

Ekonomika preduzeća



**Serbian Association of Economists
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The phrase "good economics expectations" in times of a structural crisis has always seemed to us to embody some misunderstanding. One of the possible answers concerns the way in which others react to the national economy's strategic actions and crisis management measures, either now or before long. Looking for answers in a time when both the economy and the environment face a serious peril is critical, particularly because Serbia has been continuously surprising pessimists with its navigating through the nexus of headwinds. All articles are particularly dedicated to this kind of strategic and crises management responses to the geopolitical crisis as a new macroeconomics variable.

Inspired by the previous idea, this issue of *Ekonomika preduzeća* is structured in the following way. The first paper in the *Transition Issues* section, prepared by a trio of authors, *D. Đuričin, I. Vuksanović Herceg* and *V. Kuč*, deals with the green transition analyzing it from background and foreground perspectives, in Serbia, as a way of crisis mitigation and a shift toward sustainable and inclusive growth. A remarkable, fact-based paper written by *J. Tabaković*, the governor of the NBS, digs right into the relationship between the roots of inflation and monetary policy response. The third paper within the same section, prepared by a duo of authors, *R. Kastratović* and *D. Lončar*, focuses on the correlation between bilateral investment treaties and internationalization of enterprises. In the last paper of this section, *D. Vujović* explores the benefits and challenges brought by an increasing use of digital money as well as its implications for monetary and fiscal policy.

In the *Accounting and Audit* section, *D. Malinić* and *S. Vučković Milutinović* provide a brilliant accounting framework for ESG metrics, with special focus on investment in the 17 UN SDGs as a necessity of modern times. *S. Randjelović's* paper in the *Tax and Law* section discusses the outstanding problem of public finance, the mutual interrelationships between a fiscal space and sustainable growth.

The *Economic Growth and Development* section includes two papers. The first one, written by a quartet of authors from different fields, *K. Koloro, G. Pitić, E. Vlačić*, and *U. Milosavljević*, is dedicated to the impact of Industry 5.0 on a small and open economy. The second paper in the same segment, prepared by a trio of authors, *N. Savić, J. Lazarević* and *F. Grujić*, looks into this topic through the other end of the telescope, namely surveys and analyses the generation Z's expectations from business leaders.

Last but not least, the paper written by *G. Petković, A. Bradić-Martinović* and *R. Pindžo* in the *Tourism* section, discusses the impact of crisis management as an applicable tool delivering good results in destination management.

Prof. Dragan Đuričin, Editor in Chief





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HOW A STRUCTURAL CRISIS IS FLIPPING THE ECONOMIC SCRIPT AND CALLING FOR THE GREEN TRANSITION IN SERBIA

Kako strukturna kriza preokreće ekonomsko razmišljanje
i poziva na zelenu tranziciju u Srbiji

Abstract

These days in the economy and society, along with well-known and highly elaborated internal structural imbalances created by economic neoliberalism and exacerbated by fault lines in reactive policies during serial crises, new disruptive forces related to external asymmetric shocks have been unleashed. Due to widening imbalances, the economy fell in a structural crisis (cascading crisis, rolling crisis or a confluence of crises). A high probability of the emergence of apocalyptic consequences warns us that the situation is extremely alarming. The global economy and the planet are in a serious trap of dying slowly but surely. Finding a systemic solution to rising imbalances is the imperative of our time. The so-called "green transition" is a big idea to mitigate the crisis and make a recovery. It is a way to annul the existing structural imbalances and misconceptions of reactive policies, as well as a platform for sustainable economic growth in balance with the limits of nature. This approach is particularly suitable for developing economies that aspire to catch up with the developed world through new industrialization. In this paper, we attempt to concentrate, among dozens of complex issues concerning the transition from an old to a new economic order, on those solutions pertaining to the economic system adjustments in line with the natural limits in a landlocked, small, open, and developing economy such as Serbia. The great majority of economics scholars have agreed upon the root causes of the crisis as well as the key assumptions regarding problem solutions. In defining our proposals, despite different angles, we intend to integrate the most effective elements of a widely accepted but outside-the-box view. No doubt, it is not certain for how long the current crisis will last. Some mitigation activities already exist. Unfortunately, it is not enough. To reverse the regression trend, four questions need to be answered. What is a global priority for action, and what to ignore? What would be a feasible and effective conceptual platform for the crisis mitigation and the subsequent revival and establishment of a sustainable and inclusive economy? How to coordinate transformative activities in the

right direction at the local level? How to weight different instruments to finance the transition from a new normal to a better normal, particularly from the perspective of the mission of economic entities and performance measurement system? To answer the previous questions, the economic theory and public policy should first replace the nexus of neoliberal rules, particularly by making well-being a relevant tenet, not only self-interest. That requires a paradigm change, in both microeconomics and macroeconomics, by adopting a new nexus of economic rules, capable of explaining the behavior of economic agents, sometimes irrational and inconsistent, but always under the impact of natural limits and "universal connectivity" as a dominant free good in the Fourth Industrial Revolution. The above requires the implementation of the circular model of growth and heterodox economic policy platform. To make the transition to a new system efficient, funding of this endeavor should be of paramount interest. Following the previous line of reasoning, the material is organized in six parts, besides Introduction and Conclusion. The Part 1 is dedicated to the necessity for a fully radical change to mitigate the structural crisis and to set up a new conceptual platform for sustainable and inclusive growth. The Part 2 is focused on the fault lines of the neoliberal economic policy platform, confirming that this platform cannot provide the conceptual base for economic policies during the system change. The Part 3 proposes the green transition as a solution to the aforementioned problems. To invigorate a greener economy, the Part 4 is suggesting the new ways of financing as a smart enough pivot. The Part 5 discusses the transition toward a greener economy as a challenging response to the current economic situation in Serbia. The Part 6 is focused on the necessity for the accreditation of the green transition program for Serbia.

Keywords: *Serbia, green transition, circular economy, industrial policies, SDGs, ESGs, new financing models*

Sažetak

Pored dobro poznatih i svestrano razmatranih strukturnih neravnoteža koje je izazvao ekonomski neoliberalizam i koje su pojačane pogrešnim politikama reakcije na serijske krize, danas su se u privredi i društvu pojavile nove sile destrukcije kao posledica delovanja eksternih asimetričnih šokova. Zbog produbljenja neravnoteža, ekonomija je ušla u strukturnu krizu (kaskadnu krizu, kotrljajuću krizu ili sabirnu krizu). Visoka verovatnoća pojave apokaliptičnih posledica govori da je situacija ekstremno zabrinjavajuća. Globalna privreda i planeta su u ozbiljnoj stupici, umirući sporo ali izvesno. Imperativ našeg vremena je pronalaženje rešenja za narastajuće neravnoteže. Tzv. „zelena tranzicija“ je velika ideja za rešavanje krize i obnovu. To je način za anuliranje postojećih strukturnih neravnoteža i pogrešnih koncepcija reaktivnih politika, kao i platforma za održiv ekonomski rast koji je u skladu sa ograničenjima prirode. Ovaj pristup je posebno pogodan za privredu u razvoju u njihovom nastojanju da dostizanje razvijenih zemalja ostvare novom industrijalizacijom. U ovom radu koncentrisaćemo se, pored većeg broja složenih pitanja u vezi sa prelaskom sa starog na novi ekonomski poredak, na rešenja u vezi sa prilagođavanjem ekonomskog sistema u skladu za ograničenjima prirode u zemlji bez izlaza na more, maloj i otvorenoj privredi u razvoju kao što je Srbija. Značajna većina relevantnih ekonomskih teoretičara slaže se u pogledu uzroka krize kao i ključnih polazišta u vezi sa rešenjem problema. U definisanju naših predloga, nastojali smo da integrišemo najučinkovitije elemente opšteprihvaćenog, ali originalnog pogleda. Nema dileme da se ne zna kada će se kriza završiti. Neke korektivne aktivnosti već postoje. Nažalost, to je nedovoljno. Preokret u regresionom trendu zahteva odgovore na četiri pitanja. Šta je globalni prioritet za delovanja, a čime se ne treba baviti? Šta je izvodljiva i učinkovita koncepcijska platforma za rešenje krize i oporavak, kao i za stvaranje održive i inkluzivne privrede? Kako koordinirati aktivnosti transformacije u dobrom pravcu na lokalnom nivou? Kako oceniti različite mogućnosti finansiranja prelaska od postojeće normalnosti prema boljoj normalnosti iz ugla misije ekonomskih subjekata i sistema merenja uspeha? U davanju odgovora na postavljena pitanja, ekonomska teorija i javne politike, pre svega treba da zamene skup neoliberalnih pravila i opšte dobro postave kao cilj zajedno sa ličnim interesima. Prethodno zahteva promenu paradigme u mikroekonomiji i makroekonomiji. Izborom novog skupa ekonomskih pravila koji je u mogućnosti da objasni ponašanje ekonomskih subjekata koji su ponekad iracionalni i nekonzistentni, ali uvek pod uticajem ograničenja prirode i „univerzalne konektivnosti“ kao dominantnog slobodnog dobra u četvrtoj industrijskoj revoluciji. Prethodno zahteva primenu cirkularnog modela rasta i heterodoksne platforme za vođenje ekonomskih politika. Da bi prelazak na novi sistem bio efikasan, u centru pažnje mora biti finansiranje tog poduhvata. Sledeći prethodnu liniju razmišljanja, materija je strukturirana u šest delova, pored uvoda i zaključka. Prvi deo je posvećen neophodnosti potpuno radikalne promene kako bi se rešila strukturna kriza i uspostavila platforma za održivu i inkluzivnu privredu. Drugi deo bavi se greškama neoliberalne platforme za vođenje ekonomskih politika, dokazujući da ova platforma nije u stanju da bude konceptualna osnova ekonomskih politika tokom promene sistema. U trećem delu se govori o zelenoj tranziciji kao rešenju za prethodno opisane probleme. Da bi se osnažila

ideja zelene ekonomije, četvrti deo je posvećen novim načinima njenog finansiranja kao stožerom promene. Peti deo se bavi tranzicijom prema zelenoj ekonomiji kao izazovnim odgovorom na trenutnu ekonomsku situaciju u Srbiji. Šesti deo je usmeren na akreditaciju programa zelene tranzicije za Srbiju.

Ključne reči: *Srbija, zelena tranzicija, cirkularna ekonomija, industrijske politike, ciljevi održivog razvoja, kriterijumi održivosti, novi modeli finansiranja*

Introduction

The intention of this paper is not only to voice our concern over the impact of the ongoing global rolling crisis on Serbia's economy, but also to raise awareness about the importance of more systemic, comprehensive and proactive view in search of a solution colloquially called the “green transition”.

In the Anthropocene age, climate change and related imbalances in physical and biological subsystems are evident to everybody, including their negative impact on the socio-economic subsystem of the planet imagined by J. Forrester as “system dynamics” [17]. For more than two centuries, economic prosperity was predominantly based on the cumulative effects of four industrial revolutions and economic liberalism. In the meantime, economic liberalism reached its limit because its key consequence, the linear model of growth, has brought humanity in the state of climate emergency, threatening to ruin any chance of further sustainable and inclusive growth. These days there is an increased commitment to climate action, on both micro and macro level. The global temperature is expected to rise significantly above pre-industrial levels. The likelihood of extreme weather tripled during the century. Global heatwaves cause wildfires, droughts and shortage of water supply and negatively affect agriculture. Rivers are drying up, diminishing hydro power production and making river transport extremely difficult. After that, almost regularly, the episodes of heavy rains occur. The global economy is losing 23 acres of fertile land per minute. As the Arctic is heating 1.5 times faster than the rest of the world, the Arctic Ocean may become ice-free by 2050. The consequences on rising sea levels are postponed and unpredictable. One is certain, because millions of people

are affected, global warming contributes to a significant influx of climate refugees. According to [45, p. 2], greenhouse gas emissions are set to increase by 14% over the current decade. The previous fact sheet dramatically increases the probability of the most apocalyptic consequences, including the risk of biotic feedback loops and a full-blown conflict that threaten the very survival of humanity.

Due to an existential threat to the global economy and the planet, the transition toward a greener economy is unavoidable. The Network for Greening the Financial System (or NSFS) defined the so-called “net zero” scenario as a hypothetical path toward 1.5 degrees temperature increase by 2050 [31]. Bearing in mind that greenhouse gas emissions are universal and front-loaded, there is a broad consensus about the need for a multipronged attack on energy production based on fossil fuels. Also, the green transition creates the opportunities for sustainable growth in three areas: replacing carbon-intensive products and technologies with climate neutral ones, decarbonizing the existing production, and developing new inputs, products, services and infrastructure, including carbon capture, within supply chains.

So, the green transition is a way to mitigate the current structural imbalances as well as a platform for sustainable and inclusive growth, toward both people and nature. Without a clear path toward a “net-zero” or, eventually, “low-carbon” economy, imbalances will continue to grow in a non-linear way.

Such a radical change in the organization and functioning of the economy would challenge economic orthodoxies. For more than two centuries, the supporters of liberal capitalism, whether conventional or neoliberal, have been constantly divided by the supremacy of two categories of liberty, negative and positive. To remember, a “negative liberty” is giving economic agents the independence from the government interference. Consequently, the economic theory explains egoism or the promotion of self-interest by the concept of “homo economicus”, which means that the behavior of economic agents is consistent, predictable and led by economic rationality. Inversely, a “positive liberty” is the right to be “human”, namely capable of respecting global commons, along with the freedom to have private interests.

In 1947, a group of reputable economics scholars under the leadership of L. von Mises, F. Hayek and M. Friedman, framed a new conceptual platform, believing that it would be able to deliver sustainable economic growth after the experience with totalitarian economic systems and WWII. They got back to the roots of free market capitalism, the market mechanism that is impossible to deny. After some time, such an orientation led to the appearance of an extreme version of capitalism named neoliberal capitalism, along with economic neoliberalism or market fundamentalism [21, p. 115]. The concept was further developed by the Chicago School of Economics during the 1960s and put in practice through a series of trial-and-error policies by prominent politicians R. Reagan and M. Thatcher in the US and the UK, respectively. The concept, with some changes, served as the platform for economic transition in Latin America and CEE economies, during the 1980s and 1990s, respectively.

The neoliberal variant of capitalism, referred by J. Friedman as “shareholder capitalism” [18], has three components. First, the linear model of growth that tends to ignore external negative effects and public goods. Second, the supremacy of the market over the state intervention in the economy. Third, the economic policy platform colloquially called the “Washington Consensus” [46], based on a set of rules such as deregulation, liberalization, globalization, and privatization, supported by inflation targeting as the key policy tool.

Inbuilt structural imbalances of neoliberal capitalism became evident from the very beginning. In the linear model of growth, the treatment of free goods (land, water, and air, primarily) went to extremes, namely to total ignorance. Other examples of ignorance are related to the appearance of market (and regulatory) imperfections and public goods (and public companies). The linear model of growth is the first derivative of basic economics rules. When the “invisible hand” of the market is declared an almost exclusive coordination mechanism, the state’s role in the economy is mainly neglected. The related economic policy platform, obsessed with inflation (low and stable), is almost exclusively managed by monetary measures. When the output gap (low and stable) is off the radar of an economic policy platform and the fiscal policy plays a secondary

role within core policies, there is no space for structural (or industrial) policies to control the output gap and its structure. The aforementioned implies plenty of negative feedback loops, followed by the fractures (or structural imbalances) starting with financialization (together with securitization). Financialization, combined with outsourcing, accelerated deindustrialization, particularly in advanced economies. Deindustrialization led to an increasing role of leverage buyouts and other manifestations of investment myopia, while roughly one-fifth of retained earnings at the disposal of the real economy were invested internally. The aggregate result of the previous fault lines is income (and wealth) inequality.

To find the solution to a structural crisis, we cannot work without a framework. For such meta masses, non-systemic, partial and erratic responses are not required. The solution involves tectonic changes. The Fourth Industrial Revolution (4IR), as an enabler, can be used effectively to find a solution only if the economic context is adequate.

To mitigate regression, humanity should be driven by hope, not fear. The right time to act is now. Namely, to replace pessimism with optimism and to transform optimism into action. To do that, the economy and the planet as a whole need the transition toward a new system based on the principles of circular and regenerative economy and the heterodox economic policy platform based on a substantial coordination role of the state in economic development.

Every economic model has its reason to exist. The reasons behind the green transition are to repair, restore and rejuvenate the current economic model and the planet as a whole. Human ingenuity, as always, will do that.

It is not easy to make a shift to a greener economy. Replacing the resource-intensive linear model of production with the circular and regenerative one is even more challenging in a national economy under a permanent threat of stagflation due to a delay in economic development, the output gap, indebtedness, and the lack of liquidity. For instance, the production of clean cement, which is seen as a necessity from the climate perspective, costs approximately twice as much as traditional production. Moreover, huge investments are needed to create conditions where the substitutes for fossil fuels such as green hydrogen,

solar, nuclear plants, bio mass, and others would become cheaper than fossil fuels.

In the war against the climate crisis, each national economy has its responsibility. No one can afford to sit on the sidelines. In the green transition, as a novel and emerging area of investment, each national economy needs strategic ambiguity, which means minimizing engagement, while maximizing effects. Moreover, it is a way to finance the new industrialization of Serbia by escaping the threat of stagflation.

Based on the previous proposition, preparing a green transition program for the accreditation by relevant international bodies is the first, but only a tiny part of what needs to be done to implement the new industrialization based on climate neutral production. So, we promote a quite transformative change in Serbia because we want the global economy and the planet to be as sustainable and inclusive as possible.

After the Great Recession of 2008, the old-timers from the field of economics such as J. Stiglitz [36], [37], D. Rodrik [34], [34], R. Rajan [33], D. Acemoglu [1], and many others started to propagate the ideas about a new economy. More recently, these ideas have been backed and further deepened by some prominent economics scholars of the new generation, including M. Mazzucato [24], [25], [26], S. Brunnhuber [7], [8] and other distinguished figures from other scientific fields such as C. A. Pereira and U. Bardi [2]. In our own previous work [12], [13], [14], [15], [20], we tried to contribute to this line of reasoning. So, the emerging contours of a new economy are clear.

The first big question: Why do we need a radical change in the current nexus of economics rules?

These days humanity is at war with (human) nature. The outcome is a very unusual backdrop, a rolling crisis, cascading crisis, or a confluence of crises. Understanding how the key forces have transformed the global economic context from prosperity into regression, including an in-depth analysis of other imponderables, is not possible without identifying regression-pull forces and isolating them from the progress-push ones. The key regression-pull forces are: imbalances of economics neoliberalism and reactive

policies against these imbalances, climate crisis, health crisis, and (geo)political disputes. Multiple interactions of these forces create a meta trend, the structural crisis of neoliberal capitalism. The central progress-push meta trend is the 4IR. Thanks to the 4IR solutions, “universal connectivity” is going to be a new free good.

In a structural crisis, a bewildering change full of conflicting signals and contradictions dominates. The context is mainly under the impact of exponentially shaped growth curve of output and population for years. The above is not in line with the limits of nature, so it becomes an evident limit to growth. Also, it is not compatible with universal connectivity as a legacy of the 4IR. Despite almost endless opportunities for the influx of innovations based on the amalgams of virtual, physical, and biological breakthroughs, an ambivalent character of such innovations is obvious. On the one hand, innovative amalgams are continually opening new frontiers for investment and growth and, by doing so, they play a positive role. On the other, their disruptive character against incumbents exacerbates a negative impact of the existing market failures.

During the crisis the number of headwinds is continually increasing as a result of the holistic character of correlations between key forces. In inflection points, the number of black swans and multiple non-linear feedback loops is growing exponentially. These adverse phenomena contribute to the transformation of the economy from a linear into a non-linear system. In non-linear systems, heuristics and bottom-up initiatives prevail over optimization and top-down command and control, in both microeconomics and macroeconomics.

Non-linear systems are full of disruptors (or risks stressors). The nexus of global (or external) disruptors has dominated over the nexus of internal disruptors such as the risks related to individuals, economic agents, financial institutions, national economies fundamentals, macroeconomic policies, etc. External risks have a universal and asymmetric impact. As such risks consist of interlinked non-linear components, it is almost impossible to cover them by individual reactions [8, pp.15-16]. Again, a coordination role of the state is necessary.

Exponentiality, which is everywhere, is putting the economy in a stage of chaos. In this stage, the great

majority of stakeholders are formally expressing the respect for public interests and global commons, but in concrete actions, individual interests massively prevail. The stage of chaos is clouding the prospects for crisis mitigation and economic revival. In the absence of inbuilt corrective mechanisms, the economy trapped in such massive dysfunctionalities cannot be sustainable. What is not sustainable, will not sustain.

To resolve this contradiction, there is a need for changing the context by developing an additional coordination mechanism based on a new role of the state in the economy, along with the market mechanism.

At the end of 2022 humanity has reached eight billion people. This obviously challenging figure is related to the serious responsibilities of the global economic system to provide sustainable and inclusive economic growth, for both people (full employment and good enough household income), and the planet (balance between the subsystems of system dynamics).

Unfortunately, neoliberal capitalism, as the last and most extreme variant of free-market capitalism, and market fundamentalism as its policy platform, almost an ideology, did not provide a plausible guarantee of the previous expectations. Capitalism is at the end of more than five-decade-long period of shareholder capitalism and more than four-decade-long period of market fundamentalism. Also, other alternatives to this system have opened more questions, particularly regarding the sustainability issue. One of the reasons for such skepticism is an unavoidable cross-impact between the systems.

For more than two centuries since the first industrial revolution, the global economy has been sending disturbing signals regarding the sustainability issue, even in “good times”. In “bad times”, or the times of crisis, instead of mitigating the existing imbalances, unconventional and/or experimental remedies of reactive policies mainly exacerbated them and/or contributed to the emergence of new ones. Indeed, the old and new types of structural imbalances have not been entirely accidental, nor mitigated by conscious design.

One of the most important structural imbalances is income (and wealth) inequality. According to [10, p. 30], since the start of economic neoliberalism income

inequality trends have diverged significantly in the US in relation to the period of liberal capitalism. Concretely, the wealth shares of the richest 1% and richest 0.1% in the US increased from 25% to more than 45%, and from 7% to 20%, respectively. Interestingly, the crisis has not altered the long-run trend of inequality. According to OXFAM [32], in the first two years of the COVID-19 crisis, the world's ten richest individuals more than doubled their personal wealth from USD 700 billion to USD 1.5 trillion, while the bottom segment still has not recovered its pre-crisis wealth levels.

Even more, income and wealth inequality indicate that economic neoliberalism is not socially sustainable for many reasons. The most important one is that half of working age individuals in advanced economies are shut off from the effect of economic growth. Income and wealth concentration of the top 1% has been accompanied by reductions in social mobility of the remaining groups of people. For example, the repayment of student loans when apartment rents eat more than half of wages of ex-students is reducing social mobility. If anything, decreasing discrete income is restraining growth by shrinking opportunities for lower and middle earners and fostering rent-seeking mentality of the top earners.

An overheated and out-of-tune economy with the output gap cannot fix itself. It is neither able to respond adequately and timely to monetary and fiscal stimuli, nor to austerity measures. To prevent the economy from collapsing, the leitmotiv in almost all anti-crisis programs consists of massive bailouts for financial intermediaries, aid programs for the non-financial sector, and money infusion. Unfortunately, the outcomes of such unconventional and/or experimental policy responses are not encouraging. Conventional policy tools that are regularly used to smooth over the impact of risk stressors and/or to create a positive economic momentum have lost much of their power as interest rates remain close to zero or even negative and quantitative easing (QE) provides an alibi for money printing.

Since the beginning of economic neoliberalism, the global economy has been in a rolling crisis because frequent seismic waves have gripped it. According to [11], in this period the global economy faced 425 downfalls and one

big crisis per decade. The extremely bad experience with the effectiveness of anti-crisis measures shows that they could not be credited as a factor pushing the economy toward recovery. Also, the inventions such as experimental and/or unconventional policies cannot be a commonplace of reliable policy patterns in the future.

At the confluence of crises, basic economic agents and institutions are overwhelmed by many difficulties on a variety of levels. Permanent inflation is the main indicator that the system is out of tune. For a long period of time inflationary pressure has not gone away. Also, inflation, persistent and growing, indicates that policy measures are ineffective. The next indicator of overall dysfunctionality is debt level. According to IMF [22], in 2021 the global debt (public plus private) picked up USD 235 trillion, or 247% of global GDP. The world's public debt is 96% and private debt is 153% of global GDP. If we look at private debt, we can see that the debt of non-financial corporations is by one-third larger than household debt. The related indicator of dysfunctionality of the system is the level of off-balance sheet items held by financial intermediaries. According to BIS [6], there are USD 65 trillion off-balance sheet derivatives in the global financial system. The odds of further lending are unlikely when there are giant black holes of financial derivatives in the banks' balance sheets.

When it comes to the monetary policy, we see that the "pendulum never stops in the middle". At the beginning of 2022, guided by the aim of keeping inflation under control, monetary powers shifted from one extreme to the other, from a dovish to a hawkish policy. To keep inflation under control, they faced an agonizing challenge, to sacrifice growth. This shift in the monetary policy led to a sharp slowdown in economic growth. Anyhow, each form of slowdown (recession, stagflation, or even depression) dents capital markets as the brain of market economy. On the other hand, the planet is continuously sending a lot of disturbing messages calling for impact investments to mitigate the climate emergency.

Moreover, such a fragile economy is exposed to the impact of external asymmetric shocks such as climate change, microbe mutations, geopolitical disputes, etc. According to [8, p. 1], they have some characteristics. They are hidden and with implicit effects. Contrary to

internal or self-inflicted shocks, external shocks are characterized by their asymmetric impact. They hit all economic entities, but they hit them in different ways. Moreover, entities that are not responsible for their appearance are almost always hit harder. Finding global solutions to global problems requires an anti-fragmentation platform.

The combination of internal structural imbalances, fault lines in the economic policy platform and external asymmetric shocks has generated strong centrifugal effects, which are further deepening the existing fractures and creating the new ones. All of them have been accompanied by the reductions in social equity and loss of social cohesion. Last but not least, in advanced and wealthier economies, demography speaks for itself. When the economy does not function well, autochthonous population is rapidly declining and aging dramatically. This is a serious economic issue entailing many ethical and (geo)political consequences. Ordinary people fully understand the mess we are living in. In search of answers, luminaries are looking for a paradigm change or a new foundation of the economic theory, both macro and micro.

In the Anthropocene age humanity is hanging by a thread. When the pieces of economic puzzle do not fit together, and when its way of functioning is not particularly in harmony with the laws of nature, regression, both economic and social, is unstoppable. When an economy is crisis-inclined and without self-defense mechanisms by its design, and when external asymmetric shocks are accelerating and magnifying embedded structural imbalances, geopolitical involvement is growing. Economic sanctions and counter sanctions (trade wars), currency wars, proxy wars, etc. are the predecessors of more serious geopolitical disputes. When geopolitics dominates economics, the shift toward deglobalization and restricted globalization (or reglobalization) is real. In this case, the advantages of outsourcing due to cheap labor and effects of diversification, particularly in food, energy, and commodities supply, tend to disappear. Under the impact of this shift, a great number of national economies, particularly landlocked, small, open, and developing ones, such as Serbia's economy, could not fix their problems without a radical change of the system.

The second big question: Why did reactive policies fail during the crises?

In neoliberal capitalism the private money is flowing through the economy almost exclusively in “good times” and the government money more extensively in “bad times”. The outcome of counterproductive, unconventional and/or experimental reactive policies that have emerged in “bad times” is that the economy is floating from one crisis to the next. In the financial sector, to prevent the collapse of banks and mitigate the liquidity (sometimes solvency) crisis, policymakers have used massive bailouts and QE. Pumping of money into the real economy was based on soft lending. In an out-of-tune financial system full of bubbles, bailout and money pumping are in contradiction to the orthodox economic policy platform based on the “hard budget constraint” argument, both macro and micro. The unconventionality of “soft budget constraint” is a consequence of the politically motivated principle of “too big to fail”, which is directly opposed to the ordinary economic rule that economic agent with negative equity should step off the stage to stop insolvency spillover. Interestingly, almost the same reactive policy has been implemented during the COVID-19 pandemic, despite a massive supply squeeze and/or supply chain disruptions due to the lockdown.

Another dovish pivot of the monetary policy for years has been an extremely low, even negative, key policy rate. Interestingly, the fiscal policy has also been expansionary (massive fiscal stimuli, degressive taxation and tolerance of profit transferring to tax havens), which seems to contradict a well-known trade-off from the conventional policy mix: an expansionary monetary policy along with a restrictive fiscal policy, and vice versa. Today is even less clear how to achieve a sustainable balance in the economy in the context marked by a deepening gap between supply and demand, persistent and growing output gap, input costs surge, universal price soaring, diverging signals from capital markets, and fall in investor expectations.

Despite the obsession with macroeconomic stability reduced to inflation (low and stable), volatility has been the dominant characteristic of the economic landscape for years. The bubble burst and winner-takes-all strategy

in new sectors of the economy confirm that the “invisible hand” of the market frequently did not meet the efficiency and sustainability proposals. Moreover, competition fails more in emerging industries, thus contributing to an overall slowdown. During the recovery episodes, due to an abrupt shift in demand, the prices of commodities hit maximum levels. As the prices of energy, precious metals and basic foods are in correlation with the demand for raw materials, their soaring easily pipelined to every supply side corner of the economy. Recently, geopolitical disputes sent prices of commodities higher still. The biggest rise was seen in gas and fertilizers, which pushed up the prices of basic foods even stronger. In such a context, low and stable inflation as the key policy target has been totally overshot.

An overheated economy is faced with debt and fiscal burdens increase. In 2021, the US public debt reached USD 28 trillion, while it is estimated that the tax gap in the next ten years will balloon to USD 7 trillion. The ongoing approach in fighting inflation has raised two big dilemmas regarding the functionality of a hawkish turn in the monetary policy and fiscal tightening (including the introduction of wealth taxation). Both policy turns are fundamentally in stark contradiction to the basics of economic neoliberalism including as low as possible neutral (or natural) interest rate¹ and degressive taxation. Moreover, to keep inflation under control by using a hawkish monetary policy means that an economic slowdown is much needed, which is another contradiction of such a policy.

Contrary to all expectations, in 1H 2022 in advanced economies and their followers, the actual rates of inflation have doubled projections. In the US, in June 2022 CPI y-o-y surged to a four-decade high of 9.1%. This fact confirms that inflation is not transitory but a structural phenomenon, which means that it is persistent and growing. No doubt, the central monetary power waited too long to make a hawkish policy turn. The policy of easy money, being in place for years, has only deepened the gap between demand and supply.

There are the two most critical effects of structural inflation. First, the cost-wages inflationary spiral. Due to rampant inflation, prices have been rising so fast that it

has diminished the purchasing power of salaries. Second, a downgraded outlook for growth. When the central bank increases core policy rates more assertively to slow demand, economic growth is likely to shrink.

Another problem is the calibration of prime rate as a hawkish pivot of the central bank. The surge in interest rates is expected to ease demand for the key drivers of headline inflation, primarily commodities and housing. When inflation is in or near a double-digit territory, it is almost impossible to increase core policy rates to come close to the natural interest rate. So far, the rise of key policy rates has not calmed inflation. The explanation is relatively simple. The natural interest rate is indefensible when the situation with inflation is irreversible. Namely, the natural interest rate of 2.5-4.0% does not make sense if the actual inflation is drastically higher.

No doubt, a restrictive monetary policy is a legitimate way to cool inflation, but it could help only gradually, and under some conditions. After the massive liquidity infusion which significantly deepened the gap between demand and supply, equilibrium could not be restored automatically by withdrawing cash and capital from the financial system. Simply, imbalances cannot be solved quickly. Another reason for slow cooling down is that the confidence in capital markets has been lost because central banks have misread the signals for years. The price of misreading signals is stagflation.

Price volatility, combined with slowdown, indicates that the economy is facing a precarious equilibrium triggering a long chain of negative consequences: contraction in capital markets, slowdown in the housing market, collapse of investments in real estate and real economy, output squeeze, and minimum wage hike. An economy trapped in an inflation spiral cannot maintain momentum and is simply heading for a freefall.

As they are not able to provide convincing evidence, unconventional and/or experimental economic policies are not immune to overestimations and fault lines. Persistent inflation is a clear confirmation that the current policy mix has missed the target.

To line up a new economic system based on understanding what is achievable (and how), requires a radical non-evolutionary change, or paradigm change.

¹ Interest rate which supports maximum output while keeping inflation under control (2%)

Despite many negative events brought by cascading crises, a good thing in the Anthropocene age is that humans are sitting in the driver's seat. So, technological breakthroughs have the potential for crisis mitigation. Technology is an enabler. To be effective, the 4IR solutions require the change in economic context. So, this reasoning prevails in our approach because it speaks clearly of the necessity of the paradigm change in economics, both micro and macro.

Some measures should be focused on the paradigm change in microeconomics (and micromanagement). In the conventional sense, microeconomics refers to the optimal allocation of limited resources and pricing of products and/or services produced with the aim of matching factor prices with factor returns and generating the value for owners. Microeconomics is helping to respond to changes with the aim of achieving a sustainable competitive advantage.

Others prioritize the paradigm change in macroeconomics (and macro management) involving an active role of the state in the economy. The purpose of macroeconomics is the search for an adequate context, i.e. defining a set of rules under which economic agents operate, as well as the coordination mechanisms and policies that can provide sustainable and inclusive economic growth. The government's coordination role in frontier technologies is to respond to major challenges and ensure impact investments in tradable sectors. That is the very purpose of the "visible hand" of the government.

Most people would probably agree that we need some of both because a radical change implies a double paradigm change. The interplay between 4IR tools and solutions and new economic settings based on a double paradigm change has the potential to make the rejuvenation of real economy possible and fully compatible with the planetary boundaries. The double paradigm change needs the coordination effort. Specifically, we share the opinion that the changes on a micro level should be coordinated by new policy instruments on a macro level (industrial policies, macroeconomic automatic stabilizers, and impact investments).

From the perspective of the climate crisis, a great majority of relevant institutions saw 2022 as the most dangerous year from the start of economic neoliberalism. The UN COP27 plan to mitigate the climate emergency [42]

has been fast-tracked because the situation seems worse than it was at the time of the UN COP26 [41]. Evidently, the ground momentum for a radical change of direction has been lost due to the war in Ukraine. In a rising chain of geopolitical disputes, nobody knows where the situation is heading. When average global temperature could easily rise by 3°C above pre-industrial levels by 2050, the reduction in greenhouse gas emissions of ten big global emitters by 45% until 2030 and the goal of net-zero emissions until 2050 are still hypothetical. Without a radical change of the system, the climate crisis will continue.

Anyhow, to make a turn from regression toward prosperity, the zero step is the settlement of (geo)political disputes. Without this, macroeconomic stability, carbon neutrality and the resolution of biological crises are likely to remain just hypothetical goals. Moreover, when (geo)politics dominates economics, the question is: why to spend so much intellectual capital and time on the concept that is unlikely to be implemented soon? The main reason for such activism is the necessity for such a change.

After a geopolitical settlement, at some point of time the economic recovery will start and investments in the green transition will reemerge. Unfortunately, as soon as this happens, reglobalization or a two-tier system of values and economics rules, one for the advanced Western economies and another for the emerging economies from Euro-Asia, Far East, Middle East, Latin America and Africa, is almost inescapable. It could become a new source of polarization and a powerful threat to globalization. So, the new model of growth and economic policy platform we are trying to promote should be conceptually capable of settling down these inconveniences.

Let us present two additional proposals. The financing and allocation of investments in the green transition as well as the disclosure of their effects through financial reporting need to follow new rules. In the new economy, GDP as a measure of economic progress is not enough. There are some complementary measures from the human well-being perspective such as the UN 17 SDGs [43], along with natural prosperity index, index of job satisfaction, and index of happiness. In the new setting, we should admit that when the players of economic game do business, they are not only putting a price tag on resource combination

and disclosing created value, but also confronting their strategy with the risk universe, particularly the risks related to the planetary boundaries. Given the fact that, in addition to profit concerns, each economic players is deeply intertwined with environmental (E), social (S), and governance (G) concerns, a new performance measurement system should be extended by ESGs measures. Including the ESG proposition in the standard reporting on the company's viability links the effects to sustainable growth and higher value creation.

The green transition: A great idea to answer the big questions

The previous analysis has undoubtedly showed that the prevailing economic model has been functioning without any limits, namely, under the soft budget constraints, toward both money and natural resources. It creates the money it needs to cover imbalances and exploits the natural resources related to these needs. M. Mazzucato [25] eloquently explained the phenomenon of a "spender of last resort", referring to a subject that is making and taking everything. Given the fact that we are not living in an empty world but in a full world with the obvious limits, the transition toward a new economic order is imminent.

If the creation of an economic system which will respect the limits of nature is a target, a vehicle to accomplish this intention is the green transition. An emerging economic system should be able to reduce moral hazard in the financial sector and rejuvenate the real economy by minimizing welfare losses and maximizing well-being for all. So, the green transition calls for a radical, non-evolutionary context change. In social sciences such as economics, the success in implementing a context change and the creation of a new economic system require a new narrative, which includes three elements:

1. Adequate nexus of economics rules
 2. Circular model of growth
 3. More comprehensive economic policy platform
1. *An adequate nexus of economics rules.* The change of rules is an option when the system does not function

well. The neoliberal economic model was thoroughly architected based on inadequate rules. What did the founders of economics neoliberalism miss to accomplish when they imposed the nexus of rules?

Firstly, there is an inadequate treatment of non-economic phenomena such as free goods and technology change. Although economic theory has evolved over time to acknowledge the impact of the environmental boundaries on the free goods proposition, it has yet to deepen its understanding of the role of technological change as a solution to the climate emergency. The problem as massive as this one will require a fundamental reconsideration of some of the most deeply-held propositions in economics such as the exogenous character of technology.

The orthodox approach treats technology as an exogenous factor, the factor which affects resource allocation but does not depend on it. Such an approach did not recognize the endogeneity of technology and its possible impact on the cost-return relationships of investment. From the risk-return perspective of investment projects reflecting in global commons such as the limitation of greenhouse gas emissions or vaccine development, for example, the severity of these risks cannot be properly assessed by the discounted cash flow calculation if technology has an exogenous character. With the endogenous character of technology, we can easily notice that investments in renewables are much more profitable than investments in the optimization of energy consumption. Properly defined industrial policies could support a lower discount rate for projects in global commons. Consequently, plenty of innovative breakthroughs in the energy sector and land-use industries based on the 4IR solutions could be financially viable. Through industrial policies and impact investments, the state could play a catalytic role in the transition towards a greener economy.

Secondly, while reconsidering the conventional nexus of economics rules, a revision of the understanding of the human cognition mechanisms is an important issue. After more than four decades of serial studies

in the field of behavioral economics (and behavioral finance), it is quite legitimate to forget the way in which the conventional economics rules conceived human cognition.

Namely, behaviorism made breakthroughs in understanding the functioning of human brain from the perspective of economically relevant factors such as common sense, self-confidence, investment habit, intuition, risk appetite (or aversion), etc. as well as the resulting social relations. According to behaviorists, people are not as rational and consistent as the neoliberal economic theory claims. “Humans”, which are mostly irrational and inconsistent, exist in parallel with the “homo economicus”. Also, behavioral economics confirms that there is no symmetry between risks and rewards. The Nobel Prize laureate in economics, D. Kahneman [23] takes all the credit for this achievement. Concretely, in most situations the investor’s risk aversion is significantly stronger than the risk appetite. In contrast to neoliberal orthodoxies, all these findings were confirmed through the empirical tests provided by neurophysiology and neuropsychology.

As for social relations, rather than seeing human beings as being driven exclusively by rational self-interest, we could adopt a complementary proposition that human beings are driven by purposiveness [5]. Even as self-determined players, human beings are “social animals” whose decisions are the result of social interactions in the political process. When developing the mindset of purposiveness, the existential threats such as climate change should be taken into consideration by all.

There is another conventional standpoint related to the previous rules, saying that human well-being is the first derivative of egoism. Contrary to this plausible economic and philosophical proposition, when blindly following egoistic interests without paying for negative externalities, some people behave inhumanly toward other people. Actually, they privatize profits and socialize costs. The similar effect is associated with the ignorance of public goods, which leads to the costs of moral hazard. So, in the

process of building a fair and equitable society for all, what we are looking for is achieving a new balance between purpose and profit.

Moreover, there are at least two negative consequences of the above-mentioned economics rules such as the shadow economy phenomenon and a relatively large state-owned sector. The shadow economy is the reality of economic neoliberalism. At the global level, it makes up a quarter to a third of all economic transactions. The state-owned sector is mainly entropic, namely value-destroying and/or loss-making. Due to the escalation of agency problem, the state’s involvement in natural monopolies and/or network technologies with the ongoing mismanagement is great burden to productivity improvement. Given that public utilities are still based on fossil fuels, while doing business with them private investors are actually sitting on the carbon bubble.

When searching for a new set of rules, we need constructive sceptics, namely luminaries with realistic but “outside-the-box” thinking. A realistic view backed up by universality and the current narrative is not enough. New economics rules should explain simultaneously what to do to come out of the current crisis, and how to make the new economy sustainable and inclusive.

One of the key rules is that all investment actions (and inactions) should be carried out within the planetary boundaries. This change fundamentally replaces the way we evaluate new ventures, choose the discount rate as a hedge against risks and confront the discount rate to the rate of return associated with related investments. Also, it implies the inclusion of all externalities (positive and negative) in the calculation of earnings stream.

2. *The circular model of growth.* The second component of a new economic narrative relates to a new growth model. The linear model of growth is unsustainable because the economy cannot grow indefinitely in a finite world, at the same time disregarding all negative external effects such as pollution and waste. The economy can only function in a sustainable (and inclusive) way if it follows the reversibility principle

in circular processes by analogy with the physical system (energy and matter should not be lost).

According to [29, p. 371], the circular (or regenerative) economy is an antonym of the linear economy as the conversion of natural resources into waste and pollution through industrial production. The circular model of growth has two cycles, the biogeochemical cycle and the reversal of already produced products based on the “5R” rule (Reduce, Reuse, Recycle, Reconstruct and Refurbish). Functioning of this model requires the promotion of innovative solutions, providing a deeper insight into human well-being as well as the conservation of energy, natural resources, and biodiversity.

By promoting the circular economy, we follow the key rule of the 4IR, “to do more, better and faster with less resources/energy and more knowledge”.

3. *A more comprehensive economic policy platform.* The third element of change in economics covers a new economic policy platform, named “heterodox” [12]. Along with the “invisible hand” of the market, the new policy platform uses the “visible hand” of the state as a complementary coordination mechanism. The best thing to neutralize the market (and government) failures and negative externalities is to use a special purpose policy instrument. Importantly, the above implies that an economic policy intervention that is not focused on a well-recognized problem and its key root causes may not be justified.

In the heterodox approach, the previous principle manifests itself in core policies and structural (or industrial) policies, as well. The novelty in this approach is that it allows the market forces to operate in the context of structural (or industrial) policies.

Perhaps one of the most significant findings for boosting and reconfiguring the output is the role of structural (or industrial) policies. The 4IR and an almost endless influx of combinatorial innovations have created the space for greater engagement of the state in the economy through coordinating and financing efforts toward a sustainable competitive advantage.

There are three generic types of industrial policies: horizontal, vertical, and environmental. Horizontal (or industry neutral) policies tackle education, research and development, big science, health care, etc. Vertical policies are dedicated to industries from tradable sectors providing export expansion and/or import substitution. Environmental policies are dedicated to environmental conservation.

In the heterodox policy platform, there are two simultaneous processes: verticalization of the achievements of horizontal industrial policies and horizontalization of results of vertical industrial policies. So, the new model is based on two coordination mechanisms: “visible hand” of the state (via industrial policies and impact investments in infrastructure and tradable sectors) and “invisible hand” of the market via trial and error, encouraging the quick and massive diffusion of innovative solutions.

In the new policy platform, we must think about core economic policies in a structural way. Namely, both coordination mechanisms are functioning by using automatic macroeconomic stabilizers. As a consequence, the new policy platform supports the reversibility principle because automatic macroeconomic stabilizers help in the coordination among industrial policies and between industrial and core economic policies (primarily monetary, fiscal, labor and competition).

Automatic macroeconomic stabilizers are an example of the implementation of a well-known Keynesian idea, pointed out by O. Blanchard et al. [4], about reducing negative economic consequences in “bad times” by using the fiscal space from “good times”. For example, the green subsidies as a fiscal automatic stabilizer helps to prevent an excessive buildup of debt into the economy and to contain inflationary consequences of fiscal stimulus, by changing conventional policy targets with the structural ones. When considering the negative effects of greenhouse gas emissions, we simply need to specify the carbon tax as another fiscal automatic stabilizer. Carbon tax as a price tag on the related resources can be compared with subsidies

or other incentives to stimulate innovations and deployment of carbon-neutral technologies. From an environmental perspective, both measures could discourage investment in fossil fuels and encourage investment in renewables.

A complex problem such as the structural crisis of neoliberal capitalism needs systemic and comprehensive answers. In defining a new economic system, we need a more comprehensive overhaul that tackles the root causes of the ongoing crisis instead of targeting its worst symptoms. To implement the green transition, humanity needs a new social taxonomy that would contribute to learning how to adapt to continuous change with the aim of simultaneously managing the sustainability of the economy and the planet. The path from the new normal to a better normal requires new financing models.

Financing the green transition

Spending on clean-energy and investments in climate-friendly production finally starts ramping up. Funding of impact investments is more cost-intensive than funding of conventional projects. It requires a quantum leap in funds needed, “from billion to trillion”. According to McKinsey [28, p. viii], until 2050 the green transition could absorb the amount of USD 275 trillion, reaching about 7.5% of the aggregated GDP forecast. This fact implies that in 2022 the green transition financing has already absorbed roughly USD 10 trillion out of about USD 80 trillion of the global GDP.

From which sources could money come from? Withdrawing an amount of money of such magnitude from the current fund flows, namely from the state budget, fiscal scheme (taxes and subsidies), borrowings and financial securitization would be too slow and hardly possible considering the required sums. So, in funding global commons, the new channels of monetary transmission in parallel with the existing ones should play a pivotal role. Also, this funding should take into account the necessity of marketization of common goods.

Functioning of a sustainable economy, which means a recovered, more stable and greener economy, should be based on the dual currency system, conventional and

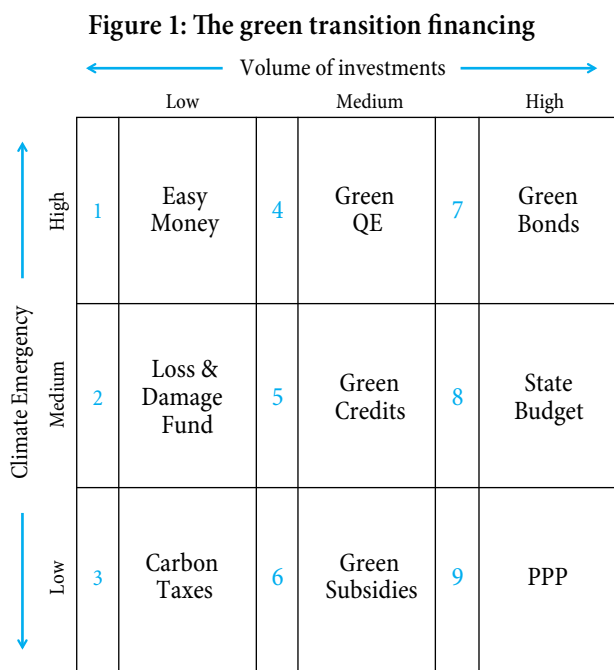
green digital. In this monetary regime, the central bank will take responsibility for the issuance of special purpose green digital instruments such as green bonds, crypto currencies, stablecoin, etc. For years central banks have been playing the role not only of a lender of last resort, but also of a spender of last resort. They create money that is needed to cover imbalances. In the previous period, the expansion in the monetary base by activities of credit institutions was mostly decoupled from the real economy. Namely, increasing of the monetary base has inflated the FIRE (Finance-Insurance-Real Estate) sector by means of new financial intermediaries (private equity funds, hedge funds, FTS, etc.). So, instead of contributing to economic growth, financial securitization led to further financialization and bubble bursts in overheating sectors. In times of crisis, increasing of the monetary base has been also used as a way to finance fiscal deficit. Lining up green digital money as a new monetary transmission channel is an absolute must for our generation and an obligation for future generations.

Financial intermediaries will also have an important role in the disbursement of green credits and marketization of common goods by using bonds (sovereign and private), actually “green bonds”, and other hybrid instruments of financing. To marketize common goods, special-purpose green digital financial instruments issued by the central bank are required.

Last but not least, the fiscal policy could use some tools to redirect fund flows and reenergize collective actions toward a greener economy. Instruments such as carbon taxes and green subsidies play the role of fiscal automatic stabilizers.

The foregoing could lay the groundwork for thinking about different tools in financing the green transition by distinguishing them across two dimensions. First, tools vary with respect to the volume of investments needed. They are shown as row headings in the matrix presented in Figure 1. Concretely, the alternative tools differ in terms of “low”, “medium”, and “high” volume of funds needed. The second dimension along which the tools differ is the climate emergency. They are shown as column headings in the matrix. The alternative tools target the climate emergency at “low”, “middle”, and “high” level.

Combining the two dimensions, yields a 3x3 matrix with 9 different cells.



1. *Easy money.* Easy money (or grants) from multilateral financial institutions and regional organizations could be the solution for covering a high level of the climate emergency, recognized in the local programs of green transition based on international standards, and low volume of funds needed. For example, the COP26 announced the necessity of USD 100 billion per year to support this purpose in emerging economies.

Or, in 2022 the EU Council announced a EUR 1 trillion program for the European Green Deal (EGD). The ultimate goals are the reduction in greenhouse gas emissions of 55% by 2030 and the transformation of Europe into the first climate-neutral continent by 2050. Money is supposed to come from the EU budget, national budgets of member states, and private-public-partnership (PPP). To make the concept applicable requires many things at once, including the implementation of green taxonomy, green bonds standards, technical standards for green loans, and accounting directives for sustainability reporting (ESGs).

As a non-EU country, Serbia cannot enjoy benefits of the EGD, including around EUR 100 billion in funding

for financing the green transition in CEE and SEE countries. However, there are funding opportunities that need to be exploited. The Western Balkans Investment Framework (WBIF) is a “blended” financial instrument supporting the EGD. It aims to mobilize EUR 9 billion of EU funding through IPA III (Instrument for Pre-accession Assistance) instrument. So far, the WBIF has allocated EUR 2.6 billion in grants to its Western Balkans beneficiaries. The framework includes two facilities tackling the renewable energy and energy efficiency issues in WB. According to [16], the Green for Growth Fund (GGF) provides financing for green investments, while the Regional Energy Efficiency Program (REEP) supports the transposition and implementation of the EU energy efficiency legislation, combined with financing to enterprises, households and public sector entities undertaking investments in energy efficiency. The GGF is a form of PPP and has so far invested EUR 1.5 billion in the green transition [19].

