pdf>).

applying performance management schemes in the public sector, however, their relevance has remained low and, in most cases, only formal.⁴³⁵ The sheer usage of such schemes does not generate higher performance at all, especially if the schemes are approaching the issue of performance via the lens of cost savings instead of putting more focus on public value creation, citizens' satisfaction, etc.

As mentioned before, demographic quandary embraces the issue of the promotion of inclusive growth and development with a particular attention to fostering pro-social behaviour and care of the elderly and disabled. In this spirit, the Polish public sector has made a decisive innovative step toward that direction when it contributed to the creation of a specific funding space called Malopolska Incubator for Social Innovation⁴³⁶ which offers space for experimenting and award grants (meaning 100% financing) necessary to reach out the key goal of responding to the needs of dependent people while also reducing their non-stop institutional care provided in public and private institutions and heightening the independence of dependent people including support solutions for caregivers. To this end, grants are in a great help. Since 2016, the Incubator has inspired many and has also contributed to the development, testing and the implementation of modern solutions in care for dependent people. Forty out of 87 submitted ideas were chosen and funded leading to product innovations (7), service innovation (26) and various IT solutions (7). The dimension of cultivating inclusiveness did also appear in other cases. Inclusiveness through co-creation for instance has a decisive place in Poland since public administrations must be engaged in applying broad metrics on user adoption in order to join the digital Poland operations programme. The programme Help Center, started in 2015, which is originally an ICT-enabled remote help for all kind of entrepreneurs in Poland that are to start a business (i.e. it consists of virtual official [bot], live chat or video chat service with consultants, web phone, etc.). Moreover, it does also have sign

⁴³⁵ See PLĄČEK et al. 2020: 636–645.

⁴³⁶ See www.interregeurope.eu/good-practices/the-malopolska-incubator-for-social-innovation.

consultation service for deaf people and it is available for foreigners as well in the spirit of integrating them into the Polish economy.⁴³⁷

The Estonian public sector has long been dedicated to the enhancement of innovation patterns within the sector. In addition to the innovation of e-Residency,⁴³⁸ that have been studied countless times, a number of innovations have taken place. The programme Accelerate Estonia of 2019 was launched as a response to *The Madness*, i.e. to address complex challenges of the socio-economic innovation ecosystem (e.g. ageing population, environmental and climate issues, information wars, etc.). Let us recognise that the programme is related to the importance of organisational revitalisation in favour of overcoming the structural lock-in phenomena – when public servants and organisations stick preferably to current and prevailing techniques as well as methods⁴³⁹ in an effort to minimise risks of failing (an issue which is of high relevance in the era of the Great Suppression). Accelerate Estonia acts as a filter by helping to identify intervention areas where the government can and cannot help with radical innovation. Accelerate Estonia is therefore doing nothing else than providing a “serious play” for innovators in continuously addressing complex problems (i.e. it identifies not only the complex problems via interviews and public events but also the ministries that are open to rapid innovation; it then creates a call for out-of-the-box innovations; an expert team collectively chooses a few promising ones and finances them, in case of certain advancements, follow-up investments are also in the cards).

Innovation in the French public sector is not an end-of-line product. The Secretariat-General for Government Modernisation (SGMAP) has long been committed to nurturing innovation mindset in the public organisations.⁴⁴⁰ The French public sector does not act in the manner of *corriger la fortune*, in the sense that it admits the shortcomings of the French public sector by striving for new

⁴³⁷ See <https://en.ocalenie.org.pl/help-center-for-foreigners>.

⁴³⁸ See <https://e-resident.gov.ee>.

⁴³⁹ MARSH–EDWARDS 2009: 399–413.

⁴⁴⁰ See more on the French manifesto for public sector innovation at www.modernisation.gouv.fr/files/202106/french_manifesto_for_public_sector_innovation%281%29.pdf.

methods and policies to initiate ever-more innovations for the sake of the society involved more and more in the service provision. Engaging citizens, associations, institutions, businesses and the media in the positive transformation of society has been the primary mission of the so-called Make.org started in 2018. Since the changes require broad consensus, Make.org is to help in finding common grounds and shared priorities on which the collective commitment can be built. Public sector representatives participating in Make.org have a firm belief that offering citizens new modes of participation and involvement is the only way to reconcile the social body and advance democracy. Make.org has three pillars: (1) the Great Causes, which is to transform society through society: Make.org and its partners have relied on citizen consensus to take concrete action against *Violence Against Women*, to give *Every Young Person a Chance*, allow access to culture for all, take better care of the elderly, etc.; (2) the Great Debates, which is to transform institutions and democracy through citizens: in early 2019, Make.org and the Civico Europa Institute launched the largest consultation ever organised in the European Union, *WeEuropeans*, in 27 countries, which resulted in the 10 proposals approved by citizens across Europe. Make.org and several major media also conducted a parallel consultation to the Grand National Debate, and revealed the main consensus and controversies that animate the French socio-economic innovation ecosystem; (3) Commitment Consultations, which is to transform companies and administrations by employees: they have thus made it possible to imagine the City of Tomorrow or the means of hatching European Digital Champions, the solutions to make the French economy more benevolent, or to ask 5,000 civil servants how to facilitate their work and remove the obstacles they encounter on a daily basis.⁴⁴¹ What is more, in the domain of migration and refugee crisis, the French public sector developed the so-called *Refugeeks* programme, which offers tailor-made web-developing trainings for refugees with the purpose of alleviating the difficulty in finding jobs and being integrated more into the French society.⁴⁴²

⁴⁴¹ See <https://make.org/FR>.

⁴⁴² It was showcased during the 16th meeting of the European Digital Champions Expert Group (see <https://ec.europa.eu/transparency/expert-groups-register/core/api/front/document/82346/download>).

The Romanian public sector wanted to contribute to the Roma integration in a more dedicated way via a new community radio (Radio Pata) co-created with inhabitants of Pata Rât, which is a 2,000 strong Roma slum near Cluj-Napoca, Romania. The basic idea behind the project was that the community shall react to the growing share of Roma population which will exceed 20% by 2050 in Cluj. The fundamental objective was therefore to propel inclusiveness, democratising and smoothening the relation between the public administration and citizens, contributing to empowering the marginalised Roma community in Pata Rât. Radio Pata has been streamed via a specific mobile application, also implementing grass-roots community self-organisation tools and a feed on public social services.⁴⁴³

Another important wave of public sector innovations occurs in the form of *organisational restructuring and reshaping* with the aim of refurbishing public organisational units and making them able to have an innovative milieu in providing better public services. Increasing autonomy of lower tiers of governance, as shown, better serves the creation of a diffusion milieu for innovation. This topic has been of the key priorities when it came to pursuing public sector innovation in the Netherlands. That aim can also be achieved via organisational developments at municipal levels as well. Designing the way of innovation and managing the role of employees in it can be carried out by local authorities. For instance, in Nijkerk (a city with approximately 43,000 inhabitants), a similar undertaking took place in 2015; since then the municipal organisation consists of 28 self-managing teams that come directly under the authority of the municipal clerk. Nijkerk recognised the crucial importance of public sector workers and their talent in co-creation and innovative service provision. The goal for that organisational development was to meet budgetary requirements (balance) and to develop a playing field where engagement and collaboration with the local community can materialise in various ways.

The coronavirus that erupted in 2019 has been overwriting some of our views on public sector innovation. For example, one of the forced responses

⁴⁴³ See www.radiopata.ro/en/about-altart.

to the epidemic was the introduction and extension of the possibility of tele-working (home office), aka working from home even in case of public sector workers. It is certainly an organisational innovation with various unintended consequences to be addressed by further innovations. The Duke Remote Work Survey (2020),⁴⁴⁴ which was conducted with public employees in June–July 2020 in Brazil, Colombia, Chile and the United Kingdom on the effectiveness and efficiency of working from home, found that public employees were up to 40% less productive while working during Covid-19. This result was highly given by a declining self-control over work when doing jobs remotely from home. Improving self-control is therefore becoming a priority at public sector organisations but only with meticulous care simply because home office can also mitigate and even curb burn out over the medium and longer run (i.e. improving quality of family time, lessening time of travelling and meetings, etc.)⁴⁴⁵ which is also a goal for a long time in case of efficiency-enhancing public sector organisations. To this end, the UK governance is open to be part of overarching further research over the real long-term impacts of home office for the sake of both public sector employees and the people demanding service provision. In 2021, the People in Government Lab, together with an international team of experts started that research to better understand the process mentioned above and to evaluate how behavioural sciences (e.g. using nudge techniques) can ameliorate the well-being and performance of the workers in the public sector.⁴⁴⁶ Furthermore, as a response to fiscal pressure and due to the lack of skilful workers, the UK Government is to cautiously boost automation where

⁴⁴⁴ See <https://today.duke.edu/2022/04/between-two-worlds>.

⁴⁴⁵ See ZIMMERMANN 2021.

⁴⁴⁶ Since the school-building research of Jean Piaget, the famous Swiss psychologist, modern behavioural science conveys that man is also a complex being in terms of the mental world. We are guided by ancient solutions and at the same time we are very sensitive to the past of our whole lives and to the current and valid human situations and contexts. This is why even a successful public sector innovation may remain with a rather limited impact or it is the case when the society does not react negatively to changes in the public sphere that are otherwise harmful (i.e. places where manipulations, post-factualism and illiberal populist sentiment dominate). For more on nudging see THALER–SUNSTEIN 2009: 312; VAN DER HEIJDEN 2019: 31.

appropriate and reasonable in the public sector. It has launched the so-called Automation Marketplace Dynamic Purchasing System to help public sector organisations in finding intelligent automation services. As for mission orientation, i.e. addressing *The Madness* on multiple fronts, the UK Government set up a new innovation agency (Advanced Research and Innovation Agency) to cover high-risk innovative projects that are designed to address some of the grand challenges (that are juxtaposed in the UK's Industrial Strategy).⁴⁴⁷

Slovenia takes a bumpy road toward innovative state by working on the application of modern technologies in better informing policy about the impacts and effectiveness of certain decisions. As we emphasised earlier, policy learning is faster in a highly decentralised setting (especially in a federal system) because of the opportunity for parallel learning of highly autonomous local governance. In 2018, the Ministry of Public Administration of Slovenia started to use modern web-based ICT technologies to cooperate with citizens, business entities, economic and other interest groups via a dedicated platform (SME Test available through the eDemocracy portal) to evaluate and quantify the impact of their alternative policy responses on SME development.

Last but not at all least, there are certain initiatives at policy level aiming at not only raising awareness, but also helping public sector organisations and players at all level of governance to conduct proper diagnoses on which fields are more likely to trigger improved innovativeness if they are linked to actions. For example, the Department of Industry, Innovation, Science, Research and Tertiary Education in the Australian Government established the so-called Public Sector Innovation Toolkit,⁴⁴⁸ which is to lend support to governmental agencies to obtain knowledge on innovation processes and their shortcomings in this regard through helping them to carry out proper diagnoses, as well.

In implicitly responding to the wicked challenge of symmetry breaking between the financial universe and the real economy, there has been an EU-wide

⁴⁴⁷ See www.gov.uk/government/publications/industrial-strategy-the-grand-challenges/industrial-strategy-the-grand-challenges.

⁴⁴⁸ For a full picture of the Australian Public Sector Innovation Toolkit see <https://oecd-opsi.org/toolkit-navigator>.

game changing initiative, started in 2014, focusing on the excessively expanding financial universe to be better linked to the needs of the players of the real economy such as SMEs. The initiative was based on a study, being pervaded by counterfactual analysis, which showed that loan guarantees can lengthen the viability of SMEs, increase their productivity and support job creation.⁴⁴⁹ The research team found that productivity in beneficiary firms was initially lower before increasing as employees learned how to use new instruments. The counterfactual analysis then led the Commission to promote loan guarantees.

Due to the black swan events mentioned earlier (Covid-19, war between Russia and Ukraine) as ancillary phenomena to the world economy becoming ever more complex anyway, perhaps there has never been so much pressure on public sectors to work together in a more coordinated way. It requires supranational approach interspersed with innovative design. In the EU, without a full political union (federalism), the issue of improving and deepening administrative “integration” in some sectors in supporting reform and recovery programmes arose and was put on the agenda in 2021. In a nutshell, there is a growing need for a more nuanced multilevel administration and policy Integration.

Box 4

An EU perspective on public sector innovation – Going integrative

Advancement in the real economy: The key message of the I3U project (Investigating the Impact of the Innovation Union – I3U),⁴⁵⁰ which comprehensively evaluates the performance of the Innovation Union program, is that many of the commitments of the initiative have been fulfilled and the desired effects have been more or less demonstrated. For example, there has been an increase in the number of innovations generated by Knowledge and Innovation Communities (KICs), the number of startups and new ideas within incubators has jumped, but the European Institute of Innovation and Technology Institute (EIT) has also seen an increase in the number of certificates of excellence awarded to educational programs supporting

⁴⁴⁹ ASDRUBALI–SIGNORE 2015.

⁴⁵⁰ See more at www.i3u-innovationunion.eu.

entrepreneurship. The more holistic approach is also justified by the initiatives that sought to create a more appropriate innovation milieu in the area of making financing more flexible – in line with what our book emphasised earlier regarding positive feedbacks for innovation dynamism (see Sub-section *Positive and negative feedbacks of public sector innovation*). The European Commission has pursued a number of policies to tackle long-standing shortcomings in the financial resources needed for innovation: the EC launched the InnovFin program to help finance flexibility in cooperation with the European Investment Bank, and the European Venture Capital Funds (EuVECA) have also been set up, in addition, the Startup Europe initiative came to life (being complemented from 2020 by an EU Startup Nation Standard program to multiply such practices across the EU) together with the world's largest business development network (Enterprise Europe Network), and the European Innovation Partnerships have also been established.⁴⁵¹ The initiatives created a link between innovation actors, facilitated the diffusion and absorption of knowledge, and contributed to the development of sustained collaborations.

Going integrative: With the introduction of the Innovation Radar, as the European Commission's data-driven initiative, EU-level governance admitted the need to better identify high potential innovations and innovators in EU-funded research and innovation projects by allowing not only citizens and businesses, but also public officials/public sector workers to discover the outputs of EU innovation funding. Going more integrative has been also a case in point when it came to greening out the EU's economy. A strong preference for sustainability has emerged with the creation of the European Green Deal in 2020. In the agreement, the European Commission is talking about a holistic approach that emphasises that the goal of greening the European economy, i.e. climate neutrality by 2050, can only be interpreted horizontally.⁴⁵² In practice, this

⁴⁵¹ If the measure of success is how many EIPs have been created, then the project can be said to be successful. However, if we look at a wider range of innovation indicators, that success is far from clear. For the evaluation see DOBRINSKY 2019.

⁴⁵² To guarantee the right to climate neutrality, the European Commission has proposed a European Climate Regulation. This would stipulate that EU Member States have an obligation to reduce their greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels (see European Commission 2020a).

means that all EU measures and policies must be an integral part of creating a green economy, and that policies in the following areas are particularly relevant: climate change, the environment, energy, transport, industry, agriculture, policies affecting sustainable financing, but also the recent industrial policy on the agenda, must be “green”⁴⁵³ in the most positive sense of the word. Of course, existing legislation on greenhouse gas emissions, renewable energy and energy efficiency must also be “green” compatible. The effectiveness of the agreement is a matter for future research, but it is conceivable that putting the holistic approach into practice will require the involvement of the European Investment Bank. For example, in its financial background insurance activities, it prefers greening economic activities aimed at creating technological and non-technological innovations leading to climate neutrality.

Future perspective: Horizon Europe, the EU’s next large-scale research and innovation investment program with a budget of almost €100 billion until 2027, has replaced Horizon 2020 from 2021. The program has three broad objectives: (1) tackling climate change (35% budget target); (2) serving the UN’s Sustainable Development Goals; and (3) enhancing the Union’s competitiveness and growth. In fact, the program already takes into account the system of scientific benefits, i.e. it pays attention to the theoretical layer by strengthening the EU’s scientific and technological bases and the European Research Area (creating a new European Research Area); preserves the relevance of practicality in boosting Europe’s innovation capacity and competitiveness and that of the creation of sustainable jobs; and it raises the specific weight of the moral layer by covering the enforcement of citizens’ priorities, the cultivation of the values of the EU socio-economic model, and the establishment of more conscious human behaviour required by climate neutrality. It has three pillars, such as strengthening excellent scientific activities, tackling global challenges and improving the competitiveness of European industry, and achieving the innovative Europe that was previously sought to be achieved by 2020. It is permeated by a mission-oriented policy narrative, with five mission areas identified (highly resonating to *The Madness* discussed earlier): (1) Adaptation to climate change, including social change; (2) cancer research; (3) soil

⁴⁵³ See European Commission 2020b; TAGLIAPIETRA–VEUGELERS 2020.

health and food; (4) climate neutral and smart cities; and (5) healthy oceans, seas, beaches and inland waters. Thus, it does underline the central role of public sectors in working on all these objectives. There was a considerable amendment to the Horizon Europe in the first half of 2022 by enlarging its budget (by €562 million) to further support EU Missions towards innovative solutions⁴⁵⁴ including the underpinning of the Observatory of Public Sector Innovation (plus €1.5 million). Unfortunately, as we accentuated earlier, there is no overarching measurement project in plain sight that would be dedicated to evaluating public sector innovation across the board.

Illustrative case studies

Our line of thinking implies that the complex configuration of the socio-economic innovation ecosystem (with the excessively expanding financial universe coupled with a more and more overloaded public sector and a real economy not showing a solid sign of innovation dynamism) requires multifaceted innovations. The spectrum of public sector innovation should therefore be broadened. This section offers ten illustrative cases capturing primarily the successes, more specifically the next practices. In some cases, failures as past practices are also mentioned proving that public sector innovation has a dark side as well.⁴⁵⁵ The book prefers the term next practices over best practices simply because that concept recognises the complexity of the system in which there are no context-independent and fully transferable recipes.⁴⁵⁶ In doing so, all the types of innovations, mentioned earlier, will be

⁴⁵⁴ See https://ec.europa.eu/commission/presscorner/detail/en/IP_22_2843.

⁴⁵⁵ For more on the dark side of public sector innovation see MEIJER–THAENS 2021: 136–154.

⁴⁵⁶ Not only political but also economics discourses are fraught with the assertion that certain best practices need to be adopted and problems resolved. With all due respect, we deny this because the synergy of formal and informal institutions, the cultural background, the unique historical development trajectory all suggest that adoptability is a rather naïve idea. For example, the Hartz IV reform, which allowed Germany to successfully reduce structural unemployment, has been suggested to be adopted by many experts, but they have forgotten the specifics of the German context (i.e. cyclical factors as well as

covered and will be organised around *The Madness* outlined earlier. Some of the cases illustrate the necessity for pursuing public sector innovations with broadened spectrum.

Tipping inflation – Finland:
Betting on technological development in
moderating long-term inflation

To date, the world economy lives through an inflationary surge. Soaring inflation has arrived with a much faster pace causing spikes not seen in a long time and proving to be way more mulish and ubiquitous than major central banks initially thought possible. Since monetary policy interventions so far have not been successful enough in reigning tipping inflation, public sectors and governances were to resort to something new or a new combination of old stuffs – i.e. in a Schumpeterian sense,⁴⁵⁷ to conduct innovative policy “solutions” like fixing certain prices in our new complex world economic context. In the absence of a global policy entity to do that job, according to the mainstream considerations, national governments and central banks are left with the Whitworth rifle to demolish excessive inflation. Tipping inflation in itself is not worth talking about, only its prevalence as well as its indirect and direct effects are interesting, namely that today’s tipping inflation is ubiquitous and rising inflation dynamises the process of impoverishment and reinforces inequality tendencies, hence political destabilisation is on sight due to the fact that inflation is really harmful for growth, development and for the sustainability of the public sector as well as for the capability of the economic governance to act.⁴⁵⁸

the fading away process of the lasting impact of German reunification on employability played a crucial role).

⁴⁵⁷ SCHUMPETER 1983 [1934]: 242.

⁴⁵⁸ Accelerating inflation has serious consequences not only for today but also for the future. With devaluing money within capitalist conditions, it may be impossible to deal with any

*Box 5**Past practice of today: Fixing prices in fighting against inflation*

More and more voices are echoing the view in the international economics community that one of the possible ways of combating inflation is the introduction of price regulation (i.e. the maximisation of the prices of certain products). Discussions related to price regulation in fighting against spiralling inflation has not been happening only in the United States, but have also reached Europe, where, among other things, the debate is on the extent of gas price stops, while some EU countries have already introduced the policy of price caps on certain goods including petrol (e.g. Belgium on petrol and diesel, Hungary has introduced an interest rate halt and has fixed the price of fuel as well as that of some basic foods like granulated sugar, wheat flour, refined sunflower cooking oil, etc.). Some argue that such policy innovation should be extended in diminishing elevated inflation.

Based on the ruling mainstream narrative and political practice, price regulation has been taboo in the developed world for decades. Yet it was a long-standing practice in the past. During World War II, the Roosevelt Administration carried out successful state interventions in curbing the elevation of prices and strengthening the national economy. During the final years of the Bretton Woods system, after the Nixon Administration ended the state's obligation to convert the dollar to gold in 1971, it implemented overarching price and wage controls to hold back spiralling inflation. However, the measures, originally intended to run for 90 days, had to be extended because inflation jumped again before the deadline of the price regulation. The system of price control that lasted until 1974 benefited Nixon from a political point of view, but economists argued that such policy innovation unanimously contributed to the stagflation that emerged later on.

In the first half of 2022, the issue of price control reappeared in the global discussion about how to prevent the further elevation of inflation. Proponents of official

other grand challenges and to support sustainability. As the famous French sociologist-economist François Simiand said: "The ability to anticipate, envision, or even anticipate a future value is an essential function of money" (SIMIAND 1934: 80–81). That is, money is the bridge between the present and the future.

price caps argue that the current state of affairs is much more similar to how the world looked like during World War II than to the status of the world economy back in the 1970s, when the oil crisis exacerbated inflation. According to many, the rise in prices today is caused by the shortage of goods, i.e. excessive demand, caused by the Covid-19 pandemic, so targeted price regulation could not only prevent inflation, but also stimulate productivity, thus helping the economy to recover.⁴⁵⁹ In other words, temporary price caps would restore the market imbalance caused by the epidemic along production and global value chains.

In fact, such a serious intervention of the state in the regulation of market prices would lead to a decline even in the current level of production, and consequently it would entail the strengthening of shortages (not to mention the informal/shadow economies). The proponents of the price control do not want to introduce a ticketing system and, of course, reject the wage freeze (which was done in wartime) as well, thus the price cap would not curb inflation, rather it would even accelerate inflation. Thinking about price control as a today's policy innovation designed to our complex socio-economic innovation ecosystem, which is always far-from-equilibrium would not solve the structural problem lurking behind the wall, it would just delay the tasks to be done (e.g. harmonising the real economy and the financial universe, dampening inequalities, etc.).

In his seminal work, John Kenneth Galbraith⁴⁶⁰ argued that the general control of all prices is an adequate, what is more, a liberal line of approach during wartime with enduring supply shortages. Let us note here that the issue of inflation was not on the agenda of the broad economic discussions in Galbraith times, and that is a fact that many professionals had ignored it then and are still ignoring it today. Despite his contemporary colleagues, Galbraith did consider the issue of inflation as a serious

⁴⁵⁹ For example, in case of Belgium, even though there has been a price setting mechanism over petrol and diesel, it resulted in additional administrative burdens and costs for the Belgian Federal Government and Belgium's oil companies, while providing no clear benefits. Thus, setting the prices seems to have been futile in the sense that while price capping was to prevent prices to skyrocket, in April 2022, Belgium's prices for diesel and gas are among the highest in International Energy Agency member countries (see IEA 2022).

⁴⁶⁰ GALBRAITH 1952: 81.

threat.⁴⁶¹ Galbraith advocated the importance of dampening the excessive demand via policies that potentially exert their impacts via unemployment and underutilised capacity channels. This argument underpinned then the idea of price regulation.⁴⁶² In this respect, in today's context, there might be a rational argument for fostering digitalisation and Industry 4.0 development to switch on those channels in mitigating the threatening danger of inflation. As a corollary, a lesson to be learned is that addressing inflation is possible via cultivating technological advancement.

We have now abundant evidence on how inflation affects innovation activity and R&D investments, hence how does it influence innovation-driven growth. Innovation-driven growth comes from the performance of the real economy, the starting point therefore is that increasing productivity and thus the improvement of competitiveness may require more and more front-loaded investments that are in turn impossible to deliver without the involvement of additional financial resources. Those resources often manifest as credits or loans the costs of which rely on the interest rate in the economy. Monetary policy initiates change in the nominal interest rate when trying to reach out its inflation target. So that monetary policy does also adjust indirectly the interest rate of financial institutions/banks whereby the opportunity costs related to R&D and innovation investments do also change. From this, it is easy to see that in a period of rising inflation, companies are holding back their R&D and innovation spending and investments due to interest rate changes.⁴⁶³ It stifles innovation dynamism, that is, technological development. The reversal of the process is also in place, i.e. technological development through R&D and innovation can significantly reduce inflation over the medium and longer

⁴⁶¹ "Inflation, more than depression, I regard as the clear and present economic danger of our times and the one that is potentially more destructive of the values and amenities of democratic life" (GALBRAITH 1952: 9).

⁴⁶² "If prices and wages are controlled effectively, then the interaction of wages and prices cannot so act as an accelerant of the inflationary movement" (GALBRAITH 1952: 64).

⁴⁶³ See CHU et al. 2019: 683–719; ROCHA et al. 2021: 147–195.

run.⁴⁶⁴ Since the ongoing technological development (digitalisation, Industry 4.0-related technologies, etc.) affects and will certainly have an impetus on major inflationary dimensions of today (ranging from labour shortages, transportation anomalies and congestions, fuel prices, and even ageing society), one can definitely envision that innovation in those fields will serve as fertile grounds for moderating inflation. For instance, greening out the economy fuelled by the use of cleaner energy will eventually decrease the costs that might be related to natural disasters triggered by climate change. Logistical and transport anomalies are already addressed by “big beasts” (e.g. Amazon, Costco, etc.) via innovative approaches, not to mention that the ever-widening use of AI together with autonomous vehicles will be a great help in smoothing traffic whereby huge delays and increasing prices will become nothing but ancient history. Moreover, Industry 4.0-related technologies will also do their job in lowering production prices and transportation/travel related costs (3D printing, vertical farms, remote working, better real time data for predictive analytics via sensors, virtual education platforms,⁴⁶⁵ telehealth, etc.). In short, innovation decreases inflation.⁴⁶⁶ An innovating public sector fosters trust

⁴⁶⁴ Irrespective of the fact that certain inflation rate is necessary for a healthy technological development (e.g. FUNK–KROMEN 2010; ZHENG et al. 2021: 1199–1226), the excessively elevating level of inflation must be reversed. A number of studies emphasised the role of innovation and R&D, thus that of the role of technological development in curbing soaring inflation in the medium as well as long run. In case of India, inflation was addressed by ICT development (see SUBRAMANIAN et al. 2013: 125–135). See more on how technological development dampens inflation in EVERS et al. 2020.

⁴⁶⁵ It goes to platitude that higher quality education is the granite solid foundation for innovation. We have now enough evidence to see that richer parents tend to be more educated and thus their children, too. This constellation offers a playfield for those children to become inventors and/or innovators (see BELL et al. 2019: 647–713; AKCIGIT 2019).

⁴⁶⁶ For a comprehensive study on how innovation-based technological development (that has also been driving globalisation) contributed to lowering inflation in the US, see Lv et al. 2019. Of course, the link between innovation and inflation is pervaded by feedbacks and non-linearity, hence believing in the direction of simple causality is a wishful thinking. There is a need for a more nuanced view. The impact is depending *inter alia* on the socio-economic development level of the given country (which determines the capacity for innovation funding, etc.) and the ruling complex processes working below

stability in the society whereby risk-taker behaviour can be refurbished that supports investment activities in fields like R&D and innovation by resulting in growing productivity, consolidating public finance and so on and finally lowering inflationary expectations.

Innovating in the public sector, as a way of fighting against inflation partly due to excessive demand, has been chosen by Finland. A new trend in the Finnish public sector is to build up capacities for anticipatory services via innovation in better mapping and predicting the needs of citizens using artificial intelligence (AI).