2. *Loss and Damage Fund.* The COP27 closed with an agreement on providing financial support to vulnerable developing countries hit hard by climate changes. In accordance with new funding arrangements, a “loss and damage” fund is conceived to assist developing countries in responding to the climate emergency. The fund is expected to become operational after the COP28 in 2023. It is projected that acting against the climate crises could cost developing countries struggling with severe climate problems USD 160-340 million annually by 2030. It refers to all costs from building destroyed facilities, building sea walls to creating drought-resistant crops [40]. We expect that the funding will go firstly to those countries marked as “particularly vulnerable” (such as the UN 46 least developed countries or small islands in the Pacific Ocean), but the UN has to recognize problems and disparities existing in seemingly “non-qualifying” countries in terms of GDP pp such as Serbia. Bearing in mind severe pollution reported daily, putting Serbia’s cities on top of the world’s pollution map, floods, droughts jeopardizing the most vulnerable inhabitants, we

believe there is room for hope that Serbia will also get its share in loss and damage funding.

3. *Carbon taxes.* Carbon taxes are a necessary (but not sufficient) fiscal policy tool to tackle the climate problems implying low levels of the climate emergency and low levels of investment needed. This way of financing the climate emergency is mostly incentivized by regulatory bodies and tax authorities. In the heterodox policy platform carbon taxes play the role of fiscal automatic stabilizer. The aim of the carbon tax is twofold: reduction in carbon leakage and prevention of unfair competition.

4. *Green QE.* Green quantitative easing (or green QE) is an innovative idea to tackle climate problems imposed by analogy with quantitative easing in the monetary sphere. It covers a medium volume of investment needed and a high level of climate emergency. The central bank will be responsible for the monetary base increase because the risk exposure associated with this variant of financing exceeds the risk exposure of private credit institutions. Also, fundamental risks are more frequent and intensive. Along with the necessity for the elimination of negative external effects of the previous industrialization, the rationale for using an increased monetary base could be extracted from the need for green job creation. Additionally, green QE would have a significant impact on the improvement of risk-return match and reduction of the risks related to greenwashing and the free-rider problem, always connected with private financial intermediaries. Green QE is digital money including different instruments such as crypto currency, stable coin, etc. Its success depends on parallel digital block-chain based technologies [8, pp. 74-77].

Anyway, this model of financing is a controversial issue. A major obstacle to reaching consensus to finance the green transition in this way is the conflict between developed and developing economies. The question is who should be responsible for this money printing and in what magnitude. Central banks from the economies with reserve currencies could issue some portion of green QE, but this magnitude is quite

limited. Digital money issuance in the economies with reserve currencies and its free distribution to developing economies is a possible solution.

5. *Green credits.* Green credits are a workable solution for middle climate emergency – medium volume of investment needed cell of the matrix. In credit institutions, different sorts of credits prevail over equity financing. At the beginning of 2022, the six largest US banks announced USD 4.6 trillion in the next decade for this purpose [38]. The EU and China also have similar initiatives. In the case of Serbia, there is respectable agility of the leading banks in this regard. There is a wide range of options, from financing energy production from renewables to energy optimization.

6. *Green subsidies.* If carbon taxes are recognized as a necessary tax policy tool to tackle climate change, green subsidies are a sufficient tax policy tool. Namely, this is an inverse but complementary measure to carbon taxes. Green subsidies have been mostly used to finance the projects involving a low level of the climate emergency – a medium level of necessary funding. It is a way to provide finance to start-ups and existing companies on their path toward a greener business model. In the heterodox policy platform green subsidies play the role of a fiscal macroeconomic stabilizer.

7. *Green bonds.* There is a genuine idea that that the so-called “sustainability budget” should exist in parallel with the conventional state budget and act as a middleman between the real economy and institutional investors in financing a greener economy. The idea comes from [3]. In this concept, the sustainability budget will issue green bonds. Insurance companies and pension funds play a primary role in the marketization of green bonds. The main reason is that they have extraordinary liquidity.

This way of financing could be used for the projects with a high level of climate emergency-top volume of funds needed. The typical projects include investments in green hydrogen, nuclear fusion, energy conservation, and carbon capture.

8. *State budget.* In the heterodox policy approach, a genuine way in which the government could finance the transition toward to a greener economy is based on impact investments. This way of financing is typical for a middle level of the climate emergence/a high level of funds needed cell of the matrix.

Unfortunately, the government budget is limited due to the need to fulfill conventional government duties and auxiliary ones, particularly in times of crisis. The fiscal gap is the reason why the principal sources of impact investments are credits and sovereign bonds issuance.

9. *PPP.* Private Public Partnership (PPP) is a workable idea for financing the green transition projects with a low level of climate emergency / a high level of investments needed. According to WB [47], private investment and expertise, including infrastructure finance, are essential for the delivery of climate-smart infrastructure. There are several arguments for PPPs in this area. Firstly, the projects require massive capital investments, thus requiring multi-party financial arrangements. Secondly, there is a great need for innovation and unstandardized solutions, which requires more active involvement of the private sector supported by public innovation hubs. Finally, the climate emergency causes the rise of the new forms of risk presenting unique challenges to investors that would rather accept those risks if they are allocated among several partners.

In the geopolitical crisis, the energy giants' boom is evident. Profits are by almost 50% higher in 2022 than in the previous record 2011. A price umbrella makes investments in renewables profitable. Also, investment in energy efficiency could also be a feasible idea for the private sector.

The funding of impact investments associated with renewable energy sources and climate-friendly products/services should be more effective than the funding of conventional projects because of a higher volume of capital engaged, operating costs, and depreciation (including impairment). In addition to the previous prerequisite regarding the quantum leap in funding, a complementary prerequisite implies that investment in common goods should have a positive return profile.

Closing the deal when it comes to the green transition requires the harmonization of different perspectives. One of them is law and order. If investors in common goods are sitting on a carbon bubble because the fossil fuel base of the existing value chains has remained fundamentally untouched, the risk of greenwashing will significantly increase and the law system should intervene.

Based on the previous discussion we can draw the conclusion that green finance provides some guidance, but it is not enough on its own. Green financing should be compatible with the new economics rules and normative judgments, in which the circular model of growth and heterodox economic policy platform would interact. Also, with the aim of respecting the planetary boundaries during the green transition, a new economy should be capable of controlling the output gap (low and stable) and the structure of output related to new technological breakthroughs of the 4IR. So, the model should be super-focused on the implementation of frontier energy and land-use technologies, primarily through impact investments towards SDGs, as well as the performance measurement system based on ESGs.

The previously explained changes are the great imperative of our time. The national economies heavily reliant on fossil fuels are most exposed to the shift to a greener economy. It will be a huge momentum shift particularly for developing economies because economic neoliberalism has made catching up with developed economies impossible. Without these changes, a further buildup of physical risks and the costs of crisis mitigation will continue and the current freefall is likely to be prolonged.

Review of the economic situation in Serbia

On the eve of the COVID-19 pandemic in 2020, Serbia's economy recorded the most respectable performance in the last three decades. The fiscal consolidation accompanied by macroeconomics stability and robust growth gave the economy a fiscal space as well as better tools for the fight with incoming headwinds. As soon as the peak of the COVID-19 pandemic passed, in 2H 2022 the economy entered a recovery phase. Coincidentally, in the same period the economy faced a new disruptor, geopolitics.

Consequently, at the end of 2022 Serbia's economy suffered from slowdown, particularly due to the threat of stagflation affected primarily by geopolitical disputes. The fiscal deficit as a constant of the last three-year period amounted to 3.8% of GDP in 2022. So, the fiscal deficit, the current account deficit and growing debt have become the major concerns. No doubt, at the beginning of 2023 Serbia's economy is at a strategic inflexion point.

As for the fact sheet of Serbia's macroeconomic performance at the start of 2023, we see the following.

First, growth is in a positive territory, but it is slowing. The economy is not in a recession yet. After the economy picked up in 2021 (7.5%), a slowdown was quite noticeable in 2022 (2.3%)². According to the NBS [30], a growth projection for 2023 in a baseline scenario is in a range 2-3%, which is in line with the IMF/WB projections. This growth is not enough to repay the COVID-19 costs³ and the costs incurred due to geopolitical disputes.

Second, capital investments reached a respectable level. Concretely, their share in GDP is almost one quarter. Public investments dominated, followed by private sector loans, FDI, and retained earnings from the private sector (see Figure 2). Public investments reached a level of over 6% of GDP in 2021. However, the ongoing energy crisis has

had a negative impact on public investments, particularly in the 2H 2022, leading to the redirection of funds to the energy supply.

Third, the labor market is strong, representing the major pillar of Serbia's macroeconomic position. In 3Q 2022, registered employment increased by 1.3% compared to the same period of the previous year (private sector 1.5% and public sector 0.9%). The participation and employment rates reached the levels of 55.8% and 50.8%, respectively. On the other hand, the unemployment rate reached a record low level of 8.9%, which is 1.6 pp lower than a year ago (see Figure 3). In the first three quarters of 2022, the average net salary in Serbia amounted to EUR 625, which is a year-on-year nominal increase of 13% or 2.7%, in real terms.

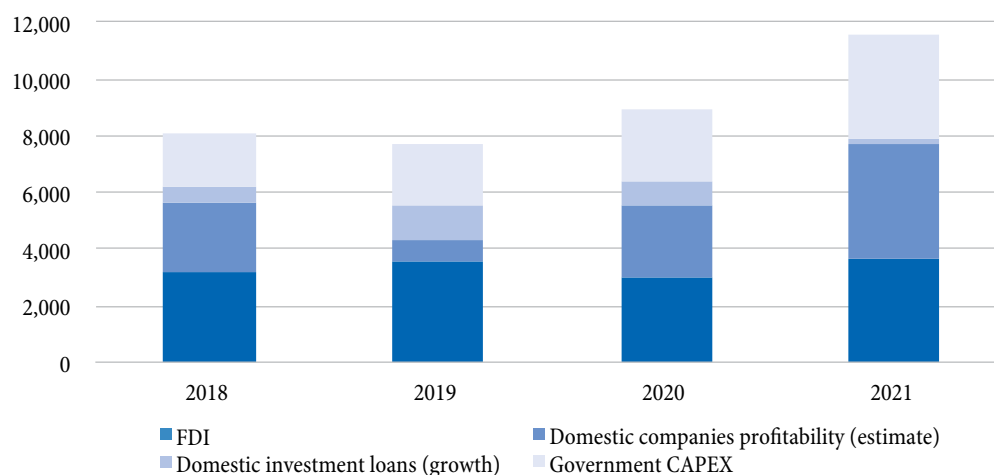
Fourth, the financial sector is doing well. The share of NPL decreased from 3.5% in 2021 to 3.0% in November 2022. Domestic credit activity recorded double-digit growth in the period 2018-2021. The echo effect of the previous developments has been materialized until 2H 2022. After that, credit activity recorded a downward trend. Also, dinarisation, as a key pillar of the monetary strategy, slightly decreased throughout the year.

In 2022, the corporate banking line was expanding significantly faster than the retail banking line. Disbursing liquidity loans and loans for current assets financing dominated in the corporate line (47.3%), followed by loans for capital investments (39.8%), while in the retail line cash loans dominated (44.1%), followed by housing loans (39.3%). The main risk stressor for credit institutions

² The preliminary estimate of the Statistical Office of the Republic of Serbia.

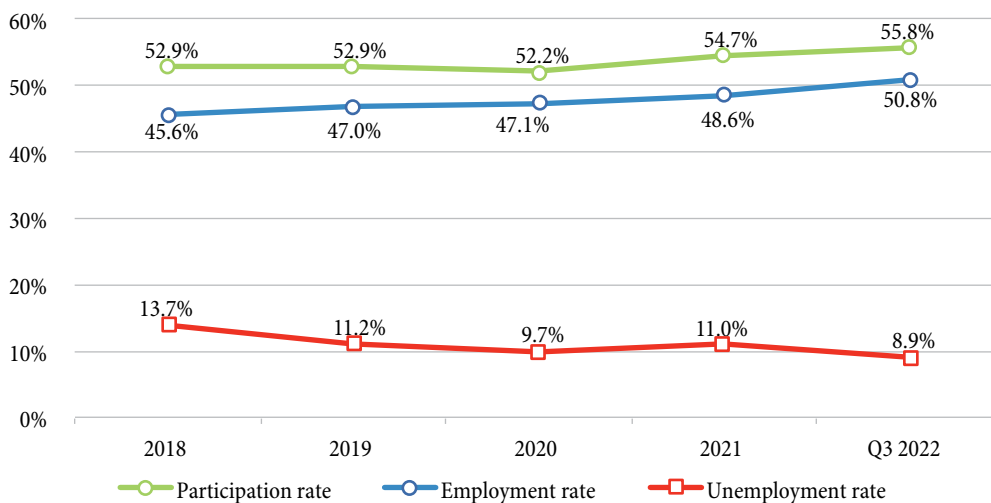
³ According to [15, p. 17], to compensate lost growth due to the pandemic in 2020 and 2021 and make longer-term growth sustainable, in the 5-year period Serbia's economy will need CAGR of 2.8% and 2.46%, respectively. The previous means that, to ensure sustainable growth, in the 5-year period starting from 2023 there is a need for CAGR=5.26%

Figure 2: Structure of capital investments (in EUR mil), period: 2018-2021



Source: NBS, Macroeconomic Developments in Serbia, December 2022

Figure 3: Labor market trends, period: 2018-3Q 2022



Source: Authors' calculations based on the Statistical Office of the Republic of Serbia data base

is a growing credit exposure of loss-making and value-subtracting state-owned companies.

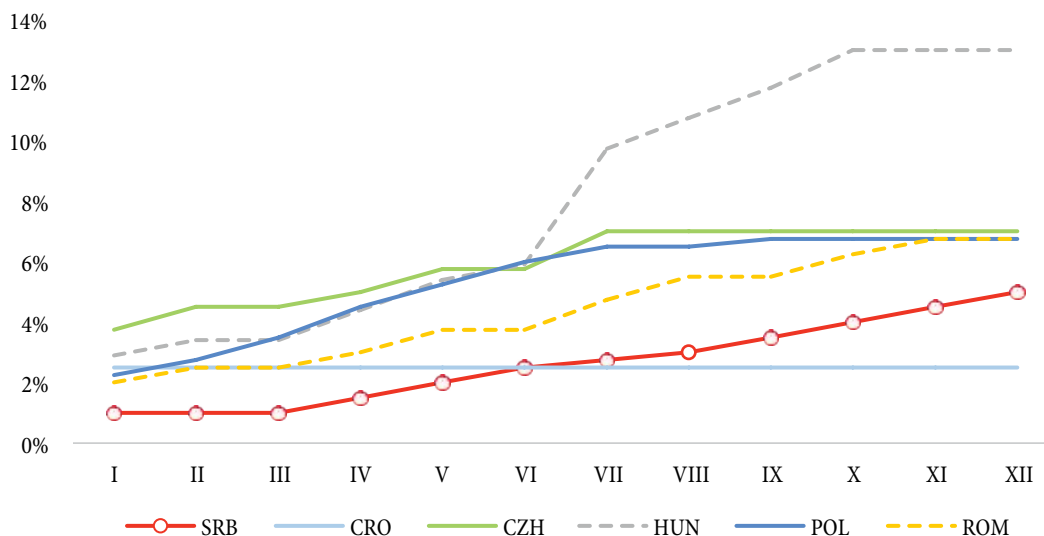
After the IMF forced the NBS to rethink its monetary policy levers, the shift from a dovish to a hawkish monetary policy was put in place. In December 2022, the NBS raised the key policy rate to 5% which is much higher in comparison to the key policy rates of relevant monetary powers such as FED (4.25%), BOE (3.5%), and Swiss National Bank (1%). But this is still below an average key policy rate in CEE (see Figure 4). The result was a surge in interest rates, particularly on RSD-denominated loans. Specifically, the average interest rate on RSD loans in the

retail line increased from 8.53% in January to 11.86% in November, while the average interest on RSD corporate loans increased from 2.71% to 5.96%.

After the fiscal consolidation successfully ended in 2018 and before the shift from a dovish to a hawkish monetary policy in 2022, the costs of capital from different sources were constantly decreasing, being at a relatively low level (see Figure 5). The situation dramatically changed from 2Q 2022 when a surge in sovereign debt yields has become a matter of great concern.

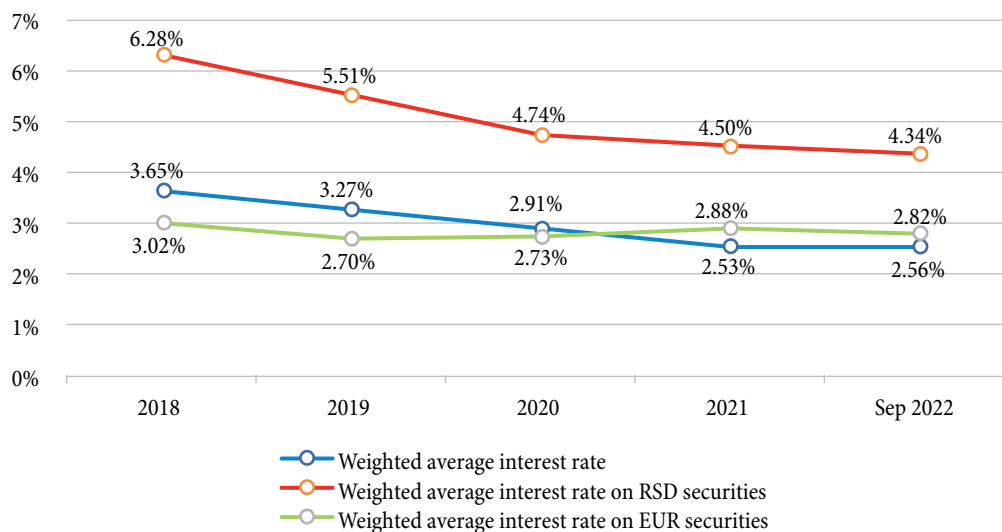
The NBS has done a good job of portraying liquidity as a substantial uncertainty in capital markets. To prevent a

Figure 4: Key policy rates in the group of CEE countries, 2022



Source: The ECB and the NBS data bases

Figure 5: Yield curves, period: 2018-2022



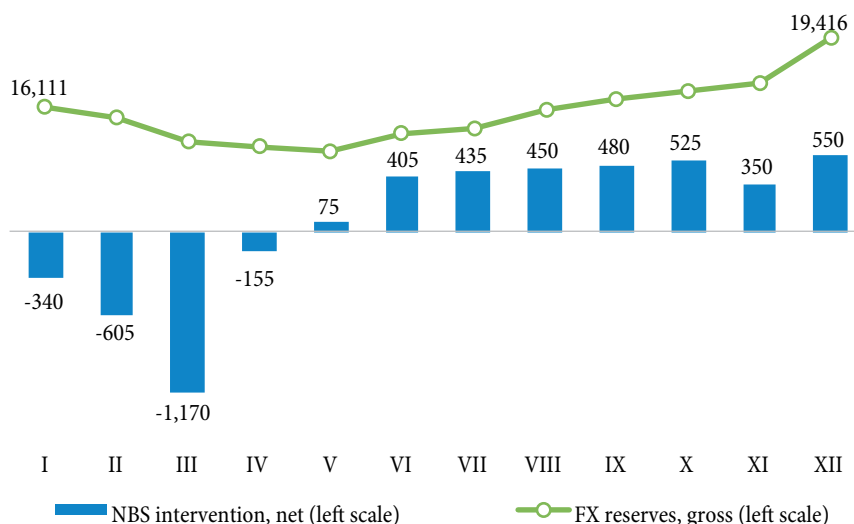
Source: The Ministry of Finance of the Republic of Serbia

liquidity trap, the central bank always tries to match supply and demand for money and capital. In the case of the NBS, a good example of this behavior is the raising of a reverse short-term repo rate. Its open market interventions were timely and effective. Namely, the NBS bought EUR 1 billion net in an open market, while the gross foreign exchange reserves amounted to EUR 19.4 billion (see Figure 6).

Navigating the supply-demand balance has been significantly affected by geopolitical crises. In that regard, the calibration of key policy rates is a critical issue. Following the global trend, the NBS successively increased the key policy rate, up to 5.0% in December 2022.

At the beginning of 2023, the key policy rate has attained 5.5%. In the fight against inflation, a hawkish policy should not be taken for granted, particularly when the surge in interest rates causes a shock on the supply side and multiple aftershocks in the real economy output. If the NBS hikes the key rate significantly above the natural rate of interest or decides to keep it at this level too long, the risk of recession will grow. Moreover, an uncontrolled surge in interest rates is not good for credit institutions, too. The surge is good only up to some level due to the credit risk increase. So, the expectation is that the NBS will signal an upcoming pause in hiking soon.

Figure 6: NBS open market interventions and FX reserves



Note: Authors' calculations based on the National Bank of Serbia data base

The Ukraine conflict caused a distress in capital markets. The issuance of sovereign debt instruments in January 2023 with the aim of tilting the upside risk and risk of unsustainable debt was successful. The Treasury Department successfully issued the 5-year government bonds of USD 750 million and 10-year government bonds of USD 1 billion. The issuance has attracted high demand, confirming a high level of the country credibility in global financial markets. The cost of debt and risk hedge were also reasonable. This is in line with the sovereign debt global trend. It was the best start of the year for decades⁴.

A stable FX has played a pivotal role in the monetary strategy. During the whole 2022, the NBS kept the FX rate almost unchanged. Precisely, it is slightly appreciated against reserve currencies (see Figure 7). Devaluation is not an applicable alternative for many reasons. Eventual RSD plummeting will trigger inflation spiraling. In responding to key macroeconomic challenges and keeping inflation under control, the NBS sacrificed the profitability of exporters.

To keep liquidity under control in an economy with three macro imbalances, critical success factors are cash infusion from FDI and remittances. In 2021 FDI amounted to EUR 3.9 billion and remittances picked up EUR 2.5 billion. In the period from January to November of 2022, FDI amounted to EUR 3.95 billion (EUR 3.7 billion net), while

remittances amounted to EUR 3.7 billion (EUR 3.5 billion net). To attract FDI and to meet investors' expectations, the government has been continually offering subsidies. This measure fueled criticism from some representatives of business community who pointed out that, due to an alleged lack of vision regarding the targeted structure of output, with this policy measure the government has actually promoted holistic interests of foreigners.

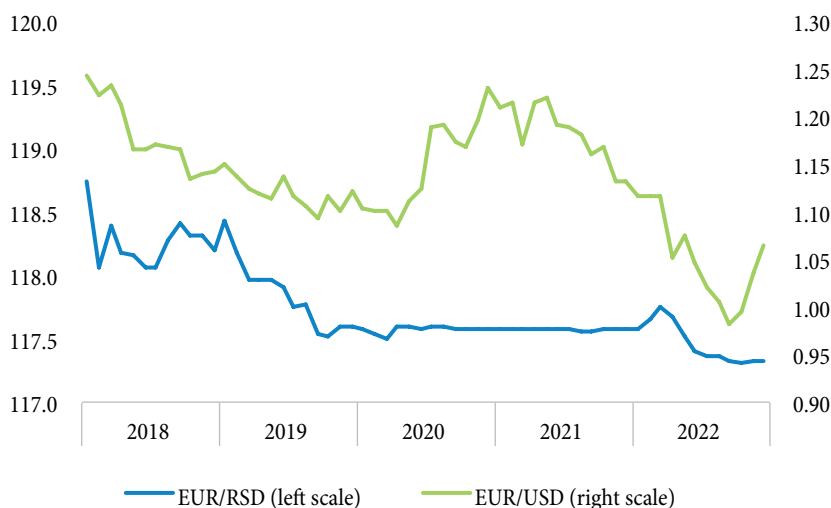
When the global economy is facing a precarious imbalance with inflation and growth moving in the opposite direction, Serbia's economy is being stuck with some internal challenges. The current recovery is fragile with a special concern related to the output gap (and its structure), inflation, and an outstanding debt increase.

The output gap is an echo effect of the geopolitical crisis during the 1990s triggered by the breakup of former Yugoslavia. The significant output gaps and distortions in their structure were the main consequences of this destruction. After the fiscal consolidation of 2018, the output has been recovering more strongly. Unfortunately, the rolling crisis 2020-2022 led to a new slowdown. The transitional output gap⁵ of 15% GDP is a major vulnerability, maybe (see Figure 8). In the last three years, the current output (particularly factory output) fell after the weakening of demand (global and local) due to twin triggers, the COVID-19 pandemic and geopolitics.

4 In January 2023 global bond issuance hit record of USD 568 billion which is 40% of all 2022 sales. Average yield is many times higher than in 2022.

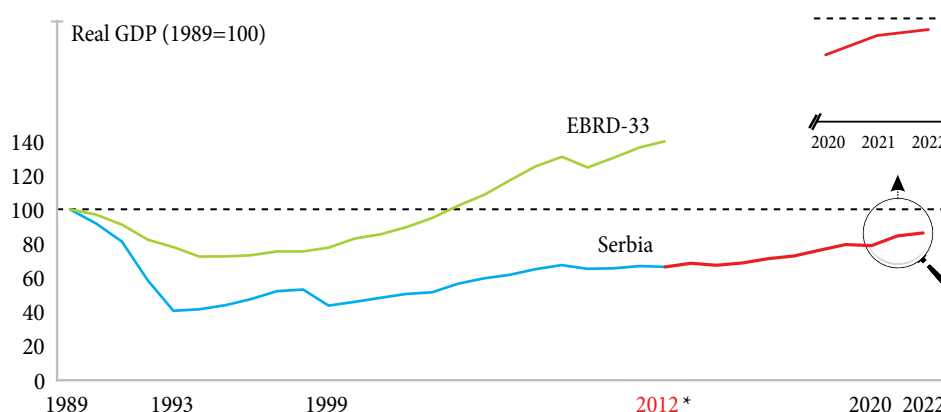
5 The ratio between the output in 2022 and the output in pre-transitional 1989 in constant prices

Figure 7: FX rate trend: RSD vs reserve currencies



Source: The National Bank of Serbia

Figure 8: Transitional output gap, period: 1990-2022



* 1989-2012 According to EBRD Transition Report
2013-2022 Authors' calculation based on national statistics

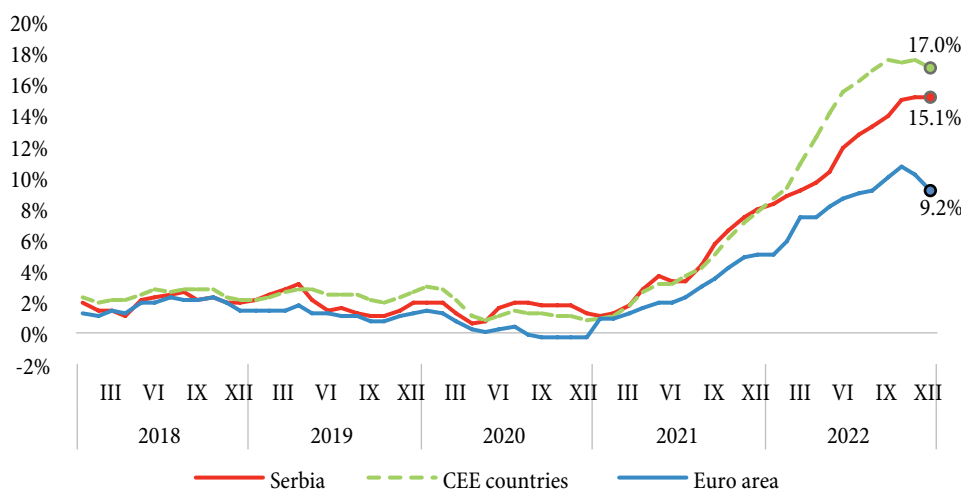
Serbia has the development gap not only relative to ex-transition countries of CEE, but also relative to the western republics of former Yugoslavia (Slovenia and Croatia). In 2021, the GDP pc in Slovenia amounted to USD 29,295 and in Croatia USD 17,685, while Serbian GDP pc amounted to USD 9,230.

Inflation is another fundamental vulnerability. Inflation is inextricably linked to the output gap. The additional triggers are the breakup (and slowdown) of supply chains and the global surge in energy and food prices. When the fear of fear overwhelms consumer sentiments, underlying inflation is plummeting. Food prices far outstrip average inflation. Energy prices are tightly controlled and below the average price in the EU. Because “there is no free

lunch”, the victim is debt increase. After a slowdown in December, annual CPI in 2022 reached 15.1%, which is below the average of the CEE economies (17%). Lower inflation in Serbia could mostly be explained by the FX policy. Namely, a stable FX rate was able to absorb some externally driven inflationary pressures and keeping under control the macro imbalances.

When it comes to advanced economies, inflationary pressures started to lessen toward the end of 2022. For example, the inflation rate y-o-y in the US slowed from 9.1% in June to 6.5% in December 2022, while in the euro area inflation slowdown started later, in Q4 2022, so it stood at 9.2% in December 2022. The inflation benchmark is presented in Figure 9.

Figure 9: Inflation benchmark



Source: Eurostat & Statistical Office of the Republic of Serbia

Last but not least, indebtedness is a vulnerability, too. A benchmark of the level of public debt shows that Serbia’s economy stays in a relatively calm mode (see Figure 10). The level of debt is growing in absolute terms but staying almost stable in relation to the output. From January to October 2022, the total public debt increased by EUR 2.3 billion to the level of EUR 32.4 billion (53.7% of GDP). At the end of 2022 the public debt amounted to 55.1% of GDP. The share of public debt denominated in EUR was 57.3%, in USD 12.4%, 4.8% in other convertible currencies, while the share in RSD amounted to 25.5%. At the end of 2022 the public debt has reached 55.1% of GDP.

The cost of debt is also under control because after the fiscal consolidation the Treasury Department has done a lot of risk remediation and most of the necessary to refinance debt. A particular problem could arise due to the surge in off-balance sheet positions. A surge in off-balance risks is one of the factors affecting the inversion of the sovereign debt yields in the last period.

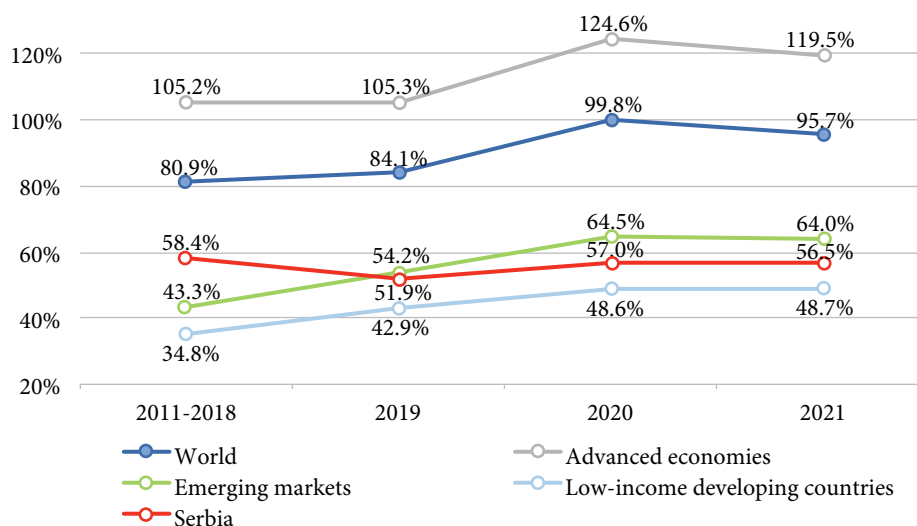
The strategic audit of Serbia’s economy shows that, despite the negative trends, events are positive. The NBS and the government have dealt with many macro challenges. But there are a lot of concerns that the symbiosis of external asymmetric shocks and internal imbalances is threatening to magnify the current slowdown. As policymakers have a fiscal space and are better equipped in the fight with headwinds, the economy slows but still shows resilience.

The main reason for that is the implementation of an industrial policies-driven approach for years. Impact investments are more substantial than ever and ICT industry is booming. The new targeted sectors are energy, with a special focus on renewables, biotech, and advanced agriculture. Recently, the government has passed the law on biotech, established the Competence Center for the 4IR and started with the restructuring of major state-owned energy companies after the IMF’s recommendation to the government to rethink the current approach.

Growing indebtedness and fiscal expansion normally lead to inflation surge. Consequently, the key idea for policymakers on the road ahead to maintain the balance between factor prices and factor incomes is to harmonize structural and macroeconomic policies by using macroeconomic automatic stabilizers. It is a prerequisite for restoring price sensitivity against all factors of production, investments expansion and revival.

In a rolling crisis not only prosperity, but the very survival on national economy depends on a proactive and preemptive government. If you are not ready to reframe the future, the future will reframe you. Despite reframed headwinds, the government should find something progressive enough to run the economy in a sustainable and inclusive way and, by doing this, to reframe the future. When the climate emergency acts as a “crisis multiplier”, the green transition should be the confirmation of the government’s climate-determined proactivity. Moreover,

Figure 10: Public debt benchmark (% of GDP), period: 2011-2021



Source: IMF, Global Debt Monitor 2022 & The Ministry of Finance of the Republic of Serbia

it is a chance for the new industrialization and output expansion. A greener economy has the potential to make a turnaround and push the output into a positive territory and toward a more convenient structure.

To follow this orientation, the accession process to the EU can play a catalytic role. Unfortunately, at this moment the EU standpoint is: “to enlarge or not to enlarge, that is the question”. Moreover, the so-called Kosovo issue is a fundamental problem for Serbia’s geopolitical positioning and further development. The dominant point of view in Serbia is to keep Kosovo within Serbia’s borders at all costs, until the last breath of each citizen, or the state. We understand this point of view and fully respect it. But it is in contradiction to the standpoints of the EU and the recently presented framework for resolving this issue. For the “going green” movement in Serbia, the EU would be a spender of last resort.

Despite respectable macroeconomics numbers, the earning power and credit potential of Serbia’s economy are not big enough to finance such a radical move as the green transition. If the green transition is a big idea for the crisis mitigation and revival, the logical question is how to finance this endeavor if Serbia remains isolated from the European mainstream. Anyhow, the zero step in the search for green funding requires the accreditation of the green transition programs by respectable international institutions.

Accreditation of the green transition program for Serbia

Let us now add the final point to the discussion, the accreditation of the green transition program as a catalyst for the crisis mitigation and a key driver of economic revival.

National economies, including the champions of economic neoliberalism, are continually facing failures due to the limitations of theoretical concepts and ineffective governance. The philosophy of individualism and its constituencies like the linear model of growth and market fundamentalism, are not welcome anymore. Also, they could not be the platform for crisis mitigation and shift toward sustainable growth in the economies with a delay in economic development. People should not be victimized

by domination habit, being at the war with each other. Moreover, humanity should not be at war with nature. Rather, they should be connected and integrated. In the fight against global warming and pollution no one can afford to sit on sidelines. Each national economy has its responsibility.

After a recent acceleration of geopolitical crisis, humanity is in midst of a profound shift. When deglobalization and reglobalization are replacing globalization and protectionism is replacing free trade, geopolitics acts as a macroeconomic variable and a crisis multiplier. Antagonizing and reconfiguring the existing suppliers and buyers on a global level, economic sanctions (and countersanctions), trade wars, currency wars, proxy wars, and restricted globalization (or re-globalization) are going to be a substantial threat to free trade and investments. These days, despite an almost endless influx of 4IR solutions, geopolitics, not technology, reflects primarily in economic expectations. Moreover, in the developed world, the military industrial complex is a dominating part of the government machine pushing own interests as global commons. The economy and finance in developing world are slaves to the previous big shift. They should not play this game.

To change the context and put the economy on a sustainable path, Serbia needs unconventional steps. The seeds of economic and climate crises will have the major impact on a big change toward a greener economy, in terms of a double paradigm change generating the circular model dedicated to the SDGs and framed by ESGs, along with the heterodox economic policy platform based on a greater role of the state in the economy. Fine-tuning of a concrete program depends on the country’s specifics. To do that, more efforts should be made toward the development and accreditation of the green transition program. The accreditation of this document goes primarily to the EU.

Even if we manage to implement effective and quite diverse measures in search of solutions, we must be aware that the program of green transition will not be easy to reverse the current trends. In making an economy greener, there are many explanatory details. The details are different because environments and problems are different. But the fundamentals are fully recognizable.

Namely, the crises mitigation and recovery should be based on some pillars.

First and foremost, the transition from old to new economy should tackle the problem of climate emergency. The previous requires the development of all-around and in-depth relationships vis-à-vis this issue, including geopolitics. The experience with the geopolitical crisis in the 1990s teaches the architects of the system in Serbia about the necessity to look closely at meta trends such as the climate emergency. Those who do not remember history are doomed to repeat it. Otherwise, *déjà vu* all over again.

The program would primarily require the radical transformation of big polluters from the energy and land-use industries, including power generation, extracting industries, cement, processing industries, agriculture, buildings, mobility, forestry, and waste management. Also, the program should be able to deploy green technologies and products/services.

Climate change and energy transition are linked. When it comes to energy supply, Serbia is not on the right track, not only due to energy deficit, but also, and mostly, due to its dependence on fossil fuels (almost 70% of energy production based on coal). In the following period, the government should gradually escape from the energy production based on fossil fuels as something bold enough to run the transition correctly.

To attract the EU and other organizations and institutions to fund the green transition in Serbia, the program should also identify the sources of extraordinary growth potential. This requires setting up the vertical industrial policies providing a coherent integration between science and industry with the aim of deploying frontier technologies such as green hydrogen, solar energy, and carbon capture as a new technological base of climate-neutral production.

The second pillar consists of impact investments in infrastructure and tradable sectors. Impact investments in infrastructure (both physical and digital) are a conventional defense tool from output gap. Preserving the competitive advantage of tradable sectors in new circumstances requires decoupling from high energy consumption. As the biggest industrial producers (steel, copper, cement, agriculture,

etc.) are also the biggest polluters, the implementation of climate-neutral technologies is necessity.

The third pillar involves restructuring of the existing industrial base in compliance with the “go green” criteria, particularly in energy production and land-use industries. This restructuring fundamentally helps in keeping up with meta trends. Bearing in mind local specifics, the biggest priorities in the segment of renewable energy sources include pumped-storage hydropower plants and cogeneration plants based on biomass (bio gas, bio diesel, and bio methanol). Such an orientation, together with reforestation, is highly compatible with the circular economy requirements.

Fourth, the harmonization of industrial policies with core macroeconomic policies through macroeconomic automatic stabilizers (key policy rate, green subsidies, green tax, tax holiday for impact investments, etc.) is also welcome. Calibration of key policy rate in line with natural interest rate and control of wage inflation could not be good enough without structural adjustments in tradable sectors (particularly, in ICT, energy, industrial production, agriculture, and construction).

Last but not least, a new financing platform based on a multitrack approach will offer interested players a critical mass of funds for financing these endeavors.

Conclusion

Among economics scholars and practitioners, economic neoliberalism has been recognized as the root cause of the current structural crisis, rather than the platform capable of generating solutions. An economy based on these premises is impotent and out-of-tune, which means with the output gap and over-finalized. It is not sustainable that the economy, as a spender of last resort, continuously increases debt and the scarcity of energy and material resources. Moreover, it is becoming increasingly difficult to navigate its main inconveniences such as debt crisis and stagflation by using the conventional macroeconomic script. Without structural policies and built-in macroeconomic stabilizers, the results of reactive policies are mainly counterproductive. Bringing inflation down with a hawkish monetary policy in case of the

output gap and its inadequate structure is a therapy that may be more dangerous than the illness itself. A surge in the key policy rate in the middle term leads to growing underlying inflation and wage inflation. It turns out to be a fatal illusion trying to close the gap between supply and demand, as a root cause of structural inflation, by using the tools regularly implemented as an antidote for transitory inflation (“easy come, easy go”). Moreover, the emergence of interest rates inflation as a new form of inflation leads to further lingering and spiraling of the crisis. Namely, calming inflation by interest rate hike and, by doing this, slowing down the economy is actually deepening another structural imbalance, the output gap.

Another weak point of economic neoliberalism is its incompatibility with the requirements of the 4IR. The concept of the so-called “contactless economy” under the impact of the 4IR needs a coordinated and well-tuned economic system with dynamic stability focused on innovative solutions to mitigate the structural imbalances of former development. Never-ending volatility, as consequence of in-built fault lines, coupled with counterproductive policy response, is one of the key characteristics of today’s economic settings. So, the contactless economy could not be implemented in a crisis-inclined system.

Probably the biggest worry associated with economic neoliberalism is the domination of “unknown unknowns” such as spiraling environmental deterioration. Despite the well-intentioned efforts, the climate emergency, as a key form of environmental deterioration, plays tango with the planet. The last driver of such developments is the dominance of geopolitics over economics. The climate targets initially defined in the Paris conference in 2015 have been missed due to geopolitical disputes and their negative consequences on greenhouse gas emissions. The most convincing evidence of the dangerous loosening of climate targets in advanced economies is the revival in the energy mix not only of nuclear energy, but also coal.

There is no panacea, including the geopolitical power game, for making the economy sustainable and inclusive with such inbuilt fault lines. Despite this, in 2022 geopolitics fully became a macroeconomic variable. In times when the global economy desperately needs an anti-crisis package to deal with structural inflation and

provide climate-minded investments as a response to the climate emergency, money is directed toward war financing. Moreover, geopolitics has undermined trade and investment and put the global economy into a more divided and dangerous mode. Now is not the time to put an additional burden on the economy full of imbalances. War financing is in contradiction to the evident planetary boundaries when people expect that each national economy should be as much inclusive toward nature as possible.

How to respond to these contradictions? The answer is simple, through strategic thinking. The magic of strategy lies in the transformation of handicaps into opportunities by using an inimitable idea. In outlining the exit strategy in a country like Serbia, a bullish shot could be the use of impact investments to eliminate key root causes of the climate emergency and to grow in a climate-neutral way. A “go green” shift in an economy currently based on fossil fuels could be an ultimate driver toward a more sustainable and inclusive economy in the future. Following this line of reasoning, in the final document of COP26 [41], the top 20 emitters producing 80% of global greenhouse gas emissions committed to reduce the emissions by 45% until the end of this decade and to reach a net-zero emission stage by 2050. In the COP27, the “Loss and Damage Fund” was established for developing nations [40]. In Europe, the European Green Deal is a great breakthrough. All documents are tiny parts of what needs to be done to preserve the future of the planet and make the economy sustainable and inclusive. Serbia should believe in the power of this idea.

The green transition is not an overnight flight. To protect, restore and rejuvenate the planet require the reconstruction of the economy and its future development by following natural boundaries. To drive the economy forward, the first step is to abandon the conventional economic script and think in a more systemic and comprehensive manner. However, mitigation of the current macroeconomic imbalances and adaptation to meta trends take time. Even if imbalances start to disappear at some point, global warming (and pollution) will not stop. Embarking on the green transition journey does not instantly end the disruptions created by economic neoliberalism.

In dealing with a confluence of crises, the existence of multiple ultimate goals points to the complexity of a leadership role. So, the new economy should integrate the climate emergency goals and the necessity for a climate-neutral industrialization based on 4IR solutions. What makes the architects of the new economy so special, apart from their consideration for meta trends and familiarity with a new conceptual platform, is their creativity in implementation.

Today for almost all national economies is much more important to whom you are connected than who you are. Geopolitically-driven restrictions between superpowers instantly produce decoupling, deepening the gaps between supply and demand, overall scarcity of energy and food on local levels, and deglobalization. The surge in energy and food prices is spreading to connected industries and, by doing this, eats the purchasing power of population. To calm social relations, the indexation of wages (and pensions) regularly leads to inflation spiraling.

The previous trend appears in its extreme form in a small, open, landlocked and underdevelopment economy. In an economy highly dependent on FDI, mainly from the EU, and faced with the negotiation process regarding its geopolitical positioning, conducted under the patronage of superpowers and still unresolved at both internal and international level, geopolitics has an important role to play. The so-called “Kosovo issue” has exacerbated the negative impacts of previously mentioned factors. It is a macroeconomic variable in full capacity and crisis multiplier. So, the Serbia’s economic success in navigating the rolling crisis has been overshadowed by the Kosovo issue.

Along with the Kosovo issue, Serbia has a lot of things to settle. A great priority is the climate emergency. It should not be treated as a political issue par excellence because there are no ideological roots. The climate emergency is not political but existential threat, quite visible in every corner of the planet. There is no need to politicize this issue because no one can escape the responsibility to participate in finding solutions. Even though a climate-neutral industrialization seems like a fantasy in times of geopolitical supremacy, it is a step in the right direction.

As for the green transition in Serbia, the critical question is going to be: Will Serbia be able to carry out an

adequate program of the green transition and be a reliable partner in its implementation? In strategizing about the future, national economies should not be under time pressure. In addition to hard work and determination, the implementation of a new framework needs a “substance”, namely the impact investments based on structural policies promoting tradable sectors and well-coordinated with the core economic policies via macroeconomic automatic stabilizers. It is a well-elaborated leitmotiv of our previous work, capable of generating key components of the green transition program. For central banks stagflation is incredibly difficult to navigate. So, structural policies are imminent.

In the near past, Serbia has consistently disappointed both optimists and pessimists. It has been continuously showing a confusing picture, determined by the genuine crisis management economic solutions enabling maneuvering amid headwinds of the rolling crisis, on the one side, and by the incapability of making strategic political decisions, on the other. Lighting the path through a confluence of crises will start with the climate crisis. If the adjustment to this multiplier of other crises delays, the overall crisis will be magnified. Serbia’s economy must shift away from the carbon footprint manufacturing and incentivize a new industrialization toward a digital economic landscape in line with the limits of nature. Because investing in SDGs and reporting by ESG criteria threaten energy security, the diversification of renewables is required. This is feasible because Serbia is sitting on the gold mine of ICT talents giving the strategists a plausible reason to raise their expectations. In 2022, ICT was the most profitable industry and the biggest exporter. Exploring new frontiers in ICT shapes the sustainability and inclusivity of many.

References

1. Acemoglu, D., & Robinson, J. A. (2012). *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: The Crown Publishing Group.
2. Bardi, U. & Alvarez Pereira, C. (2022). *Limits and Beyond: 50 years from The Limits to Growth, What we Learned and What’s Next?* UK: Exapt Press.
3. Bareket, M., & Kahane, Y. (2022). *Achieving Environmental Resilience and Other Sustainability Goals through the Insurance and Pension System* (WAAS Working Paper, February 2022).