Outcomes and basics:

Competitiveness, innovativeness, the performance and institutional architecture of the public sector

In terms of competitiveness, Finland has been among the Top 20 performing countries in the IMD World Competitiveness Yearbooks. Its 2021 edition ranked Finland to the position of 11th (for comparison, it was 16th in 2018, 15th in 2019 and 13th in 2020), while the 2022 edition of the Yearbook considered Finland's competitiveness a firmly improving one by placing the country to the 8th place. That upscale ranking position has been mainly given by surpassing government efficiency (e.g. within that dimension, in terms of institutional framework, Finland was ranked 3rd out of the 63 countries, while public finance [15th], business legislation [6th] and societal framework [1st] are of salient performers as well), business efficiency (e.g. finance [4th], management practice [6th]), and infrastructure (e.g. technological infrastructure [2nd], scientific infrastructure [12th], education [3rd] and health [3rd]). In

the surface (i.e. is there a disharmony between subsystems, etc.), and of course, it also depends on the rate of inflation in a non-linear way, etc. Neglecting those conditions is as if we would say for example that "[...] In the short run, the inflation causes the innovation funding. But the relationship is reversed in the long run as the innovation funding is the one which causes inflation" (RAMZI-WIEM 2019: 35–58).

terms of innovativeness, Finland was ranked 7th among the 132 economies featured in the GII 2021.⁴⁶⁷ With a view to the EU, the Finnish socio-economic innovation ecosystem was ranked 5th among the 39 economies in Europe. What is especially telling is the fact that Finland has been able to produce more innovation outputs relative to its level of innovation investments and also relative to the relatively outstanding share of government employment as a percentage of total employment (the rate of 25% of 2000 has just slightly decreased to approximately 24% by 2019).⁴⁶⁸ Another public sector related performance indicator might be the one used in the WEF's Global Competitiveness Ranking 2020, namely that among the 37 countries ranked in the 2020 ranking, Finland has been 1st in terms of ensuring public institutions for being embedded by strong governance principles by building on a long-term vision and establishing trust by serving their citizens via high-quality services.⁴⁶⁹ As far as the underlying institutional architecture is concerned, Finland has been a relatively highly decentralised country the degree of which has also increased over the last decade (see Figure 11–12). The decentralisation index of the European Committee of the Regions reconfirms this fact. The

⁴⁶⁷ See www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/fi.pdf.

⁴⁶⁸ See https://ec.europa.eu/eurostat/cache/digpub/european_economy/bloc-4d.html?lang=en.

⁴⁶⁹ This guiding principle is basically about pursuing a future-oriented thinking by focusing on equitable outcomes and inclusive development with the aim of maintaining and strengthening the trust infrastructure. To this end, WEF uses metrics such as: judicial independence, corruption perception, digital media trustworthiness and a composite index reflecting the ability of citizens to exercise formal rights and liberties. WEF does also include subjective perceptions stemming from business leaders, obtained from the World Economic Forum's Executive Opinion Survey, on three factors, which together give an indication of how good public institutions are at anticipating or responding to shocks: (1) governments' responsiveness to change; (2) their long-term vision; and (3) the adaptability of legal frameworks to digital business models. In addition, two survey-based indicators are included: business leaders' perception of the strength of auditing and accounting standards, and whether spending on employees is accounted for as a cost or an investment (see www.weforum.org/reports/the-global-competitiveness-report-2020/in-full/section-5-assessing-countries-transformation-readiness). For more on the score for Finland see SCHWAB–ZAHIDI 2020: 73.

overall decentralisation index score for Finland was 2.3 meaning the Finnish socio-economic innovation ecosystem, considered a unitary state with its two levels governance (provinces and municipalities), could occupy the 5th place out of the EU27 in the ranking. It shows high fiscal decentralisation since the expenditure ratio, as the relative share of overall sub-national expenditure compared to total government expenditure, has been exceeding 38% (6th place), this high decentralisation also holds in case of administrative decentralisation, while political decentralisation has not been so salient with its 19th place.

Dealing with long-term inflation via technological development

In fighting against excessive demand-pull inflation, the Finnish public sector has been committed to be engaged in investing in a general purpose technology, namely in artificial intelligence (AI) to use it in the interest of putting the citizens into the centre of public service provision. The 2020 Global Startup Ecosystem Report already highlighted the fact that Finland plays a pioneering role in applying AI not only in the real economy (i.e. 3.15% of the Finnish companies with more than five employees utilise AI),⁴⁷⁰ but also in the public sector becoming a rather active user of such technology. The goal is to develop predictive citizen services with AI. In doing so Finland has invented a mix of innovations within the public sector and for the public sector: (1) *a process and technological innovation*: AI-based platform called AuroraAI run by the Finnish Ministry of Finance using citizens' big data in providing tailored and timely services for different life situations of the citizens (when looking for jobs requiring special trainings; when studying elsewhere requires increased mobility; when approaching the end of compulsory education);⁴⁷¹ (2) *services as well as organisational innovation*: introducing free (online) courses

⁴⁷⁰ See <https://startupgenome.com/reports/gser2020>.

⁴⁷¹ For instance, in early 2021, more than 5,000 Finnish families received text messages recommending pre-primary education places for their children. The acceptance rate was 90%.

on AI ethics⁴⁷² to promote ethical sustainable and inclusive AI society which was invented and delivered by the newly established interdisciplinary and cross-sectoral, cross-departmental organisational unit called AuroraAI Ethics Board.⁴⁷³ In addition, since AI development is a moving target, its ethical guidelines as well as application in the public sector must be continuously studied after having more and more information about the public officials' attitudes, knowledge and relationship towards AI.⁴⁷⁴ In this spirit, the Finnish Aalto University and the Finnish Center for Artificial Intelligence joined their forces and launched a participatory multidimensional research team that has been inviting citizens, civil servants and software developers to decipher and identify risks and potential algorithmic services in the interest of efficiently and fairly used AI in the public sector.⁴⁷⁵ During this research, the project made it possible to devise lessons to be learned when it comes to stimulating participatory models of governance and oversight of AI for use in Helsinki's vocational education and training programs.⁴⁷⁶ One of the key drivers of the Finnish AI development is the relatively high public trust in government and public institutions (partly due to higher decentralisation) allowing more efficient usage of AI based on big data coming from citizens.⁴⁷⁷ A potential

⁴⁷² See <https://ethics-of-ai.mooc.fi>.

⁴⁷³ See LEIKAS et al. 2022. For more on how Finland approached AI see <https://knowledge-4policy.ec.europa.eu/sites/default/files/finland-ai-strategy-report.pdf>.

⁴⁷⁴ For the latter, Finland has also been playing a leading role since it was to survey public sector officials and workers on their relationship towards AI. That research found that AI and the welfare state model seem to be tightly coupled through data, while societal discussion in general is inevitable together with participatory processes on the level of technology design, as well as professional legal and ethical consideration on the level of policies (see LUUSUA-YLIPULI 2021: 51–60).

⁴⁷⁵ For more on the Civic Agency in AI project see <https://fcai.fi/news/2022/2/8/participatory-research-to-improve-artificial-intelligence-based-public-sector-services-and-empower-citizens>.

⁴⁷⁶ For the AI register of the City of Helsinki see <https://ai.hel.fi/en/ai-register>. For the article on the research clinic done with the City of Helsinki in 2021 on AI in schools see <https://cyber.harvard.edu/story/2021-09/open-access-resources-ai-schools>.

⁴⁷⁷ As the WEF emphasised, Helsinki has developed an innovative blueprint for using the power of citizens' data and analytics to remain one step ahead and enhance their

spillover effect of the project is the widening algorithmic literacy in the Finnish society which will definitely be a *sine qua non* of future AI development.⁴⁷⁸ All in all, technological development may be considered an effective antidote to rising inflation over the long run, the public sector, which functions as the cradle of long-term thinking, therefore has the opportunity to focus on this.

Health crisis – Norway: Innovative digital basis for tackling Covid-19

The present case documents the development of Altinn and the potential that it brings, which has been the most comprehensive governmental ICT project in the history of Norway. Altinn did also prove to be essential during the recent coronavirus pandemic for establishing renewed digital services and systems for employees faced by serious firings and health issues. It has functioned as a fundament to shared services. This section first outlines the specificities of Norway in terms of its competitiveness, innovativeness, the performance of the public sector and institutional architecture, then it concentrates on the past and present of Altinn providing a platform for expanding the digital services of the public sector in innovative ways. The case of Norway demonstrates that even a less decentralised country can achieve higher level of innovation capacity, which would have been given originally in a decentralised institutional background, through comprehensive digitalisation.

lives. This blueprint allowed the capital city to separate the storage, anonymisation and processing of data from tasks performed by residents (see www.weforum.org/impact/power-of-data-helsinki).

⁴⁷⁸ Apart from the application areas mentioned, AI has been infiltrating into the policy-making, especially into the monetary policy practice with the aim of not only improving statistics and forecasting certain general macroeconomic trends, but also contributing to the better understanding over whether the expansion of the financial sector proves to be a systemic risk for the real economy and the public sector itself (i.e. AI is more and more used in monitoring of financial market indicators and assessing financial risk).

Outcomes and basics:

Competitiveness, innovativeness, the performance and institutional architecture of the public sector

Norway has made decisive steps slowly but firmly to enter into the Top 10 most competitive countries ranked in the IMD World Competitiveness Yearbook 2021. The Nordic country was ranked 6th in 2021, it has improved one place every single year since the 11th position of 2017. Even though that ameliorating trajectory has been broken by the 2022 edition of the Yearbook due to the black swan events addressed earlier in this book (e.g. it presented Norway as 9th out of 63 countries), the earlier improvement was mainly driven by improvements and substantial performances primarily in pillars of government efficiency (e.g. domestic economy [9th], employment [16th]); business efficiency (public finance [8th], institutional framework [2nd], business legislation [8th] and societal framework [1st]); and infrastructure (basic infrastructure [1st], technological infrastructure [12th], health and environment [2nd] and education [6th]). One of the most prominent subjective strength factor, based on the executive survey carried out by IMD, was policy stability and predictability (71.4% of the respondents shared the view that the Norwegian governance and public sector is trustworthy enough). In terms of innovation performance, Norway was ranked 20th among the 132 economies featured in the GII 2021, with a view to the European peers, Norway was ranked 12th among the 39 economies in Europe.⁴⁷⁹ As Figure 11 already depicted, Norway is a less decentralised country.⁴⁸⁰

⁴⁷⁹ See www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/no.pdf.

⁴⁸⁰ Even though it seems to be decentralised, the power of the central level governance has almost remained the same by organising the system into semi-inflexible hierarchical setting (REICHBORN-KJENNERUD-VABO 2017: 253–272). Kolltveit and Askim (2017) demonstrated for instance the shortcomings of decentralisation with respect to science policy. Still, a certain level of decentralisation seems to be required when it comes to successful digitalisation project (i.e. a critical level of cooperation among different layers of administration), see DE MELLO – TER-MINASSIAN 2020.

The origins and the key driving forces

Altinn constitutes a web portal used to electronically manage the interaction of the public sector with citizens and the private sector. It started as a collaboration project between three governmental agencies: the Norwegian Revenue Service (Skattedirektoratet), Statistics Norway (Statistisk sentralbyrå: SSB) and the Brønnøysund Company Register (BRC). The main idea was (1) to ease the burdens of the private sector; and (2) make the public sector more effective by creating a single electronic interface handling all the reporting requirements of enterprises to various governmental agencies. Since its launch in 2003, Altinn has constituted a continuous innovation project with new services, organisations and governmental agencies continuously being integrated into the platform. By now, Altinn is responsible for organising the digital dialogue between the public sector and more than 4 million citizens as well as approximately 455,000 companies. Upgrades over the years included access to governmental registers, collaboration services – where several services can be linked together in a comprehensive process involving one or more users and one or more public agencies and event-based reporting – meaning that all data are instantly transmitted to all relevant registers and agencies. In addition, it has been fully redesigned to get a more intuitive and user-friendly service. In the early 2010s, close to 1,100 governmental services were available through the Altinn website and about 300 were implemented through the Altinn platform. To date, it constitutes the most comprehensive ICT innovation project in the history of the Norwegian Government, both in terms of the number of agencies involved and project costs. It has received considerable international attention as an example of successful e-governance innovation (Digi.no) that has been effective enough in reducing costs for the sake of the entire society of Norway.

At least six key driving forces of Altinn can be juxtaposed: (1) it was a bottom-up initiative underpinned further by (2) the deep involvement of the private sector; (3) the matured level of information society; (4) the rich past experience based on trustful relationships among key agencies; (5) competent leadership; (6) the promises of significant cost reduction and that of the positive image building.

- The final decision to develop Altinn was made by the governmental ministries and followed a classical top-down, hierarchal pattern. Officially, it was initiated based on governmental White Papers stating the need to improve on e-governance and decrease the administrative burdens of enterprises. In innovation literature, such a centralised decision-making structure is commonly seen as an inhibitor of innovation. The reason is that a public sector organisational unit, being in a centralised hierarchal institutional setting, has less authority, incentives and flexible resources available to initiate innovation projects.⁴⁸¹ Although the final decision to launch Altinn was made by the political elite, the *initiative* to develop Altinn was the result of bottom-up pressure. It started out with the three involved agencies mentioned earlier, launching a collaborative project to explore the possibilities of using internet as an interaction and data-catch tool. Pedersen described Altinn as a bottom-up initiative and emphasised this as an important success factor as it ensured that the project had broad support by all the involved governmental agencies.⁴⁸² Representatives from the Norwegian Revenue Service also supported this view. There was a strong inner pressure to become technologically modern, the initiative to launch Altinn came, to a large degree, from the agencies themselves.⁴⁸³ The case constitutes an example of public agencies capable of being innovative, risk-taking and collaborative-seeking in a centralised government structure, and without the financial rewards incentives present in the private sector. Moreover, it points to attentive ministries capable of using the ideas and initiatives of their subordinate agencies when designing policy. All in all, fostering collaboration seems to be able to dampen the lack of high degree of decentralised initiation over time and the rewards cannot be interpreted in terms of financial dimension, on the contrary, the long-term collaboration can be seen itself as a high reward.

⁴⁸¹ See DE MELLO 2000: 365–380.

⁴⁸² PEDERSEN 2012.

⁴⁸³ PELLERUD 2006.

- The development of Altinn II which started in 2006, also marked a radically new way of managing public procurement in Norway by using a new method called “Competition-driven dialogue”.⁴⁸⁴ The new approach was based on the recognition of the project management that they did not know what all the requirements should be. Neither did they have an overview of all the technical possibilities existing in the market. Dialogue meetings were therefore established between the project management and suppliers in order to define the specifications of the tender in 2007.⁴⁸⁵ In this way, the project management drew upon the expertise and innovative power of the private sector. The procurement process was therefore, in some way, conducted in an explorative manner. The approach has been widely recognised and adapted in later public procurement processes. Second, the Altinn software was based on open standards. This helped avoiding supplier lock-in and enabled open competition among enterprises for supplier contracts. The use of open standards can be seen as particularly important in the case of Altinn, since it constitutes a continuous innovation platform with many suppliers and users involved. The private sector, and especially their strong interest organisations, was also a driving force behind the decision to launch Altinn. The interest organisations played a key role by putting pressure on the agencies and the government to improve public reporting procedures which was regarded as complex and inefficient prior to Altinn.⁴⁸⁶ According to Pedersen (2012), the interest organisations had also been a driving force in the later development of Altinn by forwarding the needs and ideas of the private sector in terms of future functionality. The three above examples point to the government’s attention to the private sector as an important driver behind the Altinn innovation – both in the initiation phase and later development phase.
- The level of maturity of the information society was an important factor enabling the development of Altinn from 2003 and onwards. At the turn

⁴⁸⁴ PEDERSEN 2012.

⁴⁸⁵ Difi 2010.

⁴⁸⁶ PELLERUD 2006; PEDERSEN 2012.

of the millennium most citizens had access to the World Wide Web. Since 2003, open standards and the XML format, which enables distribution of data that also entail semantic information about the data, became increasingly more common. These advances in ICT technology were necessary preconditions for the development of the Altinn platform and its services. The deep involvement of the private sector would not have been a real perspective if the matured information society, mentioned above, had not been present by offering the necessary field of experimentation for collaborative agencies.

- The extensive collaboration between the three governmental agencies proved challenging sometimes. The main reason was the “silo” structure of the government which made necessary horizontal communication between the agencies difficult. Despite the challenges, the collaboration between the agencies is generally considered a success, especially from an international perspective. A contributing factor was that the three agencies had prior collaborative experience working together on similar projects (e.g. the SLN and Enhetregistreret projects). Recent Altinn projects, involving both private and public actors, have been surprisingly numerous and the climate for collaboration between the two sectors has improved with time. One explanation for this development is the collaborative experience accumulated through the long duration of the Altinn project, but more importantly the particularly strong trust relationship existing between the government and the private sector in Norway was an important success factor.
- Past evaluation studies of Altinn emphasised proactive and competent leadership as a major driver in the Altinn project. Representatives from Brønnøysund and Statistics Norway – the two smallest agencies in the project management board, highlighted the value of having the much larger and resourceful Norwegian Revenue Service as a “locomotive” in the planning and development phase. In particular, the leading role of the director of the Norwegian Revenue Service has been accentuated whose personal engagement, participation and prioritisation of the project was an

- indispensable success factor in the project. The importance of having top managers who are truly passionate and engaged in the project cannot be neglected when assessing the project. Since governmental projects in general are more hierarchal and top-down managed, it may be that proactive, passionate leaders are particularly important in public sector innovation.
- From an instrumental perspective, the anticipated cost savings of the solution were the key reason for initiating the project. Past analysis showed that Altinn II, during the course of 15 years, could provide total cost savings between EUR 1.2–2 billion.⁴⁸⁷ The anticipated cost savings were divided among the three involved actors in the Altinn system: enterprises, private citizens and governmental agencies. Past estimates indicated that enterprises spent approximately 7,300 FTEs every year on reporting to governmental agencies. By developing electronic reporting services through a common platform, quantitative estimations expected cost savings for the private sector in the area of EUR 620 million in a 15-year perspective. The cost savings for this group was primarily the result of reduced time spent on registration (re-use of information), reduced postage expenditures and not having to navigate complex governmental structures. The cost savings for private citizens were estimated to be the same as for enterprises. It is worth noticing that the most widely used service on Altinn is the opportunity for private citizens to hand in their tax return scheme electronically. For governmental agencies, Altinn was expected to provide even bigger cost savings: EUR 720 million in a 15-year perspective. Some of the main cost saving factors were reduced postage expenditures, less manual work and lower operation and maintenance costs of individual services and data systems.⁴⁸⁸ Altinn was also expected to improve general efficiency and quality of service by better enabling horizontal collaboration between the governmental agencies. In addition, Pedersen (2012) points out significant cost savings as a result of reducing redundancies (i.e. parallel investments

⁴⁸⁷ BYGSTAD – D'SILVA 2015.

⁴⁸⁸ BYGSTAD – D'SILVA 2015.

in similar solutions). During 2018 alone, Altinn resulted in savings of €1 billion for the Norwegian society.⁴⁸⁹

- Some data support the hypothesis that Altinn was initiated not solely because of its expected benefits, but also as a result of the government to improve their image. This hypothesis has its origins in the so-called “myth perspective” which states that public organisations are dependent on creating legitimacy for their existence.⁴⁹⁰ Support of this theory is found in a survey from 2005 in which respondents expressed that “improved image of the state among citizens” was the most important effect of Altinn.⁴⁹¹ Similarly, an evaluation study showed that Altinn significantly contributed to the Norwegian rise in terms of “e-governance”. The project was also in line with current trends and fashions at the time, such as Service Oriented Architecture (SoA), standardisation, open source, semantic technology, e-governance, cost-efficiency, interoperability, etc. Thus, it is reasonable to say that the public sector’s wish to increase and improve its legitimacy and image was to some degree an important driver behind the decision to launch Altinn.

After contemplating the main drivers behind Altinn, an even more productive inquiry would be to concentrate on the major barriers of the Altinn project. In this regard, the case study outlines the following hampering factors: (1) the myopic thinking; (2) supplier lock-in; (3) technical difficulties and relatively low public acceptance of failures.

- Public choice theory and political economy literature suggest that politicians and bureaucrats in essence are vote and budget maximising machines. As a result, politicians tend to be risk averse and prioritise short-term results while downgrading quality and long-term planning and financing. Ex-post evaluation studies indicate that these barriers to successful public sector

⁴⁸⁹ For more on the redesign see <https://doga.no/en/activities/design-and-architecture-in-norway/design-in-norway/interaction-design/re-design-of-altinn>.

⁴⁹⁰ CHRISTENSEN et al. 2009.

⁴⁹¹ PELLERUD 2006.

innovation were, and still are, present in the Altinn project. One of the first comprehensive evaluation studies conducted in 2011 by Difi (2012) concluded that efforts to keep time and development costs to a minimum have been prioritised at the expense of the quality of service. The report pointed to several weaknesses such as a lack of competent personnel and adequate preparations for managing and maintaining a complex system like the Altinn platform. Furthermore, a significant number of errors were discovered such as the lacking emergency plans and the poor quality of tests in all phases of the project by supporting the hypothesis that there had been an over focus on efficiency/short-term results at the expense of quality and long-term success.

- The consultancy company Accenture was responsible for both developing and operating Altinn and became a total supplier in the early years of the project. The project management of Altinn II recognised the danger of getting caught in a supplier lock-in and divided Accenture's contract into three new tender offers. As a result, new suppliers were involved in the project and a lock-in was avoided.⁴⁹²
- There are examples of serious errors as well in the lifetime of Altinn. Without being exhaustive, in 2011, the whole platform broke down due to overload when citizens were using the system to hand in their tax return schemes. In March 2012, Altinn experienced a major security breach when thousands of Norwegians automatically got logged in to the same user. The errors caused an outrage from the public, media and politicians alike, characterising the project as a scandal. In addition to the two instances, the platform and its growing number of services have functioned without major difficulties. Nevertheless, the strong reactions illustrated the high level of stability demanded by the public with respect to government services. Looking at past research, political scientists have observed that the media and opposition parties' interest in exposing public sector failures forms a powerful impediment to innovation.⁴⁹³ In light of this research, the

⁴⁹² PEDERSEN 2012.

⁴⁹³ See BORINS 2001; 2008.

strong criticism may cause governmental service providers on Altinn to be more cautious and risk averse, thereby hampering future innovation efforts.

In the shadow of Covid-19

With the advancement of Altinn resulting in a milieu in which Norwegians are dealing with the public sector through a mostly digitalised system, by the time when Covid-19 hit, the country was in a relatively good position to maintain a good public service level via extending digitalisation further. One of the prime examples of such further development is the establishment of the collaborative project called Public–Private Digital Cooperation (DSOP) among the Norwegian Tax Administration, the Brønnøysund Register Centre (which is a government agency for the management of a number of registers and digital governmental systems for exchanging information), the financial services industry and a certain number of agencies being responsible for other public services. This joint undertaking is to digitalise important societal processes in an effort to increase citizens' well-being whereby the trust infrastructure in Norway can be safeguarded over gloomier times (e.g. Covid-19). One of the results of that collaboration was the consent-based loan applications. With that new service, bank customers filing for loans no longer need to provide their tax returns and to pay slips to the bank, instead, it is enough to give digital consent through Altinn to allow the Tax Administration to share information on income, debts and net assets with the bank. This easier, faster and cheaper administrative action saves non-negligible time and effort for the banks and the customers alike. Another example for innovation during Covid-19 was related to the compensation scheme developed to curb the dramatic effects of the coronavirus. The scheme was to offer financial support to cover fixed costs in case of ailing companies suffering from income losses due to the pandemic. Based on the platform Altinn, for the close cooperation among the Norwegian Tax Administration, the Norwegian Digitalisation Agency, the Bits (the financial infrastructure company) and the financial services group DNB, it

took only three weeks to develop a new scheme based upon a shared solution of ID-porten⁴⁹⁴ and Altinn systems. Such undertaking proved to be essential in creating new digital systems for those losing their jobs.⁴⁹⁵

Box 6

*Shattered success – UK: National Program
for Information Technology (NPIT) in the NHS*

Of course, ICT-based service innovation can also fail. Such ‘past practice’ happened in the UK, which has been considered a relatively competitive (i.e. its IMD ranking position was 18th in 2021) and innovative country (its WIPO GII position was 3rd among the 39 economies of Europe). Moreover, the UK is sometimes characterised as a highly decentralised state and at the same time as a highly centralised system.⁴⁹⁶ Unsurprisingly, the UK has also been ranked in the top third (14th) with respect to the ability of the public sector to embed strong governance principles in building a long-term vision and establishing trust by serving their citizens, an indicator used in the WEF Global Competitiveness Report 2020.⁴⁹⁷

The case of the large-scale and uniquely enormous digitalisation program of the UK’s Health System can be to a large extent treated as a not so unambiguously performing public sector innovation since this giant initiative proved to be more time and expenditure consuming than one would have ever expected.

Objective: According to the initial vision, if a citizen being wherever in the UK faces for example an evolving and painful bulge on his groin after lifting heavy weights, the only thing to do is to take some tool out from the pocket that can display where the nearest doctor is and then the system chooses an appropriate time to come so that the patient will avoid any queuing. In addition to the medical examination, the doctor

⁴⁹⁴ ID-porten offers a common log-in system into the Norwegian public e-services.

⁴⁹⁵ For more digital services see www.regjeringen.no/contentassets/00493dd2foo347098f15274e9302d392/en-gb/pdfs/our-new-digital-world_web_may-2021.pdf.

⁴⁹⁶ A quite convincing and detailed analysis in this regard was written by DARDANELLI-WRIGHT 2021.

⁴⁹⁷ See SCHWAB-ZAHIDI 2020: 73.

has access to the patient's all available medical data (e.g. drug sensitivity, previous surgeries, etc.) that may be in favour of a more precise diagnosis. The doctor has the opportunity to compare his diagnosis with the recommendation of the computer system equipped with artificial intelligence, and then the concordant diagnosis is: inguinal hernia. Since all medical data would be centralised and digitalised, the real-time availability will offer a more efficient use, for example: nurses communicate with their specific devices in gauging for timely injections and drugs; the learning process of residents is also controlled by the system that signals when they commit a fault, etc. Against this background, the main purpose was to build a computer system which *inter alia* connects more than one hundred thousand doctors, nearly four hundred thousand nurses, fifty thousand other health professionals; additionally, it puts the storage and query of documents onto electronic basis, and what is more, this centralised system stays sentinel over each process happening in the medical system.

Detours in the success: The NPIT programme was launched in 2002 anticipating 10 years of operation up until its maturity and approximately £11.4bn was allocated for its purpose. NPIT aimed at streamlining the NHS significantly; however, its informatics maturity for such digitalisation lags behind expectations. Besides a series of problems, there was no single company which would have accepted to be charged with the whole modernisation programme. The complex character of the project forced the decision-makers to establish five regions in the country whereby the modernisation was based on the work and supervision of five local service providers (LSPs) (Accenture with 2 regions, Computer Science Corp.; BT and Fujitsu). These LSPs started to work on different aspects of the project (e.g. establishing the data centre, the booking system, and building up the Wide Area Network having the necessary bandwidth). Although there was some perceptible improvement in the waiting times up until 2006,⁴⁹⁸ huge delays have emerged from the side of suppliers leading to expenditure exceeding. The official statistics as well as other evaluator studies showed that the additional costs were not in line with the expected improvements (e.g. in 2000, the £11.4bn was considered, however, according to the National Audit Office, this sum exceeded this amount by 2006).

⁴⁹⁸ GUBB 2006.

One strand of critics emphasises that the basic concept of that gigantic project was misguided from the onset. There is no need for a centralised and country-wide system, since the relationship between the doctor and patient is built on trust and confidence. By the same token, most people are getting health services within a well-defined district, in a smaller geographical area; there is therefore no significant benefiting effect from having country-wide medical data with real time availability. The proponents are echoing that this type of innovation striving to reach a country-wide integrated system is a unique one; centralisation is needed because many people face malpractices during their health care treatments arising mainly due to the lack of information.

A potential conclusion is that the gargantuan tasks emerging during the establishment of a country-wide digitalised health system call for due diligence when it comes to the issue of public health sector innovation. The time and expenditure consuming character establishes a claim for a relatively stable public finance position which bears the delays, additional extra costs without endangering the already existing service quality.

All in all, the case of Norway illustrates that circumventing the lack of decentralisation is possible via (a critical level of decentralisation-based) digitalisation. Altinn constituted (and still constitutes) the most comprehensive governmental ICT project in the Norwegian history.⁴⁹⁹ Basically, it was a bottom-up initiative from subordinate public agencies with large estimated cost savings that has been pervaded by proactive leadership and close contact with the private sector. In contrast, the silo structure of the government and low public acceptance for errors are seen as central barriers. Most importantly, Altinn exemplifies how public information sharing platforms can trigger extensive public service innovations and collaboration among public agencies, and with the private sector. There is no legacy of Altinn since it is still a living and developing basis (e.g. with January 2022, new digital VAT returns were launched).

⁴⁹⁹ See more on the digital transformation of Norway in PARMIGGIANI–MIKALEF 2022: 11–18.

Engaging in the next production revolution – Hungary: Suppressed public sector due to unorthodoxy

The first part (Sub-section *Outcomes and basics*) can be considered a stocktake on the features emphasised along this book that are of crucial importance when it comes to better understanding the development and the potential of public sector innovation, such as general competitiveness and innovation performance, the performance of the public sector and the basic institutional architecture. The second part is dedicated to the issue of why engaging in the next production revolution in case of Hungary seems to be a cumbersome and not so straightforward undertaking. To this end, we are discussing the quelling forces identified in Section *Succession of crises*, in a synthesising way. The Hungarian case is also enigmatic because many experts and analysts would expect that a labour shortage-stricken environment paves the way for Industry 4.0 solutions to break into the country more quickly.⁵⁰⁰

Outcomes and basics:

Competitiveness, innovativeness, the performance and institutional architecture of the public sector

Whichever major competitiveness ranking is taken, Hungary has been long in the middle. Based on the results of the IMD World Competitiveness Yearbook 2021 (henceforth Yearbook), which ranks the economies according to their performances in three dimensions (economic performance, government efficiency, business efficiency and infrastructure), Hungary closed at the 42nd position out of the 64 countries ranked in the Yearbook, which has been a 5-places improvement compared to the 2020 result. Moreover, its position improved

⁵⁰⁰ On the share of companies complaining about the labour shortages in Hungary see <https://think.ing.com/snaps/hungary-labour-shortages-increase-jun21>. It is hardly by chance that labour shortage was identified as an innovation-hindering factor as well (see European Commission 2020c).

further relatively by the 2022 edition of the Yearbook which ranked Hungary as 39th out of 63 countries ranked. The relatively significant strengthening of overall competitiveness was mainly driven by the dimension of economic performance (from 46th in 2019 to 19th in 2020 and then to 8th in 2021), which was primarily fuelled by international capital investment (from the place of 40th in 2020 to 20th in 2021) and the advancement in employment (from 20th of 2020 to 13th in 2021) (while the growth performance of the domestic economy slipped from the 18th to the 40th ranking position). In terms of government efficiency, the country has improved by seven places (Hungary ranks 1st out of 64 in terms of corporate income tax, but Hungary is also ranked 6th in terms of investment incentives), which is mainly due to the more favourable tax policy (from 45th to 33th ranking position) which also has a beneficial effect on the overall assessment of business regulation (from 43rd to 39th). Of course, the rate of VAT in Hungary is a world record high. It is also a matter of concern that the socio-economic system and the functioning of the state interacting with it have produced chronic shortcomings in many areas, such as the regulation of competitiveness (54th), the social security burden on employees (55th), but also the tendency and practice of protectionism (52nd) and bribery and corruption (50th). As a result, we should not be surprised that there has been no spectacular progress in the business efficiency dimension for years, either (e.g. it ranked 55th in 2013, 56th in 2014, a place where it returned to again by 2021). Central to the latter is the lack of available and ready-to-fight skilled labour (63rd), the lack of competent senior managers (62nd), the high rate of brain drain (60th) and the negative social attitude towards globalisation (63rd). At the same time, the identifiable improvement in business efficiency is mainly given by an improving employment trend (from 61st to 54th), but also by the increased access to finance strengthening competitiveness (from 49th to 47th).⁵⁰¹

With respect to innovativeness, Hungary was ranked 34th among the 132 economies featured in the Global Innovation Index 2021 prepared and

⁵⁰¹ To the latter, the World Economic Forum's Global Competitiveness Report 2020 emphasised that the relatively low level of domestic credit to private sector is a serious weakness of the Hungarian competitiveness.

published by the WIPO.⁵⁰² With a view to other European countries, Hungary was 22nd among the 39 economies in Europe. Hungary performs best in knowledge and technology outputs and its weakest performance is in market sophistication calling attention to the fact that Hungary has been on an FDI-driven development path since the regime change of the 1990s.⁵⁰³

As for the performance of the public sector, there has been a great deal of shortcomings in Hungary with regard to the trust-enhancing governance practice. Among the 37 countries ranked in the World Economic Forum's Global Competitiveness Ranking 2020, Hungary has been 32nd in terms of ensuring public institutions for being embedded by strong governance principles building on a long-term vision and establishing trust by serving their citizens via high-quality services.⁵⁰⁴ Even though one can acknowledge that since the world economy and even the national socio-economic innovation ecosystem has become ever more complex, it requires more and more public sector functions potentially requesting more employment to do complex jobs, it is still intriguing that despite the ongoing digitalisation and the challenges pressing efficiency improvement via employment rationalisations, the Hungarian public sector has been resistant to such forces. The share of government employment within the total employment of Hungary has been relatively stable since 2010 (in 2010, the share was more than 20%, while it has slightly dropped to 18–19% by 2019, for comparison, these values are almost twice of the corresponding German values, but they are even higher than that of the other Visegrád countries such as the Czech Republic, Poland and Slovakia).⁵⁰⁵

As far as the underlying institutional architecture is concerned, Hungary is a unitary state with a relatively less decentralised institutional architecture which has become even more centralised over the last decade (Figure 11–12). The sub-national government consists of counties and municipalities and

⁵⁰² See www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/hu.pdf.

⁵⁰³ See ÉLTETŐ 2022.

⁵⁰⁴ See SCHWAB–ZAHIDI 2020: 73.

⁵⁰⁵ See https://ec.europa.eu/eurostat/cache/digpub/european_economy/bloc-4d.html?lang=en.

there are therefore at least 3,155 local administrative units. According to the Decentralisation Index, prepared by the European Committee of the Regions, the country's overall decentralisation index score is 1.4, which means that Hungary is the 21st least decentralised country among the 27 EU Member States. It is coupled with a relatively low financial/fiscal autonomy of the lower tiers of government (the decentralisation index pertaining to the expenditure rate is 23% meaning that the country was ranked as 17th out of the 27 countries ranked. That rate is considered low decentralisation (i.e. when the relative share of overall sub-national expenditure compared to total government expenditure is 20–26%). It can also be stated that there is a mismatch between the functional (competences delegated) and the autonomy of lower tiers of governance. In this respect, i.e. in terms of administrative decentralisation Hungary has been at the 20th place out of 27. Similarly, the country has also been a politically least decentralised economy with its 22nd position.⁵⁰⁶ In addition, as we documented earlier, the configuration of institutions and governance shows the combination of relatively low institutional quality and less good governance (see Figure 9).

Engaging in the next production revolution

As for *q forces No. 1–2–3*, in 2015, the revolt of the Hungarian taxi drivers against the platform Uber neatly illustrated the increasing tensions due to new digital technologies (platforms). In addition, in early 2017, the Hungarian Hotel and Restaurant Association expressed its concerns about the ever-more increasing use of Airbnb by providing a potential roadmap toward whitening out Airbnb-based businesses with the help of the government together with the National Tax and Customs Administration. In addition, and despite the rising awareness over the crucial importance of cybersecurity (e.g. the new national cybersecurity strategy was accepted in January 2019), Hungary

⁵⁰⁶ See European Committee of the Regions s. a.

could not avoid serious cyberattacks against public institutions (e.g. against hospitals during 2016 via ransoms like Locky and CryptoWall 4), raising concerns over the fragility of public services.

In addition, for a relatively long time, the strictness of employment protection in Hungary has been below that of the OECD average.⁵⁰⁷ Still, with the approval of the newest amendment of the Labour Act by the Hungarian Parliament in a rather unprecedented and chaotic way in December 2018 (i.e. voting for the so-called Slavery Act [Overtime Act], which has become effective as of 1 January 2019, meaning the possibility to raise overtime hours from 250/year to 400/year on a voluntary basis, overriding even the collective agreements with trade unions), the Hungarian labour market regulation has become *seemingly* more flexible. As we discussed earlier, pushing a more flexible labour market is not a panacea per se, potentially injecting additional uncertainties into the socio-economic innovation ecosystem, especially in case of Hungary.⁵⁰⁸ Bearing in mind the constellation of (1) intensifying shortage of (skilled) labour via brain drain⁵⁰⁹ interspersed logically with (2) the increasing dependency of households on remittances coming from expatriated workers,⁵¹⁰ accompanied with (3) ever-more heightening inequalities and impoverishment,⁵¹¹ recent changes in labour market legislation can be seen

⁵⁰⁷ For instance, for the year 2013, the Hungarian value was 2.07, while the OECD average was 2.28 (see OECD.Stats).

⁵⁰⁸ See KOVÁCS 2016: 231–250.

⁵⁰⁹ Hungary was considered a net exporter of talents according to IMD World Talent Ranking 2017. It performed much worse than its Central European peers, the so-called Visegrád group (the Czech Republic, Poland and Slovakia).

⁵¹⁰ The personal remittances received (in % of GDP) have been by far the greatest in Hungary compared to other Visegrád countries. That volume accounted for 2% of the GDP in 2010, while it had skyrocketed over 3.3% by 2017 due to a significant emigration of people. According to the Hungarian Central Statistical Office, almost 175,000 people have left Hungary since 2010.

⁵¹¹ In 2016, among the Visegrád group, only the Hungarian rate of risk of poverty or social exclusion (26.3%) exceeded that of the European Union average (23.5%). According to the OECD, income and wealth inequalities in Hungary tend to be large. Moreover, now, it takes 7 generations for a child born in a poor family to get into the middle class. Unsurprisingly, Hungary suffers from a comparatively surpassing share of well-being deprivations,

as a faux pas rather than a promising step toward bettering the productivity outlooks of Hungary.⁵¹² Although these altogether may form a coercive force toward a non-inclusive Industry 4.0 development strategy of Hungary, the positive impetus of such an orientation on productivity can be questioned on many grounds (e.g. supporting companies to purchase the newest Industry 4.0-related technologies would be nothing more than giving them expensive toys without professional knowledge).

Importantly, there might be an ancillary phenomenon acting as a quelling force against the healthy and fast diffusion of Industry 4.0 with spectacular productivity-boosting impact, namely that politics is not necessarily to pursue reality-oriented approaches but post-factualism. It may seem that there has been an increasing demand for a post-factual-oriented, opinion-driven governance (doxocracy), as well as social order. In our view, the main problem is not with political populism and the tools used for manipulation; the main challenge is rather that it does not seem to matter to the society any longer whether politics or the government seek factualism or not (e.g. think of the misleading initial promises of the UK Independence Party arguing for Brexit). The famous French sociologist–philosopher Jean Baudrillard coined the term *simulacra* to capture the triumph of delusiveness over (often ugly) reality.⁵¹³ Undoubtedly, *simulacra* has already had a systemic effect. For instance, there would not have been excessive indebtedness of nation states with severe negative repercussions in various domains if voters had punished governments choosing fiscal alcoholism at time of elections; income and wealth inequalities would have been much lower if voters had not supported governments deciding to diminish progressivity from the

with 12 out of 18 deprivation indicators ranked in the bottom (most deprived) third of OECD countries.

⁵¹² The Hungarian trajectory in terms of labour productivity (measured in GDP per hour worked, 2010 = 100) has been by far the worst amongst the Visegrád countries since 2010 (see OECD Productivity Statistics: GDP per capita and productivity growth).

⁵¹³ See BAUDRILLARD 1981: 164. For example, at the end of the 2016 US presidential election campaign, the number of fake news posts on Facebook outnumbered that of the real ones with respect to the election (see ALLCOTT–GENTZKOW 2017: 211–236).

tax system; and finally, if voters had not chosen some sort of conscious ignorance, then those turning away from governments imposing austerity measures would not have preferred populist and nationalist streams but rather those emphasising the necessity of sacrifice in an effort to implement developmental missions. In light of these considerations, after 2010, the key characteristic of the Hungarian economic governance has been the establishment of a Max Weberian plebiscitary leadership democracy being pervaded by a good deal of simulacrum (post-factual governance with extensive nationalism and macroeconomic populism) that can serve as a source of suppression over the innovative potential of the public sector itself.⁵¹⁴ The major components of such system can be juxtaposed as follows: (1) A series of governmental measures in autocratic fashion increasing uncertainty and critical instability in the Hungarian innovation ecosystem on the one hand, while cementing the leading group to be immutable and not voted out of office on the other (e.g. formal institutionalism without real impact in case of seemingly independent Fiscal Council);⁵¹⁵ (2) post-factual-like

⁵¹⁴ A form of governance which perpetually refers to the people's will, but its original intention is to transform that will to its own purposes. Such a system necessitates and is built on a strong charismatic leader alone representing the political elite, which shapes rather than follows the public will (see URBINATI 2014: 320).

⁵¹⁵ For in-depth analyses on the autocratic fashion see KORNAI 2015; KORNAI 2017. The main measures were as follows: Eradicating the original form of Hungary's Fiscal Council; amending the constitution and adapting the authority of the Constitutional Court to the planned laws and regulations in an ad hoc fashion; introducing special taxes on the energy, telecommunications, retail and banking industries that discriminate against foreign companies; rejecting any commitment to preserving and strengthening the sanctity of private property by nationalising private pension funds; introducing flat income taxes, which are more beneficial for high earners; reducing the autonomy of higher education and cutting its budget by HUF 84 billion between 2010 and 2013; strict regulations on the media; and establishing and adopting Hungary's new Fundamental Law, which inter alia constrains the power of the Constitutional Court and limits the room for manoeuvre of future governments without a two-thirds majority. In 2014, the Hungarian Prime Minister explicitly expressed the government's ambition to create an 'illiberal democracy'. In addition, independent media suffered from serious attacks (e.g. as Freedom House documented, Hungary's largest independent daily, *Népszabadság*, which had uncovered a string of scandals involving the ruling

considerations in economic governance spanning from a fight for economic freedom through ill-based communications of governmental achievements. As far as the economic freedom war⁵¹⁶ is concerned, it was with a scent of a growing negative attitude toward globalisation, which cannot be a plausible and sustainable development-congruent strategy simply because of the hard-won lesson of development economics stating that globalisation is irreversible and no one can stay out of it if a real development is considered a value by the government (i.e. sharing international knowledge to innovation dynamism). Moreover, Hungary relies on the EU asymmetrically, since 97% of all public investment in the country is financed mostly by the European Union; thus, turning against Brussels is based on nothing but post-factual false beliefs. In this respect, the new orientation in foreign policy (the so-called Opening to East strategy) has not led to the desired outcomes so far.⁵¹⁷

party, was unexpectedly suspended in October 2016 (see <https://freedomhouse.org/report/freedom-press/2017/hungary>). An increasing share of the Hungarian Public Finance has been spent on communication in an effort mostly to rebel against Brussels, to communicate how dangerous the migration crisis is, etc. Even in 2018, approximately EUR 150 million was spent on communication by the government. In 2018, beyond the approval of the amendments to the Labour law (Slavery Act mentioned earlier), the Hungarian Parliament also passed a law on establishing a new system of administrative courts under the firm control of the Minister of Justice, meaning that a separate court system will be responsible for decisions in which Hungarian authorities are affected or involved by endangering judicial independence. Attacking renowned higher education institutions together with the Hungarian Academy of Sciences by removing its financial autonomy contributed to a series of demonstrations as well.

⁵¹⁶ The term *fight for economic freedom* was repeatedly used in governmental speeches (e.g. it was used in a speech in the Hungarian Parliament on 21 November 2011 delivered by the Minister of National Economy with respect to the IMF credit agreement).

⁵¹⁷ See KOZÁR–NESZMÉLYI 2017: 295–309.

*Box 7**Reality check – Survey results on Industry 4.0*

The Hungarian Industry 4.0 landscape is, therefore, not without the quelling forces elaborated earlier. By filtering out the major insights of recent surveys on the perspective of Industry 4.0 in Hungary, the followings emerge: (1) To date, 60% of the respondent manufacturing companies in Hungary do not apply any smart manufacturing systems or solutions; (2) those companies are in great need of information and knowledge transfers as well as concrete solutions regarding Industry 4.0 development (44% of the respondents pinpointed both the lack of information and knowledge and the high costs of implementation as primary hurdles to progress in that direction);⁵¹⁸ (3) 90% of the respondent firms operate with a soupçon of R&D expenditure base within the range of 0.1–3%; (4) while Hungarian respondents reported one of the highest levels of supply production information integration and that of the customer production information integration compared to those in other regions analysed (Upper Austria, Lower Bavaria, Veneto, Emilia Romagna and Lower Silesia), this perception has not really been mirrored in terms of outcomes (i.e. Hungary is considered a medium performer in production and process innovations);⁵¹⁹ (5) most Hungarian manufacturing firms are predominantly expecting benefits from adopting Industry 4.0 solutions in terms of significant cost reductions as well as time savings to reach out to markets.⁵²⁰ Thus, neither productivity improvement

⁵¹⁸ See the survey within the project Smart Factory Hub involving 280 manufacturing firms from 10 countries (www.interreg-danube.eu/approved-projects/smart-factory-hub). Furthermore, a recent survey, a joint undertaking commissioned by the Industry 4.0 National Technology Platform with the aim of assessing the Industry 4.0 readiness as well as awareness of domestic manufacturing companies revealed that not only large, but also small and medium-sized (SMEs) Hungarian companies are mostly lacking a systemic strategy for Industry 4.0 (the share of those not having strategy at all was 66% in case of large companies, while it was 36% in case of SMEs), see HAIDEGGER–PANITI 2016.

⁵¹⁹ OECD (2018: 124) pointed out that except the mainly foreign-owned export sector, the domestic SME sector has low growth, productivity and propensity to innovate.

⁵²⁰ See the survey within the project InnoPeer AVM involving 163 manufacturing companies from 5 countries (30 from Hungary, see www.interreg-central.eu/Content.Node/InnoPeerAVM.html).

nor large-scale job creation are considered clear goals for them. Keeping in mind the IFs with respect to Hungary, it is not surprising that the lack of skilled labour and adequate training as well as the widely perceptible digital illiteracy were repeatedly reported as major obstacles to ground Industry 4.0 development.⁵²¹ Consequently, the current state of affairs of manufacturing firms calls, at least, for a more complex development and training programme.

The recognition of the inhibiting factors mentioned brought to life some policy reactions; one of the most promising programmes is the so-called HGC Academy,⁵²² concentrating exclusively on manufacturing firms showing high growth potential (HGC as high growth companies in terms of job creation and productivity).⁵²³ The HGC Academy offers a range of services (seeking international best practices, organising workshops across Hungary for firms motivated and competent enough to take part in the project,⁵²⁴ mentoring, practical trainings and education for the selected 40 companies, etc.) and its uniqueness also comes from the fact that it considers launching the so-called Prototyping Innovation Centre for selected firms. The Centre will be equipped with all the necessary Industry 4.0-related technologies and non-technological solutions to showcase and to be used for prototyping. Thus, it differs from other well-known concepts (e.g. technology transfer offices, innovation (and business) incubators, (innovation) clusters, innovation/technology parks and

⁵²¹ The Digital Economy and Society Index, developed by the European Commission, also suggests that Hungary belongs to the bottom third in terms of maturity among European countries. Slovakia and the Czech Republic outdid the Hungarian performance (see <https://ec.europa.eu/digital-single-market/en/desi>). If one looks at IMD World Digital Competitiveness Ranking 2018, Hungary seems to have been deteriorating (while Hungary was ranked at the place of 36th in 2014 out of 63 countries, it then fell to the 46th position in 2018).

⁵²² See <https://hgc.ifka.hu>.

⁵²³ The manufacturing companies involved meet the following criteria: A minimum of EUR 300,000 annual turnover; employment over 10 persons; operation in convergence regions (regions except Central Hungary); preferred domestic ownership; constant growth in recent years either in terms of employment or profit.

⁵²⁴ The number of such companies is 153, employing more than 10,000 workers in Hungary. 60% of those are with less than 20% export in their operation, 9% of those have exports above 80%, only 8% of those companies are familiar with digitalisation of manufacturing processes, and only 2% of them are experienced in Big Data analytics.

various innovation agencies) since it is sought to help manufacturing firms in real developments at technological level. It will not solely serve as a model factory, but a place where prospective Industry 4.0-based production and economic processes can be modelled, tested, and where new, innovative products can be incorporated into production processes.

Still, the shortly presented quelling forces in Hungary call for a reality-oriented economic governance in reinvigorating the dynamism of the innovation ecosystem in a complex way (e.g. a governance cultivating ecosystem which is to breed, develop, attract and preserve talents as a critical base of any kind of Industry 4.0 transformation by eliminating uncertainties, etc.).⁵²⁵ Without a significant turn in economic governance, it is quite likely that a strictly industrial development-oriented governance would only increase the criticality in the system without generating real and sustained socio-economic values.

With respect to communication, the Hungarian government was triumphantly publishing seemingly positive messages in the state-owned media (e.g. the historically low level of inflation which, in reality⁵²⁶ was actually

⁵²⁵ We must note that the role of education is crucial, not only in Hungary, but from the perspective of innovation dynamism throughout Europe, as well. Among other things, it seems to be a regrettable fact that, although the number of people starting their higher (university) studies has increased in recent decades, the goal of social inclusivity and innovative dynamism, to meaningfully involve talented young people with a disadvantaged social background, was not sufficiently enforced. Ichino et al. (2022) revisited the evidence on the relationship between the expansion of the education system (especially the expanding access to universities) and promoting talents/students with higher intelligence. The authors found that expanding university access has been accompanied with declining average intelligence of graduates as well as deteriorating wage premium across cohorts. Perversely, those who benefited the most from the growing accessibility of universities came primarily from advantaged socio-economic backgrounds and, what is more, were equipped predominantly with less intelligence (see ICHINO et al. 2022).

⁵²⁶ By June 2022, Hungary, together with other European countries, started to re-experience surpassing levels of inflation (double-digit rates, e.g. 10.7% in May 2022), similar to the values experienced after the regime change and the transformational crisis of the early 1990s in the Central and Eastern European post-socialist countries.

driven by frozen or delayed real investments; growing employment, which was mainly due to the increased public employment and compulsory worker activity;⁵²⁷ communicated the utility price cuts as a real development in the interest of Hungarians, while this step actually led to prices being above the world market prices for energy carriers).

All in all, the full panoply of effects of Industry 4.0 on productivity is not as obvious as some analysts and practitioners think. Estimating that effect is like fishing in the lake of uncertainty simply because there are many quelling forces inbuilt into the socio-economic complex system (like in the Hungarian system); what is more, Industry 4.0 can also be considered a potential source of criticality. Engaging in its fast and broad diffusion by public support is not without serious consequences, especially when innovation in the public sector is also suffering from suppression due to uncertainty-triggering governance approaches.

Migration crisis – Canada: Life-long integrative efforts

Due to a complex set of issues, ranging from climate change through various conflicts to the willingness and aspiration of many to go abroad etc., migration to the developed world (OECD) has become voluminous over the last decades. Just for instance, the year 2015 for Europe was marked by a serious migration as well as refugee crisis, the fundamental trigger of which was the flee of people from Syria, that was the time when approximately 1.3 million people arrived to the old continent to apply for asylum. There has been no example of such an immigrant mass since World War II. True, the Covid-19 pandemic made the process heavily disrupted and intermittent (permanent migration to the OECD countries fell by 30% during 2020 by representing

⁵²⁷ These fields absorbed almost 80,000 people in the period 2008–2013. Another telling fact was that, in 2014, the government did not allocate financial resources for the Central Statistical Office to carry out researches on poverty or socio-economic inequality.

one of the lowest values for decades with its 3.7 million immigrants). Since inclusive growth and development serves as a healthy basis for any further real socio-economic and technological development,⁵²⁸ the issue of integrating migrants and refugees in innovative ways without endangering the opportunities for native-born citizens (i.e. especially in the shadow of automation, robotisation, Industry 4.0, etc.) has become a hot potato of today's policy discussions.⁵²⁹ This section is to outline the case of Canada which has been focusing on inclusive growth via innovatively promoting active ageing embracing also multigenerational immigrants. The case study is to emphasise the multifaceted character of public sector innovation. It offers a possibility to discuss the appropriate connections between the public sector, civil sector and volunteers; it echoes the fact that retired people, let them be native-born or multigenerational immigrants, are the first source of volunteer workers that are of particular importance in tackling demographic challenge and inclusiveness. The main message of the Canadian case is that active ageing should be supported both by top-down and bottom-up initiatives. Moreover, by building on the large-scale voluntary sector, public policy development can be significantly triggered in the interest of the Canadian society.

Outcomes and basics:

Competitiveness, innovativeness, the performance and institutional architecture of the public sector

In terms of international competitiveness, Canada has been in the top third of the IMD World Competitiveness Yearbooks' ranking. Out of 63 countries ranked, Canada was 10th in 2018, it then improved to the position of 8th, while

⁵²⁸ Not to mention the fact that immigrants tend to pay more taxes and contributions to the social systems than they receive back. This is why their integration fosters their economic contributions as well (see OECD 2021g).

⁵²⁹ Interestingly, the narrative of "immigrants steal your jobs" seems to be rather poor when it comes to AI-related activities (see HANSON 2022: 180–231).

it has recently lost some élan by dropping back to the place of 14th both in 2021 and 2022.⁵³⁰ Among the major challenges, the Yearbook mentioned among other things that the milieu of the Canadian socio-economic innovation ecosystem has become pervaded by low investment capital, whereby innovation and retention of scale-up companies are more than beset with difficulties (not to mention the issues of soaring inflation, housing market shortcomings for many and the labour market imbalances especially in service sectors). If one takes a mere glimpse on the pillars of competitiveness, it can be said that although there is room for significant improvement, Canada has been performing in a broadly balanced way in the four pillars. There are strengths in every pillar: in economic performance, the international investment (8th) surpasses; in case of business efficiency, institutional framework (15th) provides more stable basis for competitiveness; in case of business efficiency, finance (12th) and management practices (10th) are showing superior performance; while in case of infrastructure, basic infrastructure (7th) and education (7th) constitute relative advantages for the Canadian society. Since competitiveness and innovativeness go hand in hand, it is not surprising that Canada was ranked 16th among the 132 economies featured in the GII 2021.⁵³¹ With a view to high income countries, Canada can be ranked as 15th among the 51 high-income group economies. As matter stand, the Canadian public sector seem to be able to mirror the strong governance principles as Canada was ranked as 9th out of 37 countries in the WEF's Global Competitiveness Report 2020 in terms of ensuring public institutions embed strong governance principles building a long-term vision and establishing trust by serving their citizens.⁵³² As far as decentralisation is concerned, Canada has been a constitutionally decentralised federal system. Thus, the Canadian provinces (lower tiers of governance) bear the stamp of self-governance (i.e. tax autonomy, extensive resources, etc.) enjoying full policy autonomy and also authority over immigration, citizenship and residency (that is also reflected

⁵³⁰ See www.imd.org/globalassets/wcc/docs/wco/pdfs/countries-landing-page/ca.pdf.

⁵³¹ See www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/ca.pdf.

⁵³² See SCHWAB-ZAHIDI 2020: 73.

in decentralised public service provisions let them be education, healthcare and other social services, etc.).⁵³³

Canada: Life-long integrative efforts

Sociologists have been calling the attention of the Canadian economic governance and the general public as well to the fact that the seniors' population within the society is expected to rise by 68% by 2037 (i.e. the 75+ age group is doubling, whereby the number of people aged between 65–74 together with those being above 75 will be almost 10.5 million by 2037, which corresponds to 27% of the current population). And the pace of ageing is fastening (e.g. in the period 2016–2021, the number of Canadians aged 65 and older grew by 18.3% to seven million, which was the second-largest increase in 75 years). According to the 2021 census, the number of people aged 85 or above has more than doubled since 2001.⁵³⁴ What is more, the share of elderly among multigenerational immigrants has also been increasing.⁵³⁵ Since the growing share of elderly can behave as a serious drag on economic growth and development, keeping and, if possible, increasing their meaningful activism in the society are of immense importance. According to C.A.R.P., which is the largest advocacy association for older Canadians,⁵³⁶ by 2016, for the first time in the history of Canada, there were more people over 65 than under 14. Canada illustrates that achieving active ageing is a futile undertaking unless central as well as local levels of governance applies a more holistic way.