4. Blanchard, O., Dell'Ariccia, G., & Mauro, P. (2013). *Rethinking macroeconomic policy II: Getting granular* (IMF Staff Position Note SDN 13/03). Washington, DC: IMF
5. Blanchard, O., Tirole, J., Gollier, C., Reguant, M., Rodrik, D., Stantcheva, S., ... & Propper, C. (2022). *Les grands défis économiques*. Presses universitaires de France/Humensis.
6. Borio, C., McCauley, R. & McGuire, P. (2022). Dollar debt in FX swaps and forwards: huge, missing and growing. *BIS Quarterly Review*, 67-73.
7. Brunnhuber, S. (2021). *Financing Our Future: Unveiling a Parallel Digital Currency System to Fund the SDGs and the Common Good*. Palgrave Macmillan.
8. Brunnhuber, S. (2023). *Financing our Anthropocene: How Wall Street, Main Street and Central Banks Can Manage, Fund and Hedge Our Global Commons*. Cham, Switzerland: Springer Nature.
9. Brunnhuber, S., & Jacobs, G. (2020). Innovative financial engineering to fund the SDGs: A WAAS initiative. *Cadmus*, 4(2-II), 141-148.
10. Chancel, L. (2021). Ten Facts about Inequality in Advanced Economies. In O. Blanchard & D. Rodrik (Eds), *Combating Inequality: Rethinking Government's Role*. Cambridge: The MIT Press.
11. Dalio, R. (2018). *A Template for Understanding Big Debt Crises*. Westport: Bridgewater/Greenleaf Book Group.
12. Djuricin, D., & Vuksanovic Herceg, I. (2020). Double paradigm change and new economics rules: Industry 4.0 perspective. In Y. Uygun (Ed.) *Industry 4.0: Principles, Effects and Challenges* (Chapter 4). Hauppauge, NY: Nova Science Publishers.
13. Đuričin, D., & Vuksanović Herceg, I. (2019). Three things an economy needs in the era of the fourth industrial revolution. *Ekonomika preduzeća*, 67(1-2), 1-15.
14. Đuričin, D., & Vuksanović Herceg I. (2019). Illuminating an economy of the future: How to win the transition to industry 4.0 with new economic rules. In L. Monostori, V. D. Majstorovic, S. J. Hu, & D. Djurdjanovic (Eds.), *Proceedings of the 4th International Conference of the Industry 4.0 Model for Advanced Manufacturing* (pp. 100-112). Berlin and Heidelberg: Springer.
15. Đuričin, D., & Vuksanović Herceg I. (2022). Envisioning a new economics system after the transition from pandemic to endemic. *Ekonomika preduzeća*, 70(1-2), 1-22.
16. European Commission. (2020). *Guidelines for the Implementation of the Green Agenda for the Western Balkans* (Commission Staff Working Document). Retrieved from https://neighbourhood-enlargement.ec.europa.eu/system/files/2020-10/green_agenda_for_the_western_balkans_en.pdf
17. Forrester, J. W. (1968). *Principles of Systems. System Dynamics Series: Productivity*. New York: Pegasus Communications.
18. Friedman, M. (1970, September 13). The Social Responsibility of Business Is to Increase Its Profits. *New York Times Magazine*, 122-126.
19. Green for Growth Fund (GGF). Retrieved from: <https://www.ggf.lu/>
20. Hortovanyi, L., Morgan, R. E., Vuksanovic Herceg, I., Djuricin, D., Hanak, R., Horvath, D., Mocan, M. L., Romanova, A., Szabo, R. Z. (2022). Assessment of digital maturity: The role of resources and capabilities in digital transformation in B2B firms. *International Journal of Production Research*, 1-15, DOI: 10.1080/00207543.2022.2164087
21. Hunter Lovins, L. (2022). Growth of What? In U. Bardi & C. Alvarez Pereira (Eds) *Limits and Beyond: 50 years from The Limits to Growth, What we Learned and What's Next?* (pp. 110-121). UK: Expat Press.
22. IMF. (2022). *The IMF Global Debt Monitor 2022*. Retrieved from file:///C:/Users/ivavh/Downloads/2022-12-12-global-debt-monitor.pdf
23. Kahneman, D. (2011). *Thinking Fast and Slow*. London: Penguin Books.
24. Mazzucato, M. (2015). *The Entrepreneurial State: Debunking Public vs Private Sector Myths*. New York: Public Affairs.
25. Mazzucato, M. (2018). *The Value of Everything: Making and Taking in the Global Economy*. New York: Public Affairs.
26. Mazzucato, M. (2021). *Mission Economy: A Moonshot Guide to Changing Capitalism*. Harper Business.
27. Mazzucato, M., Cimoli, M., Dosi, G., Stiglitz, J. E., Landesmann, M. A., Pianta, M., ... & Page, T. (2015). Which industrial policy does Europe need? *Intereconomics*, 50(3), 120-155.
28. McKinsey and Company. (2022). *The net-zero transition: What it would cost, what it could bring* (Report). Retrieved from <https://www.mckinsey.com/business-functions/sustainability/our-insights/the-net-zero-transition-what-it-would-cost-what-it-could-bring>
29. Murray, A., Skene, K., & Haynes, K. (2017). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. *Journal of Business Ethics*, 140(3-1), 369-380.
30. NBS. (2022, December). *Macroeconomic developments in Serbia*. Retrieved from https://www.nbs.rs/export/sites/NBS_site/documents-eng/finansijska-stabilnost/presentation_invest.pdf
31. Network for Greening the Financial System. (2022). *Six different scenarios to assess transition and physical risks*. Retrieved from <https://www.ngfs.net/ngfs-scenarios-portal/explore/>
32. OXFAM. (2022). *Ten richest men double their fortunes in pandemic while incomes of 99 percent of humanity fall* [press release, 17th January]. Retrieved from <https://www.oxfam.org/en/press-releases/ten-richest-men-double-their-fortunes-pandemic-while-incomes-99-percent-humanity>
33. Rajan, R. G. (2011). *Fault Lines: How Hidden Fractures Still Threaten the World Economy*. Princeton, NJ: Princeton University Press.
34. Rodrik, D. (2011). *The Globalization Paradox: Democracy and Future of the World Economy*. New York: W.W. Norton.
35. Rodrik, D. (2016). *Economics Rules: The Rights and Wrongs of the Dismal Science*. New York: W.W. Norton.
36. Stiglitz, J. E. (2010a). *Freefall: America, Free Markets, and the Sinking of the World Economy*. New York, NY: W. W. Norton & Company.
37. Stiglitz, J. E. (2010b). *The Stiglitz Report: Reforming the International Monetary and Financial Systems in the Wake of the Global Crisis*. London: The New Press.
38. The 'Force for Good' Initiative. In Support of the UN Secretary General's Strategy and Roadmap for Sustainable Development (2022). *Capital as a Force for Good: Capitalism for a Secure and Sustainable Future*. Retrieved from https://www.forcegood.org/frontend/img/2022-report/pdf/2022_full_report.pdf

39. The 'Force for Good' Project on the Future of Capital. In Support of the UN Secretary General's Strategy and Roadmap for Financing the 2030 Agenda for Sustainable Development. (2020). *Capital as a Force for Good: Global Finance Industry Leaders Transforming Capitalism for a Sustainable Future*. Retrieved from <https://www.forcegood.org/frontend/img/pdf/Capital-as-a-Force-for-Good.pdf>
40. UN Environment Programme. (2022, November 22). *COP27 ends with announcement of historic loss and damage fund* (Press Release). Retrieved from: <https://www.unep.org/news-and-stories/story/cop27-ends-announcement-historic-loss-and-damage-fund>
41. United Nations Climate Change. (2021). *COP26: The Glasgow Climate Pact*. Retrieved from <https://ukcop26.org/the-glasgow-climate-pact/>
42. United Nations Climate Change. (2022). *COP27: Decision -/CP.27. Sharm el-Sheikh Implementation Plan*. Retrieved from https://unfccc.int/sites/default/files/resource/cop27_auv_2_cover%20decision.pdf?download
43. United Nations. (2015). *The UN Sustainable Development Goals*. Retrieved from <https://sustainabledevelopment.un.org/?menu=1300>
44. United Nations. (2015). *Transforming our World: The 2030 Agenda for Sustainable Development*. New York, NY: United Nations Publications. Retrieved from <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>
45. United Nations. (2022). *The Sustainable Development Goals Report 2022*. Retrieved from <https://unstats.un.org/sdgs/report/2022/>
46. Williamson, J. (1993). Democracy and the 'Washington Consensus'. *World Development*, 21(8), 1329-1336.
47. World Bank. (2022, March). *Climate smart PPP*. Retrieved from <https://ppp.worldbank.org/public-private-partnership/energy-and-power/climate-smart-ppps-1>



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Jorgovanka Tabaković
Governor
National Bank of Serbia

INFLATION: CAUSES, OUTLOOK AND MONETARY POLICY RESPONSE, WITH A FOCUS ON THE CASE OF SERBIA

Inflacija – uzroci, izgledi i odgovori monetarnih politika,
s posebnim osvrtom na Srbiju

Abstract

The paper elaborates on world inflation drivers and monetary policy responses in 2022, with a particular focus on Serbia, including factors underpinning global inflation in both short and long run. Reining in inflation was among the key challenges for economic policy makers across the world in 2022, and was particularly pivotal for monetary policy. Reflecting a mix of acute external shocks, in 2022 inflation turned out more persistent and stronger than expected initially, whilst in the case of Serbia it was largely dictated by global supply-side factors. As shown by NBS analyses, around 50% of the departure of actual from projected inflation in Serbia was due to a significant deviation of global prices of oil, inflation in euro area, primary agricultural commodity prices and the agricultural season at home from the assumptions used in the projection model. While pronounced oscillations of imported inflation (expressed in dinars) in the earlier years (2010 and 2012) were largely determined by the dinar's volatility against the euro (two-thirds almost), now, in an environment of preserved relative stability of the exchange rate, they are a consequence of the growth in euro area consumer prices. Responding to mounting inflationary pressures, central banks embarked on monetary policy tightening. A more robust response came from those central banks whose economies faced inflationary pressures generated not only by supply-side factors, but also by domestic demand and higher labour costs. Though global inflation is expected to slow in the coming period, estimates prevail that it will not return to the exceptionally low pre-pandemic levels in the medium run.

Keywords: *inflation, monetary policy, geopolitical tensions, energy products, food prices*

Sažetak

U ovom radu analiziram faktore globalne inflacije i odgovore monetarne politike u 2022, s posebnim osvrtom na Srbiju. Dajem i pregled aktuelnih razmatranja faktora koji će opredeliti kretanje globalne inflacije u narednom periodu, i u kratkom, i u dugom roku. Obuzdavanje inflacije bilo je među ključnim izazovima za nosioce ekonomske politike širom sveta tokom 2022, a pre svega za monetarnu politiku. Zbog preplitanja nekoliko jakih šokova iz međunarodnog okruženja inflacija se u 2022. pokazala jačom i postojanijom od inicijalno očekivane, pri čemu je u slučaju Srbije u najvećoj meri bila posledica delovanja globalnih faktora na strani ponude. Analize Narodne banke Srbije pokazuju da se oko 50% odstupanja projektovane od ostvarene inflacije u Srbiji duguje značajnijem odstupanju između svetskih cena nafte, inflacije u zoni evra, cena primarnih poljoprivrednih proizvoda, kao i domaće poljoprivredne sezone od pretpostavki korišćenih u modelu za projekciju. Dok su visoke oscilacije uvozne inflacije (izražene u dinarima) ranijih godina (2010 i 2012) u velikoj meri bile opredeljene volatilnošću deviznog kursa dinara prema evru (gotovo dve trećine), sada, u uslovima očuvane relativne stabilnosti dinara prema evru, posledica su rasta potrošačkih cena u zoni evra. Reagujući na rastuće inflatorne pritiske centralne banke su zatezale monetarne uslove, pri čemu su izraženiji stepen reakcije imale centralne banke gde su, pored faktora sa strane ponude, inflatorno delovali i domaća tražnja i povećani troškovi rada. Iako se u narednom periodu očekuje usporavanje globalne inflacije, preovlađuju ocene da se u srednjem roku inflacija neće vratiti na izrazito niske nivoe iz perioda pre pandemije.

Ključne reči: *inflacija, monetarna politika, geopolitičke tenzije, energenti, cene hrane*

Introduction

Having moved at exceptionally low levels for almost a decade, global inflation struck an upward path in 2021, triggered by a sudden rise in demand amidst the opening of a large number of economies with the easing of COVID-19 measures. Supply did not go in step with rising demand in the short run, creating supply chain bottlenecks and pushing up the prices of international container transport and primary commodities (oil, agricultural commodities and metals), and generating strong cost-push pressures on producer prices. Inflation movements were also driven by substantial fiscal and monetary support introduced in a number of countries in the first stage of the pandemic, or even before. Still, it is indisputable that the absence of measures during the pandemic would have had more far-reaching consequences for economies. Since October 2021, global inflationary pressures have also been stoked by the energy crisis in Europe due to elevated gas demand as economies were recovering, and by the bad weather, which was depleting gas storages. Multiple increases in carbon tax rates in the EU worked in the same direction.

As inflationary pressures were generated mainly on the supply side, in late 2021 and early 2022 most central banks and international financial institutions forecast the easing of pressures as of mid-2022, as also indicated by the stabilisation of global prices of primary commodity goods and the unwinding of supply chain disruptions. Nonetheless, the rise of geopolitical tensions and start of the Ukraine conflict sparked a new wave of global price hikes for energy and primary commodities. As a result, instead of slowing, inflation accelerated globally.

Even though central banks undertook significant monetary policy measures to curb inflation, some even at the cost of hard landing, in a number of countries, due to additional costs, inflation in 2022 touched the levels not seen in decades. Therefore, throughout 2022, central banks were constantly increasing inflation projections and expectations regarding the inflation peak, including the projected level of the terminal rate. In such an environment, inflation's return to the target, without significantly hampering economic activity, is considered to be the greatest challenge since the global economic crisis of 2008.

Given that even in late 2022 inflation remained the key challenge for economic policy makers across the world, primarily monetary policy makers, this paper deals with global inflation drivers in 2022, with a particular focus on Serbia, and sheds light on the inflation-curbing measures undertaken in 2022 and the inflation outlook.

Global inflation drivers in 2022: Energy and food prices

Against the backdrop of aggravated oil and energy supply, primarily from Russia, and following the start of the conflict in Ukraine, the first quarter of 2022 saw the *global oil price* topping USD 120 per barrel. As the USA decided to continue releasing oil from the Strategic Petroleum Reserve, and after oil exports from Kazakhstan were renewed and oil demand in China plummeted due to new pandemic-related lockdowns, the oil price touched around USD 107 per barrel in late March and in April. However, amid pronounced geopolitical tensions and concerns over oil supply globally as OPEC+ plans to step up output did not materialise, the oil price shot past USD 126 per barrel in the first half of June, up by 74% y-o-y. Since then, the global oil price has been on a decline amidst mounting recessionary pressures, but continued to generate global inflationary pressures in the remainder of 2022.

The tightening of geopolitical tensions between the West and Russia reflected even more strongly on *gas prices*, given Europe's high dependence on Russian gas imports, with gas storages being largely depleted. With the outbreak of the Ukraine conflict, the European natural gas benchmark price (Dutch TTF) exceeded EUR 100 per MWh (from around EUR 81 per MWh on average since early 2022), i.e. around USD 1,200 per 1,000 cubic metres of gas. In late March 2022, it reached around EUR 120 per MWh, four times more than in mid-2021, when it struck an upward path (Figure 1). In August, it hit a record high of EUR 330 per MWh, as gas flows via Nord Stream 1 were suspended. Although natural gas deliveries were stopped in September because of the pipeline leaks, the natural gas price fell to EUR 164 per megawatt-hour as gas storages were filled more than expected. In late October, under the impact of softer demand due to unseasonably

mild weather, the natural gas price fell to mere EUR 28 per megawatt-hour. As the heating season set in, in November and December the natural gas price moved at a higher level (EUR 117 per megawatt-hour on average in December), but was much below the mid-year figure. Still, unable to fully switch to another market or other type of energy in the short run, Europe dependence on Russian gas remains, and this adds uncertainty to energy price movements going forward.

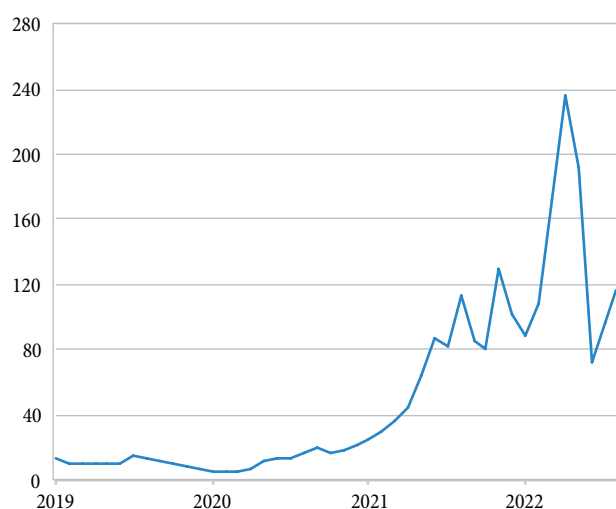
The price of electricity, as another source of energy, followed the natural gas price trend (Figure 2). According to Deutsche Börse data, it reached close to EUR 700 per MWh in late August 2022, being its historical high level, and then declined in the months that followed, mirroring the movement of natural gas prices. However, as in the case of gas, its level remains multiple times higher compared to previous years.

World food prices were on an upward trajectory from the second half of 2020. In March 2022, according to FAO Index, they touched record high, having risen by 34% y-o-y. In the rest of 2022, they declined moderately, for several reasons. Elevated supply of primary agricultural commodities with the arrival of the new agricultural season had a soothing effect, as did the build-up of recessionary pressures globally given that global primary commodity prices largely follow the production cycle phase. However, compared to the pre-pandemic period (February 2020), in

late 2022 food prices edged up by around 30%. As in the case of some other products, among the most important factors underpinning the initial growth of food prices was containment measures easing and a consequent rise in global demand, to which supply was not able to respond fast, which is why global supply disruptions did not bypass the world food market either. Moreover, transport costs were on a rise, fuelled not only by pent-up demand and restrictive sanitary measures, but also by rising global oil and petroleum product prices. Additional inflationary pressures on food prices came with the start of the conflict in Ukraine as Russia and Ukraine are important global producers of primary agricultural commodities. UNCTAD data show that Ukraine and Russia together account for around 25% of global supply of barley and wheat, as well as 14% of corn [14, p. 3]. Food production costs were also stoked by much higher prices of mineral fertilisers obtained through chemical processing of oil and gas. Market concerns over food affordability and the validity of the Black Sea grain deal amid mounting geopolitical tensions, including the effects of drought during the summer months of 2022 in most of Europe, exerted an additional pressure on the prices of food, notably grains.

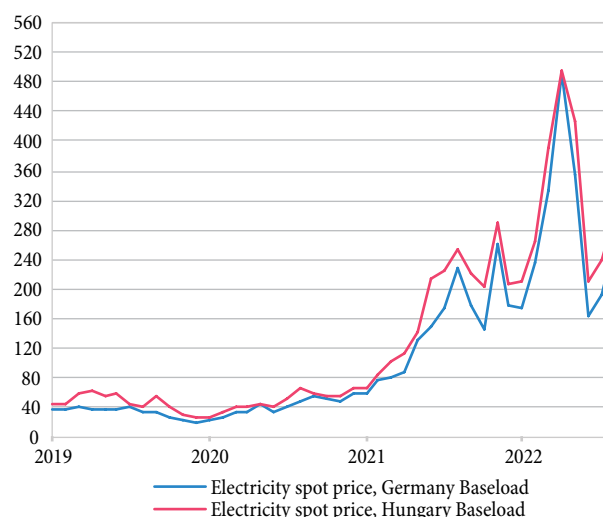
Specific drivers of inflation

Figure 1: Natural gas price in the TTF Hub (monthly average, in EUR/MWh)



Source: Refinitiv

Figure 2: Electricity prices, Germany and Hungary Baseload (monthly average, in EUR/MWh)



Source: Refinitiv

Though rising global energy and food prices and the effect of disrupted global supply chains underlie the current inflation growth in almost all countries in the world, the strength and durability of inflationary pressures are also determined by country-specific factors, such as macroeconomic fundamentals, labour market conditions, structure of consumer demand, fiscal and monetary policy stance, capital flows, exchange rate pressures etc. Though it is generally estimated that inflation is led by global supply-side factors, in the meantime, in several economies demand-side factors gained in importance. In some countries such as, for instance, the USA and central European countries (the Czech Republic, Hungary), demand and labour market conditions generated inflationary pressures even before the pandemic, but they were temporarily interrupted with lockdown effects at the start of the pandemic.

Overall, domestic demand, when at a high level, directly generates not only inflationary pressures, but also facilitates the transmission of higher cost pressures from producer to prices of final goods. Accommodative monetary and fiscal policies, including tight labour market conditions, i.e. rising wages and declining unemployment, are a part of an array of factors that can prop up domestic demand. Wages, as a factor of inflation, do not produce effects only on the demand side, but also on the supply side since, in an environment of persistently higher inflation, pressures on employers to increase wages are getting stronger, notably in shortage occupations. Excessive wage growth can generate further inflationary pressures, which may trigger further growth in inflation and a real decline in wages, bringing about new wage growth and, eventually, evolving into an inflation spiral. Still, according to the IMF World Economic Outlook of October 2022 [5, pp. 51-69], in the current conjuncture, in addition to price and nominal wage growth, the path of real wages was fairly flat or falling, which may produce disinflationary effects, diminishing the real costs of enterprises. Twenty-two similar episodes exhibiting high inflation have been recorded in the past 50 years, with long-lasting inflationary spirals being rare and ending mostly with inflation's slowdown, whilst nominal wages accommodated several quarters later.

Moreover, when global uncertainty and risk aversion are running high, and particularly if central banks of

advanced economies are tightening monetary conditions, capital flows invariably shift from emerging to advanced economies. The same is happening now, in a polycrisis environment, as shown by the slowest pace of borrowing in a hard currency at the global financial market since 2015 [4, p. 16], portfolio investment outflows, and a significant rise in yields on emerging market local currency securities. As a result, and particularly if its macroeconomic fundamentals have weakened and imbalances deepened, a country may also see a build-up in depreciation pressures. Depreciation has a direct impact on inflation as imported products expressed in the local currency are becoming more expensive, or an indirect effect, through changes in relative prices, when the local currency depreciates excessively and demand for domestic products increases, creating inflationary pressures.

Global inflation trends and monetary policy response

In the period 2015-2020, almost none of the advanced countries recorded inflation beyond 5%, while the share of emerging economies¹ with inflation exceeding 5% was around 30% (Figure 3). Since 2021 the situation has changed significantly. Specifically, of the total number of 40 advanced economies, around 40% recorded inflation beyond 5% at end-2021, while according to the IMF's October 2022 estimates, this percentage increased to 80% at end-2022. As for emerging economies (153 of them), at end-2021 this share was even higher, at around 60%, only to increase to 80% by end-2022. During 2022, in many advanced economies inflation trended at levels that had not been recorded in decades. Thus, before starting to slow down in July, in June 2022 the US inflation came at 9.1% y-o-y, being the highest level from 1981. Inflation in the euro area approached 10.6% y-o-y in October, its highest level since the euro area was established, while in Germany it came at 11%, an unprecedented level in 50 years. Thereafter, inflation slowed in the euro area as well – to 10% in November and 9.2% in December, while in Germany it fell from 10% in November to 8.6% in December. Nevertheless, it is still early to say that inflation has struck

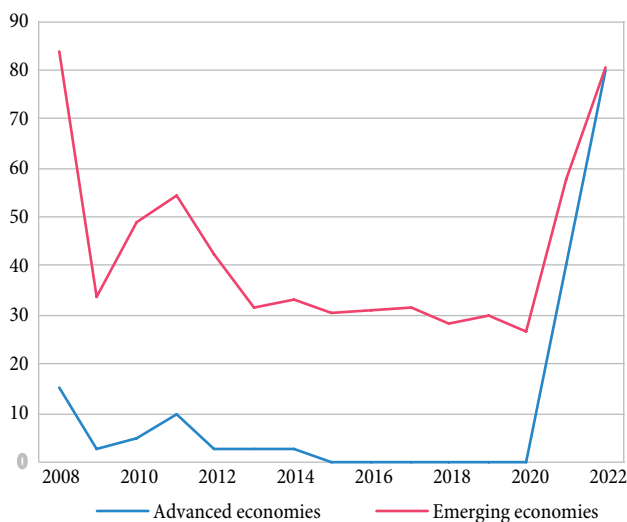
¹ Countries were grouped in line with the IMF's classification.

a sustainable downward trajectory, especially bearing in mind that core inflation has not started to descend.

Inflation at end-2022 was outside the target tolerance band in all of the observed 32 countries that officially pursue an inflation-targeting regime, and Switzerland was the only to record inflation below 5% (Figure 4). Of the observed countries, Turkey had the highest inflation, reflecting the effects of the depreciating lira in addition to global factors, followed by Ghana, Moldova, Ukraine and Hungary. Taking into account the inflation factors, in its October 2022 projections the IMF estimated that inflation would not return within the target tolerance band in inflation-targeting countries, or in the euro area and

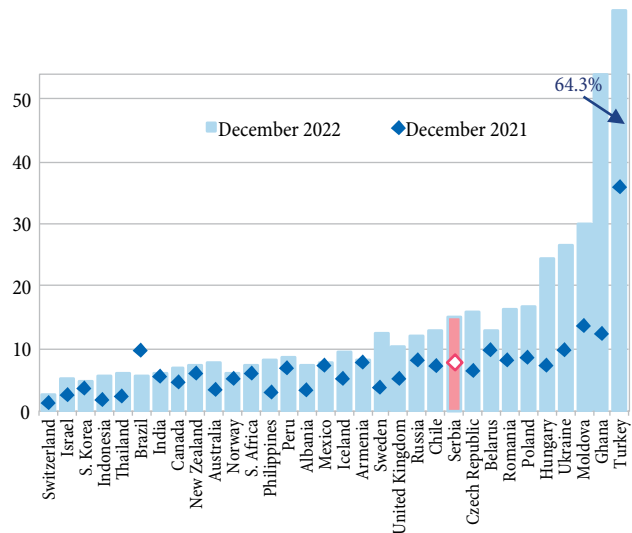
the USA in 2023. It still expects 2023 inflation to subside, reflecting previous tightening of monetary policy and the expected dissipation of the effects of elevated global energy and food prices, as well as subdued demand against the backdrop of stronger recessionary pressures globally. Speaking specifically about Central European countries that conduct inflation-targeting regime (Poland, Czech Republic, Hungary and Romania), the latest available central bank projections place average inflation in 2023 between 9% (Czech Republic) and 17% (Hungary), which is significantly above previous expectations, while Consensus Forecasts (Figure 5) also has similar projections for this group of countries. Despite significant monetary policy

Figure 3: Share of countries with inflation over 5% (by years, in %)



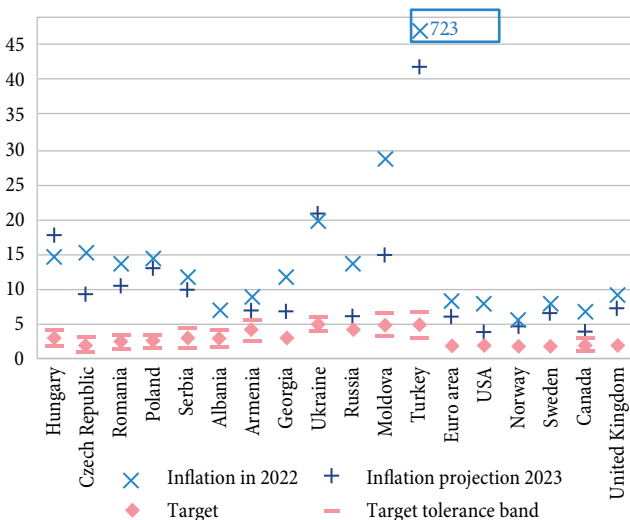
Source: IMF, WEO October 2022

Figure 4: Y-o-y Inflation in inflation targeting countries (in %)



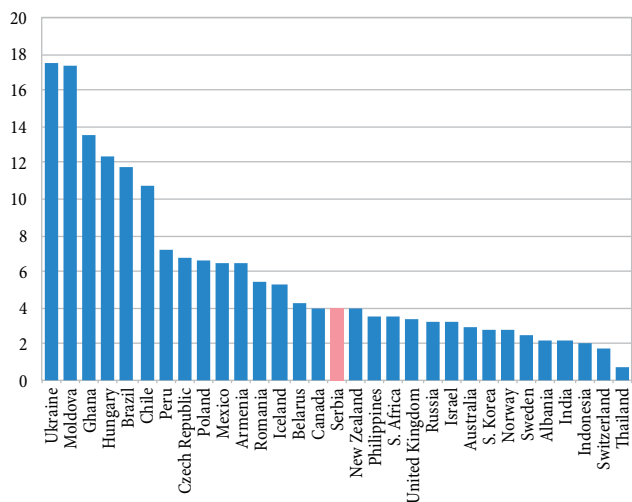
Source: central bank websites

Figure 5: Projected average inflation for 2023 (in %)



Source: Consensus Forecasts

Figure 6: Change in policy rate in 2021 and 2022 (in pp)



Source: central bank websites

tightening by their central banks, inflation in this group of countries is not expected to enter the target band by the end of 2023.

In response to mounting inflationary pressures, all central banks in the observed inflation-targeting countries lifted their policy rates during 2021 and/or 2022, in line with conditions in their domestic markets. There were also some central banks that initially lifted their policy rates only to trim them later (central banks of Russia, Turkey and Moldova in December 2022). Of the observed countries (Figure 6), Ukraine and Moldova lifted their policy rates the most, while policy rate increases were also relatively substantial in Central European countries (Hungary, Czech Republic, Poland). Thus, for instance, between June 2021 and end-2022, Hungary raised its policy rate by 12.4 pp to 13%, while the Czech Republic lifted it to 7%, (total increase by 6.75 pp). Starting from Q4 2021, the Polish also raised its policy rate, by 6.65 pp to 6.75%, where it has stood since September 2022. The response of these central banks was more robust as both domestic demand and increased labour costs had an inflationary effect in these countries.

Factors of inflation in Serbia and the NBS's monetary policy response

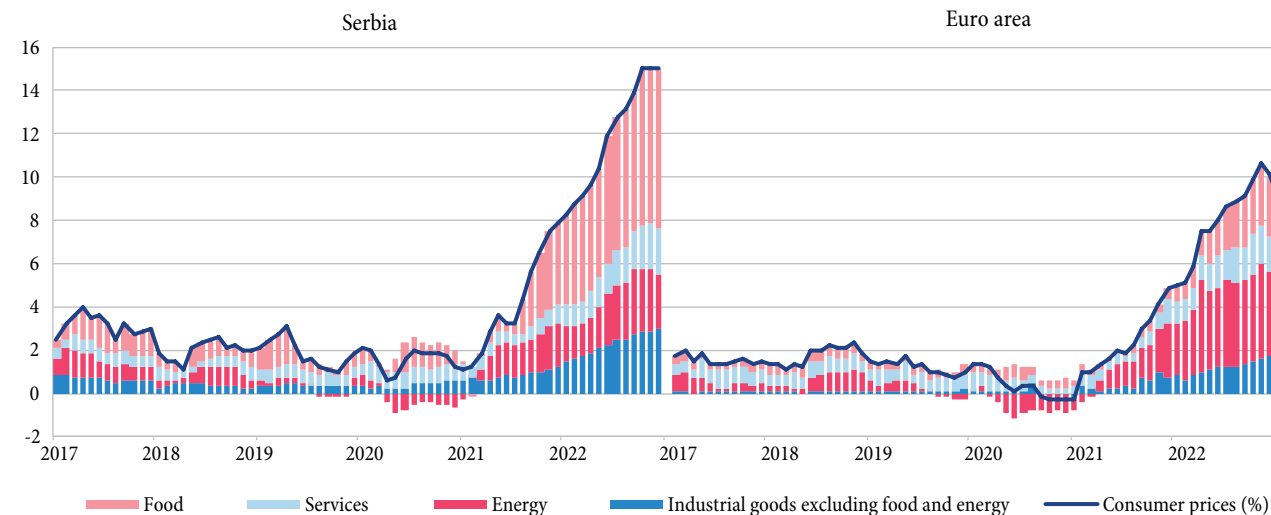
The inflation rate in Serbia stood at 15.1% y-o-y in December 2022. Almost 70% of this was the contribution of food and energy prices, which indicates that global cost-push

pressures are the major factor underpinning inflation in Serbia (Figure 7).

A major contribution to inflation came from *food prices* (7.5 pp). The increase of both processed and unprocessed food prices exceeded the overall price growth. Food prices were driven up by increased costs in food production attributable to rising prices of fuel, mineral fertilisers, packaging, etc., but most of all to the rise in the prices of primary agricultural commodities at global market (corn, wheat, soybean, etc.) as key raw materials in food production. These prices in the local commodity stock exchange mirrored the movements in the international market (Figure 8), despite the fact that in one part of 2022 the export of cereals was temporarily banned in order to ensure full supply of the domestic market. In addition, movements in their prices were also affected by the drought in Serbia and in other parts of Europe. This had a major negative effect on yields of autumn cultures. Furthermore, yields of fresh vegetables and fruit were also lower as the drought turned out to be stronger than in 2021, which is why their prices went further up in 2022, despite the high base from 2021. Combined, all of this drove food prices (notably processed food) further up in 2022 relative to 2021 as well as to the long-term average (Figure 9).

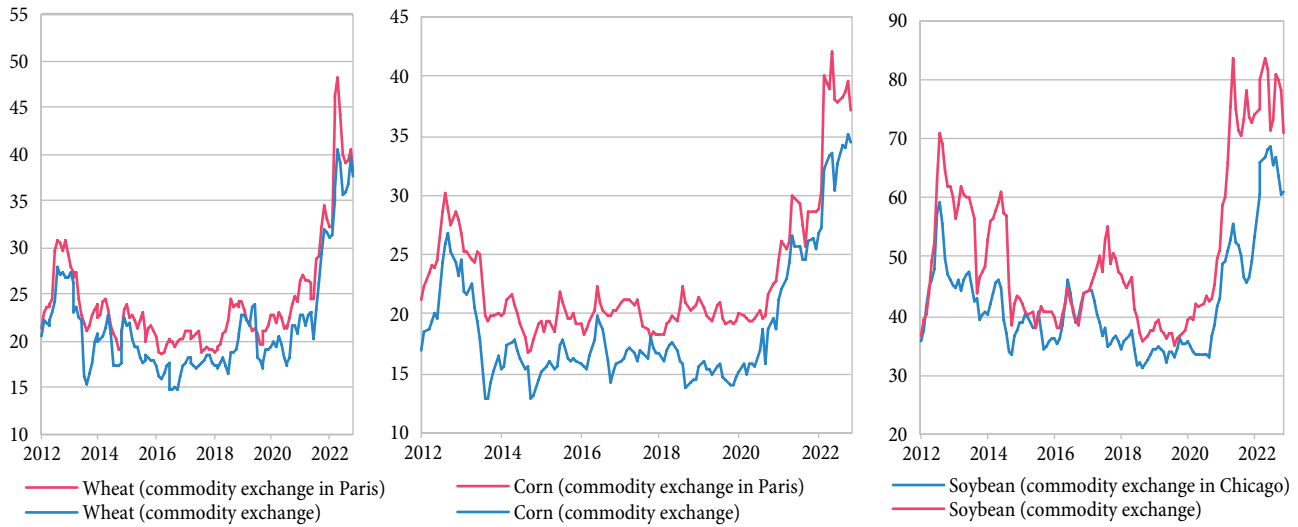
As for *vegetable and fruit prices in Serbia*, the NBS's analyses showed that yields of fruit and vegetable, which in large extent are dependent on weather conditions, predominantly determined oscillations in prices of fruit

Figure 7: Contributions to the y-o-y inflation in Serbia and euro area (in pp)



Source: SORS, Eurostat and NBS calculation

Figure 8: Wheat, corn and soybean prices in the international and local market (monthly average, in RSD/kg)

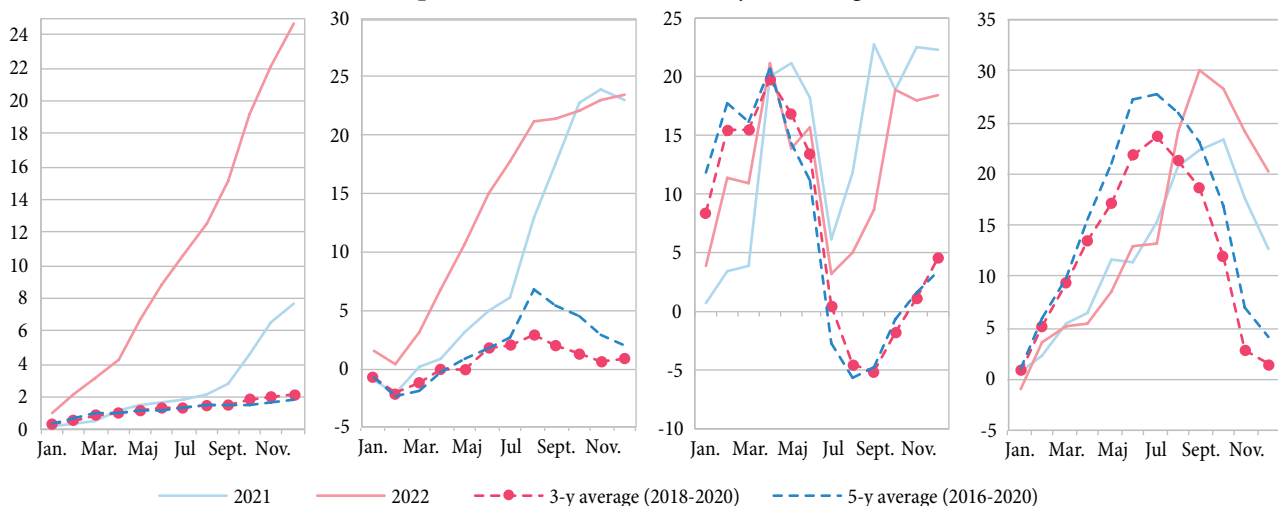


Source: Euronext, CBOT, Novi Sad Commodity Exchange and NBS calculation

and vegetable and deviations from seasonal trends [9, p. 13]. Analysis of fruit and vegetable price movements over the past fifteen years and departures of the average temperature in a specific month from the multiyear average for that month in the Niš and Novi Sad areas (the main producers of fruit and vegetable in Serbia) revealed a statistically significant correlation between average temperatures in December and January and prices of vegetables in January and February respectively, and also between temperatures in April and prices of fruit in May. As expected, this correlation is negative [10, pp. 68-69]. This implies that an air temperature which is larger than the multiyear average in December or January is supportive

to greenhouse production, resulting in decline of prices of vegetable in the next month. Similarly, low temperatures in the spring months have a strong negative correlation with fresh fruit prices – low temperatures and frost are lowering fruit yields and causing rise in prices of fruit. Contrarily, the correlation between prices of fruit and vegetable and summer months temperatures is positive (correlation coefficient higher than 0.5), because above-average temperatures are linked with the drought, causing vegetable (tomatoes, primarily peppers, cabbage) and fruit prices to retain at the same level, or to decline less than would be seasonally expected. This largely explains why there was no significant seasonal fall in vegetable and

Figure 9: Cumulative food price growth in the domestic market in 2022 - comparison with 2021 and multiyear average (in %)



Source: SORS and NBS calculation

fruit prices as of June 2022, though it is typical for this period of the year.

The second important factor behind inflationary pressures in Serbia in 2022 were *energy prices*. Growth in global oil prices translated onto retail prices of petroleum products at home, and during 2022 their largest contribution was recorded in July (1.8 pp). Then, under the impact of decreasing global oil prices, and with the strengthening of global recessionary pressures, y-o-y growth in petroleum product prices also slowed down to 0.6 pp in December. Moreover, the Serbian Government's decision to trim excise tax by 10–15% during 2022 and limit retailers' margins resulted in 0.2–0.3 pp lower inflation in Serbia through that channel. Nevertheless, as electricity and gas prices rose at a global level and their availability diminished, household energy prices (electricity and gas) also went up in the domestic market to avoid large losses for energy companies, which contributed 0.5 pp to inflation growth. Still, their prices were adjusted minimally, i.e. considerably less compared to the global market where they rose several times. Additionally, if the entire amount of the increase had been shifted onto consumers, their direct and indirect effects on inflation and economic activity would have been enormous. A direct contribution to inflation also came from solid fuel prices, which kept up with price movements of the same group of products in the global market, given the fact that these are alternative types of energy, and that demand for these types of energy increased against the backdrop of higher gas and electricity prices.

However, the rise in energy prices which are included in the consumer basket affects inflation in Serbia, as in other countries, not only directly but indirectly as well. Indirect effects of higher prices of oil, gas and electricity, which are mirrored by producer prices of a broad group of products and are also incorporated in the prices of products imported from the EU, are probably even stronger than the direct effects, but are difficult to isolate and quantify. On all these grounds, growth in imported inflation in Serbia (approximated through prices in the euro area, expressed in dinars), together with growth in of primary commodities prices at global market and other production costs, was the key determinant behind movements in the industrial products prices (without food and energy) which

are close to the core inflation category (Figure 11). Still, while high oscillations in imported inflation (expressed in dinars) in previous years (2010 and 2012 in particular) were largely determined by the volatility of the RSD/EUR exchange rate (almost two-thirds), now, in the conditions of relative stability of the dinar to the euro, they are solely the consequence of rising consumer prices in the euro area.

Also, by building the underground gas storage facility in Banatski Dvor as well as launching the TurkStream, Serbia provided higher supply of the natural gas, thus minimising even more the drastic potential adverse effects of global energy prices. In addition, thanks to contracts signed with Russia at favourable terms, Serbia pays much cheaper price for gas compared to other countries in Europe [13, p. 31]. Though the electricity price for corporates is market-determined, the Government decided to first limit this price at EUR 75 per MWh, and then, as these prices continued up on the global market, to EUR 95 per MWh, to prevent that the global energy crisis, impose negative effects on the economy at home.

Despite rising on account of higher producer prices and imported inflation, core inflation in Serbia is still significantly below headline inflation (Figure 10), which suggests that demand-side factors and tighter labour market conditions are not the prevailing factor of the current inflation rise in Serbia. This is also indicated by the fact that producer prices of industrial products for the home market (15.3% in November and 13.3% in December, y-o-y) did not fully translate onto consumer prices of industrial products (which simultaneously posted growth of 10.3% and 10.7% y-o-y, respectively), as evident in Figure 11. Further, though domestic demand in 2021 and in the H1 of 2022 strongly raised, the NBS assessed that it did not give rise to major inflationary pressures, given that production capacities and employment rose in parallel. The same is also indicated by the output gap assessment that is a measure of demand side pressures. According to this assessment, until the end of the projection horizon the output gap will stay in negative territory, i.e. until end-2024, suggesting that disinflationary pressures from the demand-side will remain during the course of projection horizon, although this effect will gradual weaken. Also, though the wage bill posted relatively robust growth of

16.4% in October (20% in the private sector), this rise is somewhat lower once the IT sector is excluded, as its high y-o-y growth of 12.3% (15.2% in the private sector, which is close to inflation growth) is partly attributable to the base effect because of the inclusion of this sector in the Tax Administration records. Moreover, though some occupation groups recorded workforce shortages, overall the unemployment rate has remained above the natural unemployment rate and there is room for its further decrease without generating significant inflationary pressures.

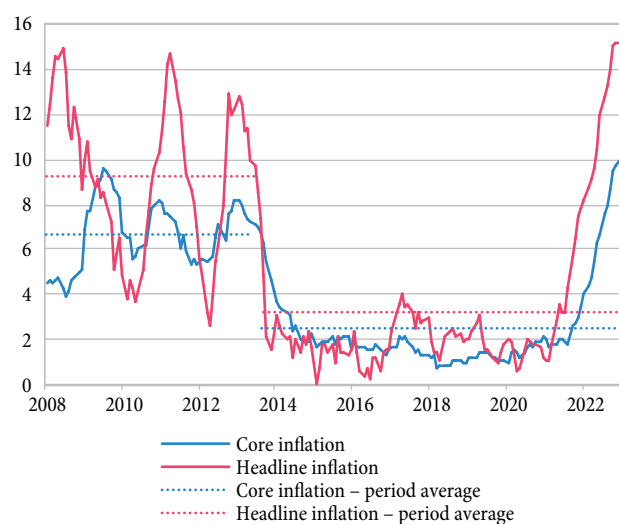
The NBS’s response to inflationary pressures was gradual but continuous. Having assessed the nature of these pressures, in October 2021 the NBS embarked on moderate monetary policy tightening, firstly by raising the effective repo rate. This had been made possible by the turnaround and changes introduced to the monetary policy framework in December 2012. Since then, repo auctions have been conducted at the variable multiple interest rate method, allowing monetary conditions to be adjusted as needed, even between two meetings of the NBS Executive Board, by changing the weighted average repo rate while keeping the main interest rates unchanged. This has provided us with important flexibility in monetary policy conducting.

Once the effective rate was raised from 0.11% at end-September 2021 to a level almost equal to the key policy rate (1% at the time) in April 2022, we initiated a cycle of key policy rate hikes. Since April, the key policy rate has

been raised repeatedly, by a total of 400 basis points to 5.0% in December 2022 and 5.25% in January 2023 (Figure 12).

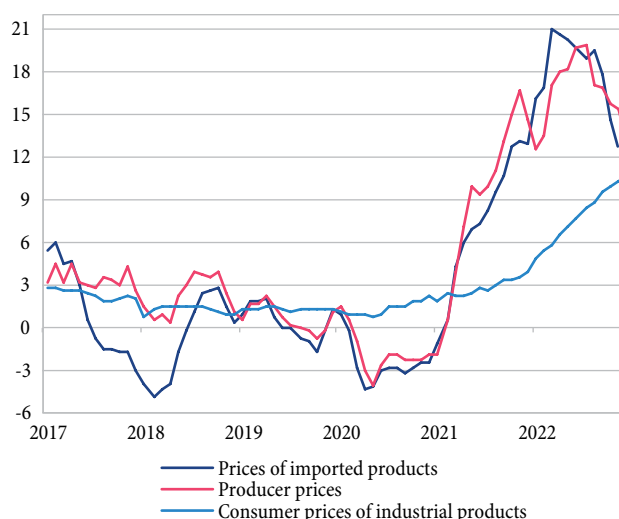
In making our decisions, we took account of the fact that inflation in Serbia is mostly led by shocks in the international environment which pushed up global prices of food and energy. These are mostly supply-side shocks, on which monetary policy has a rather limited impact. The goal of the measures was to limit the second-round effects of elevated global prices of energy and food on other prices that could come via inflation expectations, and to prevent excessive growth in loan demand, in order to return inflation to the target tolerance band within the projection horizon. Anchored medium-term financial and corporate sectors inflation expectations (three years ahead), which increased by 3% each to 4% (financial sector) and 5% (corporate sector), confirm that we have been largely successful in limiting the second-round effects and preempting a larger pass-through to the prices of other products and services. Also, the rise in the key policy rate passed through to the dinar money market interest rates and, by extension, to dinar lending rates. In December 2022, interest rates on newly granted dinar loans to corporates measured 5.9% (2.6 pp more than in September 2021), while rates on dinar household loans equalled 12.3% (3.9 pp more than in September 2021). This is consistent with the monetary policy impulse until October and signals that monetary policy transmission via the interest rate channel is efficient. In the bank lending survey for Q3,

Figure 10: Headline and core inflation movements (y-o-y rates, in %)



Source: SORS and NBS calculation

Figure 11: Imported inflation, producer prices and industrial product prices (y-o-y rates, in %)



Source: Destatis, FAO, Bloomberg, Eurostat, SORS and NBS calculation

banks assessed household demand for loans, notably cash loans, to have subsided [12, p. 7].

The relative stability of the dinar against the euro has been preserved even in the conditions of pronounced global uncertainty, acting as an important deterrent of a higher pass-through of elevated prices at global market to prices at domestic market. In 2022, in nominal terms, the dinar appreciated by 0.2% against the euro. From May until end-2022, the NBS net purchased EUR 3.27 bn via interventions in the interbank FX, offsetting the whole amount of FX sales from the beginning of 2022. At the level of 2022, the NBS bought foreign exchange worth EUR 1 bn net. By contrast to the dinar, the currencies of some inflation-targeting countries of the region weakened against the euro (Figure 13), even though their central banks tightened monetary policy – in 2022 the Hungarian and the Polish currencies lost 7.7%, and 1.9%, respectively.

The preserved relative stability of the dinar is particularly important considering that many emerging economies have faced portfolio investment outflows, despite much higher yields on local-currency government securities, while capital flows were redirected towards advanced economies as they, at the same time, tightened their monetary policies in response to mounting inflationary pressures. Analysis of yields on 10-year local-currency government securities reveals that the yields on Serbia’s

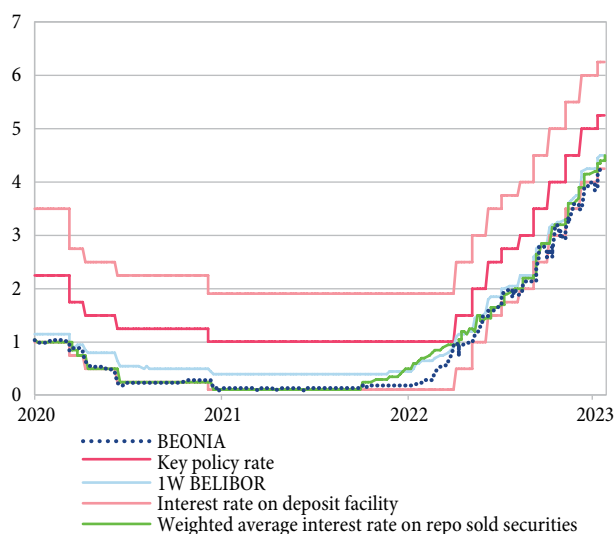
government securities increased less than for inflation-targeting Central European countries. Average yields on 10-year local-currency government securities increased in December 2022 relative to December 2021 to 8.69% in Hungary (from 4.47%), 8.15% in Romania (from 5.39%), 6.63% in Poland (from 3.32%), and 6.97% in Serbia (from 4.20%).

Inflation projections

It is indisputable that inflation outturns have trended above the projections of central banks, including the NBS, as a consequence of global shocks generated by a multidimensional crisis, unprecedented in recent history. One of our text boxes in the November 2022 Inflation Report provided an in-depth analysis of the factors that are causing the difference between the projected and actual inflation in Serbia in 2021 and 2022, looking at projections since November 2020 and their underlying assumptions [11, pp. 17-20].

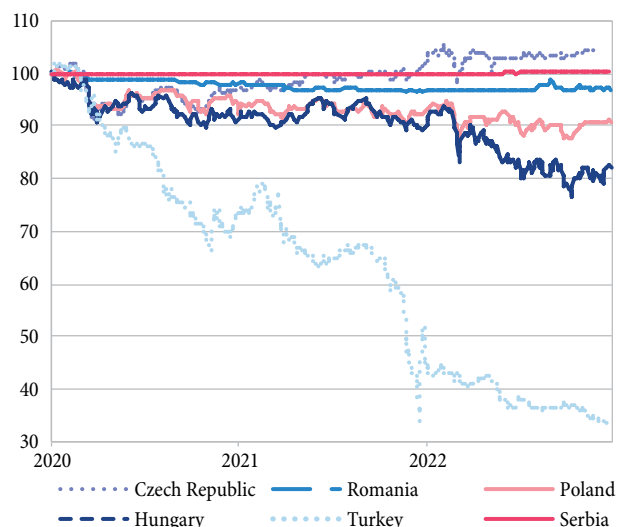
The results of the analysis revealed that, for one quarter ahead, the highest deviation between the projected and actual inflation happened in projections made in February and May 2022, i.e. in the period after the crisis in Ukraine broke out. The main causes of these deviation came from the huge differences between the primary

Figure 12: Monetary policy reaction of NBS (in %)



Source: Thomson Reuters and NBS

Figure 13: Exchange rates of national currencies in countries with IT regime against the euro* (daily data, 31 Dec 2019 = 100)



Source: NBS and central bank websites.
* Growth indicates appreciation

Figure 14: Assumed and actual movement of Brent oil price (USD/barrel)

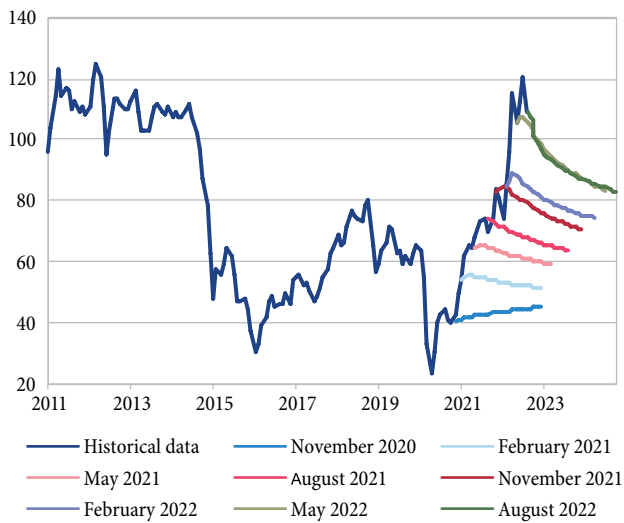
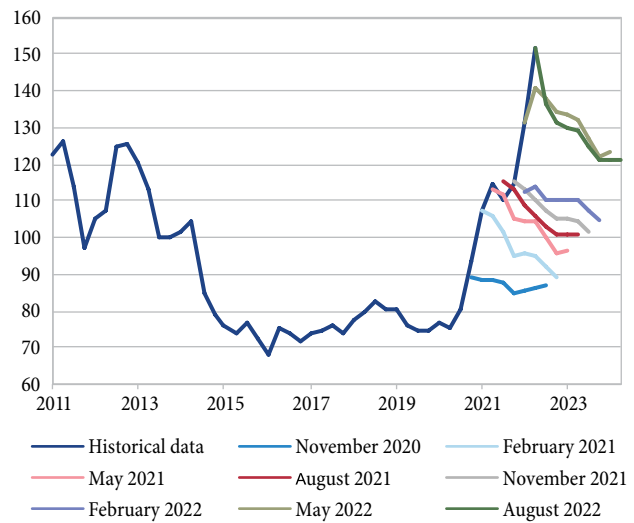


Figure 15: Assumed and actual movement of global primary commodity prices (Q4 2013 = 100)

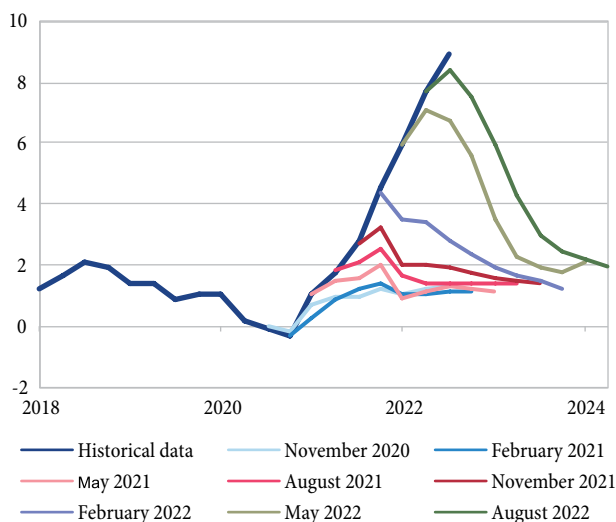


commodity and energy prices from the world market, and the assumptions for these prices that we put in our projections, for which we use their market futures and estimates of international institutions that are relevant for this purpose. This is standard central banks practice to use market futures and estimates of international institutions (IMF, World Bank, Consensus Economics, etc.) as assumptions for their projections, which, at the time, did not assume new shocks, but expected energy and commodity prices to calm down and fall gradually over the projection horizon (Figures 14 and 15). Since global energy prices skyrocketed and supply bottlenecks

persisted, the euro area inflation in this period was also constantly above the ECB projections (Figure 16). The fact that the euro area is our most important trading partner is causing the euro area inflation to be an important factor of domestic inflation. Therefore, the departure of recorded from projected inflation in the euro area is also causing that recorded inflation in Serbia is higher than projected (Figure 17).