⁵³³ Moreover, such decentralised structure has become ever-more decentralised in the period 1995 and 2016 (see OECD 2019). Let us note that Canada manifests as a rather asymmetric decentralisation (federal state) as compared to Austria, Australia or Switzerland. Québec has a way higher influential power on the Canadian federal system than Geneva plays in case of the Swiss federalism or Sydney means for Australia (see more in MILNE 2005; BIRD–VAILLANCOURT 2007: 259–289).

⁵³⁴ See Statistics Canada.

⁵³⁵ SALMA et al. 2017; Government of Canada 2022a.

⁵³⁶ See www.carp.ca/about#about.

Active ageing should be built not only on the recognition that the age *per se* does not inform much about the competences of the elderly, but also on the consideration that lots of accompanying conditions have to be addressed at the same time to maintain an age friendly community. In Canada, thanks to the relatively surpassing share of the volunteer sector, and the network maintained between governments, local level of governance and voluntary sector organisations (VSOs), there is an increasing body of evidence that retired people become the first source of people involved in that way. Since the involvement of VSOs shapes the public policy development, building on voluntary sector – in which the share of retired, senior people has been increasing over decades – is of crucial importance. Retired people and even elders of multigenerational immigrants can live an active life. For instance, they can even be trained for energy-saving-related consultancy which could also be conducive in transforming the society into a more environmental friendly one; teaching older immigrants active ageing can be facilitated by immigrant volunteers, as well;⁵³⁷ exercise classes to promote physical fitness and overall health are able to connect immigrant seniors and youth to socialise, share cultures and safeguard their health.⁵³⁸

Drivers of life-long efforts:

Demography and institutional setting encouraging collaboration

First and foremost, the demographic trajectory reflects that the volume of seniors (those of being over 65 years) has been skyrocketing throughout Canada. This in turn offers human supplies for the voluntary sector as well.

⁵³⁷ In case of Canada and in particular, in Toronto, immigrant volunteers participated in active ageing by teaching English. Moreover, they also promoted active ageing among their learners (see ZHANG et al. 2021: 439–454). The volunteers' bottom-up approach, with its innovative self-designed curriculum and learner-centred pedagogy, seemed to meet the practical needs of their learners, while promoting their active ageing in key areas of health, security, integration and participation.

⁵³⁸ This happens in Vancouver's Chinatown (see JACOBSON 2022).

The mass of people who has to work something after retirement is growing and their interest in meaningful and influential works is also increasing (e.g. to shape public policy development and learning by their guidance and expertise in particular fields).⁵³⁹ Second of all, the federal institutional architecture also lends support for such development – i.e. to be the voluntary sector engaged in the development of public policy as well – since it has an inherent incentive for a more intensified willingness to cooperate due to the fact that local governments are closer to the private/business/third sectors than in the case of a highly centralised country (i.e. it also means more transparent and visible local politics with less ambiguity⁵⁴⁰).

Apart from this, there are organisations working in the background dedicated to stimulating the collaboration among relevant actors like VSOs and governments/municipalities. For instance, the Max Bell Foundation's Public Policy Training Institute (PPTI) which offers an excellent learning opportunity between January and June of each year for staff or volunteers within Canadian charities (non-profit organisations) whose organisations want to impact the public policy process (let them be at municipal, provincial or federal levels). By completing the program, participants have an enhanced level of knowledge and skills that are required to develop, inform and monitor public policy on issues relevant to their organisations. The programme might be seen as a hotbed for more integrative policies with respect to immigrants since it can provide mentoring and bridge training as well (i.e. tailor-made trainings for immigrants to make up their backlog to fare well in the Canadian society).⁵⁴¹

⁵³⁹ Many Canadian seniors stay active in their communities by volunteering; nearly one quarter (23%) of seniors participated in volunteer activities in 1997 (see ROBB et al. 1997). A study prepared by Revera found that Canadian seniors tend to volunteer more time and money as compared to any other demographic group (i.e. seniors' volunteer efforts have resulted in approximately \$11 billion in economic value in Canada), see MILLAR 2019.

⁵⁴⁰ See FOUROT 2021: 75–95.

⁵⁴¹ The prototype of such practice can be found in Ontario, where the so-called Ontario Bridge Training Program has been designed to better integrate internationally trained immigrants into the Canadian labour market particularly in positions they already have some qualifications and skills or at least jobs requiring almost the same educational

Immigrants can then serve as sources of or at least contributors to innovation dynamism in general. A survey in 2010 among Canadian firms and employees revealed that building on ethnically diverse workgroups within organisations generate more effective brainstorming and innovation.⁵⁴²

By concentrating on a more vigorous involvement of the third sector (VSOs), governments seize the opportunity to refine and elaborate further their policy priorities based on valuable feedbacks and suggestions coming from VSOs. Of course, public policy contributions from charities/VSOs are primarily focusing on provincial and/or municipal levels of governance rather than on the federal system-wide governance. Moreover, a five-year long initiative, called “The Voluntary Sector Initiative”, was set up in the spirit of fostering good relationships between the federal government and the voluntary sector as a whole. The initiative was introduced in 2000 and its financial backing amounted to more than \$94 million for five years. One of the most essential objectives of this initiative was to strengthen the capacity of the voluntary sector by facilitating their collective operations with the federal government. With 2005, that initiative was officially closed, however, it paved the way to establish the *Accord Between the Government of Canada*

background (see www.tcu.gov.on.ca/eng/eopg/programs/obtp.html). In addition, and in connection to refugees, the Canadian system has been offering the so-called Privately Sponsored Refugees programme, which helps refugees to become employed and to get earnings. The programme resulted in higher employment rates and earnings even 15 years after the arrival of refugees (see KAIDA et al. 2020: 1687–1708).

⁵⁴² See DOWNIE 2010: Chapter 3. Canada has relatively long recognised that some diversification of workplaces, let them be in the private or public sectors, is instructive in the sense it increases inclusiveness and is also able to better ground the emergence of innovative ideas. To this end, in 2021, the Canadian Government launched the programme 50–30 Challenge with the fundamental goal of challenging the Canadian organisations to increase the representation and inclusion of diverse groups within their workplace, while highlighting the benefits of giving all Canadians a seat at the table. It is also open for diversifying by hiring immigrants and refugees. The number of participating organisations in that bottom-up, co-created and nationally recognised initiative has reached 1,573 by 2022. Along this channel, a more diverse workplace (e.g. higher female representation in decision-making) can obtain a more climate change aware mindset (see ALTUNBAŞ et al. 2022).

and the Voluntary Sector and *A Code of Good Practice on Funding* – as a basis for continuing the enhancement of volunteering in the future by involving elderly in a more pro-active way.⁵⁴³

There were initiatives to maintain the commitment of the voluntary sector, which is getting more and more pervaded by seniors, to be engaged in true and genuine policy dialogue in favour of all Canadians. The Voluntary Sector Initiative contributed to the process which, along a more horizontal management approach, could gain traction. It is a necessity when complex challenges are ahead of us.

Box 8

Social-technological innovations for refugees

After the intensified exodus of refugees from Syria after 2015 due to the conflict which is dating back to 2011, the Canadian Government continued its unique private sponsorship of refugees programme started at the end of the 1970s (i.e. it encompasses both financial and settlement responsibilities such as providing the cost of food, rent and household utilities and other day-to-day living expenses, providing clothing, furniture and other household goods, locating interpreters, selecting a family physician and dentist, assisting with applying for provincial health care coverage, enrolling children in school and adults in language training, introducing newcomers to people with similar personal interests, providing orientation with regard to everyday activities such as banking services, transportation and helping in the search for employment).⁵⁴⁴ In a matter of months, Canada's novel private refugee sponsorship programme being accompanied with public sector sponsorship of refugees faced more than 40,000 refugees inflowing to Canada by forcing new processes and solutions to be innovated and designed. In response to the Syrian refugee crisis, a group of citizens unleashed the so-called Lifeline Syria with the goal of privately sponsoring 1,000 refugees in Toronto. A collaborative effort was made since the Ryerson University (RU) did also introduce an initiative – the

⁵⁴³ See Government of Canada 2022a.

⁵⁴⁴ See www.canada.ca/en/immigration-refugees-citizenship/corporate/publications-manuals/guide-private-sponsorship-refugees-program/section-2.html.

RU Lifeline Syria Challenge – aiming at supporting the evolvement of at least ten sponsorship groups in its own community area to raise \$270,000 to sponsor 10 refugee families. The last one had features sounding familiar for those that are equipped with the idea of pursuing a sharing economy. In pursuit of better integrating refugees, the programme (1) leveraged technology to volunteers since crowdsourcing donations for sponsorship teams seemed to be an instructive way forward (there was a targeted digital communication together with a dedicated website for the sake of volunteers, sponsors and others); (2) was open for student volunteers (from the RU) and private sector organisations, thereby the growing need for human capital could be met via sharing the tasks among them more equally (financial aspects and the settlement side); (3) a sponsor-centred programme was followed. In the relatively highly decentralised system of Canada, that model used in Toronto was then copied, adopted and modified via its diffusion. Three months after the launch of the sponsorship programme, it grew to sponsor 75 families, or 300 newcomers.⁵⁴⁵ Satellite sponsorship teams emerged sporadically on campuses and in other Canadian cities.

Apart from these efforts, there have been a number of ICT-based innovative services available for refugees in Canada. For instance, under the domain of education, the so-called Rumie Initiative can be mentioned, which is a non-profit organisation that has been distributing tablets with pre-loaded educational tools for refugees around the world. The educational tools, such as textbooks, videos and games, can be used offline by refugee students. In the field of incentivising the refugees' employability, the Dubarah Network was built in helping Syrian refugees to get acquainted with available jobs and educational opportunities in Canada (and 22 other countries worldwide). It has been coupled with Magnet, a matching platform developed to fill the gaping gap in the labour market between demand and supply when connecting job seekers and employers together based on detailed skill taxonomies, directed content and advanced analytics. Supports bias free and/or targeted hiring and leads pilot for Syrian refugees. Since then, discussions over how social and technological innovations can be fruitfully used in advancing the successful integration of immigrants and refugees to the Canadian federal system have been on the political agenda. The increasing

⁵⁴⁵ See CUKIER-JACKSON 2017.

awareness over social innovation in this respect on the side of the Government of Canada can be recognised by looking at the policy recommendations on establishing the Social Innovation Council, creating an Office for Social Innovation, building up a Social Finance Fund, and, all the more, establishing the Social Innovation Evidence Development and Knowledge Sharing Initiative.⁵⁴⁶

An important ingredient of the Canadian way of innovatively targeting the case of active ageing also touching the issue of migration was its holistic view. It manifested in enhancing the followings that are of key importance from the perspective of active ageing: (1) developing outdoor public spaces and buildings that are physically accessible and secure; (2) improving the coverage and quality of public transportation that are sensitive to the needs of older people; (3) and offering opportunities for seniors to participate in leisure, social, cultural activities with people of all ages and cultures. Apart from these, principles were also defined: encouraging and improving the employability of older people with more flexible tasks and retirement options; searching for options that make older people able to take part in counselling and voluntary activities; and developing health promotion opportunities by ensuring that these are easily accessible, affordable in terms of price, proximity, etc. In addition to the governmental level of initiatives/programmes, bottom-up initiatives were also there aiming at diminishing the passive and unhealthy ageing. Importantly, as active ageing has started to gain momentum in Canada, and of course for a variety of other reasons, more and more workers have been voting for remaining in the workplace by not retiring, regardless of the fact that many of them are experiencing deteriorating physical and mental capacities. It is an unintended consequence to be reckoned with and addressed by the HR departments with a good deal of innovative mindset.⁵⁴⁷ Anyway, for instance, the Workplace Institute made efforts to offer guidance for a much wider range of entrepreneurs and firms who are to cope with the issue of retirement by

⁵⁴⁶ See Government of Canada 2022b.

⁵⁴⁷ See www.workplace.ca/art/art829of.html.

building on a strategic approach. The organisation developed the so-called Old Workforce Strategy Toolkit which helps employers to improve the management of mature employees and it also embraces strategic tips for how to address older workers-related issues.

All in all, in an effort to support active ageing of native-born citizens and multi-generational immigrants (including refugees) both top-down and bottom-up initiatives could be conducive to fulfil our aims. Top-down initiatives can shape the framework by providing guiding principles for local level governance; while bottom-up initiatives (e.g. by the contribution of the voluntary sector) are also crucial because the transition period into the era of retirement is of key importance if the government would like to stimulate an active ageing.⁵⁴⁸ Active ageing can be sparked by the voluntary sector the first number one resource of which is nothing else than the retired people themselves. The Canadian case does also implicitly demonstrate that a holistic approach is a continuous undertaking by being prepared for new challenges arising over time. Solid research is needed to address the issue of what kind of unintended consequences of active ageing policies and innovations can pose new challenges.

Antibiotic resistance – Austria: An even smarter city Vienna

The case of Vienna exemplifies the inevitability of the continual character of innovation building on the collaboration of public sector, the real economy, the financial universe and the civil spheres when it comes to existential challenges like the rather serious problem of antibiotic resistance. The excessive usage,

⁵⁴⁸ The Canadian pension plan is flexibility. On the one hand, an elderly can keep working when becoming a pensionary too (in this case, she/he pays pension plan contributions from age 60 until age 65 resulting in a form of post-retirement benefits to be automatically added to the pensions of the given worker and will be paid for the rest of her/his life). On the other hand, an elderly can continue to work but delay starting her/his pension – the longer a worker waits to start her/his retirement pension, the larger her/his monthly payment will be; after age 70, no one can contribute any longer.

misuses and overuses of antibiotics resulted in a sort of post-antibiotic era where modern medical scientists face a gargantuan challenge to develop new and still efficient antibiotics (i.e. drug-resistant infections kill nearly 10 million people each year). The basis of such mission to address antibiotic resistance should be a smart and innovative milieu that a smart city is more likely to create. This section first outlines the performance of the socio-economic innovation ecosystem of Austria, it then reviews the emergence of the project SmartCity Vienna which any kind of collaborative efforts targeting antibiotic resistance should be built on. Since a smart city is to offer high quality of life for all residents in a sustainable as well as efficient way via continuous social and technical innovations, addressing the mission of tackling antibiotic resistance can be an integral part of it. The Austrian smart city initiative points to the role of citizens and public sector being mutually committed to the permanent improvement of Vienna in favour of a more liveable, more sustainable city by dampening the environmental burdens and tackling climate change in a more dedicated way. Even though the initiative can be seen as a bottom-up innovation, the political will at higher tiers of government has to be maintained over time.

Outcomes and basics:

Competitiveness, innovativeness, the performance and institutional architecture of the public sector

The international competitiveness of the Austrian socio-economic innovation ecosystem has been in the Top 20 among the countries ranked in the IMD World Competitiveness Yearbooks. In the 2022 edition, Austria was ranked 20th, which is a slight decline as compared to its previous positions (18th in 2018, 19th in 2019, 16th in 2020 and 19th in 2021). By the 2022 edition, Austria's economic performance and government efficiency have suffered from a certain deterioration mainly due to the two black swan events we elaborated them earlier in this book. In its economic performance, the worst

performer sub-pillars were international trade (30th) and employment (31st). In case of government efficiency, public finance (36th) and tax policy (58th) can be mentioned as the weakest links, still, institutional framework (24th) and societal framework (13th) have been performing relatively good. In case of business efficiency, productivity and efficiency (14th) as well as management practices (12th) are the surpassing ones, while in the dimension of attitudes and values (40th) the country has room for improvement. In the pillar of infrastructure, the Austrian economy seems to have been providing relatively fertile bases (e.g. basic infrastructure [8th], scientific infrastructure [13th], health and environment [8th]). The latter was confirmed by the respondents of the executive survey integrated into the Yearbook (e.g. 75.3% of the respondents argued that reliable infrastructure is a substantial competitive factor of the country). As far as the innovativeness is concerned, Austria can be portrayed as an innovative economy since it was ranked 18th among the 132 economies featured in the GII 2021, what is more, and with a view to European peers, the country was ranked 10th among the 39 European economies covered. In addition, Austria is the 7th country out of the 37 ranked in the WEF's Global Competitiveness Report 2020 in terms of the ability of its public sector to being embedded in strong governance principles by building on long term vision and by establishing perceptible trust infrastructure in the society by serving their citizens.⁵⁴⁹ With a particular focus on Vienna, it was 11th out of 118 in the ranking of the IMD Smart City Index 2021 being between Bilbao (10th) and New York (12th) (which was a 14-places improvement compared to the year 2020). An international consensus surrounds this upscale position since Vienna was nominated each year between 2009 and 2019 by the international consultancy firm Mercer to be the most liveable city around the globe, and it also occupied the highest step of the podium in the Roland Berger's Smart City Strategy Index. As far as the issue of decentralisation is concerned, Austria is a federal or quasi-federal state in which government responsibilities are shared among federal, regional (nine Bundesländer) and

⁵⁴⁹ See SCHWAB–ZAHIDI 2020: 73.

local (2,357 municipalities) levels of governance. Importantly, even though Austria is classified as a federal state, lower-tiers of governments do have relatively low autonomy, merely (i.e. although Austria can be considered a highly decentralised one in terms of expenditure ratio) the relative share of overall sub-national expenditure compared to total government expenditure is 35% in Austria, which is relatively high – neither its revenue autonomy (22nd in the EU27) nor the administrative decentralisation (23rd in the EU27) is high. Still, one can argue that the (political) decentralisation of Austria is high (8th in the EU27) simply because lower tiers of governments have the ability to exert influence on policymaking (not to mention the fact that they treat good and direct relations with the EU).

SmartCity Vienna – A springboard toward the mission of addressing antibiotic resistance

In the early 2010s, the Vienna City Administration started to think about how the capital city, with a visionary approach, can be transformed to be a smart city providing prosperity in a sustainable way. To this end, a framework strategy was adopted by the City Council in 2014, which was then updated in 2019, and will be implemented by 2050. Its vision recognised that, even then, more than half of the world's population already lived in cities and that number will rise to 70% by 2050. The increasing urbanisation gives rise to problems and opportunities, and ecologically sensible and secure power supply will be a central theme. Against this background, the vision of the Climate and Energy Fund for the “Smart Energy Demo – FIT for SET” programme was the first implementation of a “smart city” or a “smart urban region”. That meant a residential area or an urban region in Austria, which, with the use of intelligent, green technologies, will become a “zero emission city” or “sustainable urban region” where the people will live sustainably. To this end, the “Smart Energy Demo – FIT for SET” programme initiated and funded by the Austrian Climate and Energy Fund encouraged the consortia

building for large-scale demonstration and pilot projects; what is more, it also stimulated the integration of existing and mostly developed technologies and systems into innovative interacting total systems; and last but not at all least, it supported the realisation of a “smart city” and/or a “smart region”. The programme contained *inter alia* an overview on the current status of and potential impact of implemented and available infrastructure of relevance to the “Smart City” project.

Importantly, SmartCity Vienna defined both environmental and inclusive development-related specific goals.⁵⁵⁰ For instance, one of the first goals to be achieved is doubling the generation of renewable energy in the metropolitan area up until 2030, and, in relation to that goal, another aim was to protect all the residents against climate change-related weather anomalies and other kinds of impacts. In addition, another crucial green economic objective was to halve the CO₂ emissions of the transport sector by 2030 and eliminating it fully by 2050. SmartCity Vienna served as a springboard for many other initiatives and strategies of the city (e.g. city development plan, energy programme as mentioned, as well as the Digital Agenda). One of the latest smart city projects in Vienna was about the conversion of the main water treatment plant into an eco-efficient eco power plant that can produce more energy than the actual demand.⁵⁵¹

The City Administration of Vienna is well aware of the fact that as cities are growing the issue of antibiotic resistance is becoming ever-more pressing. As the underground network grows, not only the number of microorganisms present there rises, but also the speed of the spread of infections can multiply (i.e. in Vienna, continuous reconstruction and further development take place regarding the U-Bahn system).⁵⁵² Smart city Vienna has therefore joined to a worldwide research project to document those microorganisms potentially

⁵⁵⁰ See www.wien.gv.at/stadtentwicklung/studien/pdf/boo08552.pdf.

⁵⁵¹ By applying a new sludge treatment plant, the Vienna urban wastewaters are now cleaned with energy self-sufficiency, the CO₂ emissions reduced by 40,000 tons annually, and clean electricity and clean heat are generated.

⁵⁵² See www.wienerlinien.at/u2-update.

triggering antibiotic resistance in the subway system of New York, Moscow, São Paulo, Berlin and now in Vienna. The project is to map those organisms with the aim of better guiding protections against infections. To this end, researchers from the University of Applied Sciences Campus Vienna (FH Campus Wien) examined microorganisms in the Vienna U-Bahn system. Participant researchers developed a methodology for an efficient analysis that can be used and interpreted with only a few ICT resources. In deciphering whether the process of antibiotic resistance is catalysed by the U-Bahn system, researchers had to address questions like: how long the microbes can adhere to the various surfaces of the underground system; how long can those microbes remain infectious once being on the surface of a human body? To find out, researchers from the FH Campus Wien took samples from the surfaces in three stations and three trains – before and after the underground cleaning. Interdisciplinary researchers and the public sector worked together (i.e. using bioprocess technology and bioinformatics), the DNA was extracted and sequenced in the laboratory and the data obtained was then analysed. So far, it has been found that most of the microorganisms present on the surface are bacteria that colonize our skin or are attributable to the digestive tract. However, there are surprisingly few pathogens among them. In this way, smart city Vienna obtained more granular data about the effectiveness of the cleaning of the underground system by identifying sessions where there are much room for improvement. Since bacteria survive on the U-Bahn-related surfaces for a comparatively short time, and since a much more effective transmission path is the air, filtering and cleaning ventilation and air conditioning systems are of utmost importance to reduce the speed of the spread of infections. Such research opportunity could also be helpful for an early warning system that primarily benefits the ever-growing group of allergy sufferers. Comparable studies examining the microbiome in subways have already been carried out in many countries. The results of the study in the Vienna underground are incorporated into the international project MetaSub, a kind of microbial world map. It collects the microbiomes of major cities around the world.

SmartCity Vienna does also stimulate researchers' willingness to dig deep in fighting against antibiotic resistance. In 2022, Viennese researchers and colleagues presented what they call an "innovative, broadly applicable strategy that could form the basis for a completely new type of antibiotic". These are "bacterial proteolysis-targeting chimeras" (BacPROTACs). This is about specifically designed molecules that specifically bind to bacterial proteins, shred them and thus lead to the death of the bacterial cell. As a benevolent side effect, such approach can be useful in coping with cancer, too. In concrete terms, the process mentioned involves using small molecules to specifically attack disease-causing proteins, which is of paramount importance in the treatment of cancer as it turned out later (i.e. an example of exaptation).

Factors influencing the SmartCity Vienna

A city is called smart when systematic information and communication technologies and resource-saving technologies are installed to work towards an emission-free, post-fossil society, to reduce resource consumption, permanently enhance citizens' quality of life and the competitiveness of local economy – thus improving the city's sustainability. At least the following areas are taken into account: energy, mobility, urban planning and governance. An elementary characteristic of a smart city is the integration and cross-linking of these areas with the aim of implementing the targeted ecological and social aspects of urban society and a participatory approach. At the very beginning, there were 13 targeted fields defined along the SmartCity initiative to be addressed, such as: the City; Bahnhof-Wien (with the aim of being a central business district); airport Auspern; Danube canal (water power plant, ecological buildings for banks); Siemens-Allissen (research and development); Prater-Messe-Krieau-Stadion (event city, culture centre), etc.

One of the most plausible explanations for the necessity of such multi-actor collaboration like SmartCity Vienna is the inevitability of collective actions in the crossfire of complex challenges mentioned earlier in this book.

A collective action can be feasible within a city where local level of governance and end-users of public services and citizens are forming a risk community and they are experiencing either positive or negative perceptible environmental trends in their daily lives.

Box 9

Smart Cities and beyond –

Innovation milieus for addressing antibiotic resistance

Alexander Fleming had received his Nobel Prize in Sweden in 1945 for the ground-breaking work toward the world of antibiotics (i.e. the Nobel committee emphasised that the Prize motivation was Fleming's discovery of penicillin and its curative effect in various infectious diseases). In His Nobel Banquet speech, the Nobel laureate accentuated that fortune played a great role in that discovery which illustrated how powerful an antibiotic substance could be. The way Sweden appreciates such achievement has been mirrored in its approach toward antibiotic use and its concomitant phenomenon antibiotic resistance mainly since the midst of the 1970s. For instance, due to the evidence that the resistance to penicillin among pneumococci in southern Sweden was on an intensively increasing trajectory in the early 1990s, a coordinated national strategy came to life (i.e. a Swedish strategic programme against antibiotic resistance, Strama). Antibiotic resistance is still an existential threat to the sustainable development mankind wants to achieve. A holistic approach is needed encompassing the entire innovation ecosystem to address the issue simply because as antibiotics have been used widely not only by us, but also by animals, and food industry and are therefore released in an enormous amount into the environment feeding also back to our daily life. It calls for a multi-actor collaboration when addressing epidemiological, environmental and ecological factors when analysing the environmental dissemination of antibiotic resistance.⁵⁵³

Antibiotic Smart Sweden is just an example of such multi-actor collaboration in tackling antibiotic resistance by promoting residents, municipalities, regions

⁵⁵³ See ERIKSEN et al. 2021; TRESKOVA et al. 2022.

(i.e. antibiotic smart cities). Funded by VINNOVA, and coordinated by the Public Health Agency of Sweden, the project started in 2019 and lasted until November 2021. It included measures that are sought to significantly mitigate the spread of infection. In addition, it also helped to develop treatment methods and to raise awareness over the responsible usage of antibiotics. VINNOVA aimed at creating an innovation milieu with the mission of addressing antibiotic resistance in a more holistic collaboration. The project recognised the complexity of antibiotic resistance requiring an amalgam of a variety of approaches: enhanced infection control to decrease the spread in the community and within the health and social care sectors, innovative development of medicines and more precise diagnostics, a cultivated mindset of responsibly using antibiotics and broadened collaborations.

The environment is based on nationwide coordination, synergies between projects, and increased availability of “antibiotic smart” approaches. This is achieved by strengthening and spreading established processes as well as by creating innovation projects, where municipalities and regions get together with academy and businesses develop, test and implement new solutions. The core team includes the Public Health Agency of Sweden, RISE Research Institutes of Sweden, Strama the Swedish strategic program against antibiotic resistance, ReAct action on antibiotic resistance and the Swedish Association of Local Authorities and Regions. Representatives from three municipalities and three regions were also participating in the establishment of Antibiotic Smart Sweden. When it came to implementation, Antibiotic Smart methods and working models were developed and designed in close cooperation with the local level of governance and regions. The more collaborative mindset has gained momentum because almost all sectors (real economy, public sector organisations and civil society) added new approaches by developing, testing and implementing products and services that minimise the burden of infections and support the appropriate use of antibiotics.

As for the most important substances of the SmartCity Vienna, there have been at least five factors affecting positively the project: (1) institutionally given scope for experimentation; (2) increasing demand for addressing economic, social

and environmental challenges in a more dedicated way; (3) a demonstrative role model opens future international collaborations; (4) strong commitment of all sectors; and (5) dynamic view with integrative spirit.

- *Institutionally given scope for experimentation:* The relatively great autonomy of the city of Vienna helped to imagine, develop and implement the SmartCity Wien initiative. It is mainly due to the federal system which provides higher autonomy in terms of financial autonomy (i.e. the latter one provides the necessary financial flexibility) as well as functional autonomy. As it was indicated earlier, decision-making and implementing powers at sub-national tiers were more or less outbalanced in case of Austria at the time of the early 2010s (see Figure 11) even though it was centralised more later on (see Figure 12). It offered a wider arena for experimentation because the opportunity for decentralised initiation is always at hand, not to mention that Viennese people tend to try out new solutions in a smarter way.
- *Increasing demand for addressing economic, social and environmental challenges in a more dedicated way:* There is much room for improvement in environmental aware living in Vienna. With urban development (50% of the total area is green/open space) and the increase of population (+12.8% over the last ten years), the city management faces more and more problems that are becoming more interdisciplinary, such as the issue of how to curb greenhouse gas emissions (in 2006, CO₂ emission per capita was 5.19 tonnes/inhabitant, while such indicator for the entire country rose up to 8.43 by 2016, it has started to become one of the lowest ones in case of Vienna within Austria⁵⁵⁴), preparing for climate change is of key importance (the share of used renewable energy is less than 15% within the total consumption). Considering the modal split right before the initiative, in 2008, merely 35% of the citizens of Vienna used public transport. Since the Covenant of Mayors platform Austria envisages further increase in the number of urban populations, there is a commitment to

⁵⁵⁴ See The Smart KLIMA City Wien report (www.wien.gv.at/umwelt-klimaschutz/klima-fahrplan-2040.html).

networking among cities and municipalities and to find ways for coping with challenges (e.g. to increase the willingness of people by 5 percentage points to ride bicycles instead of using cars by 2020; to decrease the car usage from 31% to 23% within the total modal split by 2020). Most of the targets were approached even though not fully achieved: from 2010 to 2019, the share of trips by private cars in Vienna decreased from 31% to 25%, the share of walking increased by 2 percentage points to 30%; cycling was up by 2 percentage points to 7%, while the use of public transport rose from 36% to 38%. Additionally, in 2019, the share of trips taken in Vienna by public transport, on foot or by bike was 75%; that of walking equalled 30%; that of cycling, 7%.⁵⁵⁵

- *A demonstrative role model opens future international collaborations:* There was a firm belief that so far as Vienna is the first in some smart solutions, it then can take advantage from those of being sold to other cities (otherwise, Vienna will have to buy from others later on). Vienna's intention was to position itself as a city of competence in research and development and innovation. As a consequence, the Vienna SmartCity initiative served as a pioneering project to establish and demonstrate marketable solutions in favour of a more sustainable and liveable city. In sum, beyond the ecological, social rewards, the economic aspect is also relevant that drove the innovation.
- *Strong commitment of all sectors:* Apart from the fact that the political will and commitment is of paramount importance as well as the political entrepreneurship – i.e. the innovative activity within the public administration and bureaucracy⁵⁵⁶ – smart citizens are also crucial with regard to the realisation of the vision of a smart city. A crucial part of any smart city initiative in the globe is whether the citizens can seize the opportunity to use the new interior and way of living in the given city. Smart city therefore requires smart citizens that can be engaged in smart solutions

⁵⁵⁵ See www.wienzukunft.at/wp-content/uploads/sites/3/2020/04/Mob_Report_EN_2019_RZscreen.pdf.

⁵⁵⁶ EDWARDS et al. 2002: 1539–1554; HEDERER 2010: 87–103.

in a day-to-day manner (e.g. for being aware of the inefficient/wasteful feature of the heating system and to be committed to better insulation methods). Environmental protection has been pursued for years in the city of Vienna; citizens therefore became socialised for behaving smart by using new technologies making the city more sustainable. Citizens must learn from each other, however, the environment aware behaviour is sparked and instilled into citizens already in kindergarten. Basically, this programme required and still requires a multi-actor/multi-agent framework that can cooperate for a relatively long period of time by showing intensive involvement of relevant stakeholders. In doing so, Vienna defined three forums that built the framework, such as producing a “smart” development path towards energy efficiency and climate protection by making close ties with the preparation of the Urban Development Plan. Additionally, the results of the programme are well visible and intended to maintain the commitment by providing longer term perspectives with strategic goals to address over time complemented with short-term measures to be taken (these are important inputs without having any binding aspects for the City of Vienna).

- *Dynamic view with integrative spirit:* On the one hand, the initiative relied also on the utilisation of already existing knowledge on and experience with the concept of smart city. For instance, the Climate Neutral Urban Districts in Europe (CLUE) programme, the objective of which was to increase regional capacity in policy development to facilitate implementation and assessment of new solutions and technologies to support low carbon economy in urban areas. Furthermore, a shared perception on Climate Neutral Urban Districts in the partnership was a clear project goal. Plus, the so-called TRANSFORMAtion Agenda for Low Carbon Cities programme supported cities in favour of realising the EU 20-20-20 targets (e.g. by establishing Smart Energy City Handbook; Smart Energy Cities Planning Master Classes). On the other hand, SmartCity Vienna has a dynamic view required when it comes to sustainable urban development. The project has been open for initiatives and other projects whose spirit

and aims are in line with the targeted goals. Under this angle, SmartCity Vienna seems to be a framework rather than a complex and highly detailed action plan that would be inflexible to future challenges. Additionally, it has been serving as a basis for future urban development plan of Vienna by being pervaded by an integrative spirit (e.g. in an effort to collect multiple views on potential use of future technologies in city development, the festival of ViennaUP²² initiated by the Vienna Business Agency, brought together various stakeholders, such as startups, investors, tech enthusiasts, creatives and visionaries).

All in all, SmartCity Vienna represents that going for a smart city, originally thought as a city to be barded with a whole gamut of ICT-based technological and non-technological solutions in increasing efficiency, smart city can be a hotbed for grounding sustainable development in a broader sense as well. It can foster greening the city out or embracing other higher-level social goals. For example, incorporating one of the most severe health challenges of today (antibiotic resistance) by building on a smart city concept seems to be instructive, but definitely not enough (i.e. addressing the perplexing questions given by antibiotic resistance like: Is chemotherapy unsafe? Are simple surgeries too risky to perform? Is the world's biggest child-killer pneumonia unstoppable? etc. are requiring regional, all the more, global collaborations that can be, of course, built on smart city initiatives too, but just partly). Regarding the barriers of such initiative, once smart city with extended scope (i.e. incorporating the fight against antibiotic resistance) is to be sustainable, there is no place for "sit on the fence policy". Developing a smart city requires a long-term vision and effort, for instance, citizens become sensitive to environmental challenges and revise their behaviour accordingly along a learning process which starts already in kindergarten, but it also takes time to establish a firm attitude to basic hygiene or to the correct use of antibiotics.⁵⁵⁷ The public sector should be committed to raise further awareness, to strive to meaningfully

⁵⁵⁷ Such attitude building is also requested in the field of artificial intelligence development in the healthcare system of smart cities. If for no other reason than AI may provide more

involve all the relevant stakeholders by coordinating them and keeping up their commitments over time.

Demographic quandary – Sweden:

Addressing care services for the elderly via innovating procurement

Sweden has been addressing the issue of improving the quality of life of the elderly via technological and process innovations (often called *welfare technology*). This case study is to exemplify that continuous public sector innovation is multidimensional especially when an issue like demographic quandary is to be effectively addressed over the long run. It first briefly outlines the characteristics of the Swedish socio-economic innovation ecosystem (i.e. competitiveness, innovativeness, the performance and basic institutional architecture of the public sector), then it reviews one of the first *welfare technology*-like innovation of the Swedish public sector (“Innovative Procurement X”) to shed light on the crucial importance of ongoing developments in this respect dwelling on the Swedish Competence Centre for Innovation Procurement.

Outcomes and basics:

Competitiveness, innovativeness, the performance and institutional architecture of the public sector

The international competitiveness of Sweden was increasing between 2019 and 2021, being placed at the 2nd position out of the 64 countries ranked in the IMD World Competitiveness Yearbook 2021 (2019: 9th, 2020: 6th).⁵⁵⁸ One year later, its competitiveness went through a slight decline becoming 4th on the ranking of the 2022 edition of the Yearbook. Even though the price movements

accurate diagnoses by dampening the overuse of antibiotics, hence AI could lead to significant reduction in antibiotic resistance.

⁵⁵⁸ See www.imd.org/globalassets/wcc/docs/wco/pdfs/countries-landing-page/se.pdf.

(41st in 2021, while 39th in 2022) are also challenging, government efficiency together with business efficiency enhancements built on solid infrastructural basis grounded such overall improvement. Within government efficiency, apart from the tax policy (58th in 2021, while 55th in the 2022 edition) which is seemingly underperforming, institutional framework (3rd in 2021, 4th in the 2022 edition), business legislation (4th) and societal framework (4th in 2021, while 5th in the 2022 edition) have been shaping the economy in an instructive way.⁵⁵⁹ In case of business efficiency, sub-indexes have been in the top positions as well (productivity [3rd in 2021, 4th in 2022], labour market [5th in 2021, 4th in 2022], finance [6th in 2021, while 3rd in 2022], management practices [3rd] and attitudes and values [4th in 2021, while 2nd in the 2022 edition]). As for infrastructure, technological infrastructure (3rd in 2021, 5th in 2022) and the dimension of health and environment (1st in 2021, 2nd in 2022) are outstanding. As for the Swedish innovation performance, the country, as the home to bright summer nights was ranked 2nd among the 132 economies featured in the GII 2021.⁵⁶⁰ Apart from the fact that the economy performs equally in innovation inputs and outputs, with a view to the EU, it was ranked 2nd among the 39 economies in Europe. Interestingly, the share of employment in the

⁵⁵⁹ High tax burden is widely seen as an obstacle to sustainable socio-economic development because it may stifle innovation and pro-active entrepreneurship. The fact that the Swedes receive good quality public services in exchange for high tax deductions compensates them and the infrastructure of social trust is therefore relatively higher than one would have previously expected based on the tax system. Let us add immediately that Sweden relies more on harmful taxes than other countries, and would need a more up-to-date system. It would require the income tax to be reduced as well as the elimination of corporate tax (which is eventually paid by consumers, so it behaves like a camouflage), which can be partly financed with a broadened and uniform 25% VAT. Capital income taxes also need to be reformed and include real estate with the aim of not endangering the symmetry between the financial universe and the real economy. More than 30 years have passed since the most recent major tax reform was implemented in Sweden, 1990–1991. Since then, the world has opened up, the Swedish business models have changed radically and the country's tax system has been patched and repaired. Knowledge of how taxes affect behaviour has also changed.

⁵⁶⁰ See www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/se.pdf.

public sector is the highest one in the EU (29%),⁵⁶¹ according to Statista, local municipalities are the second largest employers in Sweden, with 1.2 million employees.⁵⁶² Still, the judgement over the performance of the public sector by the wider public has been positive, i.e. Sweden has been ranked 6th out of 37 countries in the WEF's Global Competitiveness Report 2020 in its ability to ensure public institutions to be embedded by strong governance principles and to build a long-term vision and establish trust by serving their citizens.⁵⁶³ Relatively flourishing embeddedness is given by the highly decentralised nature of the institutional setting since Sweden's overall decentralisation index score, according to the index developed by the European Committee of the Regions, was 2.4 in 2022 which was enough to get the 2nd place out of the 27 EU countries. The Swedish unitary state system consists of two lower tiers of governance (regions and municipalities) and there are altogether 290 local administrative units to overlook and manage. Launching, innovating further and maintaining local undertakings by involving the citizens has relatively more benevolent features in Sweden since the fiscal decentralisation is also high (the relative share of overall sub-national expenditure compared to total government expenditure is 46% – a value that put Sweden in the 4th place in terms of fiscal decentralisation). It has been accompanied with relatively high administrative decentralisation as well (score: 2.3, meaning the 4th position in the ranking), that is to say, competences as well as the availability of human resources are outstandingly good. In terms of political decentralisation, Sweden has a midfield position (14th) (lower tiers of governance have a constitutionally stipulated legal basis for self-government but not in a very detailed manner like in federal states, in addition, they have much more direct relations with the EU such as membership to the Committee of

⁵⁶¹ See https://ec.europa.eu/eurostat/cache/digpub/european_economy/bloc-4d.html?lang=en.

⁵⁶² See www.statista.com/statistics/527875/sweden-employment-by-sector.

⁵⁶³ See SCHWAB–ZAHIDI 2020: 73. Even during the Covid-19 pandemic, Sweden's distinctive policies and performance, for instance, as compared to the Danish path, did not matter much for trust in the Swedish government and the Swedish health authority (see NIELSEN–LINDVALL 2021: 1180–1204).

the Regions, permanent presentation through an office in Brussels [at least for some regional governments], and representation through associations of regional authorities).

Demography driven welfare technological and non-technological innovations

Even though Sweden's innovation ecosystem is in a good shape, grand challenges are also over there. Regional disparities are relatively low, but have been on an upward trend in the last decade. Larger cities in Sweden tend to syphoning away skilled and socially more mobile workers from rural areas, especially the younger population, and while those cities are therefore experiencing higher productivity growth,⁵⁶⁴ public service provision-related problems are arising in the rural areas especially in fields of offering services for the ageing population.

The "Action for prevention of functional decline and frailty" under the first pillar of the Strategic Implementation Plan for the European Innovation Partnership on active and healthy ageing ("Prevention, screening and early diagnosis"), focused on physiological frailty and malnutrition among elderly people. The malnutrition of the elderly is a real problem also in Sweden. In 2011, 18.5% of the total population was 65 years or over, which shows a growing tendency (as in 2002 the proportion of 65 years and over was only 17.2% and it was 19.9% right before the eruption of the Covid-19). In 2022, 25% of the Swedish population are 60 years or older (meaning 2.6 million people). These people are usually pensioners. A significant part of the Swedish welfare policy is the health and social care for the elderly, and the nutrition of the elderly is an important part of it. The expenditure on care for the elderly represents an increasingly significant proportion in Sweden, it was 2.33% of the GDP in 2011, while it was close to 3.4% by 2018.⁵⁶⁵ Regarding the financing, as the

⁵⁶⁴ OECD 2021f.

⁵⁶⁵ See www.oecd.org/health/health-systems/Spending-on-long-term-care-Brief-November-2020.pdf.

Swedish institutional architecture can be seen as a highly decentralised one, it is not surprising that elderly care is usually funded by municipal taxes, but government grants are also important sources. In Sweden the municipalities are responsible for elderly care, but they often contract out their elderly care services. Ageing people have the possibility to choose between home help or special housing to be managed by public or private operators. Those people who continue to live at home can expect support in various fields, among others, most of the municipalities operates meal service and offer ready-cooked meals (or some of them offer communal meals at special day centres, or organise small groups of the elderly into teams that cook their own meals). The municipalities also provide delivery services to the homes of elderly and disabled people, who are unable to care for their own cooking. In Sweden the meal time chain is complex, there are different stakeholders involved in different parts of the chain. Despite these efforts, the elderly suffers from malnutrition in Sweden.

The project entitled “Innovative Procurement X” – “X” was a pilot project, running between 2012–2015 in four regions of Sweden. The project targeted to set up new forms of procurement in the field of meal solutions for the elderly. The main aim of the project is to build a platform for Innovative Procurement in Swedish regions. The expected results of the innovation in the field of public procurement in the nutrition of the elderly were to improve public welfare and quality of life of the elderly and to initiate public purchases in the county. The project tried to solve the problems mentioned above and aimed at building a platform for Innovative Procurement in the regions of Sweden based on Public Procurement. It was supported by the Swedish Government through VINNOVA and run from 2012–2015. The selected municipalities that joined to the project are: Gävle, Ljusdal Ockelbo and Hudiksvall.

The main aim of the pilot was to create innovative public procurement models for the mealtime situation for elderly people. A two-stage innovative public procurement was introduced in which the potential supplier has to describe the goal but without being specific about how to achieve it. Then the public sector leaves room for the market to figure out the ‘next’ practice.

Due to the decentralised setting and that of the relatively good information and knowledge sharing practices within the public sector, such innovative procurement approach was adopted by another municipality later on.⁵⁶⁶

Institutionally decentralised initiation

The “Food Distribution (FD)”⁵⁶⁷ of the meal service in Sweden is a social care service assistance, and it is organised by municipalities. There are two acts: the Health and Medical Services Act and the Swedish Social Services Act which regulate the food distribution and meal service in Sweden; however, these *acts do not include detailed information about how FD should be organised within municipalities*. On the one hand, the lack of general rules for distribution forces *municipalities to launch their own practice*. On the other hand, this situation leads to a *much diversified system*, which is not able to solve the problem of malnutrition of the elderly. An important constituent is the Swedish institutional setting in which the eldercare dimension is also embedded. A study by Szebehely and Trydegård analysed the Swedish Level of Living surveys from 1988–1989 and 2004–2005 and a database on all users of tax deductions on household and care services in 2009.⁵⁶⁸ The analysis led to the conclusion that there were two observable trends with respect to the eldercare services in Sweden: (1) a non-negligible decline in the coverage of publicly funded services on the one hand; and (2) their marketisation process was permanently increasing. The authors also stated that “[...] the decline of tax-funded home care is not the result of changing eldercare legislation and was not intended by national policy-makers. Rather the decline was caused by a complex interplay of decision-making at central and local levels, resulting in stricter municipal targeting”. As a consequence, the Swedish institutional

⁵⁶⁶ In case of a transport solution called Lindholmsleveransen see <https://inkopsradet.se/innovativ-upphandling-tar-priset>.

⁵⁶⁷ “Meals on wheels.”

⁵⁶⁸ SZEBEHELY–TRYDEGÅRD 2012: 300–309.

architecture has an inherent incentive for such a progress in case of eldercare. Therefore, municipalities are to launch their own practice in accordance with one of the prerequisites described earlier, decentralised initiation.

Permanent learning in a multi-stakeholder setup

Another important aspect is the cost of the social care service assistance, which is usually based on the client's pension in other countries, but in Sweden the food distribution is based upon the *elderly person's ability to pay*, but it should not be higher than 10% of the total cost (it is higher in other countries by usually 20–30% of the total cost). This provided a not so flexible financial background for municipalities responsible for eldercare practice, including nutrition. The number of ageing population (65 years and above) partaken meal service distributed by municipalities organised FD is approximately 60,000 persons. It is important to note that the food distribution system of Sweden was widely criticised in the past,⁵⁶⁹ simply because the service tended to imperil ageing people, whereby they were threatened by malnutrition; and because the service was by and large arbitrary i.e. “consumer-focused nutrition” developed in collaboration with experts was missing.

Against this background, “Innovative Procurement X” – “X” pilot project was to create innovative public procurement models for the mealtime situation of elderly people. The most important elements of new models will be accessibility and usability in transport and logistics. As a corollary, the Swedish eldercare service seems to be pervaded by a permanent learning process in which further innovations are avowedly a must. The main innovative elements of the project were related to the new forms of the public procurement process of meal solutions/food distribution for the elderly (i.e. creation of a platform for testing and implementing of innovative solutions). However, the meal distribution chain as well as the procurement process of meal service is quite complex; therefore,

⁵⁶⁹ See PAJALIC et al. 2012: 68–78.

involving different stakeholders at different stages is a must. The main actors of a procurement process are: public clients, purchasers, public service providers, enterprises operating in the food industry and companies from the logistics and transport sector. Regarding the transport of the meals for the elderly, it happens through private firms but sometimes by the municipality from a central kitchen. To design a complete meal service including the transport put demands on a holistic approach where the customer's needs are of key importance. The project had a user-centric approach with the aspect of public health and innovative procurement, which results the foundation of a new way to work. Purchasers and suppliers made better deals and the value of the public purchased products and services made a difference for the private persons. The public purchaser should be able to run innovative solutions forward.

Permanent learning in a multi-stakeholder setup is only possible if there is an extensive opportunity for experimentation. Selecting the municipalities mentioned (Gävle, Ljusdal Ockelbo and Hudiksvall) can be regarded as a smart step towards broadening the experimentation in the interest of a more efficient way of learning how to innovate. The distribution of works was as follows: buy and develop today's outsourcing solutions in Gävle; distribution, supply and logistics in Ljusdal; a new comprehensive solution for food in a special housing for the elderly in Ockelbo; local supplies, other stakeholders and environmental aspects in Hudiksvall. The project did also open a window of opportunity for further development when it comes to welfare technologies and non-technological solutions regarding the care of the elderly (e.g. based on modern ICT solutions allowing onsite assistance in practical tasks, monitoring health conditions, offering remote treatment and even rehabilitation for the elderly, safety alarms, safeguarding nights without problems, digital surveillance, sensor and movement detectors, assistive robots and smart apps, etc.). Beyond the fact that elderly care requires a new way of working, participatory design methods have been applied to aid the implementation of welfare technology in care settings.⁵⁷⁰ "Innovation Procurement X" – "X" programme did

⁵⁷⁰ See KUOPPAMÄKI 2021.

already pinpoint the central importance of a holistic view when it comes to procurement in the interest of bettering public services for the elderly. A comprehensive study has shown that not only the technical, economic or juridical competences of the municipal level of governance are essential in the success of procuring welfare technologies for the elderly, but also the ethical competence. Organisational unlearning (resistance to change) is still widely present in the Swedish public sector; therefore, greater emphasis should be placed on the widespread presentation of successful cases.⁵⁷¹ Continuous co-development is therefore a must embracing caregivers from a variety field of expertise (food service dietitians, etc.) and end-users (i.e. the elderly, adults with disabilities or being at high risk of deprivation, etc.).⁵⁷²

Box 10

Agencies for innovative procurement

In 2015, the Swedish Government established the National Agency for Public Procurement which has become the home of the Swedish Competence Centre for Innovation Procurement (henceforth Centre). The Centre has the primary goal of providing broad support to contracting public sector authorities and suppliers on innovation procurement, especially when it comes to taking decisive steps toward enhancing competencies in innovation procurement to tackle today's challenges (*The Madness*).

These steps are manifesting at two levels. The first level encompasses “development-triggering procurement” where the public procurer calls for fresh solutions and asks for suppliers’ ideas of development (that do not have to be new on the market, it is necessary enough to be new to the procurer). The next level refers to innovation procurement (where the innovation is new on the market and new for the procurer).

⁵⁷¹ See FRENNERT–BAUDIN 2021: 1220–1227. As an interviewee argued: “[...] It can be the case that we have a technological solution, and we want to offer something where there is a need, but no one dares to start a public procurement, because you do not know what politicians the municipality will have sitting later. The demand exists from the users and patients, but not from those in charge” (DAHN 2020: 26).

⁵⁷² Reports on how caring for the elderly has developed have been recurrently emphasised the central role of collaboration among experts (see JOSEFSSON 2018).

And the final level concerns purchasing goods and services that are not available on the market – therefore requiring a good deal of R&D and innovation activities. This can be done using pre-commercial procurement as well as other approaches.

There is another agency involved in the Swedish innovation procurement management, namely the National Procurement Services (a department within the central government authority of the Kammarkollegiet) which provides and guarantees co-ordinated framework agreements for central government authorities for goods and services of general use. In case of ICT, local and regional organisations as well as central government authorities can use such framework agreements. The department is to enrich government entities with innovative solutions geared toward bettering the quality and efficiency of the Swedish public sector in general.⁵⁷³

All in all, “Innovative Procurement X” – “X” was a multidisciplinary initiative with a holistic approach targeting the mealtime situation of elderly. The project did pave the way for the modernisation of the public procurement system to improve care for the elderly via continuous innovations that are requiring a further elaborated and reshaped procurement organisational basis (i.e. a Smörgåsbord of ideas did emerge, e.g. the procurement process has become more flexible and adapted to the wicked challenges in the sense that evidence-based criteria was softened).⁵⁷⁴ The next milestone on that road can be the Zero Vision programme aiming at the total elimination of malnutrition of the elderly by 2030.⁵⁷⁵

⁵⁷³ See <https://procure2innovate.eu/sweden>.

⁵⁷⁴ Neither the winning rate nor the average maximum contract length showed a significant difference between tenders having evidence-based criteria and those that have not (see RICHARDSON et al. 2022).

⁵⁷⁵ See www.vinnova.se/en/m/sustainable-precision-health/vision-driven-health/the-zero-vision-for-malnutrition-in-the-elderly.

Natural disasters and climate change – Switzerland:
Expanding the supercomputer's horizon
with bequeathed collaboration

The following case of the Swiss public sector innovation, which is presented here as a resource sharing based environmental problem-solving opportunity, can be seen as a prime example of the fact that holistic vision is needed when it comes to environmental protection. Its case sheds light on the fact that innovation belongs by definition to dynamic analysis since innovation in a certain field can trigger the need for further ones in addressing the problem that is potentially arising as a result of the given innovation. It is particularly the case when dealing with supercomputer capacity with an expanding application portfolio (using for predicting earthquakes, then applying in seeking out better ways to safer geothermal energy, etc.). Beyond the fact that the Swiss case sheds light on the obvious, namely that the brawn capital of yesterday is now ancient history since our economies are now attributed by brain capital (accumulation of knowledge and the dominance of human intelligence in contrast to physical strength), it also illustrates that public sector organisations should focus primarily on the results and outcomes rather than on the contemplation of activities and processes.

Outcomes and basics:

**Competitiveness, innovativeness, the performance
and institutional architecture of the public sector**

Switzerland's international competitiveness can be regarded as one of the best ones since it was positioned at the 1st place out of the 64 countries ranked in the IMD World Competitiveness Yearbook 2021.⁵⁷⁶ Despite the wicked challenges mentioned earlier in this monograph, Switzerland's next year ranking position

⁵⁷⁶ See <https://worldcompetitiveness.imd.org/countryprofile/overview/CH>.

was still enviable with its 2nd place in the 2022 edition of the Yearbook. The Swiss scores have been hovering within the Top 10 in all the pillars the Yearbook considers important. In case of economic performance (7th in 2021, while 30th in 2022), the sub-indices conveyed that up until the serious consequences of Covid-19 and the war between Russia and Ukraine, the Swiss economy had stable bases (domestic economy [4th in 2021, 7th in 2022], international trade [15th in 2021, 12th in 2022]). However, by 2022, certain decline showed up in terms of its international investment (12th in 2021, while it suffered from a great loss by 2022 reaching the 52nd place), and employment (15th in 2021, while 27th in 2022), while, of course, prices (58th in 2021, 59th in 2022) has been deteriorating because of the tipping inflation mentioned earlier. With respect to government efficiency (2nd in 2021, 1st in 2022), the most important dimensions have been displaying a relatively surpassing performance (public finance [1st in 2021, while it was still in the top in 2022 with its 3rd place], tax policy [12th both in the 2021 and 2022 editions], institutional framework [1st both in the 2021 and 2022 editions], business legislation [10th in 2021, 7th in 2022] and societal framework [5th in 2021, 6th in 2022]) that predestined the top position. As for business efficiency (5th in 2021, 4th in 2022), productivity and efficiency (4th in 2021, 2nd in 2022) as well as access to finance (1st in both editions), i.e. flexibility of financing, appeared to be the key drivers. Needless to say, the Swiss infrastructural background (1st in both editions) does also perform outstandingly (e.g. education (1st in the 2021 and 2022 editions), scientific infrastructure (3rd in 2021, 4th in 2022), health and environment (3rd in 2021, 1st in 2022). As a corollary, its innovation performance has also been considered eminent, Switzerland was ranked as 1st among the 132 economies featured in the GII 2021.⁵⁷⁷ What is even more important is the fact that Switzerland can be seen as the most innovative one as compared to the European countries as well since the country produces more innovation outputs relative to its level of innovation investments. Not to mention the fact that the country ranked 2nd out of 37 in the WEF's Global Competitiveness Report 2020 in ensuring public institutions to be strongly embedded in governance

⁵⁷⁷ See www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/ch.pdf.

principles about building a long-term vision and establishing trust by serving their citizens.⁵⁷⁸ As for the Swiss decentralisation, the federal system has the highest level of decentralisation in international standards, however, of course, the degree of decentralisation is not homogeneous across the cantons, mainly due to politics (Bern is much more centralised than for instance Basel City).⁵⁷⁹

Collaborative mindset over time

As it was accentuated by studies prepared by various organisations ranging from national authorities to international organisations,⁵⁸⁰ Switzerland has to cope with very bleak and pervasive pressures on its environment stemming from the industry, the internationally high density of population, agriculture, transport and last but not least tourism. Importantly, Switzerland's exposure to seismological events is substantial.⁵⁸¹ In order to strengthen world-class research in Switzerland, the public sector made significant efforts to establish the CSCS Swiss National Supercomputing Centre in 1991, which is now located at Lugano, in canton Ticino.⁵⁸² CSCS offers a range of high-performance computing services, ranging from classical

⁵⁷⁸ See SCHWAB–ZAHIDI 2020.

⁵⁷⁹ For more on the puzzling heterogeneity in decentralisation across cantons with German and French socio-cultural backgrounds, see one of the most insightful books by Sean Mueller filled with a number of counter-intuitive findings about the Swiss institutional architecture (see MUELLER 2015: 296).