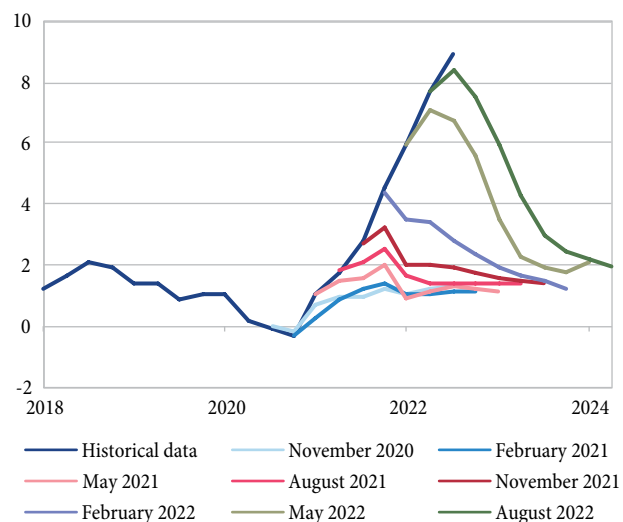
Close to 50% of the difference between the projected one-year ahead inflation and the inflation recorded in 2021 and three quarters of 2022, looking by factor, can be explained by unrealised assumptions for oil prices at

Figure 16: Actual and projected y-o-y inflation in the euro area (in %)



Source: NBS calculation based on the projections of relevant institutions

Figure 17: Actual and projected y-o-y inflation in Serbia (in %)



Source: NBS

global market, inflation in euro area, primary agricultural commodities prices, and domestic agricultural season (Figure 18). Other part of the deviation is related to the indirect effects of these factors, such as the effects of global value chain disruptions, rise in production costs due to electricity price hikes, and other factors from supply-side. Similar deviations of inflation outturns from the projections of central banks of other inflation-targeting countries of the region (Figure 19), both for the current quarter and for one, two and three quarters ahead (analysis on the basis of end-2021 central banks' projections), are another confirmation of difficulties in achieving inflation projection in the circumstances of shocks from the international environment and heightened global uncertainty. The ECB conducted a similar analysis, with similar conclusions, for the euro area [2]. This is consistent with the fact that these deviations are mostly due to common global factors.

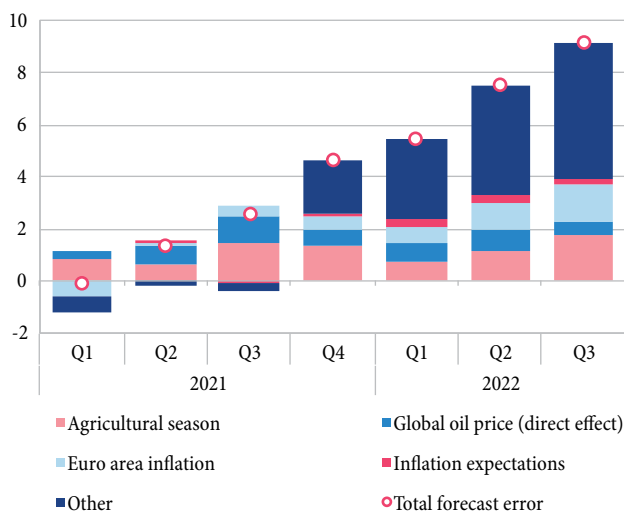
In their October 2022 edition of the World Economic Outlook, the IMF staff analysed their inflation forecast errors [5, pp. 26-29]. The conclusion was that inflation outturns greatly exceeded the 2021 and 2022 projections in both advanced and developing economies and that the forecast errors were larger for 2022. Since the Q2 of 2021, inflation has surprised consistently on the upside, causing constant upward revisions of inflation forecasts in IMF's WEO. The aggregate supply-aggregate demand imbalance was cited as the initial reason behind these errors. Inflation

forecast errors were much larger for developing than for advanced economies, and were the largest in Europe. According to the IMF, core inflation forecast errors mostly drove inflation forecast errors for 2021, reflecting global value chain disruptions and supply-demand imbalances due to faster-than-anticipated recovery. In addition to the market imbalance, another significant factor were the fiscal stimulus packages during the pandemic and tight labour market conditions. Conversely, inflation errors for 2022 mostly reflect a stronger role for energy prices, particularly after the escalation of the geopolitical situation.

Expected inflation in Serbia and worldwide

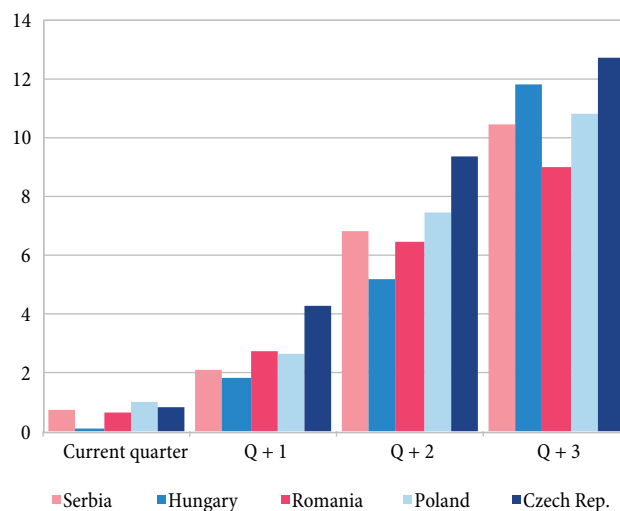
Under the November projection of the NBS, inflation (y-o-y terms) is expected to strike a downward path as of Q2 2023. It is anticipated to fall significantly in H2 2023 and to enter the target tolerance band in H2 2024. In other words, inflationary pressures will persist in the short term. They stem mostly from high imported inflation, but also from elevated costs of food production caused both by global trends and the fact that agricultural yields in Serbia underperformed due to the second drought year in a row. From Q2 2023 onwards, inflation is anticipated to drift down gradually and fall more sharply in H2 2023, helped by several factors. These are primarily the slowing of global inflation amid tightening of monetary policy by

Figure 18: Decomposition of the inflation forecast error for one year ahead (in pp)



Source: central banks of CEE IT countries, NBS calculation

Figure 19: Deviation from Q4 2021 inflation projections (in pp)



Source: central banks of CEE IT countries, NBS calculation

central banks of leading countries and the normalisation of global supply chains, which have, together, already started to work in this direction. Container transport prices have been declining for already a while; there has been a turnaround in most primary commodity prices; mineral fertiliser prices have subsided as well; the energy market, though still influenced by geopolitical developments, has partly stabilised; the global oil price has returned to its early-2022 level; and inflation rates have lately abated in the most advanced economies. If this trend becomes more entrenched, inflationary pressures in Serbia would ease substantially as well and inflation could return within the target tolerance band even sooner than expected. This would be supported by an average agricultural season in 2023, given that crops and vegetable prices surged after two droughty summers. If the agricultural season in 2023 is average and the decline in mineral fertiliser prices, begun in the closing months of 2022, continues, agricultural commodity prices could go down. While the prices of fruits and vegetables would have a direct effect on inflation, the prices of crops, wheat, corn, soybean, etc. would produce an indirect effect, through lower costs of food production.

Another deceleration factor will be the NBS's monetary policy tightening, initiated in October 2021 through average repo rate increase, and continued from April 2022 onwards through key policy rate hikes, from 1.0% to 5.0% in December 2022 and 5.25% in January 2023. Working in the same direction is the policy of safeguarding the relative exchange rate stability, as an important nominal anchor of price stability and the overall macroeconomic and financial stability. In the period behind us we have shown that exchange rate stability is unquestionable even in the most turbulent of times, as were the first four months of 2022, i.e. following the outbreak the Ukraine conflict. Even more important, the high level of FX reserves, which continued up in 2022, rising by EUR 2.9 bn and for the first time exceeding EUR 19 bn, is the best guarantee of exchange rate stability going forward.

Though global inflation is expected to lose steam in the period ahead compared to end-2022, the prevailing estimates are that, in the medium term, it can hardly go back to persistently below-target levels which had been

recorded during many years back, i.e. from the 2008 global economic crisis until 2021. Economists cite several reasons for this, above all the fact that higher and more persistent global inflation could de-anchor medium-term inflation expectations, which would pave the way for an inflationary spiral. Apart from higher inflation expectations, also raising concern is the increased correlation between the relative prices change and inflation. In periods when inflation is low, this correlation is weak, while the transmission of price changes across sectors has now increased, making inflation more widespread across both products and services. There are also signs of deglobalisation coming in place of globalisation, reflecting restrictive trade measures, disrupted global supply chains and sudden cost-push pressures caused by the Ukraine conflict [8], [1, p. 31]. While some of the adjustments in global production chains are estimated as welcomed, the excessive fragmentation of production not only affects inflation, but has an adverse impact on global growth and productivity also. Orientation toward green transition calls for sizeable investment and fuels inflation in the initial stage, but has quite the opposite effect in the long run, as it generates long-term benefits in the form of a sustainable mix of energy sources [10, p. 13]. Finally, unfavourable demographic trends and lower share of youth in total employment indicate that workforce shortages will intensify in the coming years, putting more upward pressure on wages and consequently, inflation [1]. As assessed by Goodhart and Pradhan [3], as well as Juselius and Takats [7], in the absence of substantial productivity growth, demographic factors will increase global inflationary pressures.

Still, it is encouraging that the first signs of the easing of inflationary pressures are already visible, primarily those associated with energy prices, as also suggested by the latest IMF projection from January 2023, according to which global inflation will fall from 8.8% in 2022 to 6.6% in 2023, and to 4.3% in 2024. However, it will still be above the pre-pandemic level (2017–19) of around 3.5% as disinflation takes time. The IMF projects that, annual average headline inflation will still be above pre-pandemic levels in 82% of countries by 2024, while for the core inflation it would be the case for 86% of countries [6].

Also, the balance of risks to the global inflation prevails in both directions:

- *Faster disinflation:* A sharp fall in the prices of goods, as consumers shift back to services; an easing in labour market pressures in some advanced economies due to falling vacancies. Such conditions could lead to a “softer” landing, implying less monetary tightening.
- *Inflation persisting:* Higher than expected energy and food prices could raise headline inflation and pass through into underlying inflation. Also, persistent labour market tightness could translate into stronger wage growth. Such conditions could de-anchor inflation expectations, implying an even tighter monetary policy.

In the period ahead, the NBS will continue to pursue monetary policy consistent with preserving medium-term price stability and bringing inflation back within the bounds of the $3\pm 1.5\%$ target over the projection horizon. This will require careful and continuous monitoring and assessment of the impact of all inflation factors coming from the domestic and international environment, as well as a timely monetary policy response where warranted.

Concluding considerations

Throughout 2021, global inflation was on the rise, driven by an upsurge in demand amid the loosening of containment measures and opening of a range of economies, to which the supply was not able to adjust in the short run. Inflationary pressures were also generated by the ample fiscal and monetary support provided in the first stage of the pandemic, in some countries even before its outbreak, but had there not been for such a response, the consequences would have been more far-reaching. In parallel, supply chains were disrupted on a global level, world primary commodities prices skyrocketed (oil, cereals and metals), causing cost pressure on producer prices, while the international container transport also became far more costly. The energy crisis that emerged in Europe in October 2021 has only added to global inflationary pressures.

With inflationary pressures coming mainly from the supply side, the majority of international financial

institutions and central banks expected them to moderate as of mid-2022, as was also signalled by the stabilisation of prices of primary commodities and the easing of global supply chain disruptions. However, instead of the expected slowdown in inflation, we saw global inflation step up due to a new wave of strong hikes in prices of energy and primary commodity that shook the global market amid heightened geopolitical tensions and the outbreak of the conflict in Ukraine.

Generally, it is extremely difficult to make any macroeconomic forecasts in a period of pronounced uncertainties fuelled by numerous intertwined crises, also heavily impacted by geopolitical movements. This particularly holds true for inflation projections, bearing in mind the utterly uncertain and volatile movement of international energy and primary commodity prices, which make global inflation forecasts highly uncertain and exposed to elevated risks. The galloping rise in global prices of energy and primary commodities caused by the energy crisis and the war in Ukraine could not have been anticipated, and these are the key reasons why inflation in Serbia and other countries moved at higher-than-projected levels, especially in 2022.

The analyses of factors behind the departure of actual inflation from its projected path in 2021 and 2022, which covered the projections since November 2020 and their underlying assumptions, show that the greatest deviations of actual from inflation projected for one quarter ahead were recorded for the February and May 2022 projections, i.e. after the start of the crisis in Ukraine. The largest departures from the assumptions used in the projections were seen in energy and primary agricultural commodities world prices, based on the movement of market futures for these products and relevant international institutions estimates, which, assuming no new shocks, envisaged that prices of energy and primary commodities would moderate and gradually decline over the projection horizon. Due to a strong upswing in global energy prices and prolonged halts in global supply chains, inflation in euro area was considerably higher than projected by the ECB. Given that the euro area is our key trade partner and that euro area inflation is also an important factor of domestic inflation, the departure of the actual from

projected inflation in the euro area entailed also a higher than projected inflation in Serbia. That it is difficult to deliver the projected inflation rate in conditions of globally heightened uncertainty and shocks in the international environment is also indicated by similar departures of the actual from central bank-projected inflation rates in Serbia's regional inflation-targeting peers, both for the current quarter and for one, two and three quarters ahead (analysis covered central bank projections from late 2021), consistent with the fact that the departure is largely caused by common global factors.

With a view to curbing inflation, central banks resorted to a robust monetary policy response, some even at the expense of a significant growth slowdown (the so-called hard landing). Monetary policy, however, cannot prevent the first-round effects of external shocks on prices that are directly affected, but can only impact the second-round effects through the channel of anchored medium-term inflation expectations, thereby preventing a major spillover of shocks to other prices. This may be achieved by adequate monetary policy tightening and/or transparent communication with the public regarding inflation factors and the expected inflation profile, as well as by explaining undertaken measures and communicating future steps. One of the dilemmas in the current environment of inflationary pressures is how to calibrate the response, i.e. how to determine the right scope and dynamics of monetary policy tightening. The main challenge is to determine the size of the policy rate increase that would bring inflation gradually down toward the target, without triggering major negative consequences for the economy. The problem is that in the current global environment characterised by high uncertainty, the right measure is a fine line between a more durable overshooting of the inflation target, on the one hand, and extended recession, on the other. In this context, we may ask ourselves which of the two would entail stronger and more durable consequences.

In 2022, 65-70% of headline inflation in Serbia originated from food and energy prices, indicating that inflation in Serbia is largely driven by global cost pressures. Also, the increase in imported inflation (approximated via euro area prices expressed in dinars), along with the

rising global prices of primary commodities and other production costs were the key determinants of the industrial products prices (without food and energy), which are close to the category of core inflation. While high oscillations of imported inflation (expressed in dinars) in earlier years (particularly 2010 and 2012) were to a major extent (almost two-thirds) driven by the volatility of the dinar exchange rate against the euro, this time – in conditions of the preserved relative stability of the dinar against the euro, they are solely the consequence of the rise in euro area consumer prices.

My position as the NBS Governor is that it was necessary for the NBS to tighten monetary conditions since October 2021, even in circumstances where global supply-side factors are prevailing, in order to prevent inflation from taking root, just as it was crucial to maintain relative exchange rate stability even in turbulent times. The scope of the response was calibrated taking into account that in the period observed inflation was mainly driven by global supply-side factors and that inflationary pressures could not be resolved in the short run solely by monetary policy measures, without causing major disruptions to macroeconomic processes. The goal of our measures was to limit the second-round effects of the rise in global prices of food and energy on other prices via inflation expectations, and to prevent excessive loan demand, so that inflation could be brought back within the target band during the projection horizon. The anchored medium-term inflation expectations of financial and corporate sectors which rose from 3% each to 4% (financial sector) and 5% (corporate sector) for three years ahead, confirm that we have largely succeeded in containing the second-round effects and preventing a major spillover onto prices of other products and services.

We judge that the past monetary policy tightening of the NBS will work to slow down inflation, while the preserved relative stability of the dinar against the euro will act as an important nominal anchor of the price and overall macroeconomic and financial stability. We have shown that exchange rate stability is unquestionable even in the most turbulent of times, while FX reserves, which climbed to their all-time high in 2022, remain the best guarantee of exchange rate stability going forward.

References

- Demary, M., Herforth, A-L, & Zdrzalek, J. (2022). *The new inflationary environment: How persistent are the current inflationary dynamics and how is monetary policy expected to respond?* (IW Report 16/2022). Institut der deutschen Wirtschaft Köln e. V.
- ECB. (2022). What explains recent errors in the inflation projections of Eurosystem and ECB staff? *ECB Economic bulletin Issue 3/2022*. Retrieved from https://www.ecb.europa.eu/pub/economic-bulletin/focus/2022/html/ecb.ebbox202203_05~6d1fb8f5b0.en.html
- Goodhart, C., & Pradhan, M. (2017). *Demographics will reverse three multi-decade global trends* (BIS Working Papers, No. 656). Basel: BIS.
- IMF. (2022, October). *Global Financial Stability Report*. Retrieved from <https://www.imf.org/en/Publications/GFSR/Issues/2022/10/11/global-financial-stability-report-october-2022>
- IMF. (2022, October). Wage Dynamics Post-COVID-19 and Wage-Price Spiral Risks. *World Economic Outlook, October 2022: Countering the Cost-of-Living Crisis*. Retrieved from <https://www.imf.org/-/media/Files/Publications/WEO/2022/October/English/ch2.ashx>
- IMF. (2023, January). World Economic Outlook Update: Inflation Peaking amid Low Growth. Retrieved from <https://www.imf.org/en/Publications/WEO/Issues/2023/01/31/world-economic-outlook-update-january-2023>
- Juselius, M., & Takats, E. (2018). *The enduring link between demography and inflation* (Bank of Finland Research Discussion Papers, No. 8/2018). Helsinki: Bank of Finland.
- Lagarde, C. (2022, November 4). *Monetary policy in a high inflation environment: commitment and clarity* (speech). Retrieved from https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp221104_1~8be9a4f4c1.en.html
- NBS. (2021, May). *Inflation Report*. Retrieved by https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/ioi/izvestaji/inflation_report_05_2021.pdf
- NBS. (2022, August). *Inflation Report*. Retrieved from https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/ioi/izvestaji/inflation_report_08_2022.pdf
- NBS. (2022, November). *Inflation Report*. Retrieved from https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/ioi/izvestaji/inflation_report_11_2022.pdf
- NBS. (2022, November). *Report on the results of the bank lending survey*. Retrieved from https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/kab/kab_rep_III_2022.pdf
- Tabaković, J. (2022). Inflation factors during the pandemic: global trends and the case of Serbia. *Ekonomika preduzeća*, 70(1-2), 23-40.
- UNCTAD. (2022). The impact on trade and development of the war in Ukraine. Retrieved from https://unctad.org/system/files/official-document/osgjinf2022d1_en.pdf



Jorgovanka Tabaković

She graduated from the Faculty of Economics in Priština, on 14 May 1981 as the student of the generation. She was elected Member of Parliament in six parliamentary convocations. From March 1998 until October 2000, she served as Minister of Economic and Ownership Transformation in the Serbian Government. Her book "Monetary Policy – No Final Victories" was published in 2018, "My Answers – a Contribution to the History of Banking in Serbia in 21st Century" in 2020, and another one "The Turning Point – Balance is the Key to Success" in 2021. She has served as Governor of the National Bank of Serbia since August 2012. In June 2018 she was re-appointed for another six-year term of office, starting from August 2018. The reputable Banker monthly declared Governor Jorgovanka Tabaković the best governor in the world and the best European governor for 2020. She is a widow and mother of three children: Ivana, Milena and Nikola.



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THE ROLE OF BILATERAL INVESTMENT TREATIES IN PROMOTING THE INTERNATIONALIZATION OF ENTERPRISES IN SERBIA

Uloga bilateralnih investicionih sporazuma u podsticanju
internacionalizacije preduzeća u Srbiji

Abstract

Bilateral investment treaties are traditionally considered to be an instrument for attracting foreign direct investment in Serbia. However, their provisions may also support the internationalization of its enterprises. In this paper, we explore how effective bilateral investment treaties are in promoting the most challenging aspect of the internationalization of enterprises in Serbia – foreign direct investment outflows. Additionally, we investigate the role of other main motivations for the investment outflows. We conduct our analysis by estimating a gravity model using the panel data on Serbia and its 147 partner economies, observed in the period between 2011 and 2019. The gravity model was estimated using the Poisson pseudo-maximum likelihood estimator. We find that bilateral investment treaties have a statistically significant positive effect on bilateral foreign direct investment outflows. Furthermore, the outflows are particularly affected by the treaties containing higher anti-discrimination standards and providing a more liberal investment regime. Unilateral liberalization of the host countries' investment regime is also found to be positively associated with the investment outflows, whereas both the geographic and psychic distances have negative effects. Market-seeking motives of the internationalizing enterprises in Serbia are revealed to be the dominant driver of the investment. The results provide useful implications for the policymakers aiming to support the internationalizing efforts of the enterprises and the consequent improvement of the international competitiveness of Serbian economy.

Keywords: *internationalization, bilateral investment treaty (BIT), outward foreign direct investment (OFDI), unilateral liberalization, Serbia*

Sažetak

Bilateralni investicioni sporazumi se po pravilu smatraju jednim od instrumenata za privlačenje stranih direktnih investicija u Srbiji. Međutim, odredbe ovih sporazuma mogu pozitivno uticati i na proces internacionalizacije domaćih preduzeća. U ovom radu, razmotrili smo efektivnost bilateralnih investicionih sporazuma za unapređenje najkompleksnije faze procesa internacionalizacije preduzeća u Srbiji – izlaznih tokova stranih direktnih investicija. Pri tome, ispitali smo i ulogu drugih značajnih motiva ovih tokova. Analiza je sprovedena ocenjivanjem gravitacionog modela upotrebom podataka panela koji se odnose na Srbiju i njenih 147 partnerskih privreda, posmatranih u periodu između 2011. i 2019. godine. Gravitacioni model ocenjen je primenom Poasanovog metoda pseudomaksimalne verodostojnosti. Analizom je utvrđeno da bilateralni investicioni sporazumi imaju statistički značajan pozitivan uticaj na bilateralne izlazne tokove stranih direktnih investicija u Srbiji. Osim toga, na izlazne tokove investicija posebno snažno utiču odredbe koje se odnose na standarde sprečavanja diskriminacije stranih filijala i odredbe kojima se liberalizuje režim stranih ulaganja. Jednostrana liberalizacija režima stranih ulaganja zemalja domaćina takođe je povezana sa intenzivnijim izlaznim tokovima stranih direktnih investicija iz Srbije, dok je za geografsku i kulturološku distancu utvrđen negativan uticaj na tokove investicija. Utvrđeno je i da pristup tržištu predstavlja jedan od ključnih motiva stranih ulaganja srpskih preduzeća koja internacionalizuju svoje poslovanje. Rezultati istraživanja pružaju korisne implikacije za nosioce ekonomske politike zainteresovane za pružanje podrške internacionalizaciji preduzeća u Srbiji i posledičnom unapređenju međunarodne konkurentnosti privrede Republike Srbije.

Ključne reči: *internacionalizacija, bilateralni investicioni sporazum (BIT), strane direktne investicije (SDI), unilateralna liberalizacija, Srbija*

Introduction

Traditionally, parent companies of multinational enterprises and the outward foreign direct investment activities are concentrated in the most developed economies. Since Serbia liberalized its foreign investment regime, it has primarily had the role of the host country and the efforts of the policymakers were directed toward attracting the investment. However, over the past two decades, there has been an increasing internationalization of the enterprises and growth in the number of multinational enterprises in transition economies, including Serbia [14], [30].

Outward foreign direct investment can bring certain advantages to the home country's economy. It allows the enterprises conducting the investment to acquire strategic assets and resources not domestically available. The investment can also provide them with better access to foreign markets, offering better growth opportunities, helping them diversify their sales, enabling them to take advantage of the economies of scale, and increasing their resilience [23], [43]. Through internationalization, enterprises accumulate experience allowing them to be more competitive in the international markets [33]. On the macro level, the home country benefits from the internationalization and outward foreign investment of its enterprises as it leads to productivity growth, reverse spillovers, long-term capital inflows through profit repatriation, and, in general, increased competitiveness of the economy [7].

Bilateral investment treaties are one of the few non-financial policy measures which can directly affect foreign direct investment flows. In Serbia, the treaties are mainly used to attract foreign direct investment by guaranteeing standards of treatment for foreign affiliates, providing the transparency of the regulation, and offering dispute settlement rules [20]. However, the provisions work in directions, facilitating foreign investment for Serbian enterprises, reducing the corresponding risks, and protecting the assets of their foreign affiliates. How effective the treaties are in encouraging the internationalization of enterprises is debatable and the empirical evidence is mixed [26], [46], [54].

The aim of this paper is to examine the motivations behind the internationalization decisions of enterprises in Serbia. In particular, we investigate how effective bilateral investment treaties are in supporting these activities. The study allows us to better understand the motivations of multinational enterprises in Serbia, which is useful for defining the measures pertaining to support their internationalization efforts. To achieve these aims, we operationalize internationalization with outward foreign direct investment and employ a gravity model of foreign investment flows to analyze the outflows from Serbia. We use the sample of Serbia and its 147 partner economies observed in the period between 2011 and 2019. Our empirical model is estimated using the Poisson pseudo-maximum likelihood estimator. The results show that bilateral investment treaties positively affect the outflows of foreign direct investment in Serbia, promoting the internationalization of the enterprises. Moreover, it was shown that certain provisions related to the liberalization of the investment regime and anti-discrimination standards are particularly important for the effectiveness of the treaties in this context. In addition, we find that the unilateral liberalization of the investment regime in the host country has positive effects on the outward investment from Serbia.

Our research differs from the related literature in several important aspects. Generally, the focus of the related studies is on inwards foreign direct investment and the ability of host countries to attract the investment. The focus on outward foreign direct investment research is much less prevalent in the literature and the few existing studies focus mainly on the most developed countries or larger samples of countries with different levels of economic development and different motivations for internationalizing enterprises which often obfuscates the results. According to the literature review we conducted, Serbia has not yet been the focus of a similar analysis. We also add to the related literature by considering the role of the provisions of the treaties, rather than assuming that all the treaties are homogeneous, which is the most common approach in the related literature. In addition to considering bilateral liberalization of foreign investment, we analyze the effects of unilateral liberalization of the investment regime in

the host countries, a factor which is rarely controlled for in other studies. Finally, in comparison to the majority of the related studies, we estimate our gravity model in its original multiplicative form using the most suitable econometric technique.

We structure the remainder of our paper as follows. In the following section, we explain the conceptual framework of our study and derive the main hypothesis we test in our analysis. Next, we provide an overview of the related empirical literature. This is followed by the description of the methodology and the sample used in our analysis. The results of the descriptive analysis are then presented, followed by a discussion on the main empirical results. The final section concludes.

Conceptual framework

The internationalization process is important for internationalizing enterprises and home countries alike. The process is often considered to lead to the sustainable growth of enterprises [55], and there is ample evidence of positive, albeit small effects of internationalization on firm performances, particularly profitability and international competitiveness [2], [40]. By internationalizing their activities, enterprises no longer need to rely solely on the domestic market, which enables them to take better advantage of the economies of scale. Additionally, it allows the internationalizing enterprises to use the locational advantages, such as access to the foreign markets or resources available in the host country. Finally, the enterprises accumulate experience and knowledge in international business, making them more internationally competitive and resilient.

The home country also benefits from the internationalization of its enterprises. The internationalizing enterprises directly contribute to the home country's economic growth, technological capabilities, and export competitiveness. Moreover, the internationalizing enterprises may indirectly affect the development of other enterprises in the home country through reverse spillovers [23]. Namely, the experience and other strategic advantages obtained by foreign affiliates are often transferred to the parent company in the home country, which provides

opportunities for the local companies to learn from the internationalizing ones, leading to spillover effects. These spillovers can be a way to overcome the initial hurdles of internationalization that other firms in the home country face [49].

For these reasons, the internationalization decision is critical for the expansion strategy of enterprises [17]. However, there are many uncertainties connected with this decision. The costs of organizing foreign affiliates and the challenges of their successful coordination stem from both physical and psychic distance between the home and host country [1]. The internationalizing enterprise needs to adjust its organizational practices and adapt to local culture and regulatory framework [50]. These challenges are further exacerbated if the institutional environment of host countries is of insufficient quality.

The information asymmetries faced by the enterprises preparing to expand their business abroad make the endeavor risky and costly. For this reason, firms often have a preference to internationalize their activities to the countries which are geographically and culturally closer to their home country [38]. This idea relates closely to the gravity model of trade, which is often adjusted for the analysis of internationalization in the related literature [47], [51]. The main idea of this theoretical framework is that all objects, including economies, attract each other according to their respective size and distance. Translating the concept to the process of internationalization would mean that larger and geographically closer economies should exhibit larger trade and investment flows between each other.

Bilateral investment treaties can act as an instrument to reduce the aforesaid information asymmetries and psychic distance between the home and host countries, by making the host country's regulatory framework more transparent and by signaling the credibility of the host country's commitment to the liberal regime of foreign investment and the protection of investors' interests [37], [45]. Most importantly, the treaties typically provide a dispute settlement mechanism, which reduces the reliance of the internationalizing enterprise on the host country's legal system, which can, to a certain extent, substitute for the weak institutional quality of the host country.

The Uppsala theoretical framework is also relevant for the relationship between bilateral investment treaties and the internationalization of the firm. The framework views the internationalization choice as a gradual multistage process of increasing involvement in foreign markets, dependent on the accumulation of experience [33]. It provides the explanation of the foreign market entry and expansion process, where the firm gradually progresses from indirect exports to internationalization via foreign direct investment. In this process, the transition from exporting to foreign investment is generally considered to be the most challenging [22]. Namely, foreign investment is a high-risk strategy compared to exports, as it cannot be easily reversed and is related to the problem of obsolescing bargain [53]. The firm needs sufficient resources and experience to make the shift towards a higher commitment to internationalization. However, these resources also interact with the institutional environment of the home country and pull factors in host countries. Bilateral investment treaties are particularly important for guaranteeing stable environment in this crucial step of the internationalization process, facilitating foreign direct investment flows. After overcoming initial barriers, foreign operations are generally maintained over a long period, leading to further experience accumulation and more ambitious expansion projects on both domestic and foreign markets.

Not all enterprises internationalize gradually. In the age of digitalization, the concept of “Born Globals” has become highly relevant [39]. This subset of companies immediately seeks new opportunities for expansion across borders. Regardless, foreign investment is still a risky strategy for these enterprises, and psychic and physical distances between home and host countries remain an important barrier to foreign direct investment [29]. For this reason, the role of bilateral investment treaties in the internationalization of these firms is also interesting to explore, as the treaties, if effective, should reduce risks for firms that gradually internationalize as well as for “Born Globals”.

Dunning’s eclectic paradigm also provides a useful framework for explaining the decision of internationalization via foreign direct investment and its relationship with bilateral investment treaties [16]. All enterprises which

do business abroad face additional risks and costs in comparison to their domestic counterparts. These additional costs need to be offset by advantages, which are related to ownership, location, and internalization. Ownership advantage is related to the firms’ own resources required to successfully conduct internationalizing, such as superior technology, know-how, and marketing. There is also a need for a locational advantage, which includes all the pull factors of the host country which provide benefits for the internationalizing enterprise and which combined with ownership advantage allows the multinational enterprise to be internationally competitive. Bilateral investment treaties affect the locational advantages, by providing a more stable legal environment, which allows the enterprises to fully utilize other locational and ownership advantages. Finally, internalization refers to keeping maximum control over the ownership advantage, rather than trading it on the open market. The rules on expropriations and standards of non-discrimination provided by the bilateral investment treaties increase the likelihood of multinational enterprises establishing a foreign affiliate, as it reduces the risks of losing the ownership advantage, thereby increasing the attractiveness of the internalization as a mode of ownership advantage transfer.

New trade theory provides a framework for deriving the relationship between bilateral investment treaties and firm internationalization. According to this framework, there are various motivations for foreign direct investment, depending on which the investment can be categorized into horizontal and vertical. Horizontal foreign direct investment is closely related to the concentration-proximity trade-off, as the main motivation of the investors is to locate close to foreign consumers and circumvent the trade barriers at the expense of lost economies of scale and fragmentation of the same type of production capacities over several countries. In other words, this strategy leads to an increase in fixed costs and the lowering of variable trade costs. The increased fixed costs are covered by market access and increased foreign sales. Therefore, market size is the key determinant of this type of investment [41].

Contrastingly, vertical foreign direct investment fragments the production process into phases which are then located in various countries according to their respective

factor endowments [27], [28]. This type of investment increases variable trade costs but allows for more efficient and concentrated production and the increased use of economies of scale. For this type of investment, resource endowments are the major drivers.

Horizontal and vertical foreign direct investment can be analyzed jointly by using the Knowledge-capital model, which provides an integrative conceptual framework [9]. As the official foreign direct investment data makes no distinction between the types of investment, empirical specification of the Knowledge-capital model relies on the gravity-type equation, which includes market size and differences in resource endowments as explanatory values [26], [52]. This framework is also used in our study.

Finally, one extension of the new trade models is particularly worth mentioning as it directly establishes the relationship between bilateral investment treaties and multinational activity. Egger and Merlo based this model on the trade model of heterogeneous firms [42]. They show that bilateral investment treaties effectively reduce the fixed costs of investing abroad, thereby reducing the minimal productivity required to enter a foreign market [18]. As a result, both the number of internationalizing firms and the number of foreign affiliates increase in the home country.

All the considered theoretical frameworks suggest a similar conclusion – that bilateral investment treaties positively affect the internationalization of enterprises in the home country. Considering that the theory suggests the major step in internationalization is the shift from export to foreign direct investment, and initialization of foreign investment, and taking into account the data availability considerations, we define our main initial hypothesis as follows:

H1. Bilateral investment treaties have a positive effect on outward foreign direct investment in Serbia.

Apart from the mere existence of bilateral investment treaties, their contents may also play an important role in determining the effects on the internationalization of Serbian enterprises. For this reason, in our analysis we also consider the quality of the bilateral investment treaties, expecting that higher-quality treaties have a stronger effect on investment outflows. The host country's

environment for foreign investment can be improved not only through bilateral but also by unilateral measures. Thus, we also investigate the role of unilateral foreign investment liberalization. Additionally, we test the relevance of other factors outlined in this conceptual framework. This will allow us to identify the main motivations for the internationalization of enterprises in Serbia. Finally, our empirical model allows us to explore the importance of geographic and psychic distance in determining the foreign investment outflows in Serbia.

Literature review

With the global increase in the number of concluded bilateral investment treaties, researchers focused their interests on examining how effective these treaties are in promoting investment flows. The majority of the studies in this body of literature are concerned with the effects treaties have on foreign direct investment inflows, analyzing the problem from the perspective of the host country [8], [21], [36]. However, the most closely related to our analysis are the studies that analyze the effects of the treaties on the home country's foreign direct investment outflows. Most commonly, these studies are based on gravity-type empirical models [25], [32], [46]. They provide mixed evidence.

The related empirical studies can broadly be divided into two categories: multi-country studies and single-country studies. Most of the early studies on this topic are multi-country studies reporting positive effects of bilateral investment treaties of varying intensity. One of the earliest examples of such a study was conducted by Egger and Pfaffermayr [20]. They found positive effects of bilateral investment treaties on outflows of foreign direct investment from the member countries of the Organization of Economic Cooperation and Development, which were observed in the period between 1959 and 1999. They found that the existence of the treaty increases the outward stock of the foreign direct investment toward the partner economy by nearly 30%. The analysis based on the similar, albeit more recent sample, indicated that bilateral investment treaties lead to an increase in foreign direct investment outflows between 12.4% and 51.0%,

depending on the specification [32]. This set of countries, expanded with transition countries, was observed in the period 1980-2001 by Egger and Merlo, who found that foreign direct investment is highly persistent and that bilateral investment treaties increase the investment by 6.66-5.93% in the short run and from 6.69% to 10.13% in the long run [19]. Guerin analyzed the sample of 14 European Union member countries, observed in the period between 1992 and 2004 [25]. She found that bilateral investment treaties on average increase the investment outflows in these countries by 32%. Finally, Dixon and Haslam considered the role of bilateral investment treaties' quality in promoting the flows of foreign investment in the case of 18 Latin American countries [15]. They found that higher-quality bilateral investment treaties lead to higher flows of investment.

The empirical results of single-country studies are more mixed. In general, enterprises in developing countries appear to react more strongly and positively to bilateral investment treaties their home country concludes. Contrastingly, the effects in developed countries are insignificant and, in some instances, negative.

For instance, Das and Banik analyzed the case of India [13]. By observing its investment outflows toward its 102 partner economies in the period between 2008 and 2012, they found a positive impact of bilateral investment treaties. In contrast, Bhasin and Jain found no significant effects in the same country [5]. The discrepancy could be attributed to the differences in the sample, as Bhasin and Jain observed only 15 partner economies in the period 2000-2009.

In South Korea, both signed and ratified bilateral investment treaties were found to positively affect the country's foreign investment into developing countries in the period 2001-2012, whereas the outflows to developed countries were much less pronounced [34]. The finding was corroborated by Park and Jung who used a slightly different analytical approach and a more recent sample [46]. Finally, bilateral investment treaties were found to positively affect the decision of Chinese enterprises to invest abroad [37].

A couple of studies indicate distinctly negative effects of bilateral investment treaties. The results of

these studies suggest that the investment outflows are primarily driven by fundamental economic factors such as market size and resource endowments. For example, Yackee reported insignificant and, in some specifications negative effects in the case of France, which he observed for the period between 1985 to 2013 [54]. Similar results were found by Gurshev and Hamza who analyzed the British multinationals' outward foreign direct investment towards 140 partner economies in the period 2009-2017 [26], pointing out that colonial ties are a major driver of the internationalization of British enterprises.

Due to limited data availability, few studies investigate the effects of bilateral investment treaties on the micro-level. The only example of such a study to this date was conducted by Egger and Merlo, who used foreign affiliates' trade statistics of German multinational enterprises in the period 1996-2005 [18]. By estimating an empirical model using 15,728 firm-host pairs, they found that ratification of bilateral investment treaties by Germany leads to an increase in the number of German foreign affiliates, as well as the number of employees in the said affiliates.

There is also a gap in the related literature related to the lack of studies focusing on the region of Southeastern Europe. The only studies which observed this region analyzed all the countries aggregately and focused on foreign direct investment inflows and some of their major determinants. The results single out the relevance of geographic and cultural factors in determining the investment flows in the region [14], [24].

There are several reasons why various studies report different results. There are significant differences in studies in terms of the research design. Some results could be affected by the relatively small sample size. The characteristics of the home countries on which the studies focus also play an important role in the results determined. Finally, the control variables considered in the specification and the methodological approach followed also reflect on the empirical results.

With the exception of the study conducted by Haslam and Dixon, the related empirical literature implicitly assumes that all the bilateral investment treaties are made equal. However, different treaties offer different provisions and levels of investment protection. In addition, the studies

covered in this literature review do not control for unilateral liberalization which may bias the result to a certain extent. Moreover, despite being based on the gravity model, the majority of the reviewed studies do not account for the non-linearity of the model and neglect zero investment outflows in the analysis. Finally, Serbia has not been the focus of the related empirical studies. We address all these issues in the analysis that follows.

Methodology

As we previously outlined in the conceptual framework, we operationalize the internationalization of enterprises in Serbia by using the outflows of foreign direct investment, as it most closely reflects the most challenging phase of the internationalization process where the bilateral investment treaties are the most likely to benefit the internationalizing enterprises. We base the analysis on the gravity model of foreign direct investment outflows. The main aim of the analysis is to isolate and estimate the effects of bilateral investment treaties while controlling for the effects of other relevant determinants considered in the conceptual framework.

Gravity models are predominantly used in trade analysis. However, their application can be extended to the analysis of foreign direct investment [38], [44]. Uttama discusses how the model can also be derived from the Knowledge-capital model, allowing it to incorporate both the horizontal and vertical types of foreign direct investment in the analysis [9], [52]. The model is generally considered to be a well-suited and flexible framework for the analysis of foreign direct investment patterns using the dyadic approach, allowing the inclusion of all major macro-level determinants of the flows [6], [12].

The baseline model we use in the analysis can be represented by the following equation:

$$FDI_{ijt} = \beta_0 FDI_{ijt-1}^{\beta_1} BIT_{ijt}^{\beta_2} CI_{jt}^{\beta_3} GDP_{ijt}^{\beta_4} DGDPpc_{ijt}^{\beta_5} D_{ij}^{\beta_6} \exp(\delta_1 HIST_{ij} + \lambda_t) \varepsilon_{it} \quad (1)$$

where FDI_{ijt} denotes the outflows of foreign direct investment from Serbia (denoted by i) to the partner economy j in the year t , BIT_{ijt} denotes bilateral investment treaty variables, CI_{jt} denotes the level of unilateral liberalization of the host country, GDP_{ijt} refers to the size of the home and host

country's economy, $DGDPpc_{ijt}$ refers to difference in gross domestic product *per capita*, D refers to the geographic distance, $HIST$ refers to the dummy variable capturing the psychic distance, the λ_t refers to the time effects and the ε_{it} denotes the error term.

The dependent variable is outward foreign direct investment (FDI_{ijt}). This is the most widely used operationalization of internationalization in the related literature [4], [19], [54]. Thereby, we adopt the definition of the International Monetary Fund where outward investment entails all investment where Serbian residents acquire more than 10% in equity abroad. All the values are expressed in millions of EUR.

The independent variables in the focus of our research refer to bilateral investment treaties (BIT_{ijt}). The main and the most basic variable is defined as a dummy variable that takes the value of 1 if Serbia has a ratified bilateral investment treaty with a partner economy, and 0 otherwise. This is the most commonly used approach in the related empirical literature [26], [34], [46]. However, the use of a dummy variable implicitly assumes that all the bilateral investment treaties are homogenous in terms of their content. As this is often not the case, we expand the analysis, by analyzing the effects of bilateral investment treaties' contents and quality on promoting the investment outflows. Greater reduction of the entry barriers through more favorable provisions of the treaty should lead to the greater investment of Serbian enterprises to host countries that offer such conditions. All the bilateral treaties in which Serbia participates were mapped following the content analysis approach and their quality was quantified using the BITSel index developed by Chaisse and Bellak [10]. In addition to the most widely defined measurement of quality ($BITSel_{ijt}$), we also consider the effects of subindices measuring the scope of liberalization ($BITSel-lib_{ijt}$), anti-discriminatory measures ($BITSel-ad_{ijt}$), the breadth of the investment definition ($BITSel-br_{ijt}$), and the regulations related to dispute settlement ($BITSel-reg_{ijt}$).

In addition to the bilateral approach, the foreign investment regime can also be liberalized unilaterally. This is important to take into account in order not to overestimate the effects of bilateral liberalization. One of the most common approaches for measuring the level of

unilateral foreign investment liberalization in the related literature is the use of the Chinn-Ito index (CI_{jt}), based on the information provided by the International Monetary Funds in its Annual Reports on Exchange Arrangements and Exchange Restrictions [11], [31]. More liberal investment regimes in the host countries are expected to attract higher investment from Serbian enterprises.

Other control variables include all the common gravity model determinants, including the drivers of vertical and horizontal foreign direct investment as well as proxies for geographic and psychic distance. The market-seeking motive of the horizontal foreign direct investment is encompassed by the market size variable. It is approximated as the product of the market size of the home and host country (GDP_{ijt}). A similar market size variable was used in numerous related studies [20], [32], [37]. Generally, larger markets allow for taking advantage of economies of scale which, in turn, enables firms to internationalize their operations more efficiently leading to higher flows of foreign direct investment. The variable also reflects the main idea of the gravity model – that larger economies establish larger investment flows. As a robustness check, we also approximated the market size using population (POP_{ijt}), following the approach of Jong and Kim and Neumayer and Spess [34], [45]. Vertical foreign direct investment is encapsulated using the variable difference in gross domestic product *per capita* ($DGDPP_{cijt}$). The variable reflects differences in factor endowments. It can be considered as a proxy for relative skill differences as well as the labor cost difference between the home and host country [15], [32]. Both differences are important drivers of vertical foreign direct investment having a positive effect on their outflows. Geographic distance (D_{ij}) is a standard control variable in all the related empirical work based on gravity-type models [26], [32], [54]. The distance is approximated using the circle formula and the data on latitudes and longitudes between the capitals of the home country and host economies. Greater distance is expected to increase transportation costs which should particularly impede the vertical foreign direct investment. In addition, it makes the coordination of business activities more difficult. However, some countries may choose to cut the transport and trade costs by organizing sales

through foreign affiliates, which would positively affect the investment outflows. For this reason, the net effect of distance is a priori ambiguous and will be reflected by the corresponding coefficient. The psychic distance is considered through the use of history ($HIST$) and language ($LANG$) variables. Both variables are defined as dummy variables that take the value of 1 if the countries share a common language or history, and 0 otherwise. The variable reflects cultural proximity between the countries. A more familiar environment should mean lower entry barriers for Serbian investors, as they need fewer resources to adapt to the host country's culture. The relevance of this factor is explored in greater depth, and it was shown to be particularly important in the case of former Yugoslavia [3], [14]. As the two variables are highly correlated, we estimate them in separate specifications.

Finally, it is worth mentioning that history matters for foreign direct investment flows [15]. Namely, foreign investment entails fixed sunk costs when establishing affiliates and distribution networks abroad. These sunk costs motivate multinationals to sustain the activities of their foreign affiliates over long periods of time. For this reason, outward foreign investment frequently exhibits significant persistence. We model this explicitly by introducing the lagged foreign direct investment as one of the independent variables. The theoretical motivation for this is the study of Koizumi and Kopecky and the Uppsala theoretical framework [33], [35].

We estimate our gravity model using a Poisson pseudo-maximum likelihood estimator. The estimator is the most consistent option for obtaining unbiased estimates for gravity models estimated using the samples containing a large portion of zero values [48]. The estimation of gravity models with such samples using simpler methods such as generalized least squares could bias the results. The approach mitigates the problem of Jensen's inequality, which is an important issue in estimating log-linearized models. The estimator is consistent in the presence of heteroskedasticity and allows us to consider all available data giving equal weights to all observations (including the cases where there are no outflows of foreign direct investment from Serbia to a particular economy which makes up for over 70% of our sample).

Table 1: Descriptive statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
OFDI _{ijt}	1980	1.188	9.191	-39.926	191.94
BIT _{ijt}	1980	0.223	0.416	0	1
BITSel _{ijt}	1980	0.333	0.625	0	1.727
BITSel-lib _{ijt}	1980	0.344	0.650	0	2
BITSel-ad _{ijt}	1980	0.221	0.414	0	1
BITSel-br _{ijt}	1980	0.954	1.804	0	6
BITSel-reg _{ijt}	1980	0.516	1.002	0	4
CI _{ijt}	1715	0.527	0.379	0	1
GDP _{ijt}	1969	1.708	7.542	0	106.753
POP _{ijt}	1978	328.606	1244.93	0.044	12577.48
DGDPpc _{ijt}	1969	10.45	26.689	-5.959	176.023
DIST _{ijt}	1980	6.046	4.092	0.197	18.002
LANG _{ijt}	1980	0.025	0.157	0	1
HIST _{ijt}	1980	0.025	0.157	0	1

Source: Authors' calculation

Our analysis covers the period between 2011 and 2019. We restrict the analysis to this period because the methodology of compiling foreign direct investment data in Serbia was changed in 2010 and the inclusion of observation prior to this year could lead to comparability problems. We observe 147 partner economies of Serbia in this period which yields a total sample size of 1323 annual observations. The descriptive statistics for the variables included in our model are provided in Table 1.

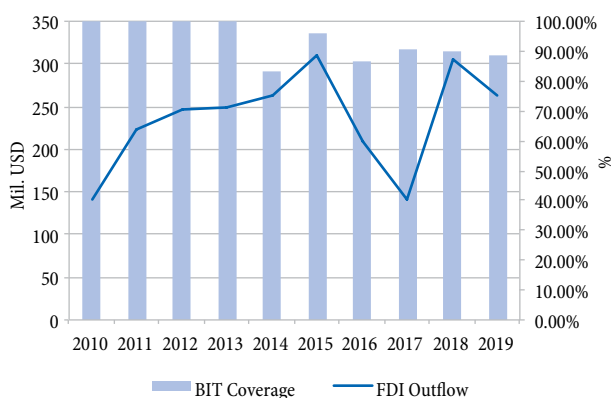
The sample is constructed by merging data from several sources. The data on foreign direct investment outflows are sourced from the National Bank of Serbia. All the variables related to bilateral investment treaties were constructed using the data provided by the International Investment Agreements Navigator database. The index values for the unilateral liberalization variable were obtained from Chinn and Ito [11], [31]. Gross domestic product and population data come from the UNCTADStat database of the United Nations Conference on Trade and Development. Finally, all the distance variables are obtained from *Centre D'Etudes Prospectives et d'Informations Internationales* (CEPII).

Bilateral investment treaties and foreign direct investment outflows in Serbia

The liberalization of the foreign investment regulatory framework was followed by large inflows of foreign investment in Serbia. However, many domestic enterprises were lacking the capacity to conduct foreign investment,

so the outflows of the investment remained negligible. However, in an effort to improve the environment for foreign investment, Serbia ratified 30 bilateral investment treaties during the 2000s, making it a country with the most extensive network of treaties in the Western Balkans region. These treaties not only protected foreign investors' interests in Serbia but also improved conditions for the investment of Serbian enterprises abroad. An increase in investment outflows ensued, surpassing the level of 100 million EUR in 2007. The global financial crisis negatively affected these outflows, bringing them to a halt in 2009. This was followed by an unsteady recovery, described in Figure 1.

Figure 1: Foreign direct investment outflows in Serbia and their bilateral investment treaty coverage (2010-2019)



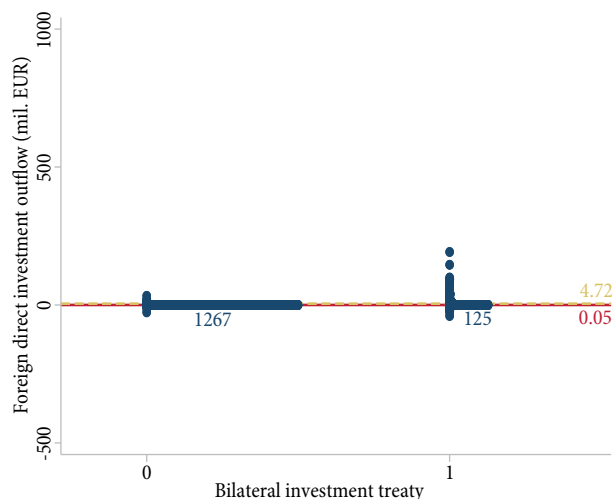
Source: Authors' calculation

Enterprises in Serbia appear to have accumulated sufficient experience and resources and the institutional framework stabilized enough for more significant investment outflows during the 2010s. This placed Serbia in the leading position in the region in terms of foreign investment outward stocks. However, these stocks are still relatively insignificant when compared to global stocks, which is expected considering the relative size of the Serbian economy. As Serbia ratified bilateral investment treaties with most of its major economic partners, the treaties covered the majority of foreign investment outflows in the observed period. Still, there are some important economies, such as Russia, India, Italy, Japan, and most of the economies on the American continent, which provide ample investment opportunities but where Serbian enterprises might lack sufficient support due to

the lack of bilateral investment treaties. Conclusions of the treaties with such countries could promote further internationalization of enterprises in Serbia.

Our sample reveals some interesting patterns regarding the use of bilateral investment treaties and their relationship with multinational activity. We compare the observations of foreign direct investment bilateral outflows of Serbia based on the ratification status of bilateral investment treaties. The results of the comparison are graphically presented in Figure 2.

Figure 2: Foreign direct investment outflows from Serbia conditional on the bilateral investment treaty status



Source: Authors' calculation

We can notice that the majority of zero investment outflows observations (1267) are concentrated in the set of countries with which Serbia has not ratified a bilateral investment treaty. Such zero investment outflows are much less frequent in the other subset. Furthermore, enterprises in Serbia, on average, invest 4.66 million EUR more annually in economies that have a ratified bilateral investment treaty with Serbia than in the other economies. The difference is statistically significant at the 1% level.

Results and discussion

We present the estimation results for our baseline model in Table 2. Model 1 refers to the baseline model represented by Equation 1, and the estimated coefficients reflect the impact of the explanatory variables on foreign direct investment outflows in Serbia. Models 2-4 refer to the

same baseline model where the alternative approximation is used for economy size. In the column denoted by Model 5, we present the results of the robustness check, where the baseline model was estimated using the subsample for the period 2011-2018. All the specifications apart from the aforesaid robustness checks are estimated using the full sample of 1323 observations. The specifications are statistically significant as a whole, as evidenced by the Wald test statistics and the corresponding p-values. The values of the coefficient of determination suggest that the data fit the models well. Finally, Ramsey's Regression Equation Specification Error Test does not show problems with any of the specifications.

The coefficients pertaining to the bilateral investment treaties show that the treaties could have a significant impact on foreign direct investment outflows in Serbia. The results are statistically significant at least at a 10% level in all the specifications. This suggests that the ratification of the bilateral investment treaty leads to an increase in foreign direct investment outflows by between 47.8% and 75.4%. The economic size of the effect is comparable to the results reported in the related single-country studies that found statistically significant positive effects. However, it should be noted that average outflows of foreign direct investment in Serbia are modest, so the increase in absolute values is much less pronounced. Regardless, the results imply that bilateral investment treaties lower fixed costs of investment and reduce risks for enterprises in Serbia that invest abroad. This supports their internationalization efforts. These conclusions are unaffected by changes in specification and sample, indicating the robustness of the results.

The results show that the unilateral foreign direct investment regime liberalization in host countries has around twice as strong an effect on foreign direct outflows in Serbia, both statistically and economically. This suggests that unilateral liberalization improves the environment for foreign investment in the host country, to which the investors in Serbia react favorably. This finding is statistically significant at least at 5% level in all specifications, suggesting the stability of the results.

The results related to the control variables also reveal interesting patterns of investment outflows from Serbia.

Table 2: The baseline model estimation results

Model	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Variable					
OFDI _{ijt-1}	0.025*** (0.003)	0.026*** (0.003)	0.029*** (0.003)	0.030*** (0.003)	0.029*** (0.004)
BIT _{ijt}	0.414* (0.215)	0.391* (0.223)	0.401* (0.213)	0.390* (0.223)	0.562** (0.234)
CI _{jt}	0.737** (0.323)	0.951*** (0.312)	0.746** (0.314)	0.970*** (0.321)	1.086*** (0.315)
GDP _{ijt}	0.046*** (0.009)		0.046*** (0.009)		0.038*** (0.009)
POP _{ijt}		0.000*** (0.000)		0.000*** (0.000)	
DGDP _{pcijt}	0.010* (0.006)	0.012** (0.005)	0.008 (0.006)	0.010* (0.005)	0.012* (0.007)
DIST _{ij}	-0.699*** (0.099)	-0.678*** (0.107)	-0.745*** (0.106)	-0.724*** (0.119)	-0.609*** (0.095)
HIST _{ij}	1.190*** (0.267)	1.223*** (0.263)			1.404*** (0.277)
LANG _{ij}			0.841*** (0.291)	0.934*** (0.301)	
Constant	0.752* (0.404)	0.586 (0.425)	0.945** (0.421)	0.754 (0.465)	0.177 (0.425)
Total Observations	1323	1323	1323	1323	1176
Wald	478.38 (0.000)	464.25 (0.000)	595.92 (0.000)	606.35 (0.000)	472.71 (0.000)
Pseudo R ²	0.706	0.700	0.695	0.690	0.705
RESET test (p-value)	0.606	0.857	0.789	0.956	0.764

Source: Authors' calculation

Note: Robust standard errors are presented in the parentheses. ***, **, and * denote coefficients significant at 1%, 5%, and 10% significance levels, respectively. Wald denotes the Wald test statistics and the corresponding p-value, provided in the parentheses. RESET test refers to the result of Ramsay Regression Equation Specification Error Test results.

Market size appears to be a major determinant of these flows, regardless of the proxy and sample used. In all cases, the corresponding coefficients are statistically significant at 1% level. This implies that the enterprises in Serbia are primarily conducting market-seeking horizontal foreign direct investment. The vertical foreign direct investment is much less pronounced.

Both geographic and psychic distances are found to be important factors in determining the investment outflows of Serbian enterprises. Larger geographic distances between Serbia and host economies are associated with lower investment outflows to those economies. Namely, the increase in distance between Belgrade and the capital city of the host country by 1,000 kilometers is associated with a foreign direct investment decrease of

between 83.8% and 110.6%. This reflects that a lot of the investment of enterprises in Serbia is directed toward other countries in the region. It also implies that investment in infrastructure and information and communication technology, which generally mitigate the problems of geographic distance could positively affect the investment outflows of enterprises in Serbia. Taken together with the significance of market size, these results also imply that the gravity model is indeed a suitable framework for our analysis. The psychic distance is also relevant for foreign direct investment outflows from Serbia, as indicated by the statistical significance of the coefficients for history and language variables, which are in all specifications significant at 1% level. The results suggest that enterprises in Serbia invest in countries with which Serbia shares a common history. The investment in such countries is increased between 228.7% and 307.1%, all other things being equal. Moreover, common language increases the investment outflow by between 131.8% and 154.4%.

Finally, the lagged outward foreign direct investment is also statistically significant in all specifications at 1% level, with stable estimated coefficient values. This indicates persistence and *inertia* in foreign direct investment outflows of the enterprises in Serbia. It could reflect sunk costs of investment and the tendency of the enterprises to continue investing in a particular location after the initial location choice is made. Finally, the results imply that the initial increase in foreign direct investment outflows made by ratifying the bilateral investment treaty also persists in the long run, amplifying the previously established positive effects of the internationalization of enterprises in Serbia.

We explore the role of the quality of bilateral investment treaties in the effects on outward foreign direct investment in Table 3. In all specifications, we use the baseline model represented by Equation 1. In Model 6, we use the widest measure of bilateral investment treaties' quality – the BITSel quality index. Models 7-10 refer to the effects of components of the BITSel quality index: quality of liberalization, the antidiscrimination quality, the breadth of scope, and the regulatory constraint quality of the treaties, respectively. A robustness check was conducted by estimating the specifications where the sub-indices of the BITSel index were found significant for

the subsample constructed for the period 2011-2018. As previously, all the specifications fit the data well, show no signs of specification errors, and are statistically significant at all significance levels.

In general, the quality of the bilateral investment treaty appears not to have significant effects on foreign direct outflows from Serbia. However, the contents of the treaties are heterogeneous and various aspects of the treaties may differ in terms of their relative importance for the prospective internationalizing enterprises. This is confirmed by the statistically significant results for the subindices quality of liberalization, the antidiscrimination quality. Both corresponding coefficients are statistically significant at 5% level and are robust to change in the sample. The results suggest not all provisions within a treaty matter for the investors equally. Internationalizing

enterprises in Serbia are particularly concerned with the prevention of discriminatory treatment of their affiliates in host countries. Bringing this issue to the highest standard in the bilateral investment treaty by guaranteeing fair and equitable treatment of the foreign affiliates of Serbian multinationals, guaranteeing their national treatment in the host country, and removing the limitation to the application of the most favored nation principle, could lead to an increase in bilateral foreign direct investment outflows from Serbia by between 57.3% and 84.0%. Establishing a liberal right to entry for Serbian multinationals and allowing their affiliates to transfer funds without any restriction also positively affects the foreign direct outflows, albeit to a lesser extent. As for the other explanatory variables, their statistical significance and coefficient values are similar to the results of the baseline model estimation

Table 3: The impact of bilateral investment treaties quality on foreign direct investment outflows

Model Variable	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)	Model (11)	Model (12)
OFDI _{ijt-1}	0.026*** (0.003)	0.025*** (0.003)	0.025*** (0.003)	0.026*** (0.003)	0.027*** (0.003)	0.029*** (0.004)	0.029*** (0.004)
BITSel _{ijt}	0.219 (0.137)						
BITSel-lib _{ijt}		0.299** (0.136)				0.404*** (0.148)	
BITSel-ad _{ijt}			0.453** (0.219)				0.610** (0.239)
BITSel-breath _{ijt}				0.071 (0.052)			
BITSel-reg _{ijt}					0.021 (0.075)		
CI _{ijt}	0.714** (0.320)	0.744** (0.321)	0.742** (0.324)	0.665** (0.316)	0.745** (0.311)	1.096*** (0.313)	1.094*** (0.316)
GDP _{ijt}	0.047*** (0.009)	0.045*** (0.009)	0.046*** (0.009)	0.047*** (0.009)	0.048*** (0.009)	0.036*** (0.009)	0.037*** (0.009)
DGDPpc _{ijt}	0.010* (0.006)	0.010* (0.006)	0.010* (0.006)	0.010 (0.006)	0.011* (0.006)	0.012* (0.007)	0.012* (0.007)
DIST _{ijt}	-0.717*** (0.100)	-0.677*** (0.098)	-0.692*** (0.098)	-0.727*** (0.103)	-0.768*** (0.101)	-0.581*** (0.091)	-0.600*** (0.093)
HIST _{ijt}	1.167*** (0.265)	1.201*** (0.265)	1.192*** (0.266)	1.160*** (0.263)	1.125*** (0.262)	1.413*** (0.272)	1.406*** (0.275)
Constant	0.858** (0.391)	0.669 (0.412)	0.716* (0.407)	0.929** (0.384)	1.082*** (0.361)	0.067 (0.430)	0.132 (0.427)
Total Observations	1323	1323	1323	1323	1323	1176	1176
Wald	485.40 (0.000)	491.71 (0.000)	480.80 (0.000)	473.88 (0.000)	486.54 (0.000)	492.26 (0.000)	476.68 (0.000)
Pseudo R ²	0.705	0.707	0.707	0.705	0.703	0.707	0.706
RESET test (p-value)	0.793	0.793	0.761	0.751	0.806	0.572	0.565

Source: Authors' calculation

Note: Robust standard errors are presented in the parentheses. ***, **, and * denote coefficients significant at 1%, 5%, and 10% significance levels, respectively.

previously presented, further indicating the robustness of the obtained results.

Finally, the results of additional sensitivity analyses are presented in Table 4. Models 13-15 refer to the baseline model represented by Equation 1 and the two baseline specifications with significant results of the BITSel quality subindices. The models are estimated using the restricted sample where all the offshore centers are excluded. Models 16-18 refer to the aforementioned specifications estimated using the subsample where the most geographically distant partner economies were excluded. The threshold used was the distance of 10,000 kilometers between Serbia and the host country. Finally, Model 19 refers to the baseline model estimated using the subsample excluding small economies (with gross domestic product less than one billion USD). All specifications are statistically significant as a whole and show no signs of misspecification.

The sensitivity analysis corroborates our previously discussed findings regarding all the explanatory variables.

The statistical and economic significance of the variables is similar in all the robustness checks. The only slight difference is found for Model 11, where the positive effects of bilateral investment treaties on foreign direct investment outflows are somewhat smaller if the small economies are removed from the sample, which further exemplifies the market-seeking motives of internationalizing enterprises in Serbia. Other than that, the results confirm significant positive effects of bilateral investment treaties as a whole as well as certain aspects of their quality (the level of liberalization standards and the anti-discriminatory measures) on investment outflows. The results also show that the patterns of bilateral foreign direct investment outflows from Serbia conform to the framework of the gravity model. Thereby, not only geographic but also the psychic distance between the economies determines the intensity of the investment flows. Finally, the unilateral liberalization of investment regime in the host country is also an important determinant of the investment

Table 4: Robustness checks

Model	Model (13)	Model (14)	Model (15)	Model (16)	Model (17)	Model (18)	Model (19)
Variable							
OFDI _{ijt-1}	0.025*** (0.003)	0.024*** (0.003)	0.025*** (0.003)	0.025*** (0.003)	0.025*** (0.003)	0.025*** (0.003)	0.025*** (0.003)
BIT _{ijt}	0.421* (0.215)			0.405* (0.215)			0.371* (0.224)
BITSel-lib _{ijt}		0.301** (0.135)			0.292** (0.136)		
BITSel-ad _{ijt}			0.421* (0.215)			0.444** (0.219)	
CI _{ijt}	0.676** (0.321)	0.688** (0.319)	0.676** (0.321)	0.727** (0.326)	0.735** (0.325)	0.733** (0.327)	0.680** (0.338)
GDP _{ijt}	0.050*** (0.009)	0.049*** (0.009)	0.050*** (0.009)	0.047*** (0.009)	0.046*** (0.009)	0.047*** (0.009)	0.048*** (0.009)
DGDPpc _{ijt}	0.010* (0.006)	0.010* (0.006)	0.010* (0.006)	0.010* (0.006)	0.010* (0.006)	0.010* (0.006)	0.011* (0.006)
DIST _{ijt}	-0.786*** (0.098)	-0.761*** (0.096)	-0.786*** (0.098)	-0.716*** (0.104)	-0.694*** (0.103)	-0.709*** (0.103)	-0.734*** (0.108)
HIST _{ijt}	1.079*** (0.258)	1.091*** (0.256)	1.079*** (0.258)	1.179*** (0.268)	1.191*** (0.267)	1.181*** (0.267)	1.143*** (0.282)
Constant	0.935** (0.384)	0.849** (0.392)	0.935** (0.384)	0.783* (0.409)	0.700* (0.418)	0.746* (0.412)	0.875* (0.451)
Total Observations	1299	1299	1299	1121	1121	1121	1243
Wald	477.76 (0.000)	494.53 (0.000)	477.77 (0.000)	459.10 (0.000)	470.45 (0.000)	461.13 (0.000)	470.03 (0.000)
Pseudo R ²	0.722	0.723	0.722	0.692	0.693	0.692	0.706
RESET test (p-value)	0.613	0.632	0.613	0.603	0.625	0.601	0.751

Source: Authors' calculation

Note: Robust standard errors are presented in the parentheses. ***, **, and * denote coefficients significant at 1%, 5%, and 10% significance levels, respectively.

outflows from Serbia, and the effects of all the considered independent variables persist in both the short and the long term.

Conclusion

In this paper, we investigated the role of bilateral investment treaties and unilateral foreign investment liberalization in promoting the internationalization of enterprises in Serbia using the extended gravity model. The model was estimated using the sample of Serbia and its 147 partner economies observed in the period between 2011 and 2019. The results show that bilateral investment treaties positively affect outflows of foreign direct investment from Serbia, supporting the notion that the treaties contribute to the internationalization process of enterprises in Serbia. Moreover, the results reveal that certain provisions, namely the ones related to the anti-discrimination standards and the liberalization of the foreign direct investment regime have a particularly strong positive effect on the investment outflows. Considering that foreign direct investment was found to be characterized by strong *inertia*, the determined positive effects persist in the long run. Unilateral liberalization of the foreign direct investment regime in the host country was also found to be positively associated with bilateral foreign direct investment outflows from Serbia. Our results indicate that the foreign investment of enterprises in Serbia is predominantly horizontal. Finally, both the increases in the geographic and psychic distance were found to negatively affect the internationalization efforts of enterprises in Serbia, suggesting that the gravity model framework is suitable for the analysis of foreign direct investment flows. The results are robust to changes in both the specification and sample.

Our empirical results support the initial hypothesis and all the major conclusions of our conceptual framework. In this regard, the results of our study corroborate the conclusions of the theoretical model of Egger and Merlo, as well as the previous findings in the majority of single-country studies, focused on the developing countries [13], [18], [37], [46]. The results contrast the findings of the studies analyzing some of the most developed countries [26], [54]. This could indicate that the level of economic development

might affect the effectiveness of bilateral investment treaties for the internationalization of enterprises, although the confirmation of this tentative conclusion would require additional multi-country analysis.

Our study provides several interesting implications for policymakers. The results of our study imply that the government can play an active role in encouraging the foreign investment of Serbian enterprises. Namely, the bilateral investment treaties can serve as an effective tool in reducing entry barriers and uncertainties for internationalizing enterprises in Serbia. Through the conclusion of treaties with prospective economic partners, Serbia can open up lucrative investment locations and opportunities, which can greatly contribute to the international competitiveness and resilience of enterprises in Serbia. When concluding new and renegotiating existing bilateral investment treaties, it is important to pay particular attention to securing the national treatment of the foreign affiliates of Serbian enterprises, the free transfer of funds for the said affiliates, maximizing the liberalization of the foreign investment regime in the host country and minimizing any exceptions to these fundamental standards and provisions. Supporting the enterprises to overcome the initial hurdles in internationalizing their activities is particularly important considering the persistence of outward foreign investment found in our study, which suggests that the enterprises accumulate their experience in the international business over time. This accumulation allows them to continue conducting investment projects abroad in the future. Our results also imply that market-seeking motives are the main driver of the foreign investment activities of enterprises in Serbia. The support for internationalization could provide the enterprises in Serbia with access to large markets allowing them to better use the economies of scale, circumvent the trade barriers and improve their performances. Finally, our results suggest that the enterprises in Serbia could be encouraged to internationalize by reducing the negative effects of distance, which can be achieved by investment in infrastructure, greater use of information and communication technologies and generally improving the connectivity between Serbian and other economies.

The aforesaid approaches are important for improving the integration of the Serbian economy into the world economy.

An interesting avenue for future research would be to conduct a similar study using micro-level data. This would require the compiling of outward foreign affiliates' trade statistics in Serbia, which are not available at the moment. The use of such data, however, would enable making a distinction between the effects of the considered determinants according to the enterprise type, which is particularly important for providing the policy recommendations for supporting the internationalization of small and medium enterprises. Additionally, such an approach would allow for determining the industry-specific effects of these measures.

References

- Amdarn, R. P. (2009). The internationalisation process theory and the internationalisation of Norwegian firms, 1945 to 1980. *Business History*, 51, 445-461.
- Bekes, G., & Murakozy, B. (2018). The ladder of internationalization modes: Evidence from European firms. *Review of World Economics*, 154, 455-491.
- Beugelsdijk, S., Kostova, T., Kunst, V. E., Spadafora, E., & van Essen, M. (2018). Cultural Distance and Firm Internationalization: A Meta-Analytical Review and Theoretical Implications. *Journal of Management*, 44, 89-130.
- Bhasin, N. & Jain, V. (2015). Outward FDI from India: An Examination into the Role of Host Country Factors. *Transnational Corporations Review*, 7, 316-334.
- Bhasin, N., & Manocha, R. (2016). Do Bilateral Investment Treaties Promote FDI Inflows? Evidence from India. *Vikalpa*, 41, 275-287.
- Blonigen, B. A. (2005). A Review of the Empirical Literature on FDI Determinants. *Atlantic Economic Journal*, 33, 383-403.
- Buckley, P. J., Clegg, J. L., Cross, A. R., & Voss, H. (2010). What Can Emerging Markets Learn from the Outward Direct Investment Policies of Advanced Countries? In K. P. Sauvant, G. McAllister & W. A. Maschek (Eds.), *Foreign Direct Investments from Emerging Markets: The Challenges Ahead* (pp. 243-276). New York: Palgrave Macmillan US.
- Busse, M., Königer, J. & Nunnenkamp, P. (2010). FDI promotion through bilateral investment treaties: More than a bit? *Review of World Economics*, 146, 147-177.
- Carr, D. L., Markusen, J. R., & Maskus, K. E. (2001). Estimating the Knowledge-Capital Model of the Multinational Enterprise. *American Economic Review*, 91, 693-708.
- Chaisse, J., & Bellak, C. (2015). Navigating the Expanding Universe of International Treaties on Foreign Investment: Creation and Use of a Critical Index. *Journal of International Economic Law*, 18, 79-115.
- Chinn, M. D., & Ito, H. (2008). A New Measure of Financial Openness. *Journal of Comparative Policy Analysis: Research and Practice*, 10, 309-322.
- Crotti, S., Cavoli, T., & Wilson, J. K. (2010). The Impact of Trade and Investment Agreements on Australia's Inward FDI Flows. *Australian Economic Papers*, 49, 259-275.
- Das, K. C., & Banik, N. (2015). What motivates Indian firms to invest abroad? *International Journal of Commerce and Management*, 25, 330-355.
- Deichmann, J. I., Grubaugh, S., & Scholten, P. (2022). FDI propensity and geo-cultural interaction in former Yugoslavia: pairwise analysis of origin and destination countries. *Eurasian Economic Review*, 12(3), 479-505
- Dixon, J., & Haslam, P. A. (2016). Does the Quality of Investment Protection Affect FDI Flows to Developing Countries? Evidence from Latin America. *World Economy*, 39, 1080-1108.
- Dunning, J. H. (1977). Trade, Location of Economic Activity and the MNE: A Search for an Eclectic Approach. In: B. Ohlin, P. O. Hesselborn & P. M. Wijkman (Eds.), *The International Allocation of Economic Activity: Proceedings of a Nobel Symposium held at Stockholm* (pp. 395-418). London: Palgrave Macmillan UK.
- Dunning, J. H., & Lundan, S. M. (2008). *Multinational enterprises and the global economy*. Cheltenham: Edward Elgar Publishing.
- Egger, P., & Merlo, V. (2012). BITs Bite: An Anatomy of the Impact of Bilateral Investment Treaties on Multinational Firms. *Scandinavian Journal of Economics*, 114, 1240-1266.
- Egger, P., & Merlo, V. (2007). The impact of bilateral investment treaties on FDI dynamics. *World Economy*, 30, 1536-1549.
- Egger, P., & Pfaffermayr, M. (2004). The impact of bilateral investment treaties on foreign direct investment. *Journal of Comparative Economics*, 32, 788-804.
- Falvey, R., & Foster-McGregor, N. (2017). Heterogeneous effects of bilateral investment treaties. *Review of World Economics*, 153, 631-656.
- Gaur, A. S., Kumar, V., & Singh, D. (2014). Institutions, resources, and internationalization of emerging economy firms. *Journal of World Business*, 49, 12-20.
- Gorynia, M., Nowak, J., Trąpczyński, P., & Wolniak, R. (2015). Government support measures for outward FDI: an emerging economy's perspective. *Argumenta Oeconomica*, 1, 229-258.
- Grieverson, R., Holzner, M., & Vuksic, G. (2021). Regional Economic Cooperation in the Western Balkans: The Role of Stabilization and Association Agreements, Bilateral Investment Treaties and Free Trade Agreements in Regional Investment and Trade Flows. *Eastern European Economics*, 59, 3-24.
- Guerin, S. S. (2011). Do the European Union's bilateral investment treaties matter? The way forward after Lisbon. *The Economic Crisis and European Integration*: Edward Elgar Publishing.
- Gurshev, O., & Hamza, S. (2021). BITs, colony ties, and offshore centers: The case of United Kingdom outward FDI. *Journal of Economic Integration*, 36, 203-226.
- Helpman, E. (1984). A Simple Theory of International Trade with Multinational Corporations. *Journal of Political Economy*, 92, 451-471.
- Helpman, E., & Krugman, P. (1985). Market Structure and Foreign Trade: Increasing Return, Imperfect Competition, and the International Economy. *Cambridge USA*.

29. Igwe, P. A., Rugara, D. G., & Rahman, M. (2022). A Triad of Uppsala Internationalization of Emerging Markets Firms and Challenges: A Systematic Review. *Administrative Sciences*, 12, 21.
30. Ipsmiller, E., & Dikova, D. (2021). Internationalization from Central and Eastern Europe: A systematic literature review. *Journal of International Management*, 27, 16.
31. Ito, H. (2006). Financial development and financial liberalization in Asia: Thresholds, institutions and the sequence of liberalization. *The North American Journal of Economics and Finance*, 17, 303-327.
32. Jang, Y. J. (2011). The Impact of Bilateral Free Trade Agreements on Bilateral Foreign Direct Investment among Developed Countries. *The World Economy*, 34, 1628-1651.
33. Johanson, J., & Vahlne, J.-E. (1977). The Internationalization Process of the Firm—A Model of Knowledge Development and Increasing Foreign Market Commitments. *Journal of International Business Studies*, 8, 23-32.
34. Jung, H. J., & Kim, E. M. (2020). International treaties and foreign direct investment: an empirical analysis of effects of bilateral investment treaties on South Korea's FDI. *Journal of the Asia Pacific Economy*, 25, 402-417.
35. Koizumi, T., & Kopecky, K. J. (1980). Foreign direct investment, technology transfer and domestic employment effects. *Journal of International Economics*, 10, 1-20.
36. Kox, H. L. M., & Rojas-Romagosa, H. (2020). How trade and investment agreements affect bilateral foreign direct investment: Results from a structural gravity model. *World Economy*, 43, 3203-3242.
37. Li, S., Zhao, L., & Shen, H. (2021). Foreign direct investment and institutional environment: the impact of bilateral investment treaties. *Applied Economics*, 53, 3535-3548.
38. Ly, A., Esperança, J., & Davcik, N. S. (2018). What drives foreign direct investment: The role of language, geographical distance, information flows and technological similarity. *Journal of Business Research*, 88, 111-122.
39. Madsen, T. K., & Servais, P. (1997). The internationalization of Born Globals: An evolutionary process? *International Business Review*, 6, 561-583.
40. Marano, V., Arregle, J. L., Hitt, M. A., Spadafora, E., & van Essen, M. (2016). Home Country Institutions and the Internationalization-Performance Relationship: A Meta-Analytic Review. *Journal of Management*, 42, 1075-1110.
41. Markusen, J. R. (1984). Multinationals, multi-plant economies, and the gains from trade. *Journal of International Economics*, 16, 205-226.
42. Melitz, M. J. (2003). The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica*, 71, 1695-1725.
43. Moran, T. H. (2008). What Policies Should Developing Country Governments Adopt Toward FDI? Lessons from the Experience of Developed Countries. In: K. P. Sauvant (Ed.). *The Rise of Transnational Corporations from Emerging Markets Threat or Opportunity?* (pp. 272-298). Cheltenham, Edward Elgar.
44. Mutti, J., & Grubert, H. (2004). Empirical asymmetries in foreign direct investment and taxation. *Journal of International Economics*, 62, 337-358.
45. Neumayer, E., & Spess, L. (2005). Do bilateral investment treaties increase foreign direct investment to developing countries? *World Development*, 33, 1567-1585.
46. Park, G., & Jung, H. J. (2020). South Korea's outward direct investment and its dyadic determinants: Foreign aid, bilateral treaty and economic diplomacy. *The World Economy*, 43, 3296-3313.
47. Portes, R., & Rey, H. (2005). The determinants of cross-border equity flows. *Journal of International Economics*, 65, 269-296.
48. Silva, J. M. C. S., & Tenreyro, S. (2006). The Log of Gravity. *The Review of Economics and Statistics*, 88, 641-658.
49. te Velde, D. W. (2007). Understanding developed country efforts to promote foreign direct investment to developing countries: the example of the United Kingdom. *Transnational Corporations*, 16, 83+.
50. Tihanyi, L., Griffith, D. A., & Russell, C. J. (2005). The effect of cultural distance on entry mode choice, international diversification, and MNE performance: a meta-analysis. *Journal of International Business Studies*, 36, 270-283.
51. Tinbergen, J. (1962). *Shaping the world economy: Suggestions for an international economic policy*. New York: Twentieth Century Fund.
52. Uttama, N. P. (2021). International investment agreements provisions and foreign direct investment flows in the regional comprehensive economic partnership region. *Economies*, 9, 28.
53. Vernon, R. (1971). *Sovereignty at bay: the multinational spread of U.S. enterprises*. New York: Basic Books.
54. Yackee, J. W. (2016). Do BITs 'work'? Empirical evidence from France. *Journal of International Dispute Settlement*, 7, 55-71.
55. Zeng, R. C., Zeng, S. X., Xie, X. M., Tam, C. M., & Wan, T. W. (2012). What Motivates Firms from Emerging Economies to go Internationalization. *Technological and Economic Development of Economy*, 18, 280-298.



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THE IMPACT OF DIGITAL MONEY ON MONETARY AND FISCAL POLICY

Uticaj digitalnog novca na monetarnu i fiskalnu politiku

Abstract

Digital money era is in full swing. It has already changed the structure of the global monetary system. Like industrial revolutions of the past few centuries, the digital money revolution is based on: (i) new IT and accounting technology (crypto algorithms, distributed ledger technology, internet, and deep penetration of smart phones), and (ii) demand for greater financial inclusion, and for more efficient financial services. The advent of unregulated private mobile money with more than 4 billion users and trillions of dollars in financial transaction has awakened fears of monetary system instability and dwindling traction of the old monetary and fiscal policy. The response has been a relentless effort by more than 100 central banks around the world to develop a public digital currency. Retail CBDCs issued by central banks will be available to everybody to provide stability and liquidity to the financial system in times of need. There will be uncertainties and challenges regarding the conduct of monetary and fiscal policy. Many expected improvements will come with inevitable tradeoffs in the speed and effectiveness of monetary policy transmission, and in achieving greater fiscal transparency without violating individual rights and privacy. Serbia will benefit greatly from improved fiscal transparency and reduced shadow economy associated with digital money revolution. At the same time it will be vulnerable to currency substitution pressures from future digital Euro and reduced traction of monetary policy in the presence of multiple e-money flows. Timely legal preparations for bank-led mobile money and central bank digital cash, and applied research of complex future policy risks is strongly advised.

Keywords: *crypto-assets, bitcoin, stablecoin, e-money, mobile money, CBDC, monetary policy, fiscal policy*

Sažetak

Era digitalnog novca je u punom zamahu. Već je promenila strukturu globalnog monetarnog sistema. Kao industrijske revolucije tokom prošlih nekoliko vekova, i ova digitalna revolucija novca zasnovana je na: (i) novim IT računovodstvenim tehnologijama (kripto algoritmima, decentralizovanom računovodstvu, internetu i dubokoj penetraciji pametnih mobilnih telefona) i (ii) očekivanjima veće finansijske inkluzije i tražnji za efikasnijim finansijskim uslugama. Pojavljivanje neregulisanog privatnog mobilnog novca koji danas već ima 4 milijarde korisnika i trilion dolara u finansijskim transakcijama probudilo je opravdani strah o mogućoj nestabilnosti monetarnog sistema pri opadajućoj efikasnosti stare monetarne i fiskalne politike. Odgovor je ogroman napor više od 100 centralnih banaka u svetu da razviju javni digitalni novac. Novac koji bi izdavale centralne banke, tzv. *retail* CBDC biće dostupan svima radi održanja stabilnosti i likvidnosti finansijskog sistema u slučaju potrebe. Sigurno će biti neizvesnosti i izazova u vođenju monetarne i fiskalne politike u novim uslovima. Mnoga očekivana poboljšanja doneće sa sobom i neizbežne teškoće u brzini i efektivnosti mehanizama transmisije monetarne politike, kao i izazove u dostizanju višeg stepena fiskalne transparentnosti bez narušavanja ličnih sloboda i privatnosti. Srbiji će digitalni novac doneti poboljšanu fiskalnu transparentnost i smanjenje sive ekonomije. Istovremeno, Srbija će biti izložena pritiscima eurizacije posle pojavljivanja digitalnog evra, kao i dejstvu smanjene efektivnosti monetarne politike u prisustvu višestrukih egzogenih tokova mobilnog novca. Zato se preporučuju blagovremene pravne reforme neophodne za uvođenje CBDC i dobro funkcionisanje mobilnog novca u saradnji sa bankarskim sistemom, kao i primenjena istraživanja budućih složenih rizika ekonomske politike.

Ključne reči: *kripto valute, bitcoin, stabilni koin, e-novac, mobilni novac, CBDC, monetarna politika, fiskalna politika*

Introduction

Digital money era is in full swing now. Decades long efforts to scale down or eliminate cash – the epitome of money and legal tender – relied on traditional cashless payment instruments: checks, payment cards, direct account debits, wire transfers and the like. This slow but persistent tide of cashless payments has recently been overpowered by a true digital money tsunami.

The first wave started with bitcoin and other private *sui generis* cryptocurrencies, and quickly expanded into crypto generated stablecoins backed by major currencies and/or low risk bonds to counter the excessive volatility of bitcoins. Privately and anonymously generated crypto protection in tandem with clearance and accounting mechanisms based on distributed ledger technology (DLT), challenged two quintessential properties of the regulated two-tier banking system. These were to print and distribute fiat money that is almost free of counterfeiting risks, and to provide an efficient clearing and accounting mechanism as a basis for payments and normal functioning of the economy.

Despite providing alternative safety features and decentralized payment clearance procedures, the impact of cryptocurrencies and stablecoins on the long held monopoly of the banking sector and stability of the financial sector remained relatively limited due to their small size, high volatility and lack of widespread acceptance.

The second wave brought on mobile money pioneered by fin-tech companies and internet trading giants relying on their dominant position in internet-based retail transactions and widespread penetration and use of smart phones by people with limited access to banking services. Instead of algorithm based *ex-ante* protection, mobile money provided security through client registration, prepayment of minimal balances and strict *ex-post* enforcement of payment discipline.

The impact of mobile money on the financial sector is likely to continue to grow exponentially in line with the number of users in China, India and Africa, and expected growth trends in middle and higher income countries based on reputable providers (Apple Pay, Google Pay, Pay Pal, Samsung Pay, Venmo, Zelle, etc.). As discussed

by Shirono et al. [32], large and growing shares of private unregulated and uninsured digital mobile money issued by mobile network operators (in so called non-Bank mobile money systems), may pose a stability and regulatory risk in difficult times if an adequate access to liquidity reserves is not secured.

Once these risks got recognized, the response of the monetary authorities worldwide was to explore the possibility of adapting and extending the concept of central bank money to the requirements of digital money revolution. In other words, to issue Central Bank Digital Currency (or CBDC), a digital form of physical currency which has been printed as legal tender during past centuries. Presently, almost 100 countries around the world (including the EU) are exploring the possibility of issuing CBDC that would best respond to the demands of providing liquidity and securing stability of the monetary system, while enabling the conduct of monetary policy in line with mandated objectives of price stability and employment.

This would complete digital transformation on the instrument side and pave the way to gradually eliminating cash and reaching cashless economy and cashless society in the not so distant future. Many challenges will have to be addressed along the way including the issues of financial inclusion and privacy. In many cases good solutions would depend on our ability to find and sustain the right balance between positive and negative effects. Positive developments rendered by digital revolution include better access to cheaper financial services, greater fiscal discipline, improved procurement and public financial management, tracking of payments enabling elimination of shadow economy and illegal activities, etc. Key negative effects include potential loss of privacy, further financial exclusion of certain social groups due to old age, limited access to ITC technology and skills, possible abuse of growing body of information on individual consumption, social political and other preferences.

This brings us to the conduct of monetary and fiscal policy in such a changed environment, the main theme of the paper addressed in section 4. Before that, in section 2, we briefly review the status of the global financial sector by looking at key lessons learned from the previous

Global Financial Crisis of 2008. In section 3 we define and discuss the characteristics of key digital financial instruments brought by the first wave (cryptocurrencies, and stablecoins), and second wave (mobile money), as well as the response of central banks through digital form of official legal tender money. We offer some concluding remarks on policy issues and themes for further policy research of relevance for Serbia in section 5.

Lessons learned from the Global Financial Crisis

In the wake of the 2008 crisis Stiglitz [33] and Rajan [29] assessed the crisis as a “financial market failure” caused by the absence of adequate regulatory framework and proper risk pricing, with contagion that led to the global financial crisis and previously unthinkable government bailout in trillions and trillions of Dollars and huge economic losses worldwide.

The belief in the efficiency of the financial markets held by the leading neoliberal economic school and adopted by key policymakers at the time (Greenspan, Summers, etc.) was so strong that it promulgated laws which legally prevented the US monetary and financial authorities from regulating the growing and increasingly complex derivatives. The usual assumptions of efficient markets (perfect competition, perfect information, no externalities) obviously did not hold in the US and the increasingly connected global financial sector.

Firstly, because the sector was dominated by large oligopolistic players not only by the size of their balance sheet (such as the 13 US megabanks), but also by the overwhelming influence they had in the government and legislature through campaign financing and important policy positions held in the administration and academia.

Secondly, due to large and growing presence of overly complex multilayer financial instruments where true risk and performance information were not fully known to issuers themselves, let alone the clients and the policy makers. The situation became even more complex after the wholesale increase in the so called sub-prime lending instruments based on overly optimistic borrower income and real-estate price projections, as well as interest rate and credit risks.

Thirdly, in the absence of clear regulation and tight on-site and off-site supervision, megabanks started losing touch with reality. Glaring example is the stark contrast between the only one percent share of AAA corporate securities vis-à-vis 60 percent share of AAA “asset-backed securities”. The first is a “real world rating number” earned by real corporations confirming their income and profits in the markets. The second is a fake number attached to packaged mortgage backed (or similar) securities “gold-plated” by the packaging company, in this case megabank. Interestingly enough Rajan shows [29, p.132] that this does not necessarily have to be a sham. Through the “magic of combining diversification with tranching” banks can create securities of different seniority and, thus, create average or even mediocre securities into “repackaged AAA-rated securities” since under normal circumstances:

- (i) mortgage default probabilities tend to be low,
- (ii) incidence of defaults is not correlated since people default for highly personal (health, family, job loss) reasons,
- (iii) real estate prices do not fall substantially and across many locations at the same time, and
- (iv) interest rates do not abruptly increase and refinancing conditions do not worsen across the board.

Rajan provides an example¹ which shows that if these assumptions hold, as they should in normal times, commercial and investment banks would not face significant risks. More specifically, the holder of senior securities would suffer losses only 1 percent of the time or less if more than two mortgages are packaged together.

But the assumptions did not hold. By 2007 defaults became more frequent than usual and highly correlated due to general layoffs. Real estate prices collapsed creating substantial negative net worth for many house owners. Programmed interest rates increase based on subprime clauses made things worse. The conditions in the financial

1 Rajan [29, p. 134] shows how packaging two or more low-quality loans can produce a AAA-rated security. If on the basis of two mortgages (assets) with face value of \$1 and 10 percent chance of default, an investment bank structures a deal with one junior security with face value of \$1 that bears the brunt of losses until they exceed \$1, and one senior security that bears the losses after that.

market worsened, practically eliminating refinancing options due to market and liquidity risks.

In short, the financial market faced a perfect storm caused by regulatory failure, poor management (risk pricing practices) both at the micro-dealer and corporate level. The unregulated asset-backed securities and custom derivatives based thereon were a time bomb. And their share in the books of major banks in the US and around the world was way too high.

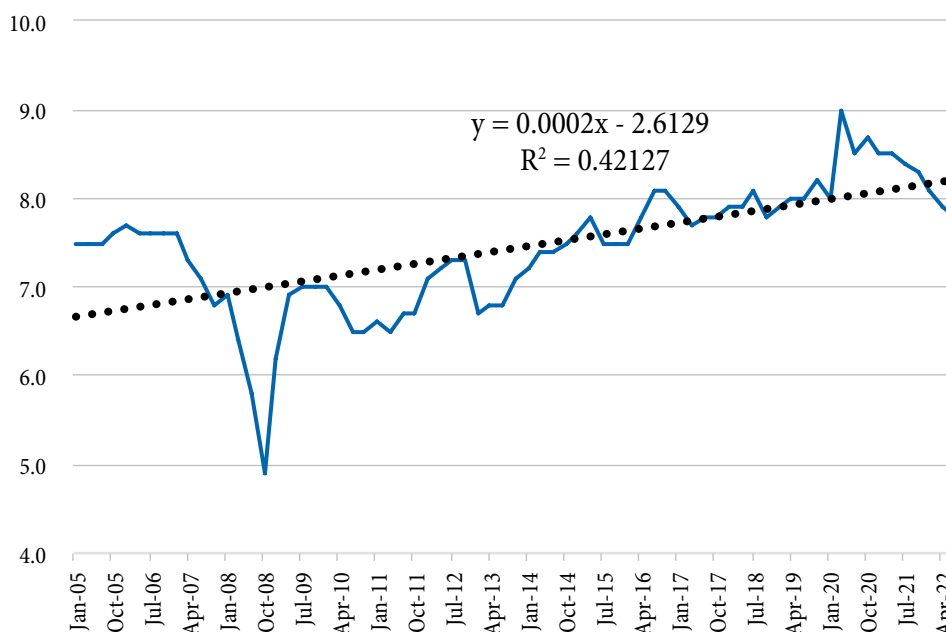
The questions are: Why did this happen? And how? The initial departure from the canonic features of the financial sector was neoliberal drive towards deregulation of the financial sector during the Reagan administration in the 1980s. Wages in the financial sector started to grow relative to other sectors in the economy based on the new set of wage, bonus and career incentives that favored performance without properly accounting for risks. Similar incentive changes happened at the higher management and corporate levels. Bank mergers in the 1990s created mega banks that became too influential and ‘too big to fail’. This further increased appetite for excessive risk taking at all management and corporate levels as profits were allowed to be taken out through wages and bonuses, while losses were hidden in overpriced non-transparent complex instruments to be picked up by the government when the inevitable crises comes eventually.

As Rajan [29, p. 136] notes, it is not surprising that banks were tempted to create and promote risky mortgage-backed securities in the absence of strict regulatory rules and supervision practices. But it is truly a puzzle why so many banks with strong analytical and risk departments retained those senior securities as the crises broke out and the mirage of modeling probabilities crumbled in the face of reality.

The global financial crisis confirmed that complex financial markets are neither efficient nor stable without good nonbiased regulation. Active policies should moderate (or if needed prevent) the emergence of mega banks and other financial institutions with ‘too big to fail’ macroeconomic and social consequences. The regulators must carefully follow the relevant trends and hidden risks and timely intervene to prevent perfect storm situations that inevitably lead to massive market failure. Failure to do so creates huge fiscal cost at the national level and equally high economic costs and sufferings absorbed at the level of individuals and vulnerable social and income groups.

Figure 1 shows the cost of the 2008 crisis. During 2007-2008 the financial sector lost more than 1/3 of its value added. It took more than five years to recover that loss. Today, financial sector accounts for 8-9 percent of the US GDP, has the highest wages and excellent key performance indicators. Despite these successes, it is

Figure 1: US financial sector value added share (as percent of GDP)



Source: U.S. Bureau of Economic Analysis

important to remember some critical lessons from the regulatory and policy failures of the previous crises, most of all, the 2008 global financial crisis.

First, the design of financial sector regulatory framework and the conduct of monetary and financial policies are endogenous in their true nature and, hence, affect the behavior of banks and financial institutions.

Second, the incentive systems and signals may sometimes lead in the wrong direction or be conflicting, especially in the presence of risks which have to be properly factored in while pursuing higher performance in the presence of complex instruments.

Third, government preference for price stability, employment and growth, as well as targeted housing financing must not be interpreted as willingness to be drawn into expensive bailouts benefiting failed banks and financial institutions. This is especially relevant at this time as large fin-tech and other non-bank financial institutions embark on private digital money creation and domestic and international payment systems.

Fourth, financial sector reform is inevitable to truly and consistently implement all lessons learned from the previous crisis as well as prepare to secure stability of the new digital forms of money and complement the system with appropriately designed public digital currency (presently best known as CBDC or Central Bank Digital Currency). Aside from new instruments and payment innovations, the core part of the reformed financial sector will have to rest on a well-managed interface between private and public sector regarding both regulatory and policy issues.

Digital money instruments

Digital money revolution, also labeled “New Era of Digital Money” [1] and the “The Rise of Digital Money” [2], shared many common characteristics of many industrial revolutions we have seen in the past two centuries. Forces of change for private digital money included [18]:

- A. Technology and infrastructure including but not limited to:
 - crypto algorithms to generate and protect privately (and anonymously) issued digital money;

- distributed ledger technology (DLT) allowing decentralized clearance and accounting;
 - internet and powerful communication systems; and
 - deep penetration of smart phones, tablets and laptops at user level.
- B. Demand for efficient and reliable financial services and modern service providers including
 - payments and transfers (domestic and international, for small and large amounts),
 - investment
 - C. Responsiveness to consumer behavior and evolving expectations
 - D. Potential for higher level of financial inclusion for
 - SMEs (entrepreneurs),
 - previously un-bankable social and economic groups, and
 - general population and businesses in areas with poor bank penetration.

Cryptoassets – Bitcoin

Cryptocurrencies or Crypto-assets as ECB Task Force officially calls them are based on blockchain concept published in 2008 under the pseudonym Nakamoto, whose existence has never been confirmed. Bitcoin, first and best known crypto-asset out of some 2000 issued thus far accounts for about 2/3 of market capitalization of crypto-assets (based on [7]). In the absence of formal definition, bitcoin is crypto-asset with decentralized trading and clearing system. It is issued based on strict cryptographic rules regarding ownership of both existing and new units.

Crypto-assets are relatively small (about 2 percent of EU money aggregates), have limited acceptance and low penetration due to, among other factors, very high volatility.

As a result, bitcoin and crypto-assets in general have had a very limited impact on monetary aggregates and monetary policy thus far. Officially, crypto-assets are not considered part of broad money as they did not ... “perform the basic functions of money as unit of account, a medium of exchange and a store of value ... prices of goods and services are not quoted in any cryptocurrency anywhere ... the number of transactions in Bitcoin is

modest. At the same time, the mining process is energy intensive ...” [7, p. 4].

Stablecoin

By contrast, stablecoins also utilize crypto-algorithms and DLT but limit volatility by having a credible custodian and by being fully backed by a major currency (Dollar or Euro) or low risk securities.

As long as the share of national stablecoins remains small, and they are backed by stable major currencies, their impact on monetary policy and transmission channels is likely to be small and neutral. In the unlikely case of a strong global stablecoin, which may provide incentives or otherwise induce commodity exporters and/or energy importers to fix prices in such stablecoin, this could impose constraints on the conduct of domestic price stabilization policies.

e-Money or mobile money

Based on Shirono et al. [32], large fin-tech companies are leading the digital money revolution. Mobile money or e-money is their flagship instrument which can be acquired through a very simple registration procedure with one of local provider shops of Mobile Network Operators (MNO). Users must have a simple smart phone and some money to deposit on the mobile account. It does not require a banking account. Based on online database maintained by GSMA (Global Systems for Mobile Communications) and IMF held FAS (Financial Access Survey), mobile money presently offers more access points globally than traditional banking sector.

Based on GSMA data, the number of registered mobile money accounts in the world (excluding China) increased exponentially from 134 million in 2002 to 1.35 billion in 2021: a tenfold increase. During the same period, the number of active mobile accounts increased even faster, from 62 million to 864 million, almost 14 times.

The value of transactions reached one trillion USD in 2021, a 31% increase over 2020. By type of transaction, person-to-person (P2P) transactions were the highest with USD 387 million (37%), followed by Cash-In payments with USD 261 million (25%) and Cash-Out withdrawals of USD 178 million (17%). The fastest growing mobile

money transactions were payments to merchants (94% increase over 2020) and international remittances (48%) indicating a diversification into areas that used to be dominated by payment cards and international wire transfers, respectively.

Additionally, mobile money is usually only one of the growing array of expanding digital financial services offered by Fin-Tech (also known as non-banking financial institutions), telecom, and other related companies. The number of mobile money users has been growing exponentially over the past decade. In addition to Africa known as the cradle of mobile money (M-Pesa), e-money has been expanding fast in Asia (China, India) providing services to billions of people seeking reliable, efficient (inexpensive) and widely accepted payment services for literally trillions of small value transactions daily.

Mobile money is a safe, simple and efficient (affordable) form of digital money that provides all functions of money: unit of account, stable store of value and medium of exchange. It provides easy access to most people, and guarantees simple and inexpensive payments and transfers, including remittances. From the monetary statistics point of view, mobile-money outstanding balances are a part of broad money, and thus affect the value and quality of monetary aggregates, as well as the characteristics of so-called transmission channels of monetary policy. The reporting of changes in mobile-money balances depends on the dominant business model and the applicable regulatory framework. Over the last 5-6 years mobile money balances have increased significantly in all African and Asian countries where e-money represents a significant portion of broad money.

It should be stressed that mobile banking is very different from mobile-money or e-money. In mobile banking, users access their bank account using custom application software installed on their smart phones. All transactions in mobile banking are performed on the client's bank account. Smart phones are just used to remotely access bank account and initiate those transactions. In mobile money, transactions are done directly peer-to-peer between registered and authenticated users based on previously deposited balances on the payee side and legitimate payments (for goods or services) and transfers.

Individual bank accounts are not needed to perform mobile-money transactions.

So far three major business models have emerged in the so-called Mobile Money Ecosystem. Shirono et. al. [32] identify two major models:

The original “MNO-led model” was created by major mobile network operators (MNO) such as M-Pesa launched by Safaricom in Kenya, Vodafone in Tanzania, and GlobeTelecom in Philippines. No bank accounts or prior credit history are needed to become mobile-money client.