⁵⁸⁰ OECD 2011b.

⁵⁸¹ For example: In January 2012, about four million cubic meters of rock fell into Bondasca valley in Switzerland due to geological movements. ETH Zürich documents earthquakes in Switzerland that are rather frequent. The Swiss Seismological Service at ETH Zürich records an average of between three and four earthquakes a day, or between 1,000 and 1,500 earthquakes a year in Switzerland and its immediate neighbouring countries (see www.seismo.ethz.ch/en/knowledge/earthquake-country-switzerland).

⁵⁸² Although it was established in Manno, Ticino, CSCS moved to a new building in March 2012. CSCS is now located at Via Trevano 131, 6900 Lugano, about 10 minutes from the local university USI (see www.usi.ch).

supercomputing to grid computing, as a national user lab facility. Hence the Centre is an organic building block of the new paradigm of collaborative science. By using this common resource in the public interest (either by public or private researchers), more adequate estimations on future geological changes are achievable.

Additionally, CSCS serves as a fertile ground for achieving the goals set in the Swiss Energy Strategy 2050 namely that identifying and using deep geothermal energy to mitigate the utilisation of fossil fuels by fostering renewable energies. This is why the CSCS started to collaborate with researchers from the Swiss Seismological Service, University of Lugano (USI Università della Svizzera italiana) and ETH Zürich in a more dedicated way in developing ways of utilising geothermal energy safely with the help of supercomputers. The collective efforts of those with very sophisticated knowledge and expertise (i.e. brain capital) made it possible to apply complex simulations even in case of underground mining, carbon capture and hydraulic fracturing. By using supercomputer capacity, identifying promising fields in which geothermal energy can be generated via so-called hydraulic stimulation has become easier. Still, such development triggered another problem to be addressed. In short, drilling to depths of 4–5 kilometres to reach regions being hot enough to heat crust water to 160 °C–180 °C is not without problems. Since the water is flowing through the hot rock which is, in turn, not very permeable, engineers need to make the rock permeable by pumping water into gaps and crevices whereby fracture surfaces shift and slip releasing stress. In this way, fractures are widening by making them permeable enough to have water underneath circulating within the hot area. On the other hand, such fractures are the end-result of tectonic stress since Switzerland is a country laying on the Adriatic plate shifting toward north and pushing the Eurasian plate. Hydraulic stimulation is therefore leading to nascent shaking (e.g. St. Gallen and Basel experienced perceptible earthquakes with a magnitude higher than 3 due to such undertaking in 2013 and 2006, respectively). The first attempt to overcome this problem was to stop injecting water at a certain point when the magnitude can be minimised. However, that approach did not work

since earthquakes emerged later anyway. It implied that there is no such easily calculable threshold.

The Swiss Seismological Service has therefore been preferring an alternative way to improve predictability and safety. An Advanced Traffic Light System has been introduced based on rock physics that will help in predicting, near-real time, whether continuing hydraulic stimulation may cause perceptible earthquakes. Albeit SED has developed a software to analyse the response of the underground during hydraulic stimulation, its proper working requires high computer capacity. So, the project entitled “Forecasting and Assessing Seismicity and Thermal Evolution in Geothermal Reservoirs” (FASTER), which includes researchers from the SED, ETH Zürich, University of Lugano and prominent software engineers from the CSCS, came to life. Running simulations, based on the brain capital at hand, on the supercomputer with the aim of predicting perceptible earthquakes as stimulation continues has become the new norm. FASTER feeds the near-real time data in the CSCS supercomputer, which is then ready to run through millions of potential scenarios with respect to issues like the possible number of fractures, their type and orientation, and how much friction and stress they can sustain.

Beyond the collaborative dimension, the Centre also aspires to optimise the use of each participating resource. However, with the escalation of nation-wide and often international collaborations in public interest, the required energy capacity as well as consumption increased at a rapid pace at the same time.

To this end, the CSCS had to resort to intensive search for such solution that would reduce costs related to the continuously growing energy consumption.⁵⁸³ The latter one can be regarded as a significant burden on the Swiss environment. Eventually, the CSCS constructed a new supercomputing facility, which utilises water from the lake of Lugano as a free cooling resource, thus lowering the power utilisation efficiency coefficient from 1.6 to 1.2 (i.e. the energy overhead for cooling from 60% to 20%).

⁵⁸³ See ETH Zurich 2010: 56.

Organisational and institutional backing

From the perspective of the CSCS, there was an increasingly intensifying need arriving from the Swiss society for trying to anticipate the seismological changes in Switzerland by providing world-class simulation-based science in a more vigorous way. In doing so, the Swiss Federal Institute of Technology in Zürich (ETH Zürich) on behalf of the federal government initiated the establishment of a rock-solid and well-performing platform, the Swiss National Supercomputing Centre as an independent unit. However, the Centre's budget is based primarily on federal financial contributions (it is complemented with research institutes' contributions) providing the necessary flexibility of finance; the initiative can be seen as a bottom-up one since the research community in canton Ticino sprang to life the idea and the commitment to that Centre. The Swiss Seismological Service performs a constant public service task on behalf of the federal government, while the Swiss National Supercomputing Centre CSCS in Manno/Lugano is developing and delivering technical and scientific supercomputing services for the academic world, as well.

Apart from the driving role of the federal government, ETH Zürich's innovative organisational climate equipped with highly skilled workers and good industrial relationships throughout Switzerland were also among the major success factors. The Centre provides wider scope for scientific experimentation on environment protection-related issues, as well, e.g. how to minimise errors in estimations on seismological changes. This *per se* serves as an indispensable reward for the research community and overall, the Swiss society. Above all, the case of the Swiss CSCS can also be linked to the phenomenon of Big Data (a stream of technology relevant for Industry 4.0 and digitalisation alike).⁵⁸⁴

It was hardly by chance that the organisational structure did not fit into the imagined purposes. Therefore, the CSCS set up a working group dedicated

⁵⁸⁴ Since 2021, the CSCS has been cooperating with Hewlett Packard Enterprise and the NVIDIA in creating a cutting edge and AI-based supercomputer to replace the existing one "Piz Daint" which is what this case study is about.

to this organisational challenge. The major aim was to make the organisation able to handle proper reporting and steering mechanisms with greater autonomy. To this end, the general manager proposed a structure having a user group in a self-organised way like in some business areas. Interestingly, the basic principles of this change in organisational setting were based on the so-called FLAG (*Führung mit Leistungsauftrag und Globalbudget*) concept of the federal administration, i.e. they have to serve as reporting entities at various levels of the organisation. The concept FLAG, as an institutionally coded opportunity, plays a key role in the federal state of Switzerland and thus it was also a driving force of the organisational innovation. The concept offers a federal state-wide management model and it has been going through an organic development over the past decades by serving as a guiding principle. By continuous development of FLAG, the federal state is to foster the results-based leadership *via* continuous monitoring. One of the most fundamental objectives of the FLAG to stay sentinel over the global budget by gauging whether the outputs are in line with the requested targets in case of public services. In this way, the gap between the functional and financial autonomy is permanently investigated with the aim of promoting mid-term planning methods throughout the public sector.⁵⁸⁵

As we mentioned, the CSCS strived to reach a more energy efficient usage of computer platform by constructing a new innovative facility which utilises free cooling from the lake of Lugano. The new facility is initially equipped with a power capacity of 5MW, corresponding to annual energy costs of approximately 11 million CHF. The improved power efficiency of the facility reduces the annual costs of the energy overhead for this consumption from almost 7 million CHF to less than 2.5 million CHF.⁵⁸⁶ The institutional

⁵⁸⁵ See www.bakom.admin.ch/bakom/de/home/das-bakom/organisation/strategie-und-leit-bild/neues-fuehrungsmodell-fur-die-bundesverwaltung.html.

⁵⁸⁶ Additionally, the CSCS adopted the GE's uninterruptible power protection technology. This contributed to the reduction of costs and environmental impact of high-performance computing. However, the CSCS uses the GE UPS system for only 1 MW of the consumption. The main consumption does not use any UPS, which contributes substantially to the power efficiency of the new building (at the cost of a slightly higher operational risk).

mainspring behind this is the principle of subsidiarity. Subsidiarity means that cantons are responsible for using energy/electricity economically and rationally tailored to their local needs (related to this, each canton has more or less dominant shares within electric power companies, as a consequence, they are playing a major role in the production and the composition of electricity). Bearing this responsibility in mind, in an effort to meet these requirements cantons apply various policies without neglecting the common interest. It calls for policy coordination which is determined by an institution, the Inter-Cantonal Conferences of Energy Directors (ICED) since 1979. This institution acts as an entity of socialisation regarding energy policy throughout cantons because its platform provides opportunity on a regular basis for knowledge and experience sharing with the aim of getting better and more aligned energy policy. This is why canton Ticino also has to be open for good energy saving solutions and financially contributed to the innovative cooling solution for the CSCS.

And the innovation continues since the current supercomputer is going to be replaced by Alps, the new generation of supercomputer with AI-augmented software setting. The CSCS will continue to be a User Lab for researchers in multiplying brain capital but in a more comfortable and transparent manner (different research infrastructures offered by the CSCS will be integrated into one and researchers will not only be able to carry out simulations, but also pre-process or post-process their data; this makes the whole workflow more efficient for them).⁵⁸⁷

All in all, the Swiss public sector innovation aimed at providing a *state-of-the-art* public service that is open for and should be based on collaboration. Innovation was embedded into an institutional setting in which the responsibility of cantons constituted a main driving force towards a recognition of being open for technologies that are helping in rationalising the resulting energy consumption. The institutional background has an inherent incentive to force the internalisation of negative externalities, at least to neutralise them

⁵⁸⁷ See www.cscs.ch/science/computer-science-hpc/2021/cscs-director-shares-details-about-planned-successor-to-piz-daint.

by triggering further innovations based on the utilisation and enhancement of brain capital available. Still, further innovations have a proper ground in the collaborative setting bequeathed. However, as the case also illustrated, it often needs financial backing. Another potential conclusion is that public sector organisations should focus primarily on results and outcomes rather than on the sheer contemplation of activities and processes.⁵⁸⁸

Emerging patterns in emerging markets – Brazil: Empowering citizens in cementing trust and democracy

The Brazilian Porto Alegre is a good example of participatory budgeting (PB). It shows that empowering citizens through PB serves as a means to make public administration more transparent, trustworthy and democracy congruent. It indicates that contextualised participatory budgeting is in the interest of a much better as well as shorter feedback circle under the aegis of fiscal anomalies. It also directs toward the recognition that once democratic values to be strengthened, PB can be an instructive way simply because democracy is not

⁵⁸⁸ For instance, a result and/or an outcome can be the future proofing of climate friendly energy system of a given country or a region. This was also the principle followed in the multi-actor public sector innovation in the Netherlands where the municipality of Amsterdam took part in a project – together with three knowledge institutions, the technology developer Spectral, local residents' representatives, etc. – aiming at offering a sustainable solution to optimise the business climate for the benefit of the customers (mainly businesses) by building on the virtual network developed that makes it possible for firms without power capacity to use the unused capacity of companies with capacity. It is basically about the smart grid network in the Schiphol Trade Park. During peak times, the available grid capacity is supplemented with (solar) energy from batteries and – if there are really no other option – with generators. The smart grid platform ensures that maximum use is made of the available grid capacity by means of real-time measurements and smart control. To date, it is to become an inclusive platform in which all residents and local partners are given the opportunity not only to be users, but also to benefit from the collective efforts in the area (see more on the project at www.sadc.nl/eerste-bedrijven-schiphol-trade-park-aangesloten-op-uniek-virtueel-stroomnet).

primarily about building and relying on well-educated competent voters but on conversations that create and maintain trust over time.

Outcomes and basics:

Competitiveness, innovativeness, the performance and institutional architecture of the public sector

Brazil's emerging economy has long been at the bottom of the rankings in the IMD World Competitiveness Yearbooks (its 2022 position was 59th, while its 2021 place was 57th, compared to the 61st place of 2017, 60th in 2018, 59th in 2019 and 56th in 2020). There have been certain challenges waiting for overarching actions, such as addressing anti-inclusive labour market, upgrading skills that are inevitable when it comes to adapting to the digital age, coordinating and leveraging public and private investments to stimulate the socio-economic innovation ecosystem, designing measures to rehabilitate political and socio-economic stability internally and externally, approving tax and administrative reform projects, and encouraging domestic and foreign investments in the productive and service infrastructure to better adapt to the markets of tomorrow. In the WIPO Global Innovation Index 2021, Brazil was ranked at the position of 57th among the 132 economies featured in the Report. With a view to its own peers, Brazil ranks 4th among the 18 economies in Latin America and the Caribbean. The underperforming socio-economic innovation ecosystem of Brazil can be grasped on many grounds, the GII 2021 emphasised that the country has been producing less innovation outputs relative to its level of innovation investments. With regard to the issue of decentralisation, Brazil, as a federal state, can be seen as a relatively highly decentralised country in which local autonomy is substantial.⁵⁸⁹ Despite the constitutionally decentralised nature of the Brazilian institutional architecture, the Brazilian public

⁵⁸⁹ See more on the degree and features of the Brazilian decentralisation in OECD 2020c.

sector – being the employer of 14.6% within the total employment⁵⁹⁰ – does not seem to be able to be equipped strongly with governance principles in building long-term vision and establishing trust by serving their citizens with high quality and innovative public services (i.e. Brazil was 35th in that ranking of the WEF's Global Competitiveness Report 2020⁵⁹¹).

Empowering citizens via participatory solutions

By the early 2010s, apart from the examples in the United States,⁵⁹² more than 50 small, medium and large cities in Europe (e.g. Berlin, Cologne, Emsdetten, London, Paris, Plock, Rome, Seville) had exemplified that there is a growing predilection for following the way of the Brazilian Porto Alegre, which is the capital city of Rio Grande do Sul, being committed to “feeling the pulse of the citizens’ opinion” through the introduction of participatory budgeting (PB), i.e. discussing budget-related issues with citizens on public service delivery. To date, approximately 3,000 governments, let them be at the central or local levels, adopted the practice of PB. PB provided positive impetus at least in the following four dimensions: (1) increasing democratic awareness of citizens and improving feedback circle; (2) dampening information asymmetry regarding urban administration; (3) changing priorities in accordance with the expressed local preferences; (4) strengthening social learning by fostering the willingness of people to establish civic associations to take part in PB in a more organised and organic way. For these reasons, participatory budgeting can be seen on the one hand, as a dialectical relationship-building initiative at local level governance, on the other hand, it can also be regarded as a catalyst of social innovation. Briefly, PB is a trust maintainer and trust

⁵⁹⁰ In 2019, the Brazilian public sector employed 7.75 million people which accounts for 14.6% of the total employment (representing 55 million people), see www.statista.com/statistics/763742/number-employees-public-administration-sector-brazil.

⁵⁹¹ See SCHWAB–ZAHIDI 2020: 73.

⁵⁹² In case of New York City see SU 2017: 67–75.

builder mechanism and is considered a tool for engineering democracy toward higher quality as it was emphasised in one of the last worldwide overviews on participatory budgeting.⁵⁹³

Since the diffusion of this kind of dialectical relationship-building and utilisation, originated in Porto Alegre, demonstrates that various forms of participatory budgeting exist, it is worth investigating the cradle of this development in order to have important messages for the perspective of the European participatory budgeting.

The Brazilian case: institutional basics driving PB

The effect of the ‘participative modernisation’ mentioned can be understood if we also incorporate the basic feature of the Brazilian institutional architecture that shapes all policy design and implementation. The institutional structure is often seen as a competitive federal one which is to a certain extent originated in the historically fragile political system and the relatively huge regional inequality.⁵⁹⁴

As far as the *institutional basis* is concerned, behind the curtain of the participatory budgeting initiative was indirectly the new Federal Constitution approved in 1988 which resulted in an even more decentralised state by delegating more tasks and responsibility to the lower tiers of governance. The new constitution entailed increased autonomy of municipalities meaning that states have great latitude to set their own tax system leading potentially to fiscal competition.⁵⁹⁵ It is often cited as a way of attracting business investments

⁵⁹³ See DIAS 2018. Enough to think of the role of trust in businesses. Paul J. Zak analysed how different trust bases at companies affect the innovative milieu including the workers’ psyche. They found that, compared with people at low-trust companies, people at high-trust companies tend to report: 74% less stress, 106% more energy at work, 50% higher productivity, 13% fewer sick days, 76% more engagement, 29% more satisfaction with their lives, 40% less burnout (see ZAK 2017).

⁵⁹⁴ GARMAN et al. 2001: 205–236; AMES 2001: 352.

⁵⁹⁵ See AFONSO et al. 2005: 295–313.

by states. By decentralisation, a more solid coercive power for disciplinarian fiscal policy appeared in Brazil. The constitutionally declared institutional changes through decentralisation signalled to a large extent the commitment of winding up the fiscal laxity that was neatly registrable in Brazil under the centralised system that culminated in a form of the well-documented Latin American populism.⁵⁹⁶

After 1994, the Fiscal Stability Program signalled this recognition as well as the commitment to a sounder fiscal policy which offers a more fertile ground for economic development. The requirement for avoiding the laxity of fiscal policy as well as to preach the importance of transparency at all level of governance called for the Fiscal Responsibility Law which was eventually enacted in 2000. The law defined rules for all level of public administration (e.g. ceilings on public debt, or on changes in the debt, limits on deficits; an expenditure proposal always have to bear the stamp of the compensation principle to identify the resources that will be used to finance the given proposal; if total personnel expenditures eclipses 95% of the levied limit, the public organisation is not allowed to create new offices or hire employees, etc.).

Even though the literature on fiscal rules suggests that rules can easily prove to be either too strict or too loose, there is always a chance to re-calibrate and refine their usage and to gear them towards the necessary fiscal flexibility. The latter one is crucial to finance investments that are explicitly enunciated by citizens *via* participatory budgeting. As comprehensive studies pointed out, after these developments, fiscal stabilisation became a reality in Brazil under a more decentralised fiscal system.⁵⁹⁷

Furthermore, the effect of the 'participative modernisation' of public administration cannot be understood separately from a much broader context related to fiscal development of the country. Since Brazil has a history of relatively surpassing inflation (i.e. hyperinflation was a basic feature of the Brazilian economy from the 1980s to the midst of the 1990s), the monetary policy had to be coupled with a fiscal policy becoming eventually more and

⁵⁹⁶ DORNBUSCH-EDWARDS 1991: 412; LEONI-RENNÓ 2006.

⁵⁹⁷ EICHENGREEN et al. 1996: 415-442.

more disciplinarian.⁵⁹⁸ The constitutional decentralisation went in this direction by stipulating *inter alia* that municipalities are responsible for a large share of expenditures in public health.

As always, there were two sides of the coin. On the one hand, decentralisation without appropriate coordination among states led to the well-known ‘beggar-the-neighbour’ phenomenon manifested in the well-documented fiscal war among states (i.e. when Brazilian states resorted to VAT reductions in the interest of attracting more business investments). On the other hand, decentralisation also offered a ‘window of opportunity’ to curb the burgeoning and long-lived corruption and clientelism⁵⁹⁹ by replacing them with a more transparent and a clearer administration which is closer to the public. The initiative was partly, therefore, the result of the alliance of top-down as well as bottom-up forces that contributed to the improvement of public integrity.⁶⁰⁰

With respect to the main factors influencing the introduction and success of PB, first and foremost, internal commitment to development can be mentioned. The initiative was crystal clearly the harbinger of the increased commitment to ‘pseudo-direct democracy’. Porto Alegre recognised that businesses are more likely to be settled where they find proper volume of workers, what is more, where the corruption and clientelism are lower than elsewhere in the country. Moreover, Porto Alegre’s leaders and its community were also entirely aware that their own development rests on factors like health care and

⁵⁹⁸ If the monetary policy is not committed to pursuing sustainability, no fiscal policy can help to make such mission credible for the general public and foreign investors. For more on the requested harmony between fiscal and monetary policies see DIXIT–LAMBERTINI 2003: 1522–1542.

⁵⁹⁹ See SANTOS 1998: 461–510.

⁶⁰⁰ In the Transparency International Corruption Perceptions Index 2011, Brazil was ranked 73rd of 182 countries. Ernst & Young (2012) also corroborated that Brazil is on the road of increasing public integrity, however, as always, the road is still bumpy. While in 2012, Brazil was 69th, one year before the eruption of the Covid-19 pandemic, it was 105th. By 2021, Brazil went up until the place of 96th. Since the outbreak of a socio-economic turmoil between 2014–2017, Brazil started to make a detour toward a more populist and nationalist approach led by Jair Bolsonaro. Such change represented a tectonic shift in the Brazilian political landscape (see more in BARROS – SANTOS SILVA 2019).

educational conditions as well as appropriate living conditions (water supply, waste water systems, etc.). The examined participatory budgeting played a key role in transforming the priorities into the really requested direction. Participatory budgeting was institutionalised and became a yearly phenomenon in Porto Alegre. PB is based on an annual review which is to safeguard the constant refinement of procedural rules by adapting them to the intensively changing circumstances.

PB enhanced the feedback circle facing citizens when they want to express their opinions and suggestion on public service provisions. Owing to the PB, critical human development gained momentum. “During the first seven years of this experiment the share of households with access to water services increased (from 80% to 98%), and the percentage of the population with access to sanitation almost doubled (from 46% to 85%)”.⁶⁰¹ PB autochthonously and incrementally broadened the opportunity for experimentation. Apart from this, PB also proved to be the most expedient way of not only reducing costs but reducing waste. In this way, such public sector innovation boosted research on urban sustainability as well.⁶⁰²

The Latin American PBs offer the possibility that people can select priorities between different projects. So, one could argue: Money is limited, and “government cannot do everything”. Hence, it is the task of the citizen to decide which of the proposed projects should be realised.⁶⁰³ As investments priorities were shaping, the need for taking into account social justice was also raised. For this reason, Porto Alegre established and started to use an allocation formula in which criteria were used that incorporated the specific features of various districts when it came to allocation of funds.

Participatory budgeting served as a catalyst for introducing collective action on local policymaking level. It influences prevailing priorities and re-configures the mindset of resource allocation according to the perceived and expressed

⁶⁰¹ UNDP 2002: 13.

⁶⁰² FRIANT 2019: 81–99.

⁶⁰³ In Belo Horizonte and perhaps also Recife, citizens can select their priorities on infrastructure projects via the Internet.

needs. Additionally, PB brought a new *élan* into the self-organising process of civic associations that led to broadening networks and weaving relations among them (e.g. the number of neighbourhood associations underwent a vibrant growth; it rose from 380 to 540 between 1990–1998).⁶⁰⁴ PB played an essential role in social learning because it significantly supported the process of empowering citizens with information and called their attention to the necessity of a more transparent and open governance – which was repeatedly emphasised in 2012 when President Dilma Rousseff launched an “openness offensive”.⁶⁰⁵

What is perhaps even more important is the fact that PB in Porto Alegre was geared predominantly towards infrastructural projects that can easily increase expenditures because of the costs of maintenance emerging afterwards. Hence, in some cases, expenditures are increasing and the government might have problems because of this as it has been the case in Porto Alegre itself. Nonetheless, according to analyses on whether PB is associated with changes in social spending or changes in several indicators of well-being, PB municipalities in Brazil (including Porto Alegre) spent a slightly higher share of their budget on health and education programs.⁶⁰⁶ Therefore, the institutionalised fiscal framework tailoring towards prudent and sustainable public finance is a must (especially in Europe where social welfare systems of some countries prove to be unsustainable).

Bottlenecks

As the Brazilian proverb says “A timely ‘no’ beats a hasty ‘yes’”. It holds also in case of introducing PB since what matters the most is its aftermath. Once there is no capacity to follow up and to keep the service quality, the hasty introduction of PB can cause serious difficulties. As far as the main barriers

⁶⁰⁴ ABERS 2007: 83–98.

⁶⁰⁵ See MICHENER 2012.

⁶⁰⁶ See WAMPLER–BOULDING 2009: 125–135.

and shortcomings are concerned, we can identify three factors: (1) allocation formula has to be improved continuously by tailoring it to the actual circumstances; (2) PB needs public organisations to be prepared for the follow up of suggestions in terms of institutional and administrative capacity; and last but not least, (3) improving transparency prior to the introduction of PB is essential.

Concerning the first factor, the funds available at the disposal in each investment area are distributed among the districts by taking into consideration the number of residents, the quality of the infrastructure available as well as the local list of priorities.⁶⁰⁷ As a consequence, poor districts with a relatively high density of population are not under the loupe of PB due to their lower ranking positions.

As for the second factor, improving the institutional and administrative capacity of local governance is one of the most pivotal cornerstones in preparing for PB. It is necessary because the increasing number of suggestions, critiques and recommendations requires human and technical capacity to be addressed and tackled in an efficient way. The credibility of PB relies heavily on whether citizens see improvements in their districts based on their proposed suggestions and recommendations. In case of Porto Alegre, the largest parts of the proposals were implemented.⁶⁰⁸

Importantly, in case of Porto Alegre, participatory budgeting contributed primarily and spectacularly to the improvement of basic infrastructure. The reason behind this is the fact that people started to think about basic needs which were either given insufficiently or were missing, e.g. building paved roads in poorer districts and connecting them to developed ones *via* public transport, or enhancing the sanitary system. But there are other, mainly more

⁶⁰⁷ SINTOMER et al. 2008a.

⁶⁰⁸ The number of cities where there was a commitment to attempt the adoption of PB was huge during the first half of the 1990s; however, public sector officials could not cope with this and massive protests arose once it became clear that the tremendously increasing demand in terms of expressed preferences and requirements cannot be rapidly and spectacularly put into practice (see ABERS 2007: 83–98).

sophisticated and complicated issues as well that would have required higher skills both from the side of local administration and citizens because of the information asymmetry (e.g. how to share public health services in a more efficient way).

In case of participatory budgeting, and any kind of participative modernisation, a solid limit against permanent improvement might be the fact that the complexity of perceived problems increases. It calls for more sophisticated suggestions based on qualified advocates. As a corollary, involving citizens into the policymaking and policy forming processes can create more room for experimentation on the basis of suggestions in the spirit of the Darwinian ‘variation and selection’.

In some cases citizens offer their contribution to the realisation of their proposals.⁶⁰⁹ Participation might thus result in service provision by citizens exclusively or in forms of shared services. Let us underline that shared services often require skills that are not available at the given local authority. It *per se* can also drive collaboration among departments – as well as private/third sectors.

Related to this, *learning the work* of public administration and getting better understanding on its progress are of paramount importance from the perspective of a pro-active participatory budgeting, Porto Alegre therefore collaborated with non-governmental organisations (NGOs) whose aim was to prepare and learn the representatives for that kind of contribution that can optimally culminate in collective actions. It is essential to give realistic picture to the local community about the current status and challenges of urban management and financial condition. It is crucial because the sheer increase in the number of participants – in 1990, only 976 participants were registered, by 2002 this number exceeded 28,000 people⁶¹⁰ – does not necessarily lead to valuable suggestions and recommendations rather to a collection of desires that are not fully met with real opportunities. These considerations are partly behind the weakening role of PB in Porto Alegre, not to mention the role of

⁶⁰⁹ SINTOMER et al. 2008b: 164–178.

⁶¹⁰ NOVY-LEUBOLT 2005: 2023–2036.

political changes putting less attention to such social innovation (e.g. after 2004, the workers' party, which supported PB, lost its political power).⁶¹¹

Furthermore, since citizens are not fully aware of how the organisational system looks like and works, a suggestion can easily establish a claim for departments to work together by building on common knowledge to solve the given issue. Consequently, as it was the case in Porto Alegre, PB can spark inter-departmental communication and collaboration, as well. This initiative attracted attention from other Brazilian cities as well; more than 100 cities adopted the main idea after mature contextualisation.⁶¹²

Transparency is therefore a prerequisite of an efficient participatory budgeting initiative. Importantly, participants are expected not only to make suggestions or scathing critiques over public service provision, but also to be responsible for the ranking of the prepared and advocated projects.