“Bank-led model” is initiated by banks but relies on MNOs to manage the network and financial services based on mobile phones. Irrespective of bank involvement, no bank account is needed to become a client.

The third model is a “Fin-Tech-led model” where providers of financial/payment services initiate mobile-money operation. These include some of the presently largest mobile-money providers such as AliPay, WeChat Pay, Apple Pay, Google Pay, PayPal, etc.

The MNO and Fin-Tech led models share many common features and can be merged into a “non-bank-led model”.

Five essential functions have been identified in each of the models:

- Network service provider role is usually carried out by one or more MNOs;
- Mobile money agents provide direct contact with present and future customers; The network of agents is supported by MNOs, and payment providers/Fin-Tech companies, as well as banks in the “bank-led model”;
- Payment service provider is responsible for front end interface with agents and customers, back-end processing and, most importantly, for payment clearance and settlement; Payment services can be provided by MNOs, FinTech companies, as well as banks in the “bank-led model”;
- Mobile money issuer who holds the liability for mobile money and guarantees the conversion of mobile money balances back to cash/legal tender when demanded; In the “non-bank led model” the issuer can be MNO or FinTech company, and in the “bank-led model” the issuer can only be the bank; and

- Deposit holder (usually a bank in all models) is responsible for funds deposited/pre-paid by mobile money customers.

A variant of “bank-led model” has been created in India labeled “narrow bank model”. It allows a formation of so called “payment banks” under existing banking laws and regulatory environment with limited set of financial services. Eligible MNOs or Fin-Techs can obtain a limited banking license which allows them to accept deposits, issue ATM and debit cards, offer payments and other financial services excluding lending. Restrictions also apply on the placement of deposits requiring that 3/4 of demand deposits be invested in low risk government securities or treasury bills with up to one year maturity, and 1/4 held with commercial banks as minimal operational liquidity.

Similar rules have evolved in other countries with significant share of mobile money in monetary aggregates to preserve financial stability and allow liquidity interventions in cases of a financial crisis due to external shocks or “runs”. The remaining concerns that apply at times of severe liquidity and financial crisis have led to proposals for the introduction of CBDCs discussed in the next subsection.

RBI, the central bank of India, has also pioneered Universal Payment Interface as an enhancement to the mobile money system allowing some 400 million users in Rural areas with older telephones (without smart phone features) to join mobile money and access modern payment services. To further increase financial inclusion, RBI has also sponsored Unstructured Supplementary Service Data (USSD) as another cashless option for those who do not own or carry any phone or tablet, and do not have access to internet. On the higher end, RBI supported the development of Immediate Payment Service for users with mobile money accounts also registered for mobile banking.

Central bank digital money – CBDC

Unprecedented growth of mobile money in Africa, South and East Asia generated 1.35 billion users worldwide in 2021. This number is more than doubled when supplemented by the missing numbers for China (1.3 billion for Ali Pay and 900 million for WeChat Pay), and corrected for under-reported users in Europe and North America (as suggested

by data of major mobile money operators such as Apple Pay, Google pay, PayPal, Samsung Pay and Venmo). With fast increasing value of e-money transactions and growing balances, mobile money proved to be very convenient and a reliable unit of account for billions of users.

Adrian et. al. [1] ask a critical question: How stable is e-money compared to other competing forms of money (crypto-assets, stablecoins, commercial bank deposit money, cash or CBDC)?

First, e-money is exposed to liquidity risk which depends directly on the market liquidity of the asset mix held by the issuer of mobile money. In normal times this may not be an issue. In times of financial crisis, however, the issuer may not be able to convert less liquid assets to cash fast enough to prevent the “run” in the absence of central bank liquidity backstop.

Second, e-money is also subject to default risk of the issuing entity due to losses (bankruptcy) or inability to short-term obligations. In that case, pre-paid funds in mobile-money accounts could be frozen or seized by creditors which represents a serious risk with potential spillovers and damaged reputation.

Third, market risk can affect assets held by an e-money provider if his net worth becomes negative (i.e. if losses exceed equity).

Fourth, e-money can also be subject to foreign exchange risk if some claims are denominated in foreign currency or a basket of currencies.

With these risks and high potential for further growth of a widespread adoption, mobile money represents a major potential challenge for the stability of the monetary system in case of crisis unless adequate liquidity backstop solutions can be implemented seamlessly. These could either be based on limited inclusion of MNO and/or Fin-Tech companies into the banking system following the “narrow banking model” introduced in India, or the introduction of a public digital money issued by the central bank to which we devote the remainder of this section.

CBDC research and objectives

Central banks around the world are exploring the possibility of issuing retail central bank (public) digital money. Based on January 2023 online tracker data, out of 119 countries

around the world, CBDCs have been Launched already in 11 countries, and Piloted in 17. In addition, 39 countries are at Research stage and 33 at Development stage in 33. In 15 countries work on CBDCs is inactive at present, and in 2 countries CBDC work has been cancelled.²

A wide range of CBDC objectives is quoted in the ample literature on the subject. Panetta et al. [27] emphasize that the primary objective of issuing CBDCs is a necessity to secure access to public money in an economy increasingly dominated by private digital money.

In a survey of pragmatic CBDC issues, US Federal Reserve [1, pp. 1-2] states that policymakers and staff are guided by an understanding that CBDCs should:

- provide positive net benefits to the economy (adjusted for risks and time distribution of effects);
- be more efficient and effective in achieving desired objectives than alternative instruments;
- complement, rather than abruptly replace, existing forms of money and methods of financial services;
- protect consumer privacy;
- safeguard against criminal activity; and
- enjoy broad support from a broad range of key stakeholders.

As recognized early in the debate by Bordo and Levine [11] CBDCs can be either

- wholesale digital money instrument made available only to commercial banks, much like the present central bank reserves, or
- retail digital money instrument available to all economic agents in an economy, much like central bank FIAT money (cash or legal tender). Retail CBDCs can be
 - account based or
 - token based digital monies.

Both wholesale and retail CBDCs can be interest bearing as deposit money or no interest bearing. This is presently a heavily debated issue with possible significance in the conduct of monetary policy, currency substitution, crowding out commercial bank deposits with possible far reaching consequences on the volume and cost of lending.

² CBDC Stage of Research and Development, by Country as of January 2023 can be accessed at Central Bank Digital Currency (CBDC) Tracker (cbdctracker.org) as well as specialized site sponsored by Atlantic Council. Central Bank Digital Currency Tracker - Atlantic Council.

Recent research suggests that these effects could be managed through the design of CBDCs and targeted policy measures that could limit the size of CBDC holdings, provide multi-tier remuneration (interest payments) depending on share of CBDCs in bank portfolios, use of CBDC caps etc.

CBDCs have a positive impact on the stability of the financial system based on sovereign digital money, faster and more efficient (cheaper) payments and financial transactions in general.

One issue that attracted a lot of attention is the potential impact of CBDC during times of financial crisis and a potential loss of confidence in commercial banks. The fact that retail CBDCs can be held with zero financial and handling cost (unlike cash) may exacerbate run on banks if no restrictions are put in place before hand. Paneta et al. [27] quote recent research results which indicate that increased risks of bank runs in the presence of CBDC can be effectively contained by design features of the instrument itself, as well as through properly calibrated safeguards and information of deposit flows enabled by tracking properties of digital instruments.

It should be noted that design features and safeguards also help in sustaining the monetary policy transmission channels. More research is needed to resolve the dilemma of CBDC remuneration and constraints on CBDC holdings in the realistic context of real-life policy choices. Zero lower bound on interest rates is one such issue. The attractiveness of CBDC as an efficient payment instrument, form of investment in times of crisis, and an anchor of price and financial stability. As Schiling et al. [31] put it: the objectives of payment efficiency, financial system stability and price stability cannot be all achieved at the same time.

Impact on monetary and fiscal policy

Without repeating policy issues already discussed in the introduction, the section devoted to policy lessons from the Global financial crisis, and in the context of individual digital money instruments, this section aims to highlight some of the key remaining policy issues with high impact on the effectiveness of monetary and fiscal policy.

The effect of crypto assets on money aggregates is small primarily because bitcoin and similar crypto assets

do not satisfy the definition of money and are normally not recorded as addition to broad money. Stablecoins backed by major currencies may add to the value of monetary aggregates, but their size remains marginal at present. Mobile money is officially considered as money which adds to the size of broad money. The reporting depends on the business model followed: In “bank-based e-money models” outstanding balances should automatically be reported as additions to M2. In “non-bank-based models” the reporting depends on the specific legal and regulatory arrangements. The responsibility for reporting can be placed on banks holding e-money deposits, or MNOs or Fin-Tech companies issuing e-money. CBDCs are part of CB money issued in digital form and thus gets reported in a standard way.

As discussed above, private digital money is a convenient and efficient way to provide payment and transfer services. In all aspects they are equal or more efficient than the traditional payment instruments. The effect on the stability of the monetary system and transmission channels depends on the inherent financial characteristics of mobile money issuers. As discussed in the previous section, both mobile money and CBDCs bring some stability and policy effectiveness issues. Current research has already identified a number of design features and safeguards that can help address main risks in normal times, as well as prevent “runs” and widespread costs during crisis.

The ongoing research of the impact on transmission channels is limited by the lack of both adequate models and empirical evidence. Much of modern monetary policy wisdom is based on empirical relations as a basis of evaluating and calibrating the policy interest rate channel and other instruments at central bank disposal.

Much of the policy discussion surrounding the development of CBDC instrument is focused on the challenges that could potentially be caused by currency substitution. The advent of strong major digital central bank currencies, such as digital US Dollar or digital Euro may create incentives for currency substitution in countries with weaker currencies and macroeconomic fundamentals. This could trigger a process of digital dollarization or digital euroization that is faster and deeper than similar processes observed in the past, based on traditional major

currencies. Excessive currency substitution may adversely affect domestic monetary policy due to limited control over domestic liquidity and, hence, less efficient impact on price stability and real performance.

Currency substitution in the presence of digital CBDC is not very different from present dual currency situations faced by many small economies with large remittances and share of shadow economy. Methods of dealing with the currency substitution problem may have to be adapted to much faster financial flows associated with the dominance of digital currencies. The fact that most digital moneys would leave a trace which could help fight shadow economy and illegal economic activity may actually diminish one the main drivers of dual currency.

Digital revolution is expected to have a profound impact on the ease and transaction cost of cross border payments. This will create considerable savings for workers' remittances, SME transactions, trade flows and international transfers. At the same time, digitalization of international payments will remove most barriers to capital flows and make standard policies of "capital account restrictions" more difficult if not impossible without stark violations of the spirit of public and private digital monies. Furthermore, the presence of public CB digital currency with practically unlimited capital mobility will require adequate choices regarding foreign exchange rate regime, and the independence of monetary policy.

On the fiscal side, digital money revolution will bring a possibility of a major reduction in the shadow economy based on digital tracking left behind every transaction (payment or transfer) and much higher level of transparency of accounting and fiscal/tax reporting. Carefully drafted laws should increase fiscal transparency and revenues without violating privacy and personal information. Challenges in protecting privacy and data integrity are very serious and merit utmost attention of the government, the legislature and the broad public.

Digital transactions would also help improve the efficiency of public spending through transparent and truly competitive procurement procedures, and monitoring of public spending effects on the achievement of stated budget objectives in health, education, social assistance, and infrastructure investment.

As a result, there will be an improved base for better public expenditure management based on multi-year expenditure framework and program based budgeting aligned with development objectives.

Finally, the digital monetary revolution will accelerate all flows and processes, and pose new challenges in the areas of monetary and fiscal policy coordination.

Serbia will benefit greatly from improved fiscal transparency and reduced shadow economy associated with digital money revolution. Despite significant variation in the estimates, the shadow economy remains a serious concern strongly linked to the share of cash transactions (in both local currency and Euros). All other factors being equal, declining share of cash and growing use of digital monies with tracking capabilities are likely to bring many shadow activities in the open, reduce or eliminate under-reporting of taxable income and transactions in otherwise registered businesses, and increase fiscal transparency on both the revenue and expenditure side of the budget. To internalize these benefits, Serbia will have to revisit its tax, budget and procurement laws, and modernize tax administration to target likely pockets of tax evasion among large tax payers, and in unregistered and illegal activities, instead of putting undue pressure on small and medium size businesses with poorly disguised urge to collect revenues ignoring social and long-term growth consequences.

At the same time Serbia will be vulnerable to currency substitution pressures from future digital Euro due to high dependence on remittances coming mostly from Euro area, and the possibly large stock of dual currency in the country. Furthermore, reduced effectiveness and traction of monetary policy caused by currency substitution will be stressed further by: (a) the presence of likely multiple exogenous e-money flows spreading like wild fire in many EU and other countries with significant trade and remittance flows, and (b) inability to fine tune capital flows.

To effectively respond to these challenges Serbia is best advised to engage in timely legal preparations for the anticipated needs of a possible (or likely) increase in "bank-led mobile money" and central bank digital currency. In parallel, mirroring the initiatives of ECB, BIS and u Fed, Serbia should initiate applied research of

complex future policy risks and seek effective institutional and policy responses.

Conclusion

Era of digital money has started slowly, at the outskirts of privately generated crypto-security associated with extreme volatility. In slightly over a decade digital money has spread like a wildfire to now include more than 4 billion users of mobile money and force a quantum change in the central bank money. Paper money, bank notes, legal tender are on the way out. CBDC will be a digital reincarnation of central bank money, available retail for all banks, companies and individuals to provide liquidity and public sector backbone to the monetary system.

We will soon live in a brave new world of digital money. Phrases like “Show me the money” from Jerry Maguire, “Cash is the king” and “Money makes the world go round” will no longer make sense. Our life will be easier. Transactions will be faster and cheaper.

There will be uncertainties and challenges regarding the conduct of monetary and fiscal policy. Many improvements will come with necessary tradeoffs in the speed and effectiveness of monetary policy transmission, and the challenges of achieving greater fiscal transparency without violating individual rights and privacy.

Serbia will benefit greatly from improved fiscal transparency and reduced shadow economy associated with digital money revolution. At the same time it will be vulnerable to currency substitution pressures from future digital Euro and reduced traction of monetary policy in the presence of multiple e-money flows. Timely legal preparations for bank-led mobile money and central bank digital cash, and applied research of complex future policy risks is strongly advised.

References

1. Adrian, T., & Mancini-Griffoli, T. (2021). *A New Era of Digital Money*. FD Finance and Development. Retrieved from <https://www.imf.org/external/pubs/ft/fandd/2021/06/online/digital-money-new-era-adrian-mancini-griffoli.htm>
2. Adrian, T., & Mancini-Griffoli, T. (2019). *The Rise of Digital Money*. IMF Fintech Notes. Washington, D.C.: IMF.
3. Ahnert, T., Hoffmann, P., & Monnet, M. (2022). *The digital economy, privacy, and CBDC*, ECB (ECB Working Paper, No. 2662) ISBN 978-92-899-5111-1.
4. Aggarwal, K., Malik, S., Mishra, D. K., & Paul, D. (2021). Moving from Cash to Cashless Economy: Toward Digital India. *Journal of Asian Finance, Economics and Business*, 8(4), 43-54.
5. Armas, A., & Singh, M. (2022). *Digital Money and Central Banks Balance Sheet* (IMF Working Paper, 2022. WP/22/206). Washington, D.C.: IMF.
6. Arvidsson, N. (2019). *Building a Cashless Society: The Swedish Route to the Future of Cash Payments* (Kindle Edition). Springer International Publishing.
7. Assenmacher, K. (2020, May). *Monetary policy implications of digital currencies* (SUIERF Policy Note, Issue No.165).
8. Barrdear, J., & Kumhof, M. (2022). The macroeconomics of central bank digital currencies. *Journal of Economic Dynamics and Control*, 142, 104148.
9. Bank for International Settlements (2021). *CBDCs: An opportunity for the monetary system* (BIS Annual Economic Report 2021).
10. Board of Governors of the Federal Reserve System. (2022). *Money and Payments: The U.S. Dollar in the Age of Digital Transformation*. Retrieved from <https://www.federalreserve.gov/publications/files/money-and-payments-20220120.pdf>
11. Bordo, M. D., & Levin, A. T. (2017). *Central Bank Digital Currency and the Future of Monetary Policy* (NBER Working Paper 23711). National Bureau of Economic Research. Retrieved from <http://www.nber.org/papers/w23711>
12. Brunnermeier, M. K., & Niepelt, D. (2019). On the equivalence of private and public money. *Journal of Monetary Economics*, 106, 27-41.
13. Carapella, F., & Flemming, J. (2020, November 9). *Central Bank Digital Currency: A Literature Review* (FEDS Notes). Washington: Board of Governors of the Federal Reserve System. <https://doi.org/10.17016/2380-7172.2790>
14. Carstens, A. (2021). *Digital currencies and the future of the monetary system*. Remarks by General Manager, Bank for International Settlements. Hoover Institution policy seminar Basel 27 January 2021.
15. Chiu, J., & Keister, T. (2022). The economics of digital currencies: Progress and open questions. *Journal of Economic Dynamics and Control*, 142, 104496.
16. Davoodalhosseini, S. M. (2022). Central bank digital currency and monetary policy. *Journal of Economic Dynamics and Control*, 142, 104150.
17. Ikeda, D. (2022). *Digital Money as a Medium of Exchange and Monetary Policy in Open Economies* (Discussion Paper No. 2022-E-10). Institute for Monetary and Economic Studies Bank of Japan.
18. IMF. (2020). *The Rise of Public and Private Digital Money: A Strategy to Continue Delivering on the IMF's Mandate* (IMF Board Paper). Washington, D.C.: IMF.
19. Johnson, S., & Kwak, J. (2011). *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown*. New York: Vintage books, Random House.
20. Kahn, C., Singh, M., & Alwazir, J. (2022). *Digital Money and Central Bank Operations* (IMF Working Paper, 2022. WP/22/85). Washington, D.C.: IMF.

21. Khiaonarong, T., & Humphrey, D. (2022). Falling Use of Cash and Demand for Retail Central Bank Digital Currency (IMF Working Paper WP/22/27). Washington, D.C.: IMF.
22. Kumhof, M., & Jakab, Z. (2016, March). The Truth about Banks. *Finance & Development*, 53(1). Retrieved from <https://www.imf.org/external/pubs/ft/fandd/2016/03/pdf/kumhof.pdf>
23. McLeay, M., Radia, A., & Thomas, R. (2014). Money creation in the modern economy. *Bank of England Quarterly Bulletin*, 54(1), 14-27.
24. Monnet, E, Riva, A., & Ungaro, S. (2021). *Bank runs and central bank digital currency*. VoxEU. Retrieved from <https://cepr.org/voxeu/columns/bank-runs-and-central-bank-digital-currency>
25. Niepelt, D. (2021, November 24). *Central bank digital currency: Considerations, projects, outlook*. VoxEU. Retrieved from <https://cepr.org/voxeu/columns/central-bank-digital-currency-considerations-projects-outlook>
26. OECD. (2002). *The Future of Money*. Paris: OECD.
27. Panetta, F., Mehl, A., Neumann, M. M., & Jamet, J-F. (2022, April 13). *Monetary policy and financial stability implications of central bank digital currencies*. VoxEU. Retrieved from <https://cepr.org/voxeu/columns/monetary-policy-and-financial-stability-implications-central-bank-digital-currencies>
28. Prasad, E. S. (2021). *The future of money: how the digital revolution is transforming currencies and finance* (Kindle Edition). The Belknap Press of Harvard University Press.
29. Rajan, R. G. (2010). *Fault Lines: How Hidden Fractures Still Threaten the World Economy*, Princeton University Press, Princeton.
30. Sanches, D., & Keister, T. (2021). *Should Central Banks Issue Digital Currency?* (Federal Reserve Bank of Philadelphia Working Paper 21-37).
31. Schilling, L., Fernández-Villaverde, J., & Uhlig, H. (2020). *Central Bank Digital Currency: When Price and Bank Stability Collide* (BFI Working Papers, No 2020-180). Becker Friedman Institute for Economics at the University of Chicago.
32. Shirono, K., Das, B., Fan, Y., Chhabra, E., & Carcel, H. (2021). *Is Mobile Money Part of Money? Understanding the Trends and Measurement* (IMF Working Paper WP/21/177). Washington, D.C.: IMF.
33. Stiglitz, J. E. (2010). Lessons from the Global Financial Crisis of 2008. *Seoul Journal of Economics*. 23(3), 321-339.
34. Turrin, R. (2021). *China's Digital Currency Revolution*. Gold River: Authority Publishing.
35. van Oordt, M. R.C. (2022). Discussion of "Central bank digital currency: Stability and information". *Journal of Economic Dynamics and Control*, 142, 104503.
36. Williamson, S. D. (2022). Central bank digital currency and flight to safety. *Journal of Economic Dynamics and Control*, 142, 104146.
37. World Bank. (2014). *Global Financial Development Report 2014: Financial Inclusion*. Washington, DC: World Bank.
38. World Payments Report, Capgemini. (2022). World Payments Report 2022. Retrieved from <https://worldpaymentsreport.com/index.html>



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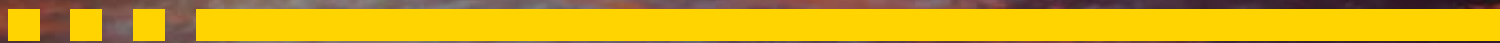


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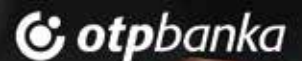
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INVESTING IN THE SDGs AND REPORTING BY ESG METRICS: THE ACCOUNTING PERSPECTIVE

Investiranje u ciljeve održivog razvoja i ESG izveštavanje
– računovodstvena perspektiva

Abstract

There are less than ten years left to achieve the goals set out in the 2030 Agenda for Sustainable Development. However, it seems that the remaining work on their implementation will take far more time than expected. This is particularly the case in developing countries which face difficulties in providing the necessary sources of finance for the acquisition of new technologies, investment in infrastructure projects, and the development of cleaner and environmentally-friendly production. Objective circumstances, such as the COVID-19 pandemic, the war in Europe and the subsequent energy crisis, have further slowed down these processes, threatening to undo the positive developments in the implementation of the sustainable development goals. Despite a significant progress made in the field of transparent reporting aimed at supporting the achievement of sustainable development goals, our impression is that a great number of different institutions have invested efforts to make a step forward in this domain, but due to the lack of globally coordinated activities, we are still far from a universal conceptual framework. That path is paved with numerous challenges. First, a high-quality conceptual framework must be compliant with the sustainable development goals to be able to track the global progress in their achievement, which requires an adequate system of performance measurement and monitoring at the global level. Second, the operationalization of sustainable development goals, recognized at the global level, must be followed by the adoption of compatible reporting at the corporate level, bearing in mind that companies are actually most responsible for local and planetary problems. The risks arising from inadequate performance measurement at the corporate level are far from being negligible. They are related to the efficiency in channeling limited capital toward the sectors and companies where it will be possible to produce the most beneficial environmental effects. At the same time, there is a risk of potential abuse with regard to the disclosure of good news or the cover-up of bad news, which casts doubt on the accuracy of information on the progress in achieving the SDGs, increasing risks of the misallocation of resources. In this paper, we investigate the complexity of aligning corporate reporting with the requirements imposed by the SDGs.

Keywords: *sustainability, environmental protection, SDG, ESG, GRI, sustainable investment, sustainable finance, sustainability reporting*

Sažetak

Ostalo je još manje od deset godina da se realizuju ciljevi postavljeni u Agendi za održivi razvoj 2030. Preostali poslovi u tom pravcu čini se da ubedljivo nadilaze taj period. To je posebno slučaj u nedovoljno razvijenim zemljama, koje imaju problem sa obezbeđenjem neophodnih izvora finansiranja za nabavku novih tehnologija, ulaganja u infrastrukturne projekte, obezbeđenje čistije i ekološki zdravije proizvodnje. Objektivne okolnosti, kao što su kovid 19, ratna zbivanja u Evropi i njima uslovljena energetska kriza, dodatno su usporili ove procese, preteći da ponište pozitivne pomake u realizaciji ciljeva održivog razvoja. Uprkos značajnom napretku na području transparentnog izveštavanja koje bi podržalo ostvarenje ciljeva održivog razvoja, utisak je da su u tom domenu prisutni naponi većeg broja različitih institucija da se napravi iskorak, ali da nas nedostatak globalno koordiniranih aktivnosti još čini dosta udaljenim od jedinstvenog konceptualnog okvira na ovom području. Izazovi u tom smislu su veliki. Prvo, kvalitetan konceptualni okvir mora da bude kompatibilan sa ciljevima održivog razvoja, kako bi se mogli pratiti globalni pomaci u njihovom dostizanju, što podrazumeva adekvatan sistem merenja i praćenja globalnih ostvarenja. Drugo, operacionalizacija ciljeva održivog razvoja, prepoznatih na globalnom nivou, mora ići u pravcu kompatibilnog izveštavanja na nivou preduzeća, koja su realno najveći uzročnik lokalnih i planetarnih problema. Rizici od pogrešnog merenja performansi na korporativnom nivou daleko su od zanemarljivih. Oni su povezani sa efikasnošću kanalsanja ograničenog kapitala prema sektorima i preduzećima gde će ekološki efekti biti najveći. U isto vreme, moguća zloupotreba objavljivanja dobrih i prikrivanja loših vesti ostavlja sumnju u tačnost informacija o dostignućima u realizaciji ciljeva održivog razvoja, povećavajući rizike od pogrešne alokacije resursa. U ovom radu istražujemo kompleksnost izveštavanja na korporativnom nivou u skladu sa zahtevima ciljeva održivog razvoja.

Ključne reči: *održivost, zaštita životne sredine, SDGs, ESG, GRI, održivo investiranje, održive finansije, izveštavanje o održivosti*

Introduction

In the past, the concept of social responsibility was primarily aimed at identifying companies that manufactured products that are harmful (dangerous) to human health. That was regarded as socially unacceptable behavior, leading to the reluctance of responsible investors to hold the shares of such companies in their portfolio. In other words, even then we could already talk about socially responsible investing (SRI) in this segment.

Over time, the problems of social responsibility became more complex so that many companies have striven to be recognized by their socially responsible behavior, taking into account, among other things, the benefits that might result from it. These companies have a better reputation, are more attractive to investors, have access to more affordable credit sources of finance, are more appealing to customers, can retain the existing and recruit new talents more easily and have a lower cost of capital. Numerous empirical studies have shown that there is a correlation between socially responsible behavior and a company's financial performance. For example, it has been found that the companies that belong to the Dow Jones Sustainability Index (DJSI) have higher return on assets than non-DJSI companies [9]. The relationship between corporate social responsibility (CRS) and corporate financial performance (CFP) was also empirically confirmed [40], [56]. The U.S. and European companies that created the highest shareholder value in the ten-year period (2007-2017) also achieved stronger employment growth [35, p. 15].

The identification of socially responsible companies by the investment community is an issue of utmost importance. Hence, performance measurement, preparation of adequate reports, and their transparent communication have become a necessity for companies, investors, regulatory bodies, and society as a whole. Of course, we are talking about additional information relative to that already found in official financial reports. Additional reports, containing predominantly non-financial information on environmental and other important social issues (information on greenhouse gas emissions, levels of carbon dioxide, environmental degradation, the amount of waste classified according to the degree of its danger to human health, investment in

cleaner production, impact on climate change, etc.), should provide a broader picture which could help us to gain a deeper insight into economic, environmental and social dimensions of a company's performance. Such information largely falls under the accounting responsibility and is of interest to both external and internal users.

The adoption of the Sustainable Development Agenda, in the form of the document "*Transforming our World: the 2030 Agenda for Sustainable Development*" [51], by the UN General Assembly in 2015, raised the awareness of the planetary problems to the highest possible level. The establishment of the 17 global SDGs has clearly indicated the right direction of further efforts at the global, regional, national and corporate levels, toward protecting the planet and creating equal opportunities for nations and individuals, i.e. a fairer and more socially responsible world. The defined SDGs require substantial investment in new technologies, education, eradication of poverty and hunger, renewable energy sources, environmental protection, etc. The implementation of the planned investment activities also entails the provision of adequate sources of finance in a relatively short period of 15 years, which is a difficult task for developed countries, and particularly for developing and underdeveloped ones. Moreover, the SDGs have brought new challenges regarding the reporting transparency, including the complex requirements in terms of measuring the progress toward achieving the SDGs of a global character, but also measuring and reporting on performance at the national and corporate level, with the aim of identifying environmentally friendly, socially responsible and financially successful companies. In this context, the appearance of ESG conceptual framework, focused on environmental, social and corporate governance dimensions, has undoubtedly contributed to the expansion of the information base that enables a more comprehensive analysis of the business, financial and environmental profiles of companies. At the same time, ESG framework largely facilitates the investors' orientation toward financially prosperous and socially responsible companies.

In this paper, the emphasis is placed on the problems encountered in the implementation of SDGs. We are primarily referring to the constraints that exist in today's environment burdened by the COVID-19 pandemic, the war in Ukraine

and the major energy crisis, but also to the issues related to insufficient investment in SDG sectors, particularly in developing countries, and difficulties faced in closing the gap in financing necessary projects. Bearing all this in mind, it is questionable whether the goals set out in the Agenda could be achieved within the stipulated period. Another problem, which should also be seen as a matter of great concern, is related to the fact that even after a half of the estimated time spent in implementing the goals defined in the Agenda, we still do not have a universally accepted multidimensional conceptual framework for reporting on companies' performance. This does not necessarily mean that no progress has been made in this area, but it rather indicates the lack of a clear enough strategy that would define how the reporting should be conceived: who should be the users of these reports (mainly investors, the community or all stakeholders), what is the main purpose of reporting (the assessment of risks and opportunities for value creation or the assessment of a company's impact on the environment), what should be the contents and structure of reports, whether to opt for integrated reporting or to prepare the sustainability reports independently of official financial reports, whether to establish mandatory reporting in regular time intervals or it should rather be voluntary and occasional, etc. Of course, there are also other open issues that need to be tackled.

Challenges in achieving the SDGs by 2030

The changing global context for the operationalization of SDGs

The risks associated with climate change, the existence of hunger and poverty, pronounced inequality, environmental degradation, overconsumption of resources to the detriment of future generations, etc., are the biggest threats to the sustainability of our planet. Due to the irresponsible behavior, first of all, of companies and their disregard for the obligation to protect the environment that persisted for too long, the problems related to environmental degradation have spread beyond the corporate level, thus becoming a huge global problem.

To respond to the above-mentioned threats and risks, the UN General Assembly adopted the Agenda for Sustainable Development with great ambitions, not only in terms of its content and scope, but also in terms of the time frame for achieving the defined goals. These ambitious goals are aimed at solving the biggest global challenges and classified within the five areas of the greatest importance for humanity and the planet: people (ending hunger and poverty, reducing inequalities, ensuring quality education and equal opportunities for all), planet (preventing further environmental degradation, sustainably managing natural resources, mitigating climate change), prosperity (ensuring

Figure 1: Sustainable development goals



Source: UN

that technological and economic progress is in line with natural resources), peace (developing societies without violence and fear, guided by the principle that there is no sustainable development without peace and *vice versa*), and partnership (mobilizing necessary means to implement the goals set out in the Agenda and strengthening solidarity, particularly taking care of the needs of the poorest) [51, p. 2]. The overview of the SDGs is presented in Figure 1.

Even a superficial analysis clearly shows the complexity of achieving individual SDGs. Excessive consumption of natural resources, also known as the phenomenon of “ecological overshoot”, is calling into question the sustainability of the current levels of production and consumption. If the consumption of some natural raw materials continues according to the existing rates of exploitation, gold and silver reserves might be exhausted in 30 years, iron ore in 70 years, and black coal in 90 years. This means that the current generation has been already heavily borrowing resources from future generations. It is estimated that every year since 2012, the existing generation borrowed resources from future generations equivalent to 1.5 renewable resources from the future [50, p. 12-15].

Global demand outstrips the ecosystem’s capacity to regenerate resources, partly due to overconsumption and partly due to the selfish behavior of companies. For example, abusing the consumers’ ability to afford new products in the short time, some companies intentionally design their products’ lifetime to end immediately after the expiration of the warranty period. On the one hand, this behavior contributes to the unnecessary depletion of natural resources and, on the other, it leads to an increase in waste often ending up in landfills due to low recycling rates. Supply chain disruptions may be caused by social unrest in the countries which are suppliers of raw materials due to poverty, low wages, job cuts, poor working conditions, lack of health care, etc. [50]. It is evident that solving the problems of poverty, inequality and the dignity of work requires a tremendous effort. The situation is similar when it comes to other SDGs.

The urgency of addressing the greatest risks to which humanity is exposed fully justifies the intentions outlined in the Agenda. However, the operationalization of SDGs turns out to be an extremely complex endeavor.

The imperative of achieving the SDGs in an extremely short period of time actually brings into question the likelihood of their implementation within the stipulated deadline. Additional pressure arises due to the occurrence of unforeseen circumstances that halt the activities directed toward the achievement of goals by 2030. In the light of the fact that the established deadlines are binding, we are urged to present a brief overview of the environment in which the SDGs should be operationalized.

The COVID-19 pandemic has pushed activities toward achieving the SDGs to the back burner. The pandemic has had devastating consequences for people’s health and lives. It has led to the disruption of supply chains, increase in expenditures in the government budget as well as at the corporate level, and decline in GDP in both developed and developing countries. Although it is not easy to fully assess its consequences, there is no doubt that the negative effects are visible in many areas. A forced shift to online classes at the global level, has only deepened inequalities in the field of education. The use of the Internet for remote learning and distribution of teaching materials was only possible in the countries with developed broadband infrastructure that enables this type of learning. That is not the case with underdeveloped countries where it was practically impossible to provide an adequate level of education. So, it frequently happened that schools stopped working for a relatively long period of time. All this contributed to a sharp increase in global learning poverty to an estimated 70% [57]. The problem appears to be even more complex if we bear in mind that SDG 4 (Quality Education) is closely connected with the following goals: SDG 2, SDG 3, SDG 5, SDG 7, SDG 11, SDG 13, and SDG 15 [46].

Uneven development of particular countries, different quality of health systems (SDG 3), unequal access to necessary medicines and equipment further deteriorated the position of poor communities burdened by the lack of food and weak health systems. In such circumstances, inequalities became even more pronounced, while partnerships came under serious scrutiny because developed countries set the clear priorities when it comes to the latest antiviral drugs, the availability of vaccines and medical equipment, etc. Some authors point out that SDG 3 (Good Health and Well-being) is intertwined and complementary with SDG 1 (Poverty),

SDG 2 (Zero Hunger), SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 6 (Clean Water and Sanitation), SDG 13 (Climate Action), SDG 14 (Life under Water), SDG 15 (Life on Land), and SDG 17 (Partnerships for Goals) [34, p. 395]. The adverse impact of the COVID-19 pandemic on the SDGs is additionally illustrated by the fact that in the first two years of the pandemic the world's 10 richest people more than doubled their wealth, from USD 700 billion to USD 1.5 trillion, while the incomes of the remaining 99% were dramatically shrinking. The finding that they have six times more wealth than the poorest 3.1 billion people becomes even more striking in the context of the fact that 21,000 people die every day in the world because of the lack of access to adequate health care, gender-based violence, and hunger and climate-related disturbances [22]. Moreover, according to the first most extreme estimates, a 20% income or consumption contraction may lead to an increase in the number of people living in poverty of 420-580 million [55]. There is no particular need to explain the damage suffered by certain industries such as transport, tourism, food industry, etc.

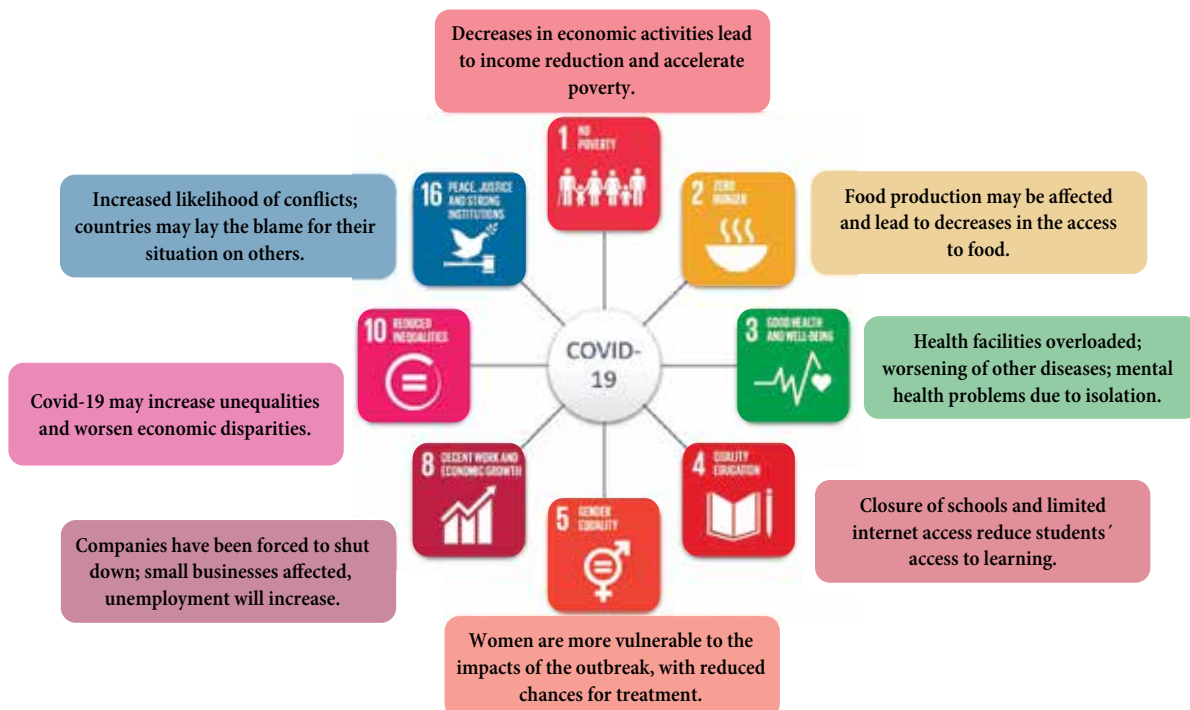
The indivisibility of the 2030 Agenda for Sustainable Development results in the interactions between the

various goals. That state triggers negative effects in crisis situations when some of the SDGs are directly affected. The multidimensional character of goals allows for spillover effects between them. Spillover effects have been confirmed in numerous research studies [45]. All this contributes to reduced commitment to the operationalization of the SDGs. Filho et al. [25] have identified the SDGs on which the COVID-19 pandemic has a more direct impact and where there is a need for urgent action. One of the possible systematizations of these impacts is shown in Figure 2.

The interactions also exist among other SDGs, but the urgency of their addressing is less pressing. The examples of these goals include SDG 7, SDG 14, and SDG 15 [25].

As a result of the obvious interdependence between the various SDGs, global society has been faced with a much wider spectrum of risks affecting many SDGs. However, despite the numerous negative implications for the operationalization of the SDGs, there are also some positive things. For instance, the collapse of many national health systems has triggered substantial investment in health care during the pandemic. More importantly, the pandemic has brought to light the vulnerability of health systems and pointed to the need to strengthen them and

Figure 2: Some of the main impacts of the COVID-19 pandemic on the SDGs



Source: [25, p. 6]

conceptually equip them by improving their quality, safety and resilience in case of the emergence of new pandemics or similar risks.

The current geopolitical context in which the implementation of SDGs is taking place, reveals that the world is still not up to the challenges that lie ahead. In the situation where the pandemic is not over yet, as we still have a lot to learn about its consequences and what awaits us in the post-COVID period, the world has been hit by new problems that are likely to set us back when it comes to the achievement of SDGs by 2030. Even though a 15-year period seemed too short for achieving the SDGs and solving the problems that had been accumulated over an incomparably longer period of time, now it is perfectly clear that, given the new circumstances, their achievement will not be possible within the foreseen period.

We could say that environmental degradation is the collateral damage of wars. The bombing of energy infrastructure, refineries and chemical plants in Ukraine has caused the pollution of soil, water and air with toxic substances harmful to the life and health of people and animals, military operations have led to an enormous increase in waste, which largely consists of a hazardous waste (construction waste, medical waste, etc.) that requires special safety measures during its transport and disposal, large forest areas have been destroyed by fires, while the destruction of water supply infrastructure has left 1.4 million of people without access to safe drinking water and additional 4.6 million with limited access [39]. Many of these consequences also affect other countries.

There are many other examples that demonstrate that the war has a huge impact on the SDGs. Disrupted supply chains directly threaten food security. Bottlenecks in supply, accompanied with accumulated stocks due to inevitable shortages, worsen the vulnerability of already vulnerable population groups, increasing hunger, poverty, inequality and putting in jeopardy responsible consumption and production. All that directly compromises the commitment to the operationalization of SDG 1, SDG 2, SDG 10, and SDG 12. Moreover, difficulties in supply and food shortages give rise to food price hikes, further hitting vulnerable groups. After the 2007-2008 food crisis and the crisis caused by the COVID-19 pandemic, the

food crisis provoked by the war in Ukraine is the third crisis in the last 15 years. The severity of the current situation caused by the war is best illustrated in the research pointing out that “over 30 countries depend on Russia and Ukraine for at least 30% of their wheat import needs, and at least 20 countries source over 50% of wheat imports from those two countries, ... while almost 40% of total African wheat imports come from Russia and Ukraine” [31]. At the same time, some countries such as Eritrea, Somalia and the Democratic Republic of Congo cover more than 80% of their needs by imports from the Black Sea region.

In addition to the aforementioned challenges, it is also important to mention the massive damage to energy, transport, water supply and other industrial infrastructure, a large number of destroyed cities, the impossibility of providing quality education, difficulties in delivering adequate health care, hampered production, the contamination of water, air and soil, high probability of the extinction of certain species, etc. If we add to this list the risks of nuclear disasters as well as the impact of possible radiation on the pollution of arable land, then it becomes obvious that not only the environment and human lives and health, but also the ecosystem as a whole, are exposed to serious risks. The situation seems even more complicated if we bear in mind that the consequences of the war will be long-lasting and far-reaching. In the war zones, air contamination may lead to a higher number of deaths compared to the victims who were killed in wildfires. Therefore, it is easy to understand that the environmental devastation caused by the war is of major proportions, which also compromises the achievement of other sustainable development goals: SDG 3, SDG 4, SDG 6, SDG 7, SDG 8, SDG 9, SDG 11, SDG 13, SDG 14, SDG 15, and SDG 16. So, burdened by a long-lasting toxic legacy of the war, the operationalization of the SDGs will stagnate, and it is quite certain that the progress in some areas made in the past will be erased [54].

The current energy crisis is a result of geopolitical developments, but considering its wide scope, it requires special attention. This is particularly true in view of the global character of this crisis. The high risks related to energy supply have brought a surge in energy prices and

uncertainty. From the perspective of the imperative for affordable and clean energy (SDG 7), it is evident that the current circumstances are moving us away from this goal. Instead of reducing the consumption of oil and coal, the situation is actually reversed. In 2022, due to well-known constraints in gas supply, the production and consumption of coal hit a record high, which was followed by an increase in carbon dioxide emissions. The combustion of fossil fuels leads to the release of carbon dioxide, which increases the greenhouse effect and global warming. In this context, the originally projected goal of reducing carbon dioxide emissions to zero by 2050 is aimed at limiting the global temperature increase to less than 1.5 degrees Celsius [28]. The projected growth in energy demand requires substantial investment, not only to meet needs, but also to change the structure of sources toward more significant growth of renewables.

The global energy crisis has unveiled all vulnerabilities of the energy system as well as the need for urgent investment in renewable energy sources with the aim of increasing their share in total sources. The change in the structure of sources encompasses multiple goals. First, to

lessen dependence on the consumption of oil, coal and gas; second, to mitigate damage experienced by households, companies and national economies in crisis situations; and third, to foster the much-needed reduction in carbon dioxide emissions and environmental protection. For example, since September 2022, gas deliveries to the EU have been down by 80% compared to the previous years [28, p. 23]. The difference has been mainly covered from storage reserves, with a significant drop in demand.

Investing in the sustainable development goals

The expected investment in the SDGs is huge. It is a result of the efforts to solve the problems, which have persisted for too long, in a 15-year period. This undertaking is especially challenging for developing countries because of the large gaps between their needs and available opportunities. In these countries, the need for investment in the energy sector is growing much faster than in developed countries. At the same time, due to undeveloped capital markets and lack of access to differentiated sources of finance, the public sources have a more important role in the SDGs financing than the private ones.

Table 1: Summary of SDG investment trends and estimated annual gaps (2015-2019)

Investment requirements	Most relevant SDGs	UNCTAD estimated annual investment gaps (billions of USD)
POWER (EXCL. RENEWABLES) Investment in generation, transmissions and distribution of electricity	SDG 7	370-690
TRANSPORT INFRASTRUCTURE Investment in roads, airports, ports and rail	SDG 9 SDG 11	50-470
TELECOMMUNICATIONS Investment in infrastructure (fixed lines, mobile and internet)	SDG 9	70-240
WATER, SANITATION AND HYGIENE (WASH) Provision of water and sanitation to industry and households	SDG 6	260
FOOD AND AGRICULTURE Investment in agriculture, research, rural development, etc.	SDG 2	260
CLIMATE CHANGE MITIGATION Investment in relevant infrastructure, renewable energy generation, research and deployment of climate-friendly technologies, etc.	SDG 13	380-680
CLIMATE CHANGE ADAPTION Investment to cope with impact of climate change in agriculture, infrastructure, water management, coastal zones, etc.	SDG 13	60-100
ECOSYSTEMS AND BIODIVERSITY Investment in conservation and safeguard ecosystem, marine resource management, sustainable forestry, etc.	SDG 14 SDG 15	No data
HEALTH Investment in infrastructure, e.g. new hospitals, and R&D on vaccines and medicines	SDG 3	140
EDUCATION Infrastructural. e.g. new schools	SDG 4	250

Source: [52]

To close the gap, it is necessary to create conditions for attracting private capital, which is not easy in these countries. The same goes for international private investments, which are not at the expected level in developing countries. One of the reasons is the unfavorable environment in which the SDGs are implemented (COVID-19, war, energy crisis). However, developing countries are also partly responsible because they have not been agile enough in removing regulatory hurdles, which is a prerequisite for attracting such investments more quickly. However, an increase in investment in SDG sectors is evident in 6 out of 9 SDG sectors. The summary of investment trends in ten SDG sectors in the period 2015-2019 is presented in Table 1.

The COVID-19 crisis triggered additional problems, further deepening the gap between necessary and available investments. Some trends in greenfield investment and project finance in SDG sectors indicate worrying results. Investment activity fell sharply in almost all SDG sectors. For example, investment in infrastructure projects dropped by 62% compared to 2019, in provision of water and sanitation by 70%, in food and agriculture by 57%, in health care by 37% and in education by 42%. Only investment in renewable energy recorded growth, but it was by two thirds lower than in 2019. Finally, the decline in investment in the SDGs was much steeper in developing than in developed countries [53, p. 2].

The *Net Zero Emissions by 2050 (NZE)* scenario reflects the urgency and ambition in solving both national and global problems that impede the progress toward the change in the structure of energy sources. This scenario envisages investment in technologies that could provide cleaner energy and successively become substitutes for fossil fuels. It is expected that annual spending on fossil fuels will fall from the current amount of USD 830 billion to USD 455 billion by 2030. This means that the share of fossil fuels in total investment in the energy sector is projected to fall from the current level of 35% to 10% in 2030 [28, p. 164]. Investment in clean energy, i.e. in low-emission fuels (biofuels, hydrogen-based fuels), is likely to move in the opposite direction, increasing from the current level of USD 18 billion to USD 235 billion in 2030. These investments should contribute to the largest increase in the power generation from renewable energy

sources, more precisely, from recently recorded USD 390 billion to USD 1300 billion by 2030. An integral part of these plans includes investment in energy efficiency and electrification whose share is expected to increase from today's 17% to 32% in 2030 or 40% in 2050. The achievement of the previous targets requires a rise in clean energy investment from about 2% of global GDP in 2021 to almost 4% by 2030 [28, pp. 163-164].

Financing the SDGs: The structure of sources of finance

Investing in the SDGs is only one of many steps on the path toward their achievement. The flip side of that issue is the provision of adequate sources of finance. Financing investments in the SDGs has become even more challenging due to the consequences of the COVID-19 pandemic, as their solving has taken priority over all other global problems, as well as the war in Europe which has also raised concerns all over the world. Both events have only further deepened the gap between needed and currently available sources of finance.

The lack of sources of finance calls into question the achievement of the goals contained in the 2030 Agenda for Sustainable Development. The aforementioned gap cannot be easily closed even in developed countries, but it is especially difficult to finance the implementation of SDGs in developing and underdeveloped countries. Although each national economy must assume its own responsibility and contribute to achieving the SDGs at the global level, there is no doubt that partnership and solidarity, particularly between developed and developing countries, have a pivotal role in this process. The construction of infrastructure facilities and the transfer of environmentally friendly technologies to developing countries require providing sources of finance and channeling them into priority projects, normally, under conditions that are acceptable to such countries.

A key role in the operationalization of SDGs and the transition to a green economy will be played by companies, which are also most responsible for the planetary problems, as well as by financial institutions that should support environmentally friendly projects by providing sources of finance. At the same time, sources of finance must

close two gaps: the first one is related to the financing of necessary investments to achieve the goals by 2030, while the second concerns the aim of reaching climate neutrality in 2050. In this regard, in March 2018, the European Commission adopted the Action Plan: Financing Sustainable Growth, which is dominantly based on three objectives: reorienting capital toward sustainable investment, managing financial risks including the risks stemming from climate change and environmental degradation, and fostering transparency and long-term interests of companies and financial institutions [14].