All in all, by using the example of the Brazilian Porto Alegre, as the birth-place of participatory budgeting, it can be concluded that PB proved to be a good way forward in favour of a public administration incorporating the effective needs of citizens in a more dedicated way. While PB in Porto Alegre and its hybrids that evolved throughout Latin America addressed mainly larger infrastructural projects, it is always important to pursue prudent fiscal management (e.g. expenditure rules, targets to fend off the heightening process of deficit bias). One of the lessons that can be drawn from the case of Porto Alegre is that transparency and access to information are critical for PB, hence PB can remarkably contribute to the improvement of public sector effectiveness as well as to the winding up of corruption. Of course, one of the most pertinent underlying success factors behind PB is always the political leadership, which is, by now, often going to seldom count.⁶¹³

⁶¹¹ The role of political change in the development of PB in Porto Alegre is of immense importance (see MELGAR 2014: 121–149).

⁶¹² And there are numerous hybrid forms of PB all over the world (see SINTOMER et al. 2010: 10).

⁶¹³ For instance, Poland established a law that made PB obligatory for big cities. However, after such commitment, PB lost dynamism.

Policymakers should carefully use the contextualised participatory budgeting in the interest of much better as well as shorter feedback circle. PB can influence and make the prevailing priorities in line with the needs of the community; however, the final decision should be made by the public sector because short term claims must not threaten longer term strategies and perspectives. If deficit bias is supported by generous behaviour represented in participatory budgeting, fiscal sustainability can be undermined and therefore future development goals are at stake. Consequently, participative modernisation and fiscal prudence should be in tandem in order to reverse the Great Suppression via conspicuously increasing public trust in governance.

Sovereign debt crisis – Finland: Innovative fiscal policy in favouring experimentalism

With the benefit of hindsight, since the outbreak and the repercussions of the 2008 financial and economic crisis and its ensuing Eurozone crisis (i.e. sovereign debt crisis), it has become clear that muddling through such a crisis without institutional innovations contributing to fiscal stability by bypassing the web of political games is more likely to be associated with a prolonged or at least protracted recession and enormous social costs. The fundamental innovative idea behind establishing independent fiscal bodies was to create autonomy for expertise over myopic political interests, in short, to ground decentralised fiscal policy at central level of governance. In this way, trust in economic policy and the public sector itself can be stimulated or at least maintained since such institutional innovation tends to assess and produce macroeconomic forecasts better – that are highly relevant for instance in case of the EU's Stability and Convergence Programmes – whereby improving the reliability of fiscal policy (i.e. leading to real budgetary improvements). This section is to give a short overview about the basics behind independent fiscal bodies through the lens of a Nordic country, Finland, which has been committed to public sector innovation for a long time and which followed

a unique path towards such institutionalism in the European arena. Such a stable fiscal space has been allowing the country to be engaged in other innovations, such as grounding experimental governance.

Outcomes and basics:

Competitiveness, innovativeness, the performance and institutional architecture of the public sector

Over the last decade, Finland has been in the Top 20 most competitive countries listed and ranked in the IMD World Competitiveness Yearbooks. Since the 15th place of 2015, Finland has been resolutely besieging the Top 10 (its position was 8th in the 2022 edition meaning a three-place improvement from its 11th place in the 2021 edition). If one looks at the four pillars of the IMD WCY, it can be said that while Finland has been performing moderately in terms of economic performance (e.g. domestic economy [18th in 2021, 36th in 2022], international trade [37th in 2021, 40th in 2022], international investment [37th in 2021, 32nd in 2022], employment [33rd in 2021, 40th in 2022], prices [39th in 2021, 40th in 2022]), there have been demonstrable improvements in areas like government efficiency (public finance [17th in 2021, 15th in 2022], institutional framework [6th in 2021, 3rd in 2022], business legislation [12th in 2021, 6th in the 2022 edition], societal framework [2nd in 2021, 1st in 2022]), business efficiency (productivity and efficiency [11th in 2021, 7th in 2022], finance [5th in 2021, 4th in 2022], management practice [10th in 2021, 6th in 2022], attitudes and values [14th in 2021, 5th in 2022]), and infrastructure (e.g. basic infrastructure [11th in 2021, 6th in 2022], health and environment [5th in 2021, 3rd in 2022], education [5th in 2021, 3rd in 2022]). Among the remarkable strengths of the Finnish socio-economic innovation ecosystem, business executives recurrently reaffirm that the Finnish education system shows outstanding performance (82% of the survey respondents thought that high educational level is a core competence of the country, 81% of them considered skilled workforce as an advantageous field for Finland, while more than half of them, approximately

54% praised policy stability and predictability). With respect to its innovativeness, Finland was ranked as 7th among the 132 economies featured in the GII 2021 prepared by WIPO,⁶¹⁴ what is more, within Europe, Finland was the 5th most innovative country among the 39 European economies. Moreover, Finland had the highest score (78.5) in the WEF's Global Competitiveness Report 2020⁶¹⁵ regarding its ability to ensure public institutions embedding strong governance principles while to build a long-term vision and to establish trust by serving their citizens. As far as the institutional decentralisation is concerned, Finland has been classified as a unitary state, however, its overall decentralisation score (2.3) predestines the country to be a relatively highly decentralised economy (5th out of 27 European countries analysed) with its two levels of governance (provinces and municipalities) with the 310 local administrative units. With respect to fiscal decentralisation, its expenditure ratio was 38% (i.e. relative share of overall sub-national expenditure compared to total government expenditure) meaning high financial decentralisation (its revenue autonomy is also relatively salient with its 71%, 3rd out of the EU27).⁶¹⁶ Its functional/administrative decentralisation has also been notable (score: 2.1, 7th out of EU27). Local autonomy can therefore be said to be high meaning that the central level exercises supervision only regarding compliance with the law.⁶¹⁷

Finland: Innovative fiscal institutionalisation in favouring experimentalism

In the following, the section outlines that Finland learned from its crises by broadening the policy horizon via system thinking. This section argues that: (1) the Finnish fiscal policy has been long pervaded by innovative system

⁶¹⁴ See www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/fi.pdf.

⁶¹⁵ See SCHWAB–ZAHIDI 2020: 73.

⁶¹⁶ See for instance the decentralised health services in KOIVUSALO 1999: 1198–1200.

⁶¹⁷ See the decentralisation index of the European Committee of the Regions s. a.

thinking; (2) Finland has established its independent fiscal body in a nuanced way; (3) beyond the fact that Finland has formally declared its commitment to public sector innovation resulting in more cost-efficient provision of public services, prudent fiscal policy allows the state for being more engaged in experimentalism in supporting real socio-economic development.

First, Finland's pre-2008 crisis anatomy can be broken into three phases with significantly different characteristics: (1) the era of the financial liberalisation and the economic boom within the period 1985–1990, which culminated in an overheated economic situation; (2) the second phase (1990–1993) was dominated by the financial crisis and its infiltration into various industries which was accompanied by the implosion of the Soviet Union further worsening the economic potential; (3) the third was the phase of recovery which was pervaded by intelligent fiscal policy practice covering the period 1993–2000. The crisis disclosed the kind of suboptimal economic policies which were sheltered by business cycles in time of peace. In this regard, the *capability of the government* to correct or select out those policies, and perhaps to incorporate new priorities, was potentially one of the crucial elements in the recovery. During the 1990s, the Finnish governance was to pursue a fiscal consolidation being innovative enough to contribute to the fiscal stabilisation without endangering the growth dynamism of the real economy. In doing so, the Finnish fiscal policy followed an expenditure-based fiscal adjustment interspersed with cutting non-productive expenditures (e.g. social transfers, public sector wages/salaries) while increasing highly-productive spending on research and development that could boost business productivity.⁶¹⁸ It was innovative in the sense that the state-of-the-art literature on fiscal adjustments suggested only the expenditure side of fiscal consolidation to get debt-to-GDP rate to dampen while potentially triggering the recessionary effect. Instead, Finland rose R&D spending from the level of 2% of the GDP to over 2.4% by 1996 and it was increasing up until the 2008 financial and economic crisis hit in (it was 3.54% in 2008, 3.73% in 2009). That aim was coincided with the objective of transforming the economy into an ICT-based, creativity

⁶¹⁸ See KOVÁCS 2011: 56–72; KJANDER 2021: 87–110.

and knowledge-facilitated innovation-driven economic system. Importantly, it required a sort of system thinking that notices the potential of techno-economic paradigmatic shift (structural change) toward a higher quality socio-economic innovation ecosystem. In this way, according to Eurostat data, in the middle of the 1990s, the declining trend in productivity – due to the crisis mentioned – was reversed by putting it back on a rising trajectory (i.e. multifactor productivity of the 1990–1994 was 2.2, while it exceeded 2.7 as well in the 1995–1999 period).⁶¹⁹ The fiscal consolidation had therefore a dynamising impact as well.⁶²⁰

Second, Finland did also step on a road directing towards a fiscal policy based on numerical and/or procedural rules and institutionalised independent fiscal authority. A variety of fiscal rules can be used (deficit and/or debt rules, expenditure and/or surplus in structural balance rules, etc.) the success of which heavily depends on the rule-follower mentality of the government and the given society as well⁶²¹ (i.e. internal commitment to fiscal sustainability paves the way toward the successful usage of fiscal rules; otherwise, the meaning of fiscal rules is exhausted, not to mention that they can be either too strict or too loose).⁶²² In addition to rules, promoting the acclimatisation of long term view spanning across governments by fostering credibility and, last but not least by building trust, politically independent and unbiased fiscal institutions (agencies, councils) complementing the rules can be established (and have now been widely used). The mixture of rules and independent institutions applied are still a young phenomenon (they were mostly established and applied after 2010). That mixture can stimulate the necessary flexibility,

⁶¹⁹ See www.stat.fi/til/ttut/2014/ttut_2014_2016-05-12_tie_001_en.html.

⁶²⁰ It is widely called a consolidation with *non-Keynesian effects* or *expansionary fiscal contractions*. A Keynesian consolidation behaves as the Keynesian economic theory suggests, namely that a fiscal stimulus (i.e. increased governmental spending being potentially coupled with tax reductions foster aggregate demand) propels economic growth, while an austerity-oriented one (decreased governmental expenditures being potentially coupled with tax increases) withers growth (see GIAVAZZI–PAGANO 1996: 67–103; GIAVAZZI et al. 1999).

⁶²¹ One of the first canary about fiscal rules was KOPITS–SYMANSKY 1999.

⁶²² See DEBRUN et al. 2009: 44–81.

which is required for greater discretionary function, and fiscal transparency, as well.⁶²³ Nevertheless, since the deficit and debt levels can be regarded as social value orientations within a democratic framework, policymakers should refrain from giving extended authority to the independent fiscal institutions (e.g. giving political and legal responsibility, as well). Accordingly, these independent institutions are forward-looking⁶²⁴ when critically assessing, and in some cases, providing advices on fiscal governance. They should be rather consulting than decision-making bodies with the opportunity to address how existing fiscal rules relate to “higher level” social and economic objectives as well. In this way, fiscal policy can become more prudent and cautious when it comes to budgetary planning. By now, a growing body of evidence suggests that errors in the macroeconomic forecasts are significant and governments tend to be pervaded by a Panglossian optimism regarding their budgetary plans as *inter alia* Beetsma et al. (2022) clearly underlined.⁶²⁵ Nonetheless, as Covid-19 showed, independent fiscal bodies played a key role in providing scrutiny of emergency spending and real-time forecasts in a very turbulent time.⁶²⁶ As for Finland, it introduced the budgetary balance, expenditure as well as debt rules over the adjustment period, while for a relatively long time, it did not have an independent fiscal institution by international standards up until 2013. The Finnish novelty is given by that hysteresis and the nature

⁶²³ National fiscal institutions are independent bodies (e.g. councils), other than the central bank, tax office, government or parliament, that prepare macroeconomic forecasts for the budget, monitor fiscal performance and/or advise the government on fiscal policy issues. Fiscal rules bring rigidity into the system and thus restrict the opportunities of distributional coalitions, whilst the independent fiscal body brings the necessary flexibility into the system at the same time. Of course, over time, the portfolio of functions of independent fiscal bodies has become varying (e.g. in terms of assessing long-term fiscal sustainability, endorsing or producing economic and fiscal forecasts, monitoring compliance with rules, or costing of policies), see OECD 2021h.

⁶²⁴ KOPITS 2011: 1–18.

⁶²⁵ See BEETSMA et al. 2022; MEROLA-PÉREZ 2013; DEBRUN-KINDA 2017: 667–700; FLORES et al. 2021; GOOTJES – DE HAAN 2022; LARCH et al. 2021.

⁶²⁶ More than 90% of the national independent fiscal bodies delivered analyses relevant for designing proper policy responses (see OECD 2021h).

of the final configuration of its rules and independent body. To the latter, its independent fiscal body was created in 2013 in a unique way since mainly its function was established within and added to the National Audit Office of Finland (NAOF) (i.e. the Independent Monitoring and Fiscal Policy Evaluation Function, which was later renamed to the Team for Fiscal Policy Monitoring to act as the Finnish independent fiscal body together with the Economics Department of the Ministry of Finance). Admittedly, the way the independent fiscal body has been developed is exceptional among OECD countries. The piquancy of the Finnish case is that such institution has been placed under the governance structure of an audit institution. Still, the body's efficiency is unquestionable.⁶²⁷ The Team is responsible for critically monitoring national fiscal rules under EU treaties and compliance with the fiscal policy objectives stipulated in the General Government Fiscal Plan. So far, the rules and the Team have fulfilled their missions in the sense that fiscal prudence has been of utmost importance coupled with sustainable deficit and debt trajectories – even with the fact that, of course, the shadow of Covid-19 put the fiscal management under different light. While one will never truly know the counterfactual as accurately as it could have happened, the Finnish budgetary balance showed surplus in the pre-2008 years (in percentage of the GDP, it was 4% in 2006, 5.1% in 2007, 4.2% in 2008), its value remained within the Maastricht threshold of 3% later on up until the pandemic of 2020; in terms of debt-to-GDP ratio, it had been on a declining trend until 2008 by reaching 32.6%, then it rose up to 63.6% by 2015, since then it was shrinking below the Maastricht rate of 60% (59.4%, 2019). With the arrival of Covid-19, however, the Finnish debt-to-GDP rate started to rise (68% in 2020, 65% in 2021).

Third, the Finnish public sector and economic governance have been committed to instil innovation in the daily routine of the public sector. In 2019, the country adopted the OECD Declaration on Public Sector Innovation which aims at exploring the potential of innovation in the core functions of the

⁶²⁷ See OECD 2022c.

public sector⁶²⁸ (i.e. embracing and enhancing innovation within the public sector, encouraging and equipping all public servants to innovate, cultivating new partnerships and involving different voices, supporting exploration, iteration and testing, and, diffusing lessons and sharing practices by building on a relatively high autonomy local governance enjoys). In an effort to cultivate innovation via the productivity improvements of the public sector, the Finnish ministries join their forces to carry out the so-called productivity analysis reports to better identify areas of potential digitalisation and productivity enhancement with the purpose of serving citizens with faster processes, reduced working hours, improved quality of services, tapped synergies and diminished redundancies.⁶²⁹ In the spirit of building trust while remaining in the risk-taker position via stimulating innovations, fiscal prudence provided a fertile ground for the country to go on an untapped road of experimentalism in policymaking: Finland was the only country that initiated and completed a nationwide randomised control trial of a basic income programme between 1 January 2017 and 31 December 2018. The underlying idea behind the concept of universal basic income is to counterbalance the anti-inclusive character of digitalisation (i.e. automation, robotisation). Let us now ignore the question of under which conditions such a system can be sustained (e.g. the majority of the society spends its free time and money on self-development as well as on value-creating activities and not just on entertainment, as the famous sociologist Theodore Adorno postulated decades ago, etc.). During the programme, a treatment group was formed by picking 2,000 initially unemployed citizens randomly, who then received a guaranteed as well as unconditional automatic cash payment on a monthly basis (which was amounted to €560) instead of the basic unemployment allowance in the same amount. Importantly, the monthly income available via this programme was way lower than a typical monthly income of a Finnish household. Then, the control group consisted of

⁶²⁸ For the Finnish declaration document see <https://vm.fi/documents/10623/307541/Innovaatiojulistus+final+25-11-19.pdf/2dbccb3c-3310-990c-537a-ee28bef08f53/Innovaatiojulistus+final+25-11-19.pdf?t=1574850905000>.

⁶²⁹ See the productivity report in Finnish at <http://urn.fi/URN:ISBN:978-952-367-049-5>.

all other unemployed people receiving the standard benefits. Comprehensive evaluations over the 2017–2018 programme recurrently found that the policy innovation was a success on many grounds.⁶³⁰ Citizens in the treatment group were more satisfied with their lives and expressed that they did experience less mental strain, depression and loneliness as compared to those in the control group. They also had a more positive perception of their economic welfare (not to mention that a slight positive employment effect was also recognisable since starting a business requires savings, basic income acted as a puffer to be engaged in entrepreneurship later on).

All in all, a core element of the innovative public sector of Finland was the longevity of innovation-seeker mindset embedded in a system thinking as an ingrained practice (i.e. taking care of structural change, navigating into new work atmosphere given by advanced digitalisation). The necessary fiscal basis for being more innovative and experimental was created by a sort of innovative fiscal institutionalisation being unique enough to be a subject of this case study. It is all the more important in today's inflationary context since more than 150 years of experience in 21 countries conveys that in a low inflation environment or a period of deflation, fiscal performance deteriorates and the effectiveness and efficiency of the adjustment are inferior.⁶³¹ This promises a relatively good outlook for the Finnish fiscal policy under the current high inflation environment to be a continuous supporter of an innovative public sector.

Shade of populism, shadow of sanctions – Wallonia: Breeding innovation mindset in and out

There is no gainsaying the fact that the 2008 financial and economic crisis and its ensuing Eurozone crisis, being coupled later with the migration and refugee crisis of 2015 resulted in a resurgence of flaring populism across

⁶³⁰ See ALLAS et al. 2020; Kela 2020.

⁶³¹ See END et al. 2015.

Europe and even in the United States. There is no clear-cut consensus in the literature on whether populism should be considered an illiberal democracy or even whether it constitutes an inherently bad thing. Populism is merely signalling that something is deeply wrong in the ruling paradigm of liberal democratic order,⁶³² it is the responsibility of the public sector, the ruling cabinet as well as that of the broader public not to let charismatic leaders to rise with sonorous rhetoric being impotent in solving real-world problems but only for seeking short-term and unsustainable gains. There is no silver bullet or a universal magic formula that can defeat populism once and for all (i.e. populism is therefore a sort of *unpolitics*) if for no other reason than populism is a highly context dependent and thus heterogeneous phenomena both in terms of populist parties and the drivers behind them.⁶³³ This is why there is no general yardstick to decipher for instance why populist radical right parties are more successful in certain countries than in others. A better way of fighting against it is to immunise the society via education to be barded with critical thinking and on-the-ground reality-oriented demands from the government and the public sector when facing underlying problems.⁶³⁴ In this way, the chance of failing populists can be increased which is all the more important since some populists tend to keep the power by resorting to authoritarian means which is more suppressive for innovation dynamism. This short illustrative case study purports to showcase that bottom-up integration of studying public sector innovation in general into the circle of university courses (the largest French-speaking university in Wallonia, Belgium, UC Louvain) may have a hard to quantify but nevertheless important contribution to upholding the principle of non-engagement in populism in the wilder

⁶³² See TAGGART 2000: 140; TAGGART 2018: 79–87.

⁶³³ See COLANTONE–STANIG 2019: 128–151.

⁶³⁴ For us, critical thinking is nothing but a *manière de voir*. It is a process of continuous commitment to systematically question the Hows and Whys of ingrained evidence (i.e. to identify and filter out the Frankfurtian bullshits), see FRANKFURT 1988: 202; FRANKFURT 2005: 67.

public while cultivating public sector innovation in case of those working in the public administration.⁶³⁵

Outcomes and basics:

Competitiveness, innovativeness, the performance and institutional architecture of the public sector

In terms of international competitiveness, Belgium became stronger as it was ranked as 21st out of the 63 countries covered in the 2022 ranking of the IMD World Competitiveness Yearbook (just for comparison, 2019: 27th, 2020: 25th, 2021: 24th). Largest improvements were registrable in the pillars of economic performance (14th) and government efficiency (33rd). As for economic performance, the sub-pillars that had been driving the positive change were the growth of the domestic economy (16th), international trade (7th) and international investments (18th), while in case of government efficiency, institutional framework (21st), business legislation (22nd) and societal framework (10th) performed relatively good except from the weakly performing public finance (47th) and tax policy (62nd). When it comes to innovation dynamism, Belgium was ranked 22nd among the 132 economies featured in the GII 2021 published by the WIPO.⁶³⁶ Belgium performed better in innovation inputs than innovation outputs in 2021, while, with a view to its European peers, the country was ranked 14th among the 39 economies in Europe. According to the WEF's Global Competitiveness Report 2020, Belgium (19th out of 37) belongs to the middle group of countries in terms of having public institutions embedding strong governance principles by building a long-term vision and establishing trust by serving their citizens. As far as the institutional architecture is concerned, Belgium can be considered a complex federal state

⁶³⁵ For more on the uniqueness of Wallonia of not being engaged in populism, see the paper by de Jonge emphasising that the region seems to have remained immune to radical populism (see DE JONGE 2021: 598–614).

⁶³⁶ See www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/be.pdf.

organised around 3 regions (the Flemish Region, the Walloon Region, and the Brussels Capital Region), linguistically 3 communities (Flemish, French and German), 10 provinces and 581 municipalities. Its decentralisation score (2.1) predestines the country to be seen as a substantially decentralised federal state (7th out of the EU27). It is mirrored in terms of its expenditure ratio (i.e. relative share of overall sub-national expenditure compared to total government expenditure) being above 45% meaning a high fiscal decentralisation, which does not really hold in case of revenue autonomy (i.e. relative share of sub-national own revenues [excluding grants] compared to the total sub-national revenues) being 40% (17th out of the EU27). Still, Belgian lower tiers of governance have surpassing autonomy (1st out of the EU27) in terms of administrative decentralisation (i.e. the extent to which the local level is supervised/constrained by the central level). In terms of political decentralisation, lower tiers of governance enjoy a relatively high level of legal basis for self-government and it also entails the ingrained practice of subsidiarity (its score in this regard means that subsidiarity scrutiny is well-defined and the regional level is consulted systematically).⁶³⁷

Wallonia: Breeding public sector innovation mindset in and out

Even though Flanders are ahead, Wallonia has the opportunity and capacity to make up its backlog by converging and even outperforming Flanders.⁶³⁸ What is more, state-of-the-art literature on the Walloon socio-economic innovation ecosystem does also emphasise the puzzling insight that Wallonia seems to have remained intact from flaring right wing radical populism (while the much richer Flanders were not), however, our knowledge is still rather incomplete on what are the basic prerequisites of such immunity. We argue that one of the underlying drivers of the demarcation strategy applied by the media and the politics itself, mentioned in the study cited earlier, is nothing

⁶³⁷ See European Committee of the Regions s. a.

⁶³⁸ VAN OUDHEUSDEN et al. 2019: 185–198.

else but awareness based on broader knowledge about the nature of innovation in the public sector obtained at university courses. Our line of thinking converges to the observation that civic education can work as a vaccine against excessive populism.⁶³⁹

To date, European universities are still rather rarely offering courses on the state-of-the-art knowledge about the true nature of innovation within the public sector and about how an efficiency-seeker and innovative milieu can be cultivated accordingly. In this respect, Belgium shows up as an exceptional case. For instance, at KU Leuven there has been a course entitled *Public Innovation*. The course has been a part of their master course in public sector innovation and eGovernance. The purpose is to give students a general intro to public sector innovation concepts, and to expose them to the public sector through guest lectures and field visits (given the fact that some students do not have a public administration background). The course existed before under a different name, but with more focus on ‘introduction to public administration’. In 2021, KU Leuven remodelled the course content and changed the name to public innovation. There is relatively limited attention for digital innovation, because that field is already covered extensively in other classes the university provides. From 2023, the university will add a session on future thinking or scenarios as well, and will expand the session on experimentalist governance and policy experiments – a field which is of great importance in a federal institutional setting like Belgium, as we indicated earlier. One of the key purposes of the course is to educate students in a way along which they will be equipped with the necessary skills and knowledge to clearly and unambiguously communicate key concepts and cases in public innovation to an academic as well as a (policy) practitioner audience. This is also the leading

⁶³⁹ DEMOS (Democratic Efficacy and the Varieties of Populism in Europe) delivered a number of studies asking whether school practices (curricula) can mitigate the likelihood that a young student will develop populist attitudes. In case of 14 European democracies, DEMOS found at least two things: (1) dedicated courses on citizenship increase students’ civic participation; (2) the engagement is even higher in case of students having parents with university degrees (for the relevant studies by DEMOS see <https://demos-h2020.eu/en/civic-education-works-as-a-vaccine-against-populism>).

principle in case of UC Louvain, the largest French-speaking university in Wallonia, where the courses go even further concentrating not only on the theory but the successful implementation of innovative ideas born in the public sector. The course *Implementing public sector innovation* acknowledges the complexity of our socio-economic innovation ecosystem in which the public sector shall sometimes take the lead in fuelling trust in the society to have a better performing real economy served by the financial universe as well. The course serves as an exploration of the themes involved in the development of public organisations (e.g. outreach management, project management, piloting, etc.) and the analysis of the dynamics of public administration in a complex system. The course teaches students to reflect (with a view to preparing them for action) on how to intelligently combine approaches, techniques, tools and means to optimise the functioning of the administration in response to the multiple challenges it faces today. The course is in line with the argumentation of our book, namely that public sector innovation happens and is potentially initiated in a complex system in which neglecting the nuances about the institutional architecture can result in very misleading insights about what to do. The approach is intended to be concrete, in tune with the reality on the ground, and therefore necessarily interdisciplinary. Beyond learning about functions or activities, the course also aims at giving students an image of the social and professional world of public administration that is diversified and objective (by going beyond stereotypes), and thus preparing them the transition to the professional world that will be theirs upon leaving their studies. The course is based on a combination of presentations and field visits which, each time, gives the opportunity to one or more professionals to share knowledge, skills and presentations of concrete cases with the students. Each sheds additional light on the management of public administration, for example strategy, human resources management, project management, process management, digitalisation, etc. The perspective chosen is therefore not to be limited to academic work but also to focus on applied work carried out within the administration (e.g. reports from study commissions or regulatory bodies). Students, for their part, are invited to mobilise this professional expertise to

put themselves in the shoes of consultants responsible for writing and/or analysing management plans. In doing so, students are trained for drafting various reports and syntheses, an essential skill for exercising an advisory, coordination, expertise or animation function in a public organisation. The ultimate goal of the course is to meet today's actors of public sector innovation in an effort to lead them to become the actors of public sector innovation of tomorrow. In this way, students, especially those that will be absorbed by the public sector, will be more likely to confront with populist narratives and to be conducive to restricting the opportunity of excessive populists to gain visibility and to have impact. Another equally important course relates to the *theoretical foundations of public sector innovation*. It embraces the broad concept of innovation, its developments in the scientific literature pertaining to the public sector (public administration, public management and public policies), the existing typologies, the specificities of innovation in the public sector, and its acceptability as well as dissemination-related challenges. The course aims at enabling students to master the theoretical foundations of public sector innovation. It encourages students to take a critical and creative perspective on innovation in the public sector and to always seek arbitrary opportunities (i.e. efficiency-increasing intervention areas in a micro or inter-departmental manner).

The courses mentioned offer an important opportunity for students to get acquainted with ongoing initiatives in the domain of public sector innovation such as the so-called NIDO programme.⁶⁴⁰ NIDO is a public sector innovation lab being open for public sector organisations desiring to be more proactive in preparing for current and emerging challenges. NIDO is about foresight via scenario exploration system, i.e. anticipating what may happen and even influencing the future as much as possible. In addition, NIDO does also acts as a platform to boost public sector innovation via more intense collaboration: within the confines of NIDO, the initiative Gov Buys Innovation provides a virtual market encouraging startups, scaleups and other real economic

⁶⁴⁰ See www.nidolab.be/nido/fr.

actors to react to public sector-related challenges (e.g. administrative, etc.) by offering their innovative business-sector-born solutions. In NIDO's so-called inspiration sessions, an emphasis is given to the search for new solutions in other sectors that do not at first sight resemble to the original one. Thus, in a broader sense, NIDO does nothing but provides a sort of exaptive forum where not only new innovative ideas can emerge and flourish, but also new functions can be found to already existing innovations to be applied elsewhere.

Box 11

Trumpeted greatness of governance suppressing public sector innovation

With the inauguration of Donald J. Trump, the US public sector was exposed to processes and forces suppressing public sector innovation. The President's thinking on public sector innovation was completely at odds with the lessons learned since His views manifesting systematically undermined the innovative milieu of key public sector organisations through cutting their budgets, reducing the levels of authorised staffing and letting public organisations suffer from retirements and job quits to remain without replacing innovative human labour force.⁶⁴¹ The new narratives on immigration and climate change⁶⁴² that President Trump created and brought into the public administration suddenly crumbled large portions of the foundations of

⁶⁴¹ The State Department and Environmental Protection Administration was a good case in point.

⁶⁴² While talking about the *Great American Comeback* programme during the World Economic Forum in Davos in early 2020, President Trump accentuated that rejecting the perennial prophets of doom and their predictions of the apocalypse is a must. President Trump used to use the adjectives for describing his understanding over global warming such as: mythical, non-existent and hoax. Perhaps, the most telling signs of scepticism over global warming was the fact that President Trump tweeted about his denial at least 115 times containing statements like these: "The concept of global warming was created by and for the Chinese in order to make US manufacturing non-competitive." (President Trump's tweet on Twitter on 6 November 2012); "It's freezing in New York – where the hell is global warming?" (President Trump's tweet on Twitter on 7 November 2012), for more see www.vox.com/policy-and-politics/2017/6/1/15726472/trump-tweets-global-warming-paris-climate-agreement.

those hard-won missions that had been built up with long and arduous work (i.e. the Trump Administration decided to withdraw from the Paris Agreement which committed 188 countries to keep rising global temperature below 2 °C; shrank from continuing the previous administration's Clean Power Plan; attempted to suspend and even freeze the fuel efficiency standards imposed on new vehicles, etc.). It was a triumph of populism to the detriment of scientifically grounded background work and at the expense of a public sector that is open for seeking out efficiency increasing intervention areas via public sector innovations. What happened was therefore completely in line with the empirical evidence suggesting that once populism takes over the cautious and science-based political approaches to reality, the populist leadership literally exiles or drives away (scientific) expertise⁶⁴³ and thus sublimely advocates post-factualism⁶⁴⁴ under the pretext of pursuing a utopian idea of make America great again by affecting emotions (the use of Twitter for that purpose, even if devilish, was an innovation in itself), it will therefore negatively impact the bureaucratic expertise in itself and the performance of the public sector in general, ultimately it will be harmful for the dynamism of the socio-economic innovation ecosystem.⁶⁴⁵ Populist governance has a complex set of consequences including the fact that researching and analysing the performance of the public sectors (perhaps their innovations) becomes more and more difficult (e.g. a populist regime does not necessarily authorise their public sector workers to take part in international surveys and analyses on public sector innovation, etc.). Since populism holds a basket of short-term pleasures and long-term pain for voters, other sectors shall take the lead in innovating that can reverse the populist mindset of the public sector and letting some long-term efficiency-increasing innovative ideas to infiltrate.

⁶⁴³ It was mainly by cutting research funding, closing scientific advisory committees, and not allowing government researchers to speak publicly (see PLUMER–DAVENPORT 2019).

⁶⁴⁴ For instance, imposing tariffs under the auspices of securing national interests was neither necessary nor justified. What is more, these steps were promoted and communicated by the President himself alone without having an in-depth discussion over the action in the Administration.

⁶⁴⁵ For the Italian case see BELLODI et al. 2021.

All in all, the commitment toward safeguarding an innovative milieu in the Belgian, and especially in the Walloon public sector is underpinned by internal (inside the public administration) and external (education system) forces that are mutually reinforcing each other.⁶⁴⁶ Building knowledge and disseminating insights about on-the-ground realities, including wicked challenges and the complexity of policymaking, may cement current and future generations' susceptibility to critical thinking.⁶⁴⁷ Thus, enhancing knowledge on public sector innovation via university courses are undoubtedly able to shape current and future generations' attitudes toward innovating within the public sector whereby contributing to the conscious pro-activism with the aim of nipping excessive populist ideas in the bud.⁶⁴⁸ This way of promoting public sector innovation as a means of preventing the formation and spread of excessively populist views can be a springboard for further public sector innovation. In this sense, this case does not exemplify cost reducing innovations (more for less) or innovations targeting the broadening and deepening of the accessibility to public services, but both at the same time together with grounding opportunities in the public sector for innovations geared toward qualitative enhancement.

⁶⁴⁶ This is why for instance themes like smart cities and smart territories could have become an important field to be developed further (see <https://nadi.unamur.be/research/smart-cities-and-e-government>).

⁶⁴⁷ Studies on populism in Belgium underlined the fact that even populist voters are to support technocratic, experts-led reforms and governance in meeting on-the-ground realities (see VAN DIJK et al. 2020: 289–318).

⁶⁴⁸ The picture on populism in Wallonia has been changing in recent years. Initially, the lack of a “supply” of populists could be explained by the massive dominance of the social democratic party. In recent years, one part of the liberal party has developed a populist discourse, with success, and, more importantly, the recent elections have shown a massive growth of the extreme left (PTB) – in other words, populism has manifested itself at the left rather than at the right (went from 5.76 to 13.68% in the 2019 elections, and, in 2022, it was around 20% in the polls, which made it the third party, just 1% behind the second largest). Nonetheless, hectic and excessive post-factual-oriented radical populism could not sprout yet.

Chapter IV

Conclusion

The present book was to showcase the crucial importance of public sector innovation among the tectonic and distorting movements of the financial universe and the real economy. The prevailing literature turns a blind eye to, or ignores, this systemic circumstance, which otherwise fundamentally influences and explains the innovation dynamism of the socio-economic ecosystem that should be at least shaped by economic governance and the public sector.

To this end, Section *Succession of crises* deciphered at least ten, sometimes strongly intertwined and interlinked, polycrisis (*The Madness*), forming the so-called Great Suppression, to which public sectors and economic governances have mostly responded only with the aim of revitalising via stimulus. It pointed out that the succession of crises as well as the obsession to stimulus were the natural resultants of the current configuration of the socio-economic system interspersed with disharmonies among the subsystems (i.e. runaway of the public sector, the excessively expanding financial universe while the real economy was left behind and left out of special awareness) engendering suppressed innovation dynamism. Section *Suppression of the innovation dynamism* was dedicated to the toxic nature of excessive financialisation, which is undeservedly neglected in the international literature, namely that while the state as a regulator and coordinator took its soothing arms and hands off the financial system since the 1970s, it has been indirectly bracketing the importance of the real economy through letting the financial universe expand. The present book argued that this tectonic movement dismantled the fabric of the socio-economic system by requiring catalytic changes on several fronts. The book was also to pinpoint that this symmetry breaking is injecting uncertainties and distrust into the real economy, to which even the next production revolution does not offer a solution by calling for an active

governance as well as for a catalytic (innovative) public sector. The chapter has uncovered that the nucleus systemic factor behind the Great Suppression then is the disharmonious interplay among the real economy, the financial universe and the public sector. As we illustrated, the expansion of the financial universe has its own landmines, hence even the new industrial revolution in itself is unable to put the real economy back into the consciousness of the financial universe to palliate the symmetry breaking. Such symmetry breaking acts as a tipping point, which is a systemic resiliency-killer mechanism. In an effort to make a difference, the public sector needs to grow up to do that job by fostering innovations within and over its walls embracing also the financial universe and the real economic arena. Otherwise, the state will be overburdened, after which the sustainability of its developmental function is doomed.

Chapter III was dedicated to the issue of the catalytic public sector and its cultivation. It first outlined the theoretical framework of public sector innovation by incorporating the fact that the challenges have been making the socio-economic innovation ecosystem ever-more complex to be tackled via reductionist scientism, rather they are calling for a more innovative public sector with a holistic and more humble governance attitude. After presenting the scope and the methodological approach, it focused on the *state-of-the-art* empirical evidence as well as it deciphered interesting cases (primarily positive cases as next practices, but pinpointing also some negative cases as past practices) of various public sector innovations that took place in the developed countries, especially in the European Union so far. The choice of these may have seemed arbitrary, their consideration was given by the logic of presenting a sort of ‘example library’ of all types of public sector innovations reflecting upon the challenges (*The Madness*) we identified earlier.

To conclude, it was not our intention to provide a complete universal roadmap – we have argued exactly that this is not possible. Still, the following four more general lessons can be drawn from our line of thinking that are presumably transcending the usual insights. Then we identify four resilience-killing mechanisms and conditions that the catalytic public sector needs to pay attention to.

CORE MESSAGES FOR THE CATALYTIC PUBLIC SECTOR

Our book pointed out that the next challenge of researchers, scholars, pundits and economic practitioners including think tanks and do tanks like the OECD is to extend the idea of analysing the drivers and barriers of public sector innovation to states far from equilibrium, for which the expanding financial universe stifles down the dynamism of the real economy feeding negatively back to the performance of the public sector as well. Once the financial system tends to fail to adequately channel credit towards productive investment in the real economy, innovation dynamism suffers and the public sector, and what follows is the overburdening of the public sector as a whole as it is to resurrect dynamism mainly through indebtedness and unintended consequences (e.g. zombification). Based upon this punchline, the following core messages emerge from our discussion.

Theorising about public sector innovation that is merely within the border of the public sector may remain loyal to prevailing theory but it is very ominous to practice. Such approach is not necessarily able to be conducive to reverse the Great Suppression. As Georg Wilhelm Friedrich Hegel stated, reality develops along the reconciliation of thesis and antithesis. In our view, the public sector shall play a key role in initiating a reconciliation between the real economy and the financial universe being gone beyond its original role. The public sector should seek out innovations that are impacting in that direction. It is all the more important because without this, even a highly decentralised (or decentralising) system cannot have a beneficial effect, meaning that its inequality-reducing effect in terms of access to public services is neutralised by the excessive expansion of the financial universe (as we implied, with such a configuration, the overburdening of the state is in the cards). In sum, under the current configuration of the systems (public sector, financial universe, real economy), not much should be expected from public sector innovation if and when the disharmony between the financial sector and the real economy is not addressed in parallel.

A broader concept of public sector innovation is needed. An extended framework is needed to address public sector innovation by recognising at least:

(1) the heterogeneous character of the public sector, the rigidity of the institutions and their adherence to the *status quo* differs in each country, as does their ability to tolerate change (e.g. certain countries have deep traditions for cultivating a public sector that does not want to dominate the processes, but to create opportunities, motivate the creation of partnerships and act as a service provider to its partners, while other countries do not have such grassroots); (2) the complexity of the challenges (*The Madness*) humanity faces calls for addressing the critical exigencies via overarching missions without working relentlessly on giving the ultimate and only solutions to the world; (3) the changes in the structural configuration of the socio-economic innovation ecosystem affecting the innovation capability of each subsystem (i.e. symmetry breaking and growing financial universe at the expense of the private and public sectors); (4) the fact that eventually all forms of innovations shall be supported especially because there might be exaptations (innovations without strategic plan) arising to be used for an entirely new function by entirely different agents in an area which is completely different from the original area of use; thus (5) the crucial role of brain health and brain capital in socio-economic renewals and resilience (to have more knowledge to gauge trend spots and alternative usages of innovative ideas; to prevent serious mental disorders impeding psychological resilience due to many factors such as Covid-19-triggered stress and isolation, extensive automation-triggered un- and underemployment, etc.); and (6) the imperativeness for unleashing and liberating sustainable innovations (do not harm the trust base of the innovation ecosystem). In principle, public sector innovation must compete with business innovation, still, the Great Suppression signals that business dynamism falls short and public sector innovation should take the lead on many grounds, including the addressing of the financial exuberance.

The public sector should feel called upon to transform its institutional setting into an innovation friendly environment whereby it can decisively contribute to reversing the Great Suppression. Since innovation dynamism relies primarily on inclusive institutions (i.e. those that are to decrease inequalities by broadening the access to socio-economic opportunities in better serving real development),

while extractive institutions stifle innovation and socio-economic development, decreasing inequality in terms of access to public services such as health enhances the resilience of the overall socio-economic innovation ecosystem. The lesson to be learned is that innovative ideas are needed for cultivating equitable public services including health and education (including innovative ideas about how and where to use already existing long-standing innovations for entirely different functions in the spirit of increasing the contribution to prosperity and well-being of the public sectors, this is the field of exaptations to be stimulated via ‘exaptive events’ bringing together a mixture of interdisciplinary actors). It requires an innovation-stimulating institutional architecture together with granular data and methodology to measure and map inequalities in access to various public services.⁶⁴⁹

Measuring is not pleasuring but obscuring. Our book noted with regret that a unified institutional background with elaborated and widely used methodology is still missing and the measurement of the output of public sector innovation is often sporadically addressed; what is more, there has been a perceptible disinterest surrounding the hot topic of public sector innovation on the part of EU Directorates-Generals. To put it mildly, the ugly truth is that the profession does not know how to assess public sector innovation as there are not enough (granular) data to do that. These circumstances are particularly intriguing especially in times when the public sector should communicate its efficiency improvements to fight against lurking and then proliferating populism, to counterbalance post-factualism, to mitigate the simulacra mentioned in the book. Still, we argue that public sector innovation is a topic where the issue of scientifically sound and precise measurement is extremely difficult or maybe even impossible because of the complexity inbuilt (e.g. public sector innovations are differing from each other on many

⁶⁴⁹ EU Member States have typically no methodology and data to get a better understanding over inequalities in terms of access to services. Contemplating already existing approaches is a must, e.g. the Swedish Open Comparisons in the Public Health project suggests that standardisation of measurement across the EU would be of key importance (see MAKENZIOUS et al. 2019: 97–101).

grounds, for instance, in terms of objective functions such as cost reducing innovations [more for less], innovations targeting the broadening and deepening of the accessibility to public services, and innovations geared toward qualitative enhancement of public services). This is a prime example where more complexity-aware economic thinking and approaches are required in moving away from pursuing the Hayekian scientism (i.e. obsession with method in copying natural sciences) toward digging deeper by capturing soft categories and the process itself, not the outcomes. In case of public sector innovation, measuring is not pleasuring but often obscuring by potentially leading to truncated, biased and flawed knowledge and a public sector management being pervaded by false consciousness. It is our hope that our book has contributed to the narrative stating that our socio-economic innovation ecosystems are interspersed with interlinked and interconnected dynamic systems exposed to symmetry breaking (i.e. expanding financial universe at the expense of the real economy, etc.) while the basic institutional architecture does also influence the often mutually amplifying criticalities emerging and the underlying capacity to innovate on the other hand. Our book suggests that there is a fervent need to build up an interdisciplinary coalition of different organisations, public sector representatives, policymakers, researchers, etc. from fields like a variety of streams of economics, behavioural, neural and network sciences, contagion dynamics, econophysics, mathematics, psychology (i.e. deciphering the mental issues preventing public sector workers to innovate, etc.) and those having complexity science background in an effort to develop new analytical tools to better understand the underlying forces behind public sector innovation pattern creation and to better uncover resiliency-killer mechanisms inbuilt into the system.

RESILIENCE-KILLER MECHANISMS AND CONDITIONS

From our analytical framework to devise the Great Suppression (i.e. emphasising the role of symmetry breaking between the subsystems of the financial

universe, the real economy and the public sector itself) together from the short illustrative case studies delivered, implicit messages about resilience-killer mechanisms and conditions are unfolding to be eliminated once public sector innovation is to offset (reverse) the Great Suppression with a better performing and social trust rehabilitating public sector. There are at least four systemic resilience-destroyer mechanisms and conditions such as Complacency, Obsession to particularism, Decentralism and Emerging tipping points (CODE).

No. 1: Complacency

Since every innovation and science begin with doubt, a potential antidote to complacency meaning the dominance of doubtlessness, as a resilience-killer process, might be the definite enrichment of knowledge as well as the enhancement of education and involvement. As Sir Alexander Fleming, a Scottish bacteriologist and immunologist credited by the discovery of penicillin, warned us: misusing antibiotics can hasten evolution of drug-resistant bacteria via random mutations and render them useless for future generations. By paraphrasing such caution, as the book documented in certain cases, misusing innovation in the public sector can be a means for governance being pervaded by populism, nationalism, secessionism or even autocratic fashions. To a certain extent, the latter was the case in Hungary, where the behaviour of the public sector and the atypical interventions of the economic governance extinguished to a large extent the flames of a healthy innovation dynamism by encoding quelling forces to the next production revolution (see Sub-section *Engaging in the next production revolution – Hungary: Suppressed public sector due to unorthodoxy*). As the case of Wallonia illustrated (Sub-section *Shade of populism, shadow of sanctions – Wallonia: Breeding innovation mindset in and out*), immunising the general public against populism can happen through knowledge building over public sector innovation at university courses where the critical mass of critical thinking can also be obtained. As the case of Porto Alegre demonstrated (Sub-section *Emerging patterns in emerging markets – Brazil:*

Empowering citizens in cementing trust and democracy), increasing the trust builder involvement of voters via participative modernisation is a good way forward once fiscal prudence is in tandem with such advancement, hence reversing the Great Suppression may become a real perspective via conspicuously increased public trust in governance. The central role of fiscal prudence was also confirmed by the Finnish case (Sub-section *Sovereign debt crisis – Finland: Innovative fiscal policy in favouring experimentalism*) in providing a springboard toward experimentalism. In addition, as the Belgian case indicated, opening up to an experimental mentality and practice in the public sector may simultaneously carry the opportunity to stimulate exaptations (i.e. when old features are started to be used for new purposes, that is to say, where a long-standing, previously unused or otherwise used innovative evolutionary by-product acquires significance in a new situation) which can only be based on a high-quality education system.

No. 2: Obsession to particularism

Narrow-sightedness is able to mask the systemic risks encoded into the complex configuration of subsystems (public sector, financial sector, real economy) that behaves as a resilience destroyer by making any recovery from a crisis ever-more difficult. A potential antidote to particularism is cultivating system thinking and extending the horizon of experimentalism. By today, the complexity of the socio-economic innovation ecosystem cannot be bypassed by simply devoting attention only to a certain element of it (i.e. concentrating exclusively on the financial sector or on the real economy). Due to the disharmony documented, engendering consequences like zombification, public sector and economic governance alike is unable to relatively easily identify Goldilocks zones where it could focus on advancing sustainable structural change (digital economy, Industry 4.0, more inclusive, greener circular economy). An important lesson of our book refers to the ongoing industrial revolution, namely that Industry 4.0 by itself does not seem to be able to autochthonously bring back the real

economy (non-financial corporate sector) into the consciousness of the financial sector unless systemic landmines (including zombification) are addressed. It calls for system thinking. What is needed therefore is a systems approach that, moreover, is aware of the need to experiment, because it is immediately impossible to fully understand and influence the system. The Austrian case (SmartCity Vienna) underscored the crucial importance of having a smart playing field to spark capacity and willingness to address serious challenges like antibiotic resistance (Sub-section *Antibiotic resistance – Austria: An even smarter city Vienna*). The case of Switzerland (Sub-section *Natural disasters and climate change – Switzerland: Expanding the supercomputer’s horizon with bequeathed collaboration*) has also epitomised the essentiality of system thinking when arguing that beyond grounding collaborative mindset, public sector organisations should focus primarily on the results and outcomes rather than on the contemplation of activities and processes. Not to mention the Brazilian participatory budgeting which served as a fine tonic for extending the opportunities for experimentation (see Sub-section *Emerging patterns in emerging markets – Brazil: Empowering citizens in cementing trust and democracy*). Additionally, the Finnish case depicted that learning from crises is possible by system thinking and by innovative fiscal institutionalisation in favouring experimentalism that are to reduce resilience-killer mechanism like fiscal alcoholism or laxity (Sub-section *Sovereign debt crisis – Finland: Innovative fiscal policy in favouring experimentalism*).

No. 3: Decentralism

The discrepancy between formal and informal institutions acts as a resilience-killer mechanism; a potential antidote to the gaping gap comes along with certain institutional change inducing actions of the public sector. Decentralisation, as a way of rendering institutional architecture to better serve certain aims (i.e. collaboration-driven innovations) is often seen as a magic formula but it is not, the informal institutional side shall also be taken into account or even

nudged in the direction formal institutional changes unfold. Otherwise, formal institutionalism can easily become irrelevant, impactless or even toxic, as the Hungarian case reflected upon (see Sub-section *Engaging in the next production revolution – Hungary: Suppressed public sector due to unorthodoxy*). Mostly but not always, in a centralised institutional setting, public sector workers are more likely to protect the tranquil boundaries of their comfort zone. While a more decentralised system appears to better ground collaborative and innovative mindset as the cases of Sweden, Switzerland and Finland demonstrated. Bringing therefore together different public sector spheres to move certain conversation further (bringing together health and finance ministries to gauge on how to spend not much on how much to be spent, etc.) is an instructive way forward insofar as informal institutions are suited for that. Importantly, decentralisation *per se* is not the panacea, every theory is just a relative truth merely. The most important goal of decentralisation is to create patterns, which depends on all kinds of parameters of the collaborators. *A mixture of approaches is therefore often needed*, as was seen in the Brazilian case, or in the Canadian case, where the co-existence of top-down and bottom-up initiatives served as life-long integrative efforts in fulfilling the objective of supporting active ageing of native-born citizens and multigenerational immigrants including refugees in a sustainable way (see Sub-section *Migration crisis – Canada: Life-long integrative efforts*).

No. 4: Emerging tipping points

Tipping points are hindering the economic governance to exert enough influence on the systemic processes to reverse to an earlier, still controllable phase offering more opportunities for real socio-economic development. A potential antidote to emerging tipping points is a continuous and holistic innovation activity with the aim of streamlining foresight and anticipative capacity. Continuous and holistic in the sense that innovations are addressing complex and longer-term missions given by the systemic configuration of the public, real economy and

the financial universe. Beyond addressing *The Madness*, the present book unravelled earlier, there might also be a complex mission of restoring the original role of the financial sector and the primacy of the real economy with which the public sector also promises better prospects for innovation. As our cases imply, bearing in mind that the socio-economic innovation ecosystem has become ever-more complex, a catalytic public sector, which is to amplify its innovativeness within while addressing systemic symmetry breaking in fostering innovation dynamism in the real economy too, shall nurture the accumulation of brain capital (as the Swiss case implied, see Sub-section *Demographic quandary – Sweden: Addressing care services for the elderly via innovating procurement*), it shall promote *transparency and access to information* (e.g. as the Brazilian case illustrated, see Sub-section *Emerging patterns in emerging markets – Brazil: Empowering citizens in cementing trust and democracy*), while *facilitating and cultivating continuous commitment with long-term vision* (e.g. as the Canadian, Austrian, Swiss, Swedish and Finnish cases highlighted, see Sub-section *Migration crisis – Canada: Life-long integrative efforts*, Sub-section *Antibiotic resistance – Austria: An even smarter city Vienna*, Sub-section *Demographic quandary – Sweden: Addressing care services for the elderly via innovating procurement*, Sub-section *Natural disasters and climate change – Switzerland: Expanding the supercomputer’s horizon with bequeathed collaboration* and Sub-section *Sovereign debt crisis – Finland: Innovative fiscal policy in favouring experimentalism*) are of paramount importance in avoiding the emergence of various tipping points (e.g. climate-, inflation-, populism-related or even migration-related tipping points, etc.) *even in the case when a highly decentralised institutional architecture is not given*. The case of Norway illustrated that circumventing the lack of high decentralisation is possible via digitalisation (see Sub-section *Health crisis – Norway: Innovative digital basis for tackling Covid-19*); while in fighting against galloping inflation, the Finnish case shed light on the long-term vision of a public sector when not preferring short-term interventionism in combatting inflation but betting on longer term technological development by moving towards anticipatory public services as an effective antidote to rising inflation (see Sub-section

Tipping inflation – Finland: Betting on technological development in moderating long-term inflation). This was also exemplified by the case of Wallonia (Sub-section *Shade of populism, shadow of sanctions – Wallonia: Breeding innovation mindset in and out*), where a relatively high decentralisation *per se* did not guarantee impulsive innovation within the public sector, outer sources of mindset changing were also important to encourage public sector innovation, which also has a beneficial effect on the fight against potentially arising excessive populism. Promoting consciousness over reality as well as public sector innovation may result in an airtight cordon for the evolvement and dissemination of excessively populist ideas. In this way, the public sector and economic governance have the possibility to leave behind the power of path dependency. The case of Finland (see Sub-section *Sovereign debt crisis – Finland: Innovative fiscal policy in favouring experimentalism*) did also demonstrate the possibility for path creation via innovative institutionalism and commitment when the public sector and economic governance acted proactively in influencing the phase transition to the ICT-based and services-oriented knowledge economy while a stable fiscal space has been allowing the country to be engaged in other innovations, such as grounding experimental governance.

All in all, our book has drawn attention to systemic considerations when trying to better understand why something deeper is amiss since an impulsive innovation dynamism in the real economy has become withering. The book is to become a clarion call for the catalytic public sector in order to mitigate the innovation-stifling character of the current system configuration. As was shown, the symmetry between the interactive public sector, the financial universe and the real economy was broken. Apart from the fact that this encourages us to rethink how complexity could be handled in a more instructive way (e.g. equilibrium according to mainstream economics is not the dominant one, but imbalance – and due to inequalities, our dominant econometric equations cannot even be realistic enough either);⁶⁵⁰

⁶⁵⁰ KOVÁCS 2022a.

by incorporating the expanding universe of the financial system at the expense of the innovation dynamism of the real economy, perhaps it has also become clear what is often misunderstood is the moral parable of the Damocles story mentioned in the introduction to this book: what appears to be an enviable position is often imbued with critical instability, or is itself such as to encode critical instability in the system such as outstanding financial gains (although due to the expansion of the financial sector to the detriment of the real economy); economic growth (although due to public indebtedness); spectacular productivity growth via Industry 4.0 (although to the detriment of inclusive socio-economic development); political power (although gained from populism grounding lacklustre public sector innovation by leaving grand challenges effectively unaddressed). As a corollary, a catalytic public sector shall take the lead in reinvigorating innovation into the socio-economic innovation ecosystem. It is the functioning of a public sphere that encodes in its operation *inter alia* the perpetual drive for innovation, the goal of maintaining coherence between large systems, and the mapping and mitigation of resilience-killing mechanisms and conditions. Thus, we hope that not only the contours but also the essential driving forces of the Great Suppression will be manageable and the process can be tamed, moreover, reversed. After all, a catalytic public sector shall acknowledge the complexity we live in and what it has to go for is not more than a sort of controlled madness.

Exploring the driving forces behind the Great Suppression is not easy, the profession is groping almost in the dark. The public sector also needs to pay more attention to this and to its own innovation performance. That way we can have a torch in the dark. For as our light increases, so does our apprehension of the darkness. Just to make it clear, in our view, the catalytic public sector and economic governance do not seek to eliminate darkness representing uncertainty, in fact, it accepts that uncertainty is a condition for novelty, and novelty is our hope for progress. The catalytic public sector should be therefore a continuous learning process or a research program rather than a singular practice that can be considered final once and for all.

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Somewhere along the line, something happened to the global economy that has robbed the confidence and courage of the innovation ecosystem, leaving it gripped by a fear of discovery, change, and an overwhelming dread of the unknown. This book delves into the issue of why innovation dynamism in the socio-economic innovation ecosystem of developed countries (especially European ones) appears to have become suppressed, what distortions the system is loaded with, and how the public sector could help via innovating itself.

Instead of unconditionally accepting the interpretation that increasing complexity makes innovation more difficult; the book summons a systemic approach in addressing the “something happened” hypothesis. It unravels an issue which has not been researched yet in a sufficient way, namely that while the state as a regulator and coordinator took its soothing arms and hands off the financial system since the 1970s, it has been indirectly bracketing the importance of the real economy through letting the financial universe to expand. The book argues that this tectonic movement dismantled the fabric of the socio-economic system by requiring catalytic changes on several fronts. The public sector and economic governance must therefore influence the systemic configuration of interplaying spheres (e.g., financial universe, real economy, public sector) in an effort to help creating autochthonous innovation dynamism.

One of the key messages of this book is that even if we have the levers, the public sector has to fight for innovation dynamism. To this end, the public sector should not only be aware of the systemic configuration in which it is embedded, but also that of their changes, or that of their unchanging nature, and should not merely ring the bell, but also act imaginatively for being an innovation trendsetter, which requires both enthusiasm and humility to cultivate better lives for all.