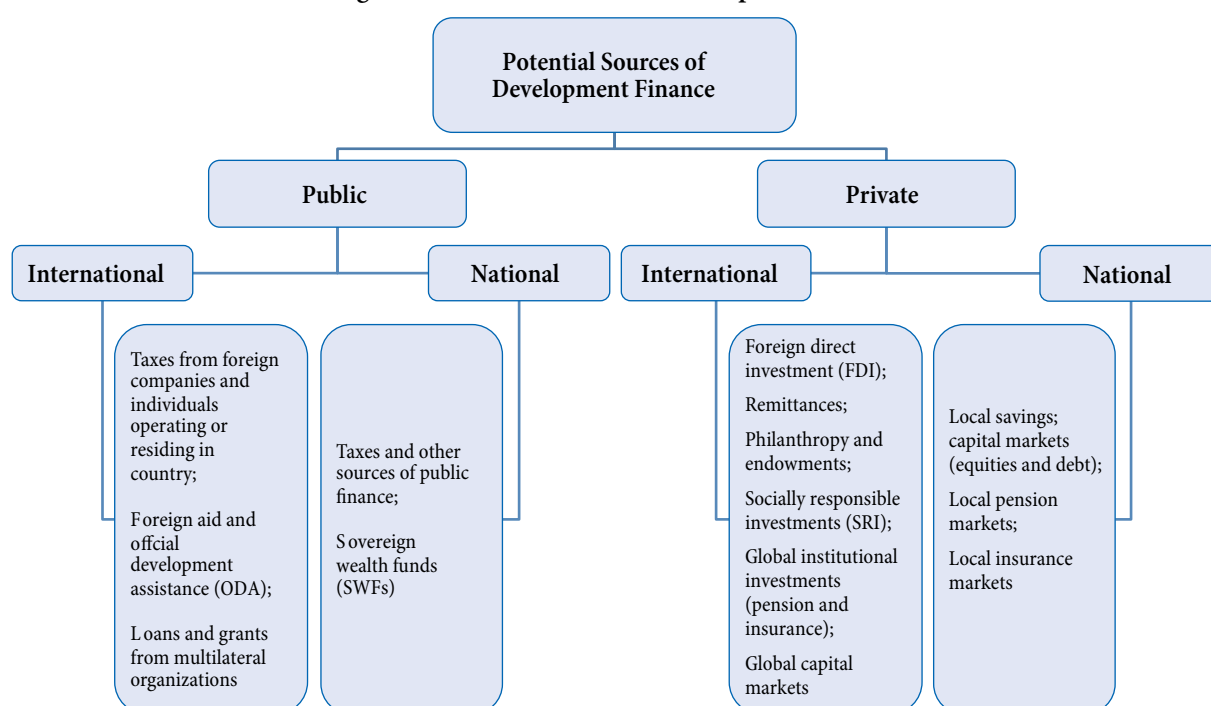
Besides the planned investments in the SDGs, the green transition also requires a parallel effort on reshaping the financial system in terms of its adaptation to the needs of inclusive and environmentally sustainable development. This implies the previously mentioned reorientation of capital flows toward the so-called “green projects”, i.e. toward the financing of renewable energy sources, cleaner production, circular economy, sustainable agriculture, food security, and other socially and environmentally acceptable projects. On the other hand, the list of priorities should exclude projects that lead to further excessive consumption of natural resources that belong to future generations. A broad consensus on the SDGs reached within the 2030

Agenda calls for finding adequate sources of finance. Moreover, substantial investment in the SDGs implies the activation of various sources of finance whose structure will differ in developed and developing countries. Potential sources of finance are shown in Figure 3.

We can agree that every traditional source of finance could have its green alternative. So, we could talk about “green” fixed-income debt instruments (various forms of “green” corporate and government bonds), “green” loans, as well as “green” equity instruments with variable or fixed yield (“green” common and preferred shares). According to the UNCTAD estimates from 2020, green investments were financed by USD 260 billion in green bonds, sustainability-themed equity funds participated with about USD 900 billion, social bonds with USD 50 billion, while COVID-19-response bonds amounted to USD 55 billion [59, p. 170].

However, taking into account the magnitude of missing funds for financing investments in the SDGs, there is also a need for innovative ways of financing, such as carbon tax which discourages investments with negative environmental effects and channels such sources of finance into socially responsible “green” projects, and green quantitative easing (QE), which entails the

Figure 3: Potential sources of development finance



Source: [42, p. 4]

government's deficit financing of the projects with a strong decarbonization effect [13, pp. 38-39].

It is perfectly clear that the implementation of the SDGs is taking place in a very unfavorable environment. However, regardless of that, the SDGs impose the need to measure progress in their achievement, which opens up a very serious issue – the necessity for a comprehensive approach to reporting. The burden of the implementation of these global goals, to some extent, should also be borne by companies which are mainly responsible for the planetary problems associated with climate change, environmental degradation, and excessive consumption of natural resources that belong to future generations. When it comes to performance measurement at the corporate level, there is a need for reporting on environmental, social and economic dimensions of the company's overall performance. At the same time, financial institutions have a great responsibility in the process of green transition as they are expected to channel sources of finance toward green projects. A key role in these processes is played by transparent multidimensional performance measurement and reporting adapted to the needs of various stakeholders.

In the context of the green transition, a multidimensional integrated approach to reporting at the corporate level implies an upgrade to the existing official financial reporting. It concerns the information that can transparently enough legitimize companies as socially responsible entities. This is important from the perspective of companies, which could achieve positive effects based on socially responsible behavior. Also, transparent reporting on financial and environmental performance should help financial institutions to identify companies that behave in accordance with the generally widely accepted SDGs in order to be able to channel capital in that direction. The development of a conceptual framework that will improve the performance measurement system at the corporate level and enable monitoring of the progress in achieving the SDGs is a big challenge.

Sustainability reporting

Sustainability reporting has recently become one of the top priorities in the agenda of policymakers, companies and

stakeholders, although it is not a new phenomenon. In the last few decades, a lot of initiatives toward sustainability arose and were accompanied by calls for reporting on the companies' impact on society and environment. A growing number of companies started to supplement their financial reporting with sustainability issues. However, different approaches to sustainability reporting as well as voluntary nature of disclosures have led to the complexity in interpreting and comparing available information through periods and among companies. It could be argued that the practices of cherry picking or even greenwashing were also widespread, so reducing transparency instead of increasing it. The deficiencies in sustainable reporting were evident and point out the need for standardization and quality improvements.

In the landscape which comprises many standard-setters and competing or complementing reporting frameworks, the challenge of harmonization or creation of unique globally accepted sustainability standards is tremendous. One comprehensive list of different frameworks and actors is given in the Guidelines issued by the EU (2017/C 215/01) to help reporting entities to disclose their sustainability impact according to EU Non-Financial Reporting Directive (2014/95/EU; hereinafter NFRD) [17]. This list is presented in Table 2.

The majority of standard-setters has entered the sustainability field with the ultimate goal to induce changes in the companies' behavior toward sustainability, but there are also some standard-setters which are primarily interested in the impact of sustainability issues on investors. However, in both cases, sustainability reporting has been the main mechanism for delivering desired informational content to stakeholders. Therefore, standard-setters have made a lot of efforts to develop an appropriate reporting framework capable of providing effective communication.

Since sustainable reporting was initially a completely voluntary initiative, companies had a choice whether to report or not as well as to choose what reporting framework to use. However, the actual question that companies face in the current environment is not whether sustainable reporting should be practiced, but rather how to do it. According to KPMG worldwide surveys on sustainability, including data of the top 100 companies by revenues in a

number of jurisdictions (N100), the sustainable reporting rate increased from 12% in 1993 to 75% in 2017 [32]. The last survey in 2020 covering N100 companies from 52 countries reveals a further increase in the reporting rate by two percentage points, from 75 to 77%. Moreover, in the sample of world's 250 largest companies, the reporting rate reached 96% [33].

Even as a non-binding initiative, sustainability reporting has become widespread practice among large and medium businesses around the world. Such a tendency may be explained by the companies' need for legitimacy in the social context marked by high concerns for sustainability issues. In accordance with the legitimacy theory, company must justify its license to operate by acting within societal norms, values and beliefs [49]. Otherwise, unfulfilled social expectations will occur and jeopardize the operations of the entity. However, the legitimacy is primarily connected with the public perceptions about how some company operates, rather than with the company's real performance. In terms of sustainability reporting, it raises serious issues of using voluntary disclosures not to reflect faithfully the company sustainability profile but to

create a desired image which could be misleading. Boiral [6] found that 90% of significant negative events related to sustainability were not presented in sustainability reports of involved companies. Many scholars have also identified that symbolic instead of substantial approach to legitimacy was employed by companies in the sustainability field, but it could be camouflaged in their sustainability reports [12], [37], [47]. Besides seeking legitimacy, companies' motives for voluntary sustainability disclosures could be found in their willingness to signal their advance environmental and social performance (signaling theory), demonstrate accountability to broad range of stakeholders interested in sustainability (stakeholder theory) as well as to respond to the institutional pressure to adopt new reporting practice since it has become socially expected (institutional theory) [48]. Finally, economics-based theories imply that these disclosures could reduce information asymmetry and the cost of capital [11].

Although the sustainability reporting is gaining growing acceptance, the fact that it is in the vast majority of cases 'company-based, voluntary, partial and, mostly, fairly trivial' [24] gives impetus to the regulation in

Table 2: List of references in sustainability reporting

Standard setter	Reporting framework/standards
CDP	CDP framework
Climate Disclosure Standards Board	CDSB Framework for Reporting Environmental and Climate Change Information
OECD	OECD Due Diligence Guidance for Responsible Supply Chains from Conflict-Affected and High-Risk areas
European Commission	Eco-Management and Audit Scheme (EMAS)
European Federation of Financial Analysts Societies	EFFAS' KPIs for Environmental, Social, Governance (ESG): A Guideline for the Integration of ESG into Financial Analysis and Corporate Valuation
Global Reporting Initiative	GRI Standards
OECD	OECD-FAO Guidance for Responsible Agricultural Supply Chains
UK Financial Reporting Council	Guidance on the Strategic Report
OECD	OECD Guidelines for Multinational Enterprises
United Nations	UN Guiding Principles Reporting Framework on Business and Human Rights
International Organisation for Standardisation	ISO 26000
International Integrated Reporting Council	International Integrated Reporting Framework
Sustainable Stock Exchanges Initiative	Model Guidance on Reporting ESG Information to Investors
Capitals Coalition	Natural Capital Protocol
European Commission	Product and Organisation Environmental Footprint Guides
Sustainability Accounting Standards Board	SASB Standards
German Council for Sustainable Development	Sustainability Code
International Labour Organisation	Tripartite Declaration of principles concerning multinational enterprises and social policy
United Nations	UN Global Compact
United Nations	Sustainable Development Goals
United Nations	Guiding Principles on Business and Human Rights implementing the UN 'Protect, Respect and Remedy' Framework

Source: Guidelines on non-financial reporting [15]

the field. From an optional, sustainability reporting has evolved into a mandatory element of companies' reporting in many jurisdictions, particularly in Europe with the adoption of NFD. The mandatory regime has capacity to force companies to make disclosures and can contribute to the quality and comparability of disclosures. However, different regulatory requirements among countries might be a serious obstacle to the harmonization which is needed at the global level. On the other side, private standard-setters that by their nature lack formal authority have a long way to go to build legitimacy and be accepted. It was evident that some of standard-setters tried to improve their chances to be globally accepted by merging with other similarly oriented organizations. One initiative in this direction was the establishment of the Value Reporting Foundation (VRF) as a result of the merger of the International Integrated Reporting Council and the Sustainability Accounting Standard Board. Furthermore, VRF consolidated in just few months into the IFRS Foundation. Nevertheless, empirical evidence suggests that in the sustainability reporting arena the most prominent position belongs to GRI and its GRI standards. According to KPMG surveys, GRI framework is used by around two-thirds of N100 reporting companies and by around three-quarters of G250 reporters [32], [33]. However, two new powerful actors, namely the EU and the IFRS Foundation, have recently entered this reporting field which could significantly change the reporting scene in the next period. Since GRI, EU and IFRS Foundation have potential to exhibit the greatest influence on the sustainability reporting practices, it is worth considering the similarities as well as differences in their approaches.

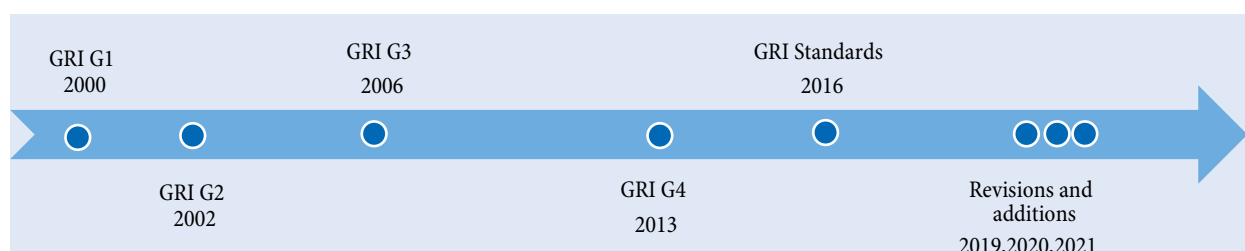
High environmental concerns were a trigger for establishing GRI in 1997 with the intention to develop the reporting framework for companies to disclose their

impact on environment what will then stimulate changes in their behavior toward a responsible approach. However, the scope of reporting was later expanded to include social, economic and governance issues [20]. GRI as an independent international organization has worked intensively to earn legitimacy in the sustainability standard-setting arena. It started with the issuance of guidelines in 2000 and regularly updated them through new versions, so four versions from GRI G1 to GRI G4 were developed. In 2016, GRI made transition from guidelines to standards and launched the GRI Standards as an improved sustainability reporting framework comprising of three universal standards and 33 topic-specific standards classified in economic, environmental and social series. In following few years, GRI continued to work on its standards in order to ensure their relevance and quality, leading to the revisions of existing standards and the issuance of new topics as well as sector-specific standards (see Figure 4).

The wide acceptance of GRI framework could be mainly attributed to its holistic approach based on multi-stakeholder orientation which at the same time incorporates a sufficient degree of reporting flexibility. GRI standards are principle-based, which is of paramount importance to ensuring the consistency of reporting framework. Relying on principles has already proved to be crucial for effective financial reporting [18], while the lack of principles or using inappropriate principles commonly led to rule-based standards which were excessive, complex, and with a lot of exceptions and justifications [38], [44], [8]. Using the analogy with financial reporting, it seems that by starting with clearly defined concepts and reporting principles GRI chose the right way for developing its standards.

In the first version of GRI Standards adopted in 2016, reporting principles were the fundamentals which shaped sustainable reporting. They were divided in two

Figure 4: Timeline: Development of GRI reporting framework



groups according to their primary focus. The first group addressed reporting content, i.e. dealt with the relevance of presented information, while the second group was related to the generally principles of quality reporting. The relevance of disclosures was ensured by taking into account the expectations and interests of stakeholders (the stakeholder inclusiveness principle) as well as a broad sustainability context including economic, environmental and social issues at all levels from local to global. The relevance also incorporated the materiality principle, which implied selection of the topics to be covered in report as well as the requirement for all material information to be disclosed (the completeness principle). However, implementing the materiality principle is more complex in sustainability than in financial reporting, since the views of other stakeholders besides investors and lenders should be considered as well as non-financial impacts besides financial ones. In this sense, GRI defined material topics as those which reflect significant *impacts* of a reporting entity on the economy, the environment and society or those which significantly affect the decisions of *stakeholders* [22]. Such definition covered inside-out and outside-in approach in the process of materiality assessment. GRI also created the materiality matrix with these two dimensions in order to help companies to make judgments on the materiality of sustainability issues. In addition to the content, quality reporting is promoted by the principles of accuracy, balance, clarity, comparability, reliability and timeliness.

Although the GRI's contribution to the development, improvement and promotion of sustainable reporting, including establishing 'common language' in this field is evident [10], some shortcomings in the implementation of its reporting framework appeared to be critical. Heras-Saizarbitoria et al. [26] found that the abovementioned GRI reporting principles were not seriously applied by companies which declared to report according to the GRI standards. Especially vulnerable principles were completeness, materiality and accuracy. Adams et al. [1] identified six questionable themes related to GRI. One of them deals with the applicability and relevance of GRI standards, since reporting organizations differ significantly among themselves and it is not easy to create standards that fit

them all. The second theme covers the nature of adoption of GRI standards by reporting companies. Companies tend to include selective disclosures in their reports, producing unfaithful reports in this way. Additionally, the materiality assessment in GRI reporting raises concerns. Other themes include low understanding of the GRI standards due to their vagueness, voluntary nature of GRI reporting and lack of quality external assurance. Some more critically oriented researchers concluded that reporting 'anything much beyond the trivial' in the field of sustainability is 'still proving elusive' [24].

The further work of GRI and the latest version of GRI Standards adopted in 2021 addressed part of these critiques. The new conceptual framework is developed and shows many similarities with the approach used by the International Financial Reporting Standards (IFRS) conceptual framework, which could be seen as a sign of mimetic isomorphism. In order to enhance its own legitimacy, GRI implemented the solution that has already proved to be effective. GRI 100 Foundation includes now in a clear manner all important elements of conceptual framework as a sound basis for the implementation of a complete set of standards: purpose and users of GRI reporting, key concepts, reporting requirements, reporting principles, and additional recommendations. In addition, relevance of the standards has been increased by launching sector-specific standards, starting from 2021. However, one important shift was related to the materiality principle. GRI has always emphasized that the first and foremost idea behind sustainability reporting is to contribute to a sustainable future by providing the accountability framework for organizations to disclose transparently their impacts on society and the planet. Nevertheless, the previous GRI approach to assessing materiality was based not only on the organization's impact on sustainable development, but also on the influence of sustainable topics on decision-making of stakeholders as a stand-alone factor. Research findings suggest that this approach frequently led companies to prioritize investors' perspective and financial materiality [2], which eventually means that sustainability reporting failed to achieve its main goal. GRI also noticed that companies often assessed only the impact on themselves instead of their impact on society and environment [21].

Consequently, GRI revised its materiality principle and linked it only with inside-out impact.

It is worth mentioning that credibility of reports could hardly be achieved without quality external assurance. However, the assurance rate is still low. In their study of sustainability reports, Badia et al. show that less than one-third of public utility companies in Italy which reported on sustainability also provided external assurance [4], while KPMG in 2020 survey found that 49% of N100 reporting companies obtained external assurance. More striking, even in the cases where assurance service is performed, the quality of assurance appears to be unsatisfactory. The research presented by [7] reveals that assurance providers predominantly used optimistic, cautious and uncritical rhetoric in their statements, which could imply the lack of independence on their side. Furthermore, the competence of the service is also seen as questionable since the important GRI reporting principles, such as the sustainability context and the balance of information, are overlooked as criteria for assessing the quality of sustainability reports. GRI includes in its 2021 framework recommendation for obtaining external assurance as well as the requirements that assurance providers should satisfy.

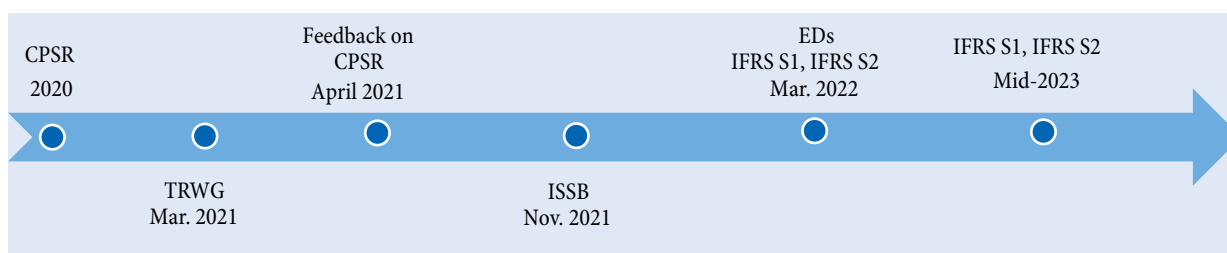
A lot of issues that GRI has been faced with and still very large number of other actors in the field of sustainable reporting have provoked calls for engaging the IFRS Foundation in this field of reporting. The IFRS Foundation is also private standard-setting organization just like GRI, but the IFRS Foundation has already established a strong legitimacy around the world and succeeded to develop globally accepted financial reporting standards, which are now required in more than 140 countries and permitted in many more [30]. The capacity of IFRS Foundation looks promising in achieving the goal of developing quality and globally accepted international

reporting standards also in the domain of sustainability. Such standards would finally eliminate complexity and confusion related to published reports and improve the comparability of the reporting entities' sustainability performance. Sustainability reporting could be seen as compatible with financial reporting, and it could be also beneficial to have one authoritative standard-setter for both reporting standards.

The IFRS Foundation formally entered the sustainability field in 2020 with its Consultation Paper on Sustainability Reporting (CPSR) and since then actively works on the development of standards (see Figure 5). The first step was the creation of the Technical Readiness Working Group (TRWG) with some other organizations which gave support to the IFRS Foundation in developing sustainability standards. The Foundation had to change its governance structure to establish a separate board for sustainability reporting standards. As a result of the change, the current structure of IFRS Foundation includes IASB, which sets accounting standards and a new International Sustainability Standard Board (ISSB) established in 2021, whose mandate is to develop Sustainability Disclosure Standards. In 2022, Exposure Drafts of the first two standards were published (ED IFRS S1, ED IFRS S2) and opened to comments, while the issuance of standards is expected in mid-2023. While IFRS S1 aims to set some baselines for disclosure of sustainability-related financial information, IFRS S2 addresses concrete topic of climate-related disclosure. The standard's structure is created to be consistent for all topic-related standards, with core content, covering governance, strategy, risk management and metrics and targets.

On its way through the sustainability area, the IFRS Foundation merged with VRF and the Climate Disclosure Standard Board (CDSB) as already recognized sustainability

Figure 5: Timeline: Development of IFRS Foundation reporting framework (not-scaled)



standard-setters with the focus on investors, which suggested that the main perspective of IFRS Foundation could differ from the one of GRI. The fact is that IFRS Foundation is an institution oriented toward investors, lenders and other creditors as its target groups. Since the sustainability issues could be very relevant for these groups, IFRS Foundation recognized its role to satisfy their information needs. Investors and other market participants are interested in the company's sustainability-related risks and opportunities and their impact on the company's financial position, financial performance and cash-flows. ISSB is then working on disclosure standards that will help investors to make informed decisions. The consistency between these standards and standards of financial reporting is obvious in terms of main concepts (e.g. who are primary users, what are qualitative characteristics of information) and sustainability report is seen as complementary to financial statements completing the set of financial information needed for economic decision-making of investors, lenders and other creditors.

It is clear that ISSB and GRI do not have the same target audience, since GRI emphasizes accountability not only to investors, but also to all stakeholders, including those who do not have direct relationship with reporting entity or are not able to articulate their interests such as future generations, which then necessarily causes differences in the objective and content of sustainability disclosures. While GRI promotes disclosures about organizations' impact on the economy, environment and society, ISSB is focused on disclosures about the impact of sustainability issues on organizations. Besides the target audience and objective as well as the content of disclosures, further differences between ISSB and GRI are seen in their scope, approach to materiality, and reporting boundaries [19]. In terms of scope, the list of topics that GRI standards cover is comprehensive since the sustainability context is defined very broadly and the development of standards has started long ago. However, ISSB has recently entered the sustainability field, and the first disclosures on its agenda are climate-related disclosures. Nevertheless, it is expected that its scope will be broadened by including other sustainability matters, particularly environmental, social and governance (ESG) issues [29]. Concerning the

materiality principle, ISSB keeps information material if its omitting, misstating or obscuring would influence the investors' and lenders' economic decisions, while for GRI information is material if it reflects significant inside-out impacts. That said, from the GRI point of view financial materiality is not decisive. However, it could be argued that in many cases significant impacts will become soon or later financially material information, so the difference between approaches is not as large as it appears at first glance. Due to reporting boundaries, GRI again takes a broad approach encompassing the whole value chain, while financial reporting boundaries are determined in a narrower way. Although in CPSR value chain was not mentioned, there is a tendency that ISSB should also include considerations through values chain, as it has already done in ED of IFRS S2 related to Climate-related disclosures.

The dynamics of sustainability reporting have been increased to a large extent in recent period due to the entrance of the EU in this field. GRI and ISSB as private initiatives strive to take the leading position in developing international standards for sustainability reporting. They are relying on their legitimacy acquired from the market in the case of GRI and due to rigorous governance structure and enforcement in accounting field in the case of ISSB. However, the EU has a legislative power to make sustainability reporting mandatory what makes its work in this area very influential. Some European countries (e.g. Denmark, Norway, The Netherlands) introduced even during the 1990s the obligation for companies to report on their environmental performance [27], but the first joint initiative toward sustainability was EU Green Paper, published in 2001, that established a clear commitment of the EU to the sustainability agenda. The next major step was the adoption of NFRD in 2014, which imposes reporting requirements on nonfinancial and diversity topics for certain large companies in the EU. The main goal was to make reporting mandatory and to increase its quality, so inducing through high transparency changes in companies' behavior toward a sustainable economy.

However, NFRD leaves Member States considerable leeway in implementing and extending its requirements, considering many important aspects, such as the reporting framework – it refers to national, Union-based

and international frameworks, matters to be reported – at minimum the environment, social and employee matters, respect for human rights, and anti-corruption and bribery matters, type of report (separate or included in management report) as well as mandatory assurance of report or not. Non-binding reporting guidelines were issued to supplement NFRD with further information and clarifications, but the need for a new Directive was obvious. The timeline of some important events in developing EU regulation toward sustainability is given in Figure 6.

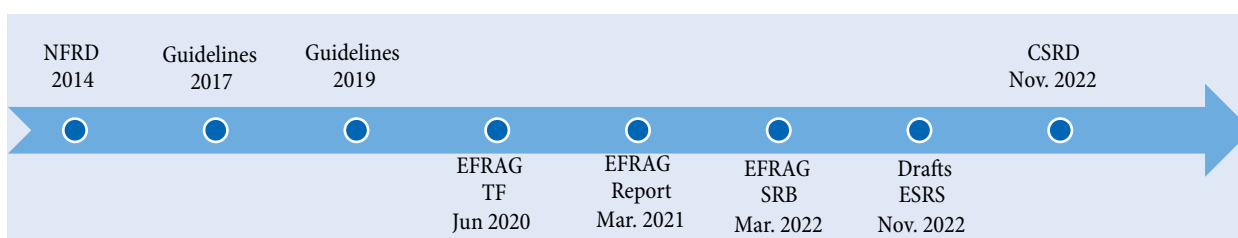
The effects of NFRD were not satisfactory mainly because of a selective approach to disclosure by reporting entities, still low comparability between reports of different preparers and insufficient reliability of presented data. The new Directive, Corporate Sustainability Reporting Directive (CSRD) was developed to address these shortcomings [16]. At the same time, the EC has given mandate to the European Financial Reporting Advisory Group (EFRAG) to produce the sustainability standards, which are seen as a necessary mechanism in achieving comparability among reports across the EU. EFRAG Task Force has started to work on this plan in November 2021, and published the report in March 2022 which provided 54 recommendations for developing sustainability reporting standards. The next step was publishing of EDs of the first set of standards. After public discussion, the drafts are corrected and released to the EC. EFRAG has also changed its governance structure, similar as the IASB Foundation, to incorporate a new board, the Sustainability Reporting Board (SRB).

Besides standardization, the main features of a new Directive are: broader scope of companies that have to publish sustainability disclosures, reporting content that is organized according to ESG classification, double materiality which relates to inside-out and outside-in impact, where some information could be material in

both aspects, but it is sufficient to be material in one to be required for disclosing. This approach is consistent with the EU position that primary users of sustainability-related information are investors as well as civil society actors, while other stakeholders could also benefit from this kind of disclosure. It is also recognized that the location of sustainability disclosures is not irrelevant, and the connectivity of financial and sustainability information is better achieved if they are combined in the same report. Therefore, sustainable-related information will be part of management report. In order to improve the reliability of disclosures, assurance is required, although for the first period limited assurance is acceptable. Reasonable assurance is more demanding, but certainly provides a higher level of information credibility.

So far, standard-setters including GRI, ISSB and the EU have not yet agreed on a generally accepted approach to sustainability reporting, pointing to the fact that this is a complex undertaking. However, GRI and the EU are closer in their orientations to broad audience, so taking a multi-stakeholder perspective in determining sustainability disclosures. They are also striving to cover a broad spectrum of sustainability issues. It is not surprising then that EFRAG chose GRI as a sub-constructor for the process of developing of ESS. Nevertheless, differences are also present, and remarkable, so it is evident that the EU promotes the concept of double materiality, while ISSB and GRI assess materiality only from one angle. Instead of further work on harmonization, it seems that these leading institutions have decided to refrain their positions, but to emphasize mutual compatibility as the panacea. The recent agreement between GRI and ISSB is a proof of this tendency, where both actors declare that it is beneficial to exist two pillars in sustainability reporting – investor-focused standards and multi-stakeholder standards, which are not mutually exclusive but rather compatible. However, in order to reduce

Figure 6: Timeline: Development of EU regulation (not-scaled)



reporting burden for companies, these organizations will work on the alignment of their requirements and other issues (e.g. terminology) whenever it is appropriate. The coming framework of the EU will challenge the position of these international actors, certainly in Europe, but since many reporting entities have international business, it is questionable whether they will have to provide additional disclosures voluntary to achieve global comparability in sustainable reporting with other non-EU companies.

Since the SDGs play a prominent role in tracing the way to a sustainable future and their achievement depends on responsible behavior of businesses, it seems effective to include references to the SDGs in reporting frameworks on sustainability. In this way, it would be possible to more transparently assess companies' strategies and activities towards each of these goals. Therefore, it should be very useful if standard-setters recognize the SDGs as an authoritative source and make them an integral part of reports according to their standards. In CSRD, the EU confirms its commitment to the SDGs and states that the development of ESRS should take into account the SDGs, among other sources. However, it is still not known in which way this will be done. On the other side, GRI has worked together with Un Global Compact and the World Business Council for Sustainable Future on the SDGs Compass, as a practical tool for the operationalization of working and reporting on the SDGs. It looks as a promising approach in providing sustainability reports with the explicit links with the SDGs. However, the challenges in translating the SDGs into applicable indicators should not be overlooked.

Integrating the SDGs into the corporate reporting system

A broad consensus reached during the adoption of the SDGs also made it clear that one-dimensional approach to a company's performance is no longer sufficient to gauge its success. Of course, this does not mean that value creation is an outdated goal, but rather that it cannot remain the only criterion for evaluating performance. The embrace of the SDGs has broadened the notion of corporate performance and encouraged companies to align their

long-term goals with the SDGs. The redefinition of success is oriented toward putting long-term sustainable value in the foreground, which means that along with financial performance, social and environmental performance should also be analyzed. In such circumstances, companies are expected to define their goals in compliance with the SDGs and to incorporate them into their strategies. Bearing this in mind, investors and other stakeholders call for the creation of an extended reporting system that, in addition to financial performance, will disclose social and environmental risks and opportunities, with the same level of accountability that is provided by traditional financial reporting.

Testing the possibility of incorporating the SDGs into an extended reporting system at the corporate level requires a double check. First, it is necessary to test the compatibility of SDGs with ESG approach to reporting. If ESG approach enables the integration of the SDGs into corporate reporting, then we can assume that the usefulness of ESG reporting will be considerably improved. Second, after assessing that ESG approach is the best choice, it is necessary to conceptually set up and regulate a three-dimensional metric. Selecting metrics that will allow investors to assess risks and opportunities is an integral part of this process. It is a good way to redirect capital flows toward companies that focus on long-term sustainability which is compatible with environmental standards and the requirements of the community in which companies operate. The investors' approval of metrics actually obliges companies to apply indicators in order to become recognized as attractive to investors. The use of such metrics should help management to mitigate risks of negative social and environmental impacts on financial performance. Finally, high-quality metrics are crucial for tracking progress in achieving the SDGs, which is important for society as a whole.

To successfully incorporate the SDGs in the reporting system, the first step implies identifying the SDGs that relate to business processes and reporting process. Therefore, it is necessary to map the SDGs across ESG dimensions. Figure 7 presents the SDGs mapping which is based on the idea of Berenberg [5, p. 14], but this version is slightly modified.

Figure 7: Mapping of the SDGs across the three ESG dimensions



Source: [43, p. 4]

Mapping of the SDGs according to ESG criteria indicates that some goals appear within two or even three ESG dimensions. Such mapping is useful to the creators of the system of reporting on long-term corporate sustainability for establishing indicators. At the same time, the presented mapping could be valuable to any company. In this way, management could better understand which SDGs are important for their business practices, what impact the identified SDGs have on long-term sustainability, which value drivers can improve sustainability and which metrics should be selected for regular monitoring of multidimensional performance [5, p. 15].

Investors' interest in the disclosure of information that could be relevant in creating investment strategies is indisputable. They are aware that in the absence of transparent reporting they cannot assess the company's exposure to different types of risks, which means that they will not be able to make informed decisions. Companies can also benefit from high-quality reporting. A better understanding of risks and opportunities contributes to more efficient risk and performance management, more accurate assessment of the possibilities of providing additional sources of finance, enhanced communication with investors and lower cost of capital as well as better public image [14, p. 3]. Bearing all this in mind, both investors and managers look forward to the establishment

of a universal conceptual framework that would enable an easier positioning of companies regarding achieved financial performance, but also regarding potential impacts of social and environmental risks.

However, the current state of the reporting according to the SDGs is not satisfactory. The KPMG Survey in 2017, based mostly on 2016 reports, finds that in a very short period from publishing, the SDGs were already recognized as important to be reported on and companies started linking their activities with the SDGs. It was the case with 39% of N100 companies that report on sustainability [32]. In the 2020 Survey, the trend of SDGs reporting was shown as very intensive and over two thirds of N100 reporting companies disclosed the impact of their activities on the SDGs. Some other interesting findings are also observed, such as that the majority of companies prioritize in their reports the disclosures related to SDG 8, SDG 12 and SDG 13, while the connection with other SDGs is recognized to a lesser degree. However, the reporting quality is questionable, since 86% companies disclosed only positive effects of their activities rather than reporting on negative effects too. It is also evident that many companies do not have performance goals related to the SDGs, which opens debate of their honest commitment to the SDGs [33]. The academic research studies also show deficiencies in SDGs reporting. By investigating reporting practices of European companies

operating in the energy sector as one of environmentally sensitive sectors, authors find that although companies increasingly reported about the SDGs, it was often done in an unbalanced way by prioritizing those goals which can be easily connected with their practice, while some other goals are less addressed [37]. More striking, in most cases there are only general statements of the commitment to the SDGs, but without clear demonstration how the SDGs are integrated in strategies, business models and core operations, revealing that no substantial change in behavior of companies is provoked. The use of attractive pictograms is also noticed to serve for creating a favorable impression of companies' compliance with the SDG but lacking any substance [37].

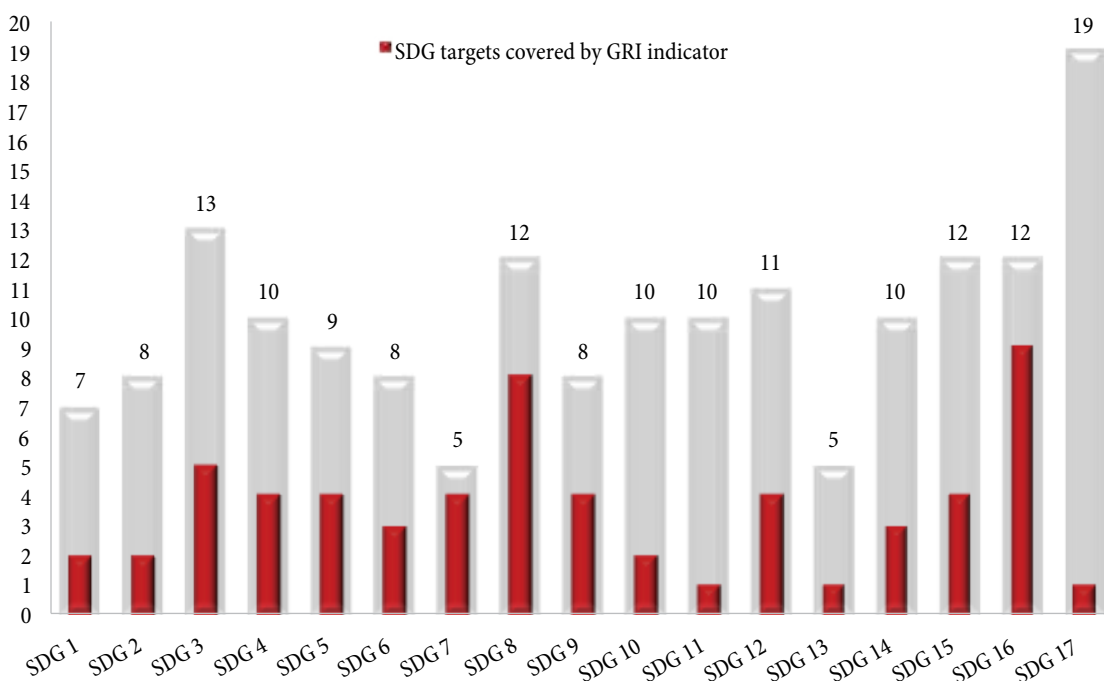
In order to reduce or eliminate inappropriate reporting practices, a comprehensive exercise should be taken to connect the SDGs with concrete indicators capable of measuring companies' impact on the SDGs. The use of indicators is inevitable, but empirical evidence shows that they are not employed sufficiently. In one cross-country study of 1370 companies, only 30 companies (about 2.2% of the sample) report the usage of key performance indicators (KPIs) related to the SDGs [26]. One of main reasons for this lack of KPIs could be seen in the complexity of creating

appropriate indicators. Considering the prevalence of GRI reporting framework and the fact that it already includes a large number of disclosures/indicators, it seems valuable to determine links between the SDGs and available GRI indicators.

We used the SDG Compass [23] to provide an insight into the connectivity of SDGs and SDG targets with GRI indicators [12]. A number of interesting findings could be derived from the statistics provided in Figures 8 and Figure 9. One encouraging result is that there is no SDG which is not covered by some of GRI indicators. However, when we move on the field of SDG targets, the situation is unfavorable since the majority of targets (64%) could not be translated into GRI indicators. Not all 17 SDGs are equally covered. In the case of 13 from 17 SDGs, the number of related targets which are not covered by GRI indicators is higher than the number of targets which are linked to GRI indicators. The worse situation is found in SDG 17. However, only in the case of SDG 7, SDG 8, and SDG 16, we find that the greater number of targets is linked with GRI indicators, with SDG 7 occupying the best position (80% of targets are covered by GRI indicators).

According to GRI categorization, GRI disclosures are classified into four groups: general (G), economic (Ec),

Figure 8: SDGs and GRI connectivity analysis



Source: Authors (based on GRI Compass data)

environmental (En) and social (S). For the achievement of individual SDGs, it could be necessary to work on more than one dimension at the same time. It is clear from the Figure 9 since indicators from different categories could be useful for assessing and monitoring progress to the same goal. In the case of SDG 8 and SDG 16, all four categories of indicators were employed. However, for some SDGs, available GRI indicators could be found only in one category (e.g. SDG 9, SDG 11), although it is obvious that those SDGs also have connections with other topics (categories). To summarize, GRI indicators from economic category are linked with 12SDGs, GRI indicators from environmental category as well as from social category are linked with 9 SDGs each, and general GRI indicators are linked with 5 SDGs.

According to Figure 9, 370 GRI indicators are linked with 17 SDGs, although GRI framework proposes lower number of indicators. This is due to the fact that one GRI indicator (disclosure) could encompass more than one reporting requirement and the disclosure of the same GRI could be put in the context of different SDGs, so appearing a few times in the total number. The discrepancy in the distribution of indicators among the SDGs is significant, ranging from 1 (SDG 17) to 80 (SDG 8). This is partially caused by the different number of targets per individual SDG, but could be also seen as a consequence of measurement issues related to some

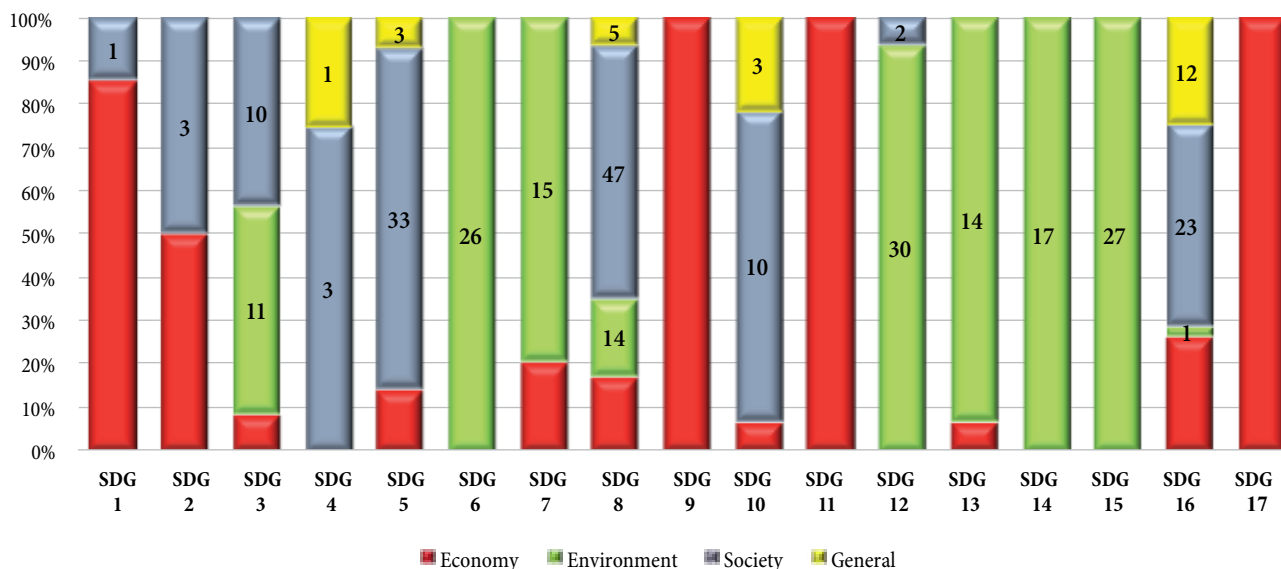
SDGs. Considering the character of indicators, the content analysis of these 370 indicators reveals that the largest number of indicators reflects environmental matters (42%), then social issues (36%), while economic topics are covered by about 16% indicators and general disclosures are represented in smaller percentage (6%). Hence, there is no balance between different dimensions.

Considering that a lot of sustainability reporting frameworks have been already developed, and that GRI offers one of the most advanced frameworks, the results presented in this analysis show that there is still much to be done in the reporting field in order to generate such sustainability reports which are capable of illuminating companies' contribution to the SDGs. The very low percentage of SDG targets covered by specific indicators reflects significant difficulties in the process of operationalization of SDGs. Additionally, voluntary nature of SDGs disclosures coupled with other issues in reporting, such as the lack of independent assurance of reported content, often seriously diminishes the usefulness of reports, which are characterized by a selective approach and symbolic compliance.

Conclusion

The global sustainable development goals reflect a broad consensus about difficult issues that threaten the

Figure 9: Structure of EES indicators



Source: Authors (based on GRI Compass data)

survival of humanity. The global character of these goals points to the magnitude of growing problems stemming from environmental degradation, climate change and overexploitation of natural resources. The urgency of solving these problems was one of the reasons for a widespread support for the adoption of the 2030 Agenda for Sustainable Development. The incorporation of the most delicate problems facing the world and their classification into the 17 individual sustainable development goals have placed the responsibility on global, regional and national institutions, governments, regulatory bodies and companies to take an active part in the implementation of these goals. The SDGs have a global character, but due to the greatest responsibility of companies for the existing problems, these goals must be transposed to the level of national economies and individual companies, which is the only way to enable their full operationalization. The unfavorable context in which the implementation of the SDGs has been taking place in recent years (pandemic, wars, energy crisis) compromises the global commitment to the SDGs, calling into question their achievement by 2030.

Integrating the SDGs into the corporate reporting process is necessary, but not so simple. The need for creating a multidimensional system of reporting on companies' performance, in which the information on financial performance would be complemented with the assessments of social and environmental risks, promotes ESG approach to reporting as one of the possible solutions. Putting the risks related to the environment, societal interests and governance in the foreground also shapes the process of external reporting, i.e. accounting for the company's overall performance. As a result, management is forced to take care of the long-term sustainability of value creation, while investors in equity and debt securities, as well as creditors, can efficiently redirect capital in accordance with the requirements of the green transition.

However, opting for ESG approach raises the issue of choosing priorities between individual dimensions. It is easy to proclaim the equal status of each ESG component, but the question is what to do in the decision-making process when some of them are mutually exclusive. Profitable coal production could be financially attractive. Also, it could be interesting from the societal perspective as it enables

energy generation and contributes to economic growth as well as to an increase in employment. The problem is that it compromises environmental protection. It is an open question whether in this or similar situations the priority should be given to financial goals or environmental problems. Given that all three goals are equally important, and that we cannot give up any of them, striking a balance between them is a major challenge.

Reporting is the best way for companies to account for and communicate to the public their approach to the implementation of the SDGs. Unfortunately, the expertise and orderliness that already exist in financial reporting could not be easily attained in sustainability reporting. The current situation points to the existence of a large number of private and public organization competing for their place and trying to gain legitimacy as the setters of guidelines and reporting standards in the area of sustainability. Everybody suffers due to this confusion, including those who compile reports as well as those who use them. The problems are multi-layered, ranging from the possibility of avoiding any reporting when it is on a voluntary basis, the inconsistency and incomparability of presented reports, to the doubts about the content and its faithful presentation. Leaving sustainability reporting only to the market incentives and mechanisms has turned out to be counterproductive. In recent years, we have witnessed the efforts toward the development of binding regulations, led by the EU and aimed at improving the relevance and quality of sustainability disclosures.

Although the SDGs are globally recognized as an imminent basis for tracing the path to a sustainable planet and, therefore, as a benchmark for assessing the behavior and progress of companies in the field of sustainability, their reporting status is rather undefined. Even the companies that tend to prepare sustainability reports sometimes fail to provide any reference to the SDGs. On the other hand, empirical findings show that the presence of disclosure about the SDGs does not necessarily imply high-quality information, nor a serious commitment of companies to these goals. There are few examples showing that the SDGs have encouraged companies to change their behavior and to actually incorporate these goals in their strategies and undertake concrete activities to implement them.

In most cases, companies present in their reports only a symbolic commitment to the SDGs, while there is no description of specific activities in this field, which casts suspicion on the very existence of the related efforts. A further problem is related to the practice of disclosing only the company's positive effects on the SDGs, while leaving out the bad ones even though they exist, and to the general validity of presented information, thereby clouding the actual position of the company – a green company or a greenwashing company. It seems that there is a need for investing a lot of effort to make reporting fit for purpose, which involves the development of binding regulations and a comprehensive set of indicators that would be suitable for monitoring the overall progress of companies in achieving the SDGs.

References

- Adams, C., Alhamood, A., He, X., Tian, J., Wang, L. & Wang, Y. (2022). *The development and implementation of GRI standards: practice and policy issues*, in Adams, C. (Ed.), *Handbook of Accounting and Sustainability*, Edward Elgar Publishing.
- Adams, C., Alhamood, A., He, X., Wang, L. & Wang, Y. (2021). *The double-materiality concept application and issues*. Global Reporting Initiative.
- Arora, U. M., & Sarker, T. (2023). Financing for Sustainable Development Goals (SDGs) in the Era of COVID19 and Beyond. *The European Journal of Development Research (2023) 35:1-19*, 35(1), 1-19.
- Badia, F., Bracci, E., & Tallaki, M. (2020). Quality and Diffusion of Social and Sustainability Reporting in Italian Public Utility Companies, *Sustainability*, 12, 4525.
- Berenberg. (2018). *Understanding the SDGs in sustainable investing*. Hamburg, Germany: Joh. Berenberg, Gossler & Co. KG.
- Boiral, O. (2013). Sustainability reports as simulacra? A counter-account of A and A+ GRI reports. *Accounting, Auditing & Accountability Journal*, 26(7), 1036-1071.
- Boiral, O., Heras-Saizarbitoria, I., & Brotherton, M. C. (2019). Assessing and improving the quality of sustainability reports: The auditors' perspective, *Journal of Business Ethics*, 155(3), 703-721.
- Bradbury M, & Schröder L. (2012). The content of accounting standards: Principles versus rules. *The British Accounting Review*, 44(1), 1-10.
- Byus, K., Deis, D., & Ouyang, B. (2010). Doing Well by Doing Good: Corporate Social Responsibility and Profitability. *SAM Advanced Management Journal*, 75(1), 44-55.
- De Villiers, C., La Torre, M., & Molinari, M. (2022). *The Global Reporting Initiative's (GRI) past, present and future: Critical reflections and a research agenda on sustainability reporting (standard-setting)*. *Pacific Accounting Review*, 34(5), 728-747.
- Dhaliwal, D., Li, O.Z., Tsang, A. & Yang, Y.G. (2014). Corporate social responsibility disclosure and the cost of equity capital: the roles of stakeholder orientation and financial transparency. *Journal of Accounting and Public Policy* 33(4), 328–355.
- Diaz-Sarachaga JM. (2021). Shortcomings in reporting contributions towards the sustainable development goals. *Corporate Social Responsibility and Environmental Management*, 28, 1299–1312.
- Đuričin, D. (2022). Integralni sistem finansijskog izveštavanja kao infrastruktura «zelene» tranzicije. *Računovodstvo, revizija i finansije u uslovima nove normalnosti, digitalizacije i „zelene” tranzicije* (pp. 21-44). Banja Vrućica: Savez računovođa i revizora Republike Srbije.
- European Commission. (2018). *Communication from the Commission. Action Plan: Financing Sustainable Growth (COM(2018) 97)*. Brussels. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0097&from=EN>
- European Commission. (2017). *Communication from the commission – guidelines on non-financial reporting (methodology for reporting non-financial information) (2017/C 215/01)*. Retrieved from [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017XC0705\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017XC0705(01)&from=EN)
- European Parliament, & Council of the European Union. (2022). Directive amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting. Directive 2022/2464/EU.
- European Parliament, & Council of the European Union. (2014). Directive amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups. Directive 2014/95/EU.
- GAA. (2008). *Getting to the heart of the issue*. Global Accounting Alliance.
- Giner, B., Luque-Vílchez, M. (2022). A commentary on the “new” institutional actors in sustainability reporting standard-setting: a European perspective. *Sustainability Accounting, Management and Policy Journal*, 13(6), 1284-1309.
- Global Reporting Initiative. (2023). *Our mission and history*. Retrieved from <https://www.globalreporting.org/about-gri/mission/history/>
- Global Reporting Initiative. (2022). *GRI Universal Standards 2021 Frequently Asked Questions*. Retrieved from <https://www.globalreporting.org/media/zauil2g3/public-faqs-universal-standards.pdf>
- Global Reporting Initiative. (2016). *Consolidated Set of GRI Sustainability Reporting Standards 2016*. Retrieved from <http://www.ekvilib.org/wp-content/uploads/2018/03/GRI-standardi-2016.pdf>
- GRI, United Nations Global Compact, & WBCSD. (2015). *SDG Compass: The Guide for Business Action on the SDGs*. Retrieved from: <https://sdg.compass.org/>
- Gray, R. (2006). Social, environmental and sustainability reporting and organisational value creation? Whose value? Whose creation? *Accounting Auditing & Accountability Journal*, 19(6), 793-819.
- Filho, W. L., Brandli, L. L., Salvia, A. L., Rayman-Bacchus, L., & Platje, J. (2020). COVID-19 and the UN Sustainable Development

- Goals: Threat to Solidarity or an Opportunity? *Sustainability*, 1-14. doi:doi:10.3390/su12135343
26. Heras-Saizarbitoria, I., Urbietta, L., & Boiral, O. (2022). Organizations' engagement with sustainable development goals: From cherry-picking to SDG-washing? *Corporate Social Responsibility and Environmental Management*, 29(2), 316–328.
 27. Hoffmann, E., Dietsche, C. & Hobelsberger, C. (2018), Between mandatory and voluntary: nonfinancial reporting by German companies, *Sustainability Management Forum*, 26, pp. 47-63.
 28. IEA. (2022). *World Energy Outlook 2022*. Paris: International Energy Agency. Retrieved from www.iea.org
 29. IFRS Foundation. (2020). *Consultation paper on sustainability reporting*. IFRS Foundation.
 30. IFRS Foundation. (2018). *Use of IFRS Standards around the world*. IFRS Foundation.
 31. IPES food. (2022). *Another Perfect Storm*. International Panel of Experts on Sustainable Food Systems. Retrieved from www.ipes-food.org
 32. KPMG. (2017). *KPMG The Road Ahead: KPMG Survey of Corporate Responsibility Reporting 2017*. Zurich: KPMG.
 33. KPMG. (2020). *KPMG The Time Has Come: KPMG Survey of Corporate Responsibility Reporting 2020*. Zurich: KPMG.
 34. Khetrpal, S., & Bhatia, R. (2020, May). Impact of COVID-19 pandemic on health system & Sustainable Development Goal 3. *Indian Journal of Medical Research*, 151(5), 395-399.
 35. Koller, T., Goedhart, M., & Wessels, D. (2020). *Valuation: Measuring and Managing the Value of Companies by McKinsey & Company Inc*. Hoboken, New Jersey: John Wiley & Sons Inc.
 36. Malinić, D. (2021). Value-Based Management, Long Term Sustainability and Corporate Social Responsibility. *Facta Universitatis, Series: Economics and Organization*, 18(4, Special Issues), 357-367.
 37. Manes-Rossi, F., & Nicolo, G. (2022). Exploring sustainable development goals reporting practices: From symbolic to substantive approaches—Evidence from the energy sector. *Corporate Social Responsibility and Environmental Management*, 29(5), 1799–1815.
 38. Nobes, C. W. (2005). Rules-based standards and the lack of principles in accounting. *Accounting Horizons*, 19(1), 25–34.
 39. OECD. (2022). *Environmental impacts of the war in Ukraine and prospects for a green reconstruction*. Organisation for Economic Co-operation and Development. Retrieved from <https://www.oecd.org/ukraine-hub>
 40. Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate Social Responsibility and Corporate Financial Performance: A Meta-Analysis. *Organization Studies*, 24(3), 403-441.
 41. OXFAM. (2022, January 17). *Ten richest men double their fortunes in pandemic while incomes of 99 percent of humanity fall*. Retrieved from OXFAM International: <https://www.oxfam.org/en/press-releases/ten-richest-men-double-their-fortunes-pandemic-while-incomes-99-percent-humanity>
 42. Runde, D. F., Metzger, C., & Hareem, F. (2020). *Covid-19 Demands Innovative Ideas for Financing the SDGs*. Center for Strategic and International Studies. Retrieved from <https://www.jstor.org/stable/resrep24770>
 43. Sætra, H. S. (2021). A Framework for Evaluating and Disclosing the ESG Related Impacts of AI with the SDGs. *Sustainability*(13), 1-17
 44. Schipper, K. (2003). Principles-based accounting standards. *Accounting Horizons*, 17(1), 61–72
 45. Shulla, K., Voigt, B., Cibian, S., Scandone, G., Martinez, E., Nelkovski, F., & Salehi, P. (2021, March 17). Effects of COVID19 on the Sustainable Development Goals (SDGs). *Discover Sustainability*, 1-19. doi:<https://doi.org/10.1007/s43621-021-00026-x>
 46. Shulla, K., Filho, W. L., Lardjaned, S., Sommer, J. H., & Borgemeister, C. (2020). Sustainable development education in the context of the 2030 Agenda for. *International Journal of Sustainable Development & World Ecology*, 1-12. doi:<https://doi.org/10.1080/13504509.2020.1721378>
 47. Silva, S. (2021). Corporate contributions to the sustainable development goals: An empirical analysis informed by legitimacy theory. *Journal of Cleaner Production*, 292.
 48. Simoni L., Bini L. & Belluci M. (2020). Effects of social, environmental, and institutional factors on sustainability report assurance: evidence from European countries. *Meditari Accountancy Research*, 28(6), 1059-1087.
 49. Suchman, M.C. (1995). Managing legitimacy: strategic and institutional approaches. *Academy of Management Review*, 20(3), 571-610.
 50. Tonelli, M., & Cristoni, N. (2019). *Strategic Management and the Circular Economy*. New York: Routledge, Taylor and Francis Group.
 51. UN. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. New York: United Nations.
 52. UNCTAD. (2019). *SDG Investment Trends Monitor*. Geneva: Investment and Enterprise Division UNCTAD.
 53. UNCTAD. (2020). *SDG Investment Trends Monitor*. Geneva: Investment and Enterprise Division UNCTAD.
 54. UNEP. (2022). *The Environmental Impact of the Conflict in Ukraine - A Preliminary Review*. Nairobi: United Nations Environment Programme. Retrieved from <https://wedocs.unep.org/20.500.11822/40746>
 55. UNU-WIDER 2020. (2020). *Estimates of the impact of COVID-19 on global poverty*. United Nation University World Institute for Development Economics Research. doi:<https://doi.org/10.35188/UNU-WIDER/2020/800-9>
 56. Wang, Q., Dou, J., & Jia, S. (2016). A Meta-Analytic Review of Corporate Social Responsibility and Corporate Financial Performance. *Business & Society*, 1-39.
 57. World Bank, UNICEF, FCDO, USAID, BMGF, UNESCO. (2022). *The State of Global Learning Poverty: 2022 Update*. World Bank.
 58. Zattoni, A. and Cuomo, F. (2008), Why Adopt Codes of Good Governance? A Comparison of Institutional and Efficiency Perspectives. *Corporate Governance: An International Review*, 16(1), 1-15.
 59. Zhan, J. X., & Santos-Paulino, A. U. (2021). Investing in the Sustainable Development Goals: Mobilization, channeling, and impact. *Journal of International Business Policy*(4), 166–183.



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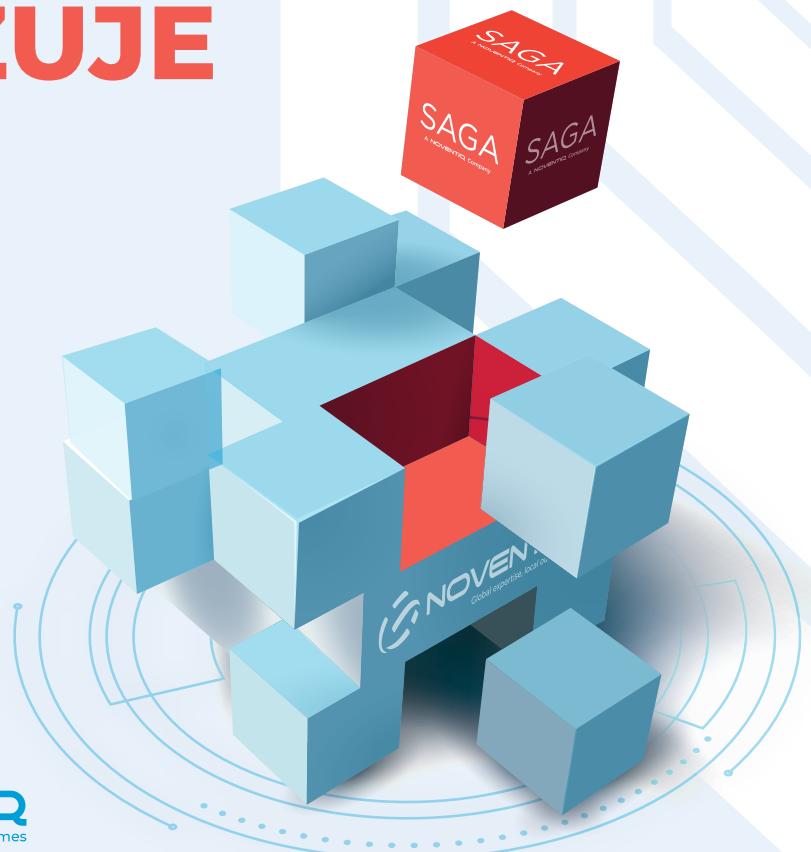
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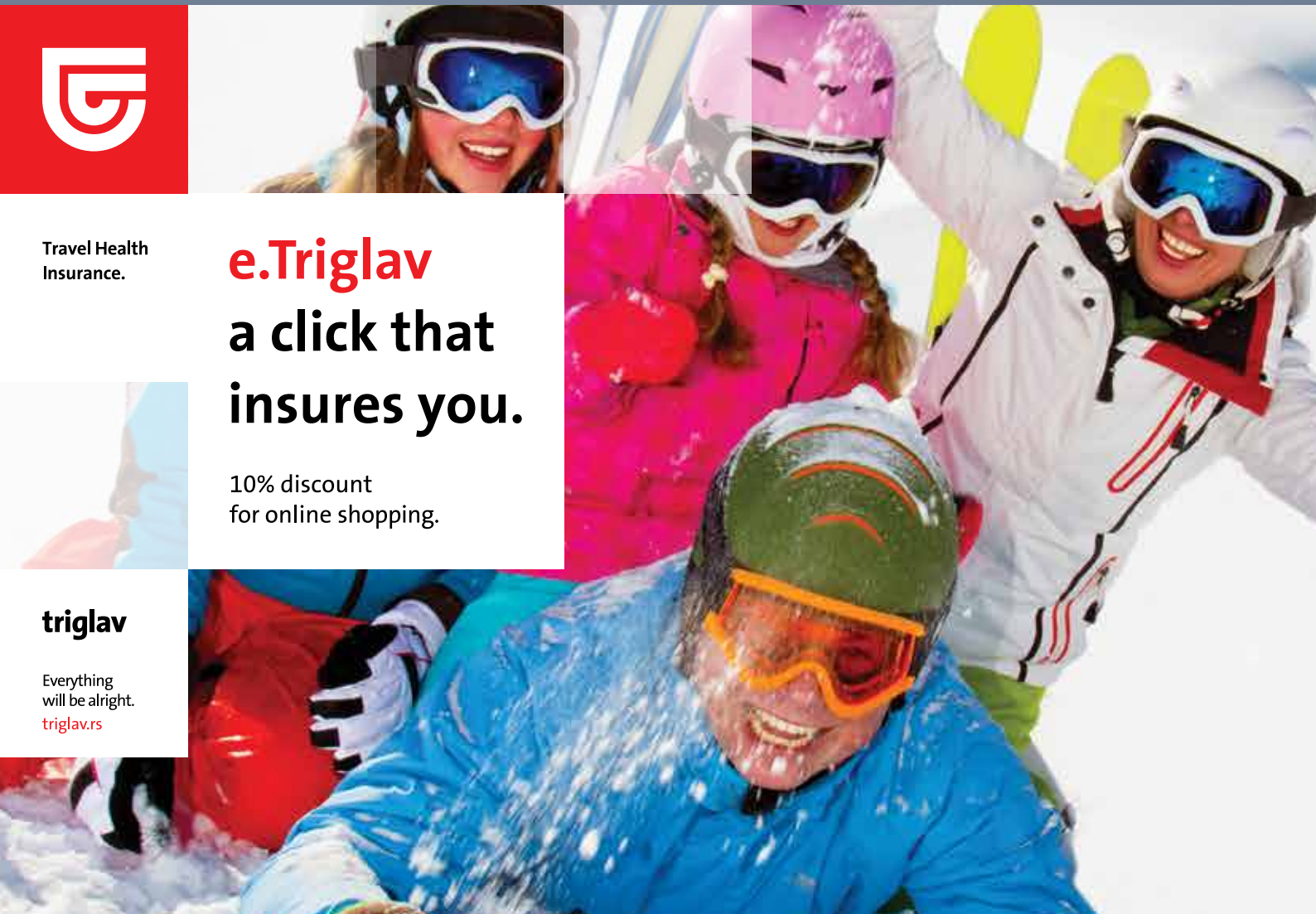
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SUSTAINABILITY OF FISCAL FRAMEWORK AND ECONOMIC GROWTH IN SERBIA

Održivost fiskalnog okvira i privredni rast u Srbiji

Abstract

In the last three years, Serbia led a very expansionary fiscal policy, with a fiscal deficit higher than the average of the countries of Central and Eastern Europe (CEE)¹ and the Western Balkans². This led to a significant rise in public debt in absolute terms, while public debt-to-GDP ratio increased only slightly, due to the currency structure of debt, the unchanged exchange rate of the dinar against the euro, and high inflation. At the end of 2022, Serbia was the European median in terms of public debt, although the debt was above the average of comparable CEE countries. Despite the moderate level of debt, public interest expenditures and the effective interest rate on Serbia's public debt are relatively high in European terms, which is a consequence of the fact that financial markets in less developed countries see the limit of sustainability of public finances at a lower level of indebtedness than in developed countries. Tightening of monetary policy in the world will trigger the further increase of government spending on interest, which may crowd-out more productive public expenditures or narrow the room for tax cuts, which is why it is especially important to keep the public debt at a lower level in the coming period. At the end of 2022, Serbia implemented a fundamental reform of fiscal rules. The advantage of the new fiscal rules is reflected in a lower deficit target and a more detailed elaboration of the government's response mechanisms to violations of the rules. Raising the public debt ceiling to the upper limit of the prohibitive zone, the elimination of countercyclical elements in the deficit rule and the absence of clear escape clauses for periods of crisis may pose a limitation. The new fiscal rules could contribute to the sustainability of Serbia's fiscal policy, provided that their consistent and continuous application is ensured.

Keywords: *fiscal policy, fiscal rules, fiscal framework and economic growth*

Sažetak

U prethodne tri godine Srbija je vodila vrlo ekspanzivnu fiskalnu politiku, sa fiskalnim deficitom većim od proseka zemalja Centralne i Istočne Evrope (CIE) i Zapadnog Balkana. To je dovelo do znatnog rasta javnog duga u apsolutnom iznosu, ali je odnos javnog duga i BDP-a porastao relativno malo, zbog devizne strukture javnog duga, nepromenjenog kursa dinara prema evru i visoke inflacije. Krajem 2022. godine, Srbija je prema visini javnog duga bila evropska medijana, mada je dug bio iznad proseka uporedivih zemalja CIE. I pored umerenog nivoa duga, javni rashodi na kamate i efektivna kamatna stopa na javni dug Srbije su u evropskim razmerama relativno visoki, što je posledica činjenice da finansijska tržišta u manje razvijenim državama granicu održivosti javnih finansija vide na nižem nivou zaduženosti nego u razvijenim državama. Zatezanje monetarne politike u svetu uticaće na dalje povećanje troškova kamata, koji istiskuju produktivnije javne rashode ili prostor za smanjenje poreza, zbog čega je posebno važno u narednom periodu javni dug držati na nižem nivou. Srbija je krajem 2022. godine izvršila temeljnu reformu fiskalnih pravila. Prednost novih fiskalnih pravila ogleda se u nižem ciljanom deficitu i detaljnijoj razradi mehanizama reagovanja države na kršenje pravila. Podizanje limita javnog duga na gornju granicu prohibitivne zone, eliminacija kontradiktivnih elemenata u pravilu vezanom za fiskalni deficit i odsustvo korektivnih mehanizama za krizne periode, mogu predstavljati ograničenja. Nova fiskalna pravila bi mogla da doprinesu održivosti fiskalne politike Srbije, pod uslovom da se obezbedi njihova dosledna i kontinuirana primena.

Ključne reči: *fiskalna politika, fiskalna pravila, fiskalni okvir i privredni rast*

1 Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia

2 Albania, Bosnia and Herzegovina, Montenegro and North Macedonia

Introduction: Economic performance of Serbia in the short and long run

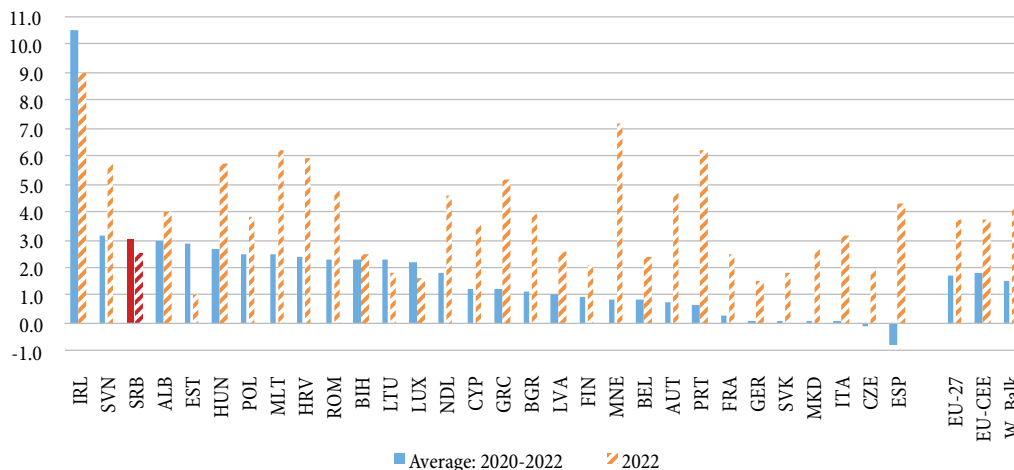
In the second half of 2022, there was a noticeable slowdown in economic growth in Serbia. This is a consequence of high inflation, changes in the terms of trade (due to the strong rise in energy prices), the rise in interest rates due to the tightening of monetary policy in an effort to curb inflation, and problems in supply chains that existed in a significant part of the year [12]. In addition to the aforementioned factors that affected economic trends in other European countries as well, the economic activity in 2022 in Serbia was additionally negatively affected by the problems with the business operations of the state-owned companies in the energy sector and the bad agricultural season. Consequently, the 2022 GDP growth rate in Serbia is downgraded to between 2.2 and 2.5 percent. On the demand side, there was a slowdown in all components except for the exports, which continued to grow primarily due to the increase in export prices. On the other hand, viewed from the production side, strongly negative trends in the second half of the year are recorded in agriculture and construction, and the slowdown is also noticeable in other sectors, except in information and telecommunication technologies.

The slowdown in economic growth in 2022 also occurred in other European countries. According to revised estimates, the average GDP growth rate in the EU-27, as well as in the EU countries from Central and

Eastern Europe (EU-CEE) in 2022 stood at about 3.8 percent, and in the countries of the Western Balkans about 4.1 percent (Figure 1). The growth of Serbia's economy in 2022 was slower compared to EU member states due to the earlier recovery of Serbia's economy from the pandemic crisis – in 2021 economic growth in Serbia was higher by about 1.5 percentage points compared to the EU and CEE average. Most European countries achieved full economic recovery from the pandemic crisis later – yet in 2022, which is, among other things, a consequence of the longer enforcement of epidemiological restrictions. In addition to that, bad agricultural season and the problems in the energy sector also contributed to weaker growth performance of Serbian economy in 2022.

However, observed at the level of a three-year period, the economy of Serbia has achieved solid results in terms of the average growth rate of GDP, which in the period from 2020 to 2022 averaged about 3 percent per year, while in the EU-27, the EU-CEE and the countries of the Western Balkans, the average annual GDP growth rate was 1.5-1.7 percent per year (Figure 1). Similar results to Serbia in the previous three years were also achieved by Slovakia, Albania, Estonia and Hungary, while almost all other European countries posted lower growth, except Ireland, which posted enormous economic growth during that period due to the development of the export-oriented IT industry. Solid results in terms of economic growth in Serbia in the previous three years are the result of the difference in the structure of the economy (smaller share

Figure 1: GDP growth rates in Europe, 2020-2022 (%)



Source: IMF World Economic Outlook Database, Oct 2022 and Ministry of Finance of Serbia

of sectors strongly affected by the pandemic), milder epidemiological measures and very high fiscal and monetary incentives applied in Serbia in the first and second year of the pandemic [14].

Pronounced geopolitical risks associated with the war in Ukraine, as well as uncertainty regarding the further development of the relations between the West and China, and the presence of relatively high inflation will make economic growth in most European countries relatively slow in 2023 as well. Similarly, according to the assessment of international financial institutions, the GDP growth rate in Serbia in 2023 may range between 2 percent and 2.5 percent. Such economic growth would be close to the average of the countries of the Western Balkans, and somewhat higher than the expected growth in the EU countries (Figure 2). Medium-term economic forecasts show that, assuming that there is no significant deterioration in the country's international position, in the period from 2023 to 2025, the average annual GDP growth rate in Serbia could be around 3.3 percent, which is slightly higher than in the Western Balkans countries (3 percent), EU-CEE (2.7 percent), as well as in relation to the EU-27 average (2.2 percent).

Achieving slightly faster economic growth in Serbia in the next three years would lead to a slight economic convergence with European countries in terms of economic development. However, in order to significantly reduce the gap in development, which compared to the EU average amounts to almost 60 percent, and compared to

the CEE countries about 40 percent [15], it is necessary for the economy of Serbia to achieve economic growth which would be by 1-2 percentage points faster than in those countries, in a period of a couple of decades. In order to achieve this, along with improving the quality of general business conditions (rule of law, efficiency of administration and fight against corruption), it is necessary to ensure microeconomic and fiscal stability and public finance sustainability in the long term, which is crucially influenced by the nature of fiscal policy [10].

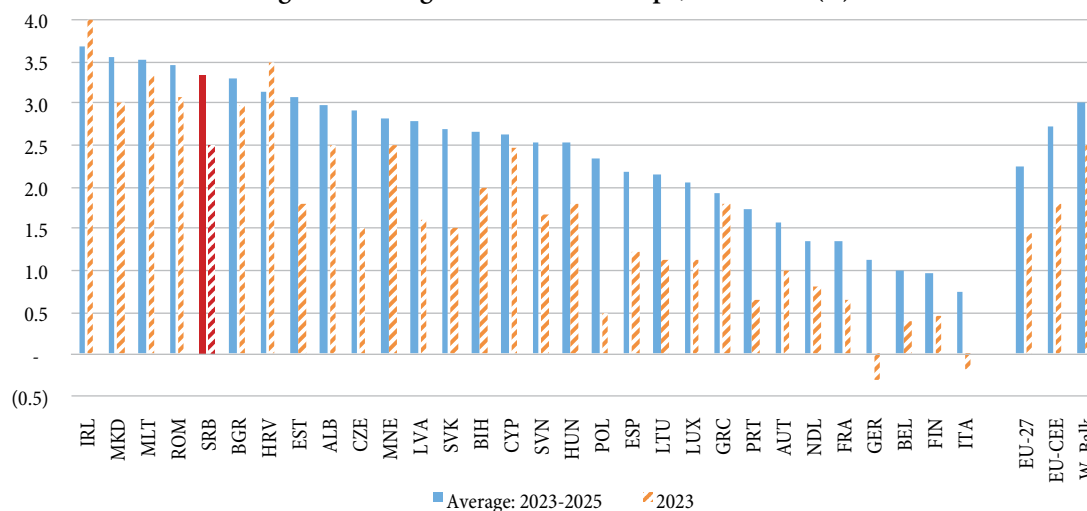
In this regard, this paper analyzes the sustainability of Serbia's fiscal policy, based on three parameters – the dynamics of the actual and structural fiscal deficit, the level of public debt and the relative volume of government spending on interest. In addition, the paper evaluates the reform of fiscal rules in Serbia, as an institutional framework for sustainable fiscal policy.

Sustainability of general fiscal framework of Serbia: Stylized facts

Fiscal balance

The fiscal balance is a basic indicator of the fiscal stance of a country, because its level affects the dynamics of the public debt, the need for financing, as well as the total domestic demand. Serbia entered the period of the pandemic crisis with a solid fiscal balance. In the period 2017-2019 on average, Serbia posted a consolidated fiscal surplus of around 0.5 percent of GDP. Similarly, most EU countries

Figure 2: GDP growth rates in Europe, 2023-2025 (%)



Source: IMF World Economic Outlook Database, Oct 2022 and Ministry of Finance of Serbia

entered the pandemic period with a low fiscal deficit, while in the Western Balkans countries, pre-pandemic fiscal deficit was moderate (Figure 3). After that, in the period of the COVID-19 pandemic, there was a surge in the fiscal deficit in all European countries, primarily due to large fiscal stimuli [11], and to a certain extent also due to the automatic decline in tax revenues caused by the slowdown in economic activity.

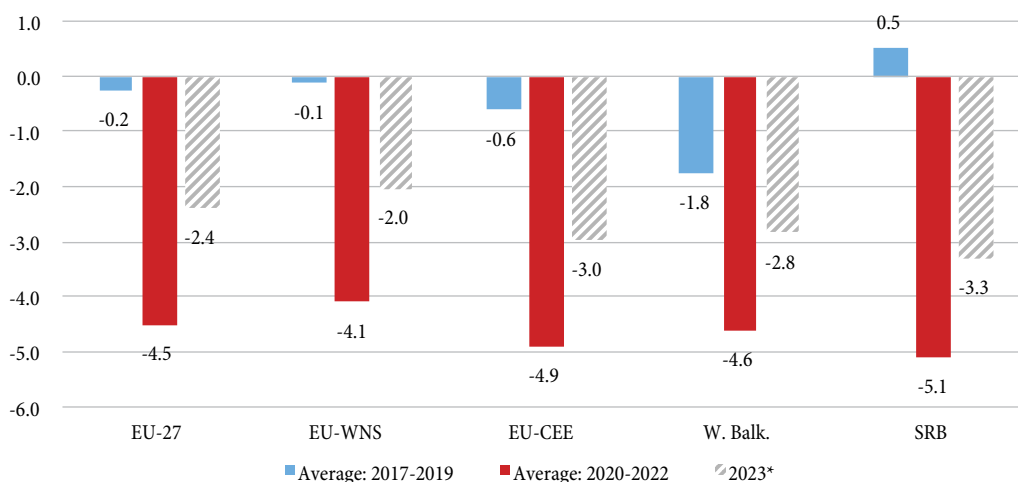
In the period from 2020 to 2022, Serbia posted a high fiscal deficit of about 5.1 percent per year on average, which was higher compared to the average deficit in the EU-27 countries, as well as to the old member states from Western, Northern and Southern Europe (EU-WNS), and in relation to the EU-CEE countries and the countries of the Western Balkans (Figure 3). Bearing in mind that in this period the average GDP growth in Serbia was above the average of these countries, it is concluded that the high fiscal deficit was predominantly a consequence of discretionary fiscal policy measures, some of which were economically justified (support to the economy in the first and second year of the pandemic), while some were not (non-means tested payment of financial aid to citizens regardless of financial situation), while some measures were economically and politically forced (e.g. subsidies for energy sector).

Serbia entered the new wave of the global crisis, caused by the war in Ukraine, with a relatively high fiscal deficit, which, together with other factors related to the doctrine of fiscal policy, influenced the expected

fiscal deficit in Serbia to be higher in 2023 than in most other European countries (Figures 3). The presented data suggest that after the fiscal expansion during the pandemic, developed European countries (EU-WNS) managed to halve their fiscal deficits, while the less developed countries – the EU-CEE, the Western Balkans, as well as Serbia, continued with the very expansionary fiscal policy. The difference regarding the dynamics of the fiscal balance in developed and other European countries can be explained by subjective factors related to the differences in the level of institutional development, as well as by objective circumstances, since the countries of Central, Eastern and South-eastern Europe are in some segments more affected by the effects of the Ukrainian crisis.

The actual fiscal balance is a consequence of the design of the fiscal policy, as well as the general trends in economic activity. In case of strong economic growth or an increase in imports, tax revenues automatically increase, as a result of which the fiscal deficit decreases (or the fiscal surplus increases) and *vice versa*. Therefore, in addition to the actual one, the structural fiscal balance is used to assess the country’s fiscal position. Structural fiscal balance refers to cyclically adjusted budget balance, adjusted for non-structural – temporary and/or one-off revenue and expenditure items. Structural fiscal balance shows what the fiscal balance would be if GDP grew at the natural rate and there were no extraordinary one-off factors. In some cases, structural fiscal balance also takes into account adjustments related to absorption (see: [1]).

Figure 3: Fiscal balance in Europe, 2020-2023 (% GDP)



Source: IMF World Economic Outlook Database, Oct 2022 and Ministry of Finance of Serbia

The data shown in Figure 4 indicate that Serbia entered the pandemic period with a structural fiscal surplus, which during the pandemic deteriorated into a relatively large structural deficit – close to the EU-CEE average, and significantly higher than the average of developed EU countries. Although a relatively high real fiscal deficit is planned in Serbia in 2023, the structural fiscal deficit has been significantly reduced compared to previous years and should amount to around 1.1 percent of potential GDP, which can be considered a sustainable level. This is a consequence of the fact that a significant part of the actual deficit in Serbia in 2023 is to large extent the consequence of extraordinary expenditures for the energy sector (about 1.5 percent of GDP), and slower growth of the economy than the natural growth rate (which will affect the reduction of tax revenues for 0.7-0.8 percent of GDP).

Public debt

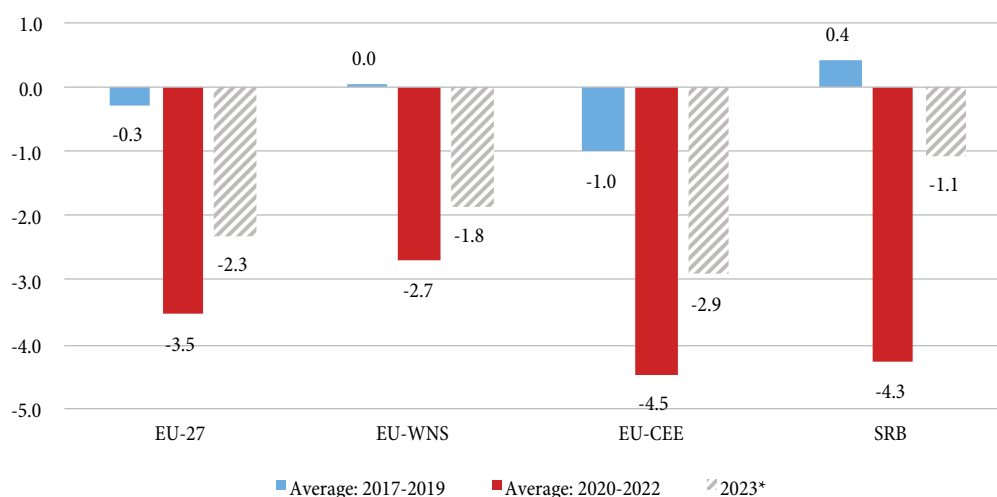
Consolidated general government (gross) debt is considered one of the key indicators of public finance sustainability and prudence of country's fiscal policy. Raising the public debt up to a certain level, for the purpose of financing productive spending (e.g. in infrastructure, human capital, research) may have a positive impact on economic growth [2], [16]. However, raising the debt above the sustainability threshold (entering the prohibitive zone) triggers adverse impact on economic growth, primarily due to surge in country risk and interest rates. Empirical studies show that this threshold of public debt is rising in the level of

development of the country. [2] found that in the Euro Area countries, rise of public debt above the 95 percent of GDP threshold has negative impact on economic activity. Consistently, [9] showed that public debt threshold in Central Europe is at around 82 percent of GDP, in Eastern Europe being around 72 percent of GDP, while in the Western Balkans countries at around 58 percent of GDP. At the same time, [13] found that prohibitive zone of public debt in developing countries is around 45 percent of GDP.

At the end of 2022 public debt of Serbia stood at around 55 percent of GDP, which is close to European median and the mean for the Western Balkans countries, albeit considerably higher than in the EU-CEE countries (Figure 5). Serbia was running large fiscal deficits in the last three years (Figure 3) that were on average larger than in most other European countries, which is why total public debt rose by as much as EUR 9.4 billion.

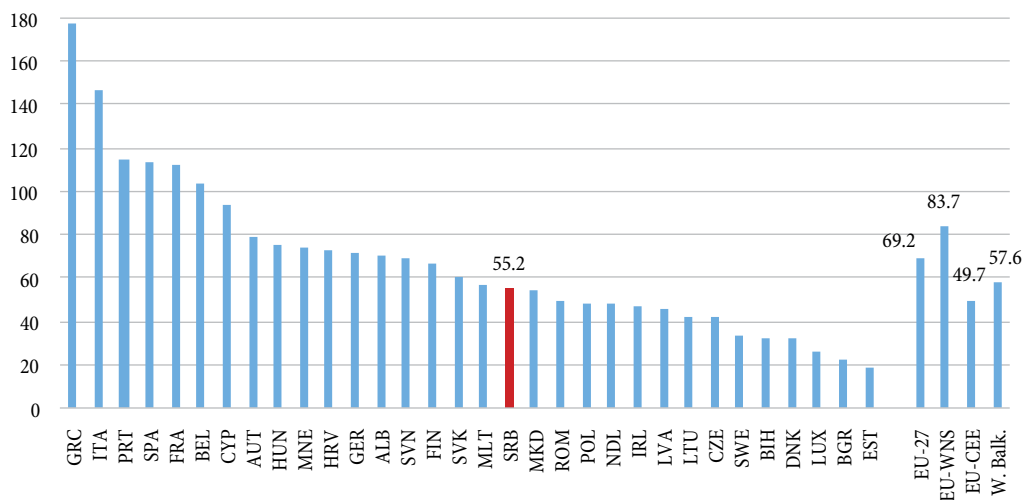
However, rise of public-debt-to-GDP ratio in Serbia over that period was relatively mild and smaller than in other European countries (Figure 6). Inconsistent dynamics of absolute and relative amount of public debt in Serbia over the past three years is the consequence of currency structure of public debt, exchange rate dynamics and inflation. Namely, due to real growth (of more than 9 percent) and high cumulative inflation, Serbia's nominal GDP rose by almost 29 percent in the period 2020-2022. On the other hand, exchange rate of Serbian dinar to Euro was nominally unchanged over that period. Since debt denominated in euro and dinars accounts for close to 70

Figure 4: Structural fiscal balance in Europe, 2017-2023 (% potential GDP)



Source: IMF World Economic Outlook Database, Oct 2022

Figure 5: Public Debt in Europe, the end of 2022 (% GDP)



Source: IMF World Economic Outlook Database, Oct 2022 and Ministry of Finance of Serbia

percent of the total public debt, unchanged exchange rate with high inflation had a significant dampening impact on the debt-to-GDP ratio.

Although public debt in Serbia is within the empirically estimated thresholds, under which debt has no significant impeding impact on economic growth, from the fiscal sustainability and macroeconomic point of view it would be beneficial to keep the public debt substantially below the upper bound of the threshold, which is the case in many EU-CEE countries.

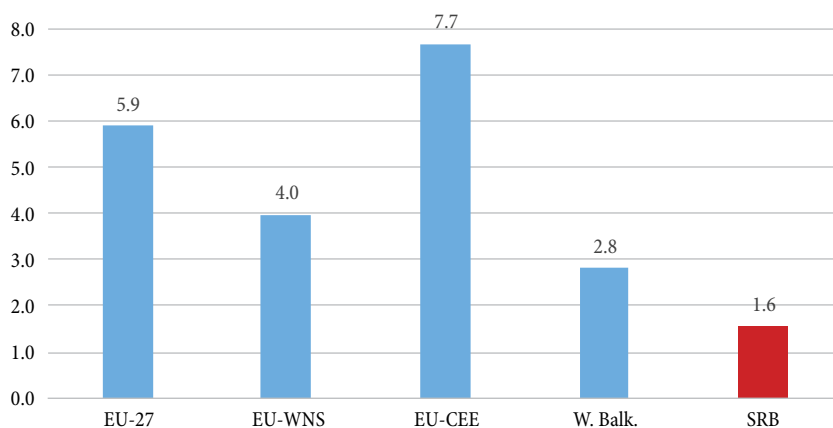
Government spending on interest

The auxiliary indicator for monitoring and assessment of sustainability of fiscal policy is the volume of government spending on interest, stated relative to GDP or in the form of the effective interest rate, calculated as the ratio

of the interest spending and the level of public debt. Relationship between the interest spending and the level of public debt is not linear, since the volume of interest spending also depends on the level of interest rates that are a function of country risks and the general conditions at the capital markets. The volume of interest expenditures and the effective interest rate indicate the crowding-out effect of public debt on other spending items (e.g. public investment or social welfare programs) or on reduction of fiscal space for tax cuts. At the same time, these indicators signal the confidence of the financial markets in long-run sustainability of country’s fiscal stance.

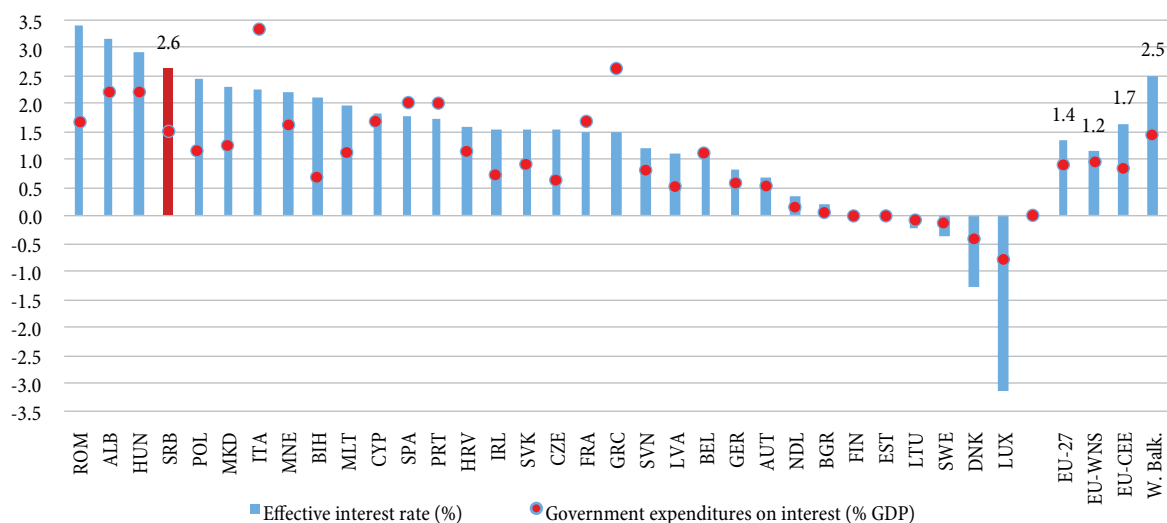
Government spending on interest in Serbia peaked at 3 percent of GDP in 2015. Since then, due to successful implementation of fiscal consolidation, fall and then stabilization of public debt and very favourable general

Figure 6: Change in public debt in Europe from the end 2019 to the end 2022 (% GDP)



Source: Author’s calculations

Figure 7: Government spending on interest (% GDP) and effective interest rate (%) in 2022

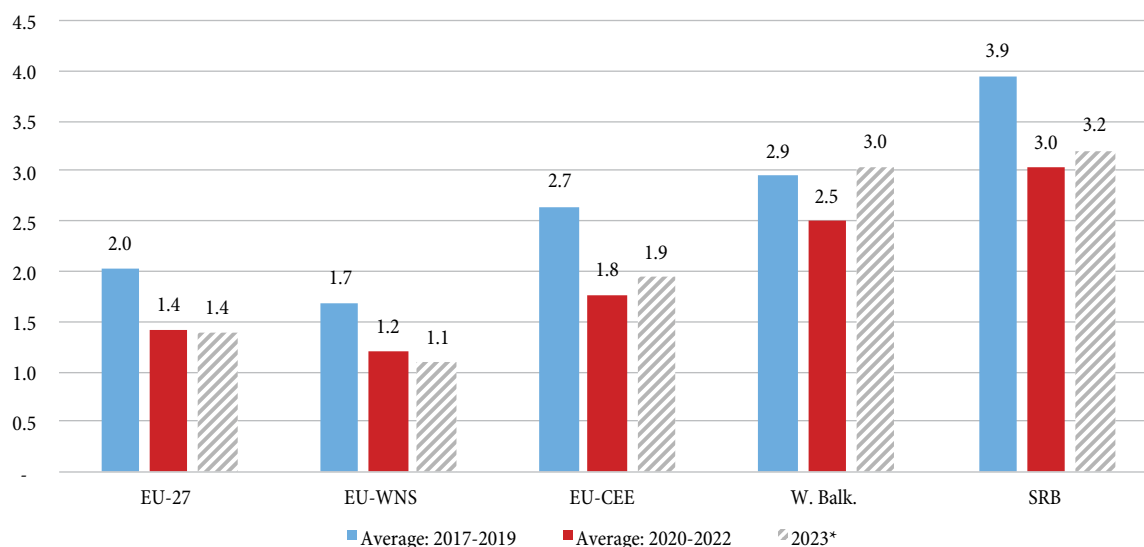


Source: Author's calculations based on the IMF and Ministry of Finance data

conditions at the international financial markets, interest outlays of government in Serbia were on decline. By 2022 government spending on interest in Serbia halved – to 1.5 percent of GDP. Although on decline, relative volume of government spending on interest in Serbia in 2022 stood close to the Western Balkans average, at the same time being almost twofold higher than the EU-CEE average (Figure 7). In other words, if Serbia posted interest expenditures close to the average in other CEE countries, it would save around 0.7 percent of GDP per year, which could be directed into public infrastructure, social welfare programs or reduction in social security contributions rate by close to 2 percent points.

Posting relatively high interest outlays even with a moderate level of public debt indicates that the effective interest rate on public debt is relatively high. Although Serbia is European median in terms of the relative volume of public debt, it ranks among a few European countries with the highest effective interest rate on its public debt, with only three European countries (Romania, Albania and Hungary) paying higher effective interest rates (Figure 7). Level of effective interest rates only to some extent depends directly on the relative volume of public debt, with the correlation the level of debt and the effective interest rates in Europe being only 0.36. This can also be observed from the data presented in Figure

Figure 8: Effective interest rates by sub-periods (%)



Source: Author's calculations based on the IMF and Ministry of Finance data

7, which show that at the lower part of the distribution in terms of the effective interest rates are mostly developed European countries, with substantial level of public debt. This means that also other factors, beyond the level of public debt, such as the level of economic development, political stability, confidence in the long-run economic performance, play substantial role in shaping the market confidence in fiscal sustainability of a country. In general, investors start charging additional risk premium yet at lower level of public debt in case of developing countries in comparison with developed countries.

One of the enablers of strong fiscal expansion in Europe over the last few years was linked to very favourable conditions at the financial markets, caused by the buoyant monetary expansion in many countries. Data presented in Figure 8 show that the effective interest rate in all European countries in the period 2020-2022 was substantially lower (in EU-27 by 0.6 percentage points - on average) than in the last three years before the pandemic, although public debt in Europe surged by almost 6 percent of GDP in that period (Figure 6). This was also the case with Serbia that was paying the effective interest rate of 3 percent on average during the period 2020-2022, which was by 0.9 percentage points less than in the period 2017-2019. However, data presented at Figure 8 also show that the effective interest rate in Serbia in the last three years was considerably higher than that in the Western Balkans and EU-CEE, while being double in comparison to the EU-27 average. Part of that interest premium in Serbia is connected to high interest payable on borrowing in the period before successful implementation of fiscal consolidation, while one part reflects the confidence of investors in long-term economic viability and political stability of the country, connected to the level of development.

Due to high inflation, central banks started monetary tightening in 2022 and that process is expected to continue in the time to come. Consequently, financial markets saw substantial rise in the interest rates, which will probably continue throughout 2023. This means that even with the similar level of public debt, countries will be paying higher interests. Data shown in Figure 8 indicate that Serbia, alongside the EU-CEE and the Western Balkans countries is expected to post rise in the effective interest

rates in 2023. On the other hand, the effective interest rates in the EU-WNS countries are expected to slightly decline, which may be connected with the fact that these countries will post considerably smaller fiscal deficit in 2023 than Serbia and other countries from the CEE and Western Balkans region (Figure 3).

Fiscal rules: Institutional framework for sound fiscal policy

Fiscal rules: Stylized facts and impact

In contrast to monetary policy, which has been for decades conducted based on the pre-defined rules, implemented by independent central, according to pre-defined rules, fiscal policy is still largely discretionary, because it entails direct redistribution of resources in society, which should to be done in accordance with voter preferences. Nevertheless, in order to reduce the possibilities for fiscal profligacy and abuse of fiscal policy, especially in election cycles, to ensure a fair intergenerational distribution of costs and benefits from government intervention and thereby increase the chances of conducting a sustainable and stable fiscal policy, in the last few decades, countries have begun to introduce fiscal rules, i.e. restrictions on fiscal policy, by law or constitution. Fiscal rules can be procedural or numerical - which introduce quantitative limits on the amount of public debt, fiscal balance, public revenues or public expenditures. From the perspective of the level at which they are introduced, fiscal rules can be national or supranational.

From 1985, when they were first created, until 2021, fiscal rules have been introduced in 105 countries. In about half of these countries there are only national rules, while in the other half of the countries there are national and supranational rules or only supranational rules [6]. In over 50 countries that have introduced fiscal rules, the fiscal council was formed, as a body responsible for monitoring compliance with fiscal rules. A large number of countries simultaneously apply several fiscal rules, so that on average these countries apply three fiscal rules. According to the IMF data, fiscal rules limiting the fiscal balance are applied in over 90 percent of countries,

fiscal rules limiting public debt are applied in about 80 percent of countries, while fiscal rules ceiling government expenditures or government revenues have been introduced by one half and one sixth of the total number of countries, respectively. Observed by groups of countries, it can be seen that fiscal rules related to government expenditures and the fiscal balance are more prevalent in developed countries, while restrictions on public debt or public revenues are more prevalent in developing countries. It is also observed that developed countries are more prone than developing countries to take into account adjustments related to business cycles, in the design of their fiscal balance rule [6]. In the last decade and a half, a large number of countries have initiated the reform of fiscal rules with the aim of improving their flexibility by means of the escape clause, through the precise definition of conditions and mechanisms for temporary deviation from the fiscal limits in extraordinary circumstances, which creates so called “the second generation of fiscal rules”.

The crisis caused by the COVID-19 pandemic required an extraordinarily strong fiscal response from governments, which posed a major challenge for the consistent application of fiscal rules. Therefore, since the breakdown of pandemic, around 80 countries started adjusting fiscal rules through: a) activation of the escape clause (30 countries), b) temporary suspension of the application of fiscal rules (20 countries), c) changing the limits defined by fiscal rules (about 20 countries), d) fundamental revision of fiscal rules (performed or planned to be performed by over 40 countries) [6].

Recent empirical literature ([5], [6]) indicates that the existence of fiscal rules affects the reduction of the fiscal deficit and public debt. [4] showed that 3 percent deficit rule set-out by the Maastricht criteria, acts as a “magnet” – since introduction of the rule, the number of countries with the deficit around the threshold has been rising by 20 percent, while the occurrence of both large government deficits and surpluses being on decline. In addition to that, studies [8] also show that the national fiscal rules and a conservative budgetary procedures scale-down the magnitude of political budget cycles in low-income countries. Empirical literature also indicates that numerical rules are often associated with low compliance,

while improving flexibility of fiscal rules to make them more responsive to shocks raises their complexity [3].

Evaluation of the reform of fiscal rules in Serbia

Fiscal rules were introduced in Serbia in 2010. They consisted of general fiscal rules that impose the limit to the fiscal balance and public debt, and special fiscal rules that introduce limit to the public expenditures on pensions and wages. Thus, the medium-term fiscal deficit target was set at the level of 1 percent of GDP, while the actual target was defined by a formula and deviated from the general one depending on the state of the economy and the inherited deficit of the previous year. In this way, the rule for the fiscal deficit had a strong countercyclical component in line with practice in advanced economies, and it also took into account the existing state of public finances, which made the limit more realistic. On the other hand, the fact that the rule was defined by a formula made it more complex and less comprehensible to the general public. The second part of the general fiscal rule limited the public debt (without liabilities based on restitution) to the amount of up to 45 percent of GDP. Modest ceiling in terms of debt created solid fiscal buffers, but at the same time reduced the chances for compliance of fiscal policy with the restrictive rule. Special fiscal rules defined that the indexation of wages in the public sector and pensions will be slower, until these expenditures fall to 7 and 11 percent of GDP, respectively.

Despite the solid design and efficient work of the Fiscal Council, in most of the period since the adoption of the fiscal rules, the actual fiscal outcomes in Serbia were not within the limits established by the fiscal rules. Already since the end of 2012, the public debt has constantly been at a level higher than 45 percent of GDP, the fiscal deficit (except for part of the period from 2016 to 2019) has been higher than the target limit, wage expenditures have consistently been at a level above of the defined limit, while expenditures on pensions have been returned to the framework defined by fiscal rules since 2016.

At the end of 2022, Serbia made a fundamental reform to the fiscal rules. The backbone of the new generation of general fiscal rules consists of the following components: i) the target medium-term deficit has been reduced from

1 to 0.5 percent of GDP, and the permitted deviation from this target became exclusively a function of the level of public debt - the target fiscal balance was 0 percent of GDP, if public debt exceeds 60 percent of GDP, while if the public debt is less than 55 percent, or from 45 to 55 percent or below 45 percent of GDP, the target deficit would be 0 percent, 1.5 percent or 3 percent of GDP, respectively (see: [12]), *ii*) the limit for the public debt was raised from 45 to 60 percent of GDP. In the segment of special fiscal rules, the limit for wages of public sector employees and pensions is set at the level of 10 percent of GDP each. A new special fiscal rule also defines the method of pension indexation, so that, if the total mass of pensions is below the mentioned limit, pensions are indexed according to the growth rate of net wages in Serbia, while in the case that the mass of pensions amounts to 10-10.5 percent of GDP pensions are indexed according to the Swiss formula (average rate of wage growth and inflation), and in case the mass of pensions exceeds 10.5 percent of GDP, indexation is done only according to the inflation rate (see: [12]). Under new provisions, the government's response to violation of the fiscal rules, in terms of the implementation of the program to bring back the fiscal policy within the framework defined by the rules, was more precisely regulated. The application of the amended fiscal rules has been postponed until 2025 with the explanation that extraordinary crisis circumstances will be present in 2023 and 2024.

Considering the state of public finances, domestic and international experience and the need to create an institutional framework for sustainable and predictable fiscal policy, it is estimated that the new fiscal rules have several advantages and limitations. Reduction of the medium-term targeted fiscal deficit to 0.5 percent of GDP, inclusion of liabilities based on restitution in the limit regarding public debt, redefinition of special rules related to wages and pensions and a clear definition of pension indexation rules, as well as the elaboration of mechanisms for the government's response in case of breach of the rules, are considered advantages of the new fiscal rules. On the other hand, the raising of the public debt limit to the upper limit of the prohibitive zone, which reduces the fiscal buffers, the elimination of counter-cyclicalities from

the rules on the fiscal balance, and the absence of clear escape clause that would be applied in crisis are considered limitations of the new fiscal rules. Thus, with the new fiscal rule, it is possible for the government to conduct a loose fiscal policy in the period of economic boom, if the public debt is lower, and to be forced to run a tight fiscal policy in the bust cycles if the public debt is close to or above the ceiling. In addition, since the crisis in 2023 and 2024 is not the only one to come, as different crises occur periodically, instead of postponing the application of new fiscal rules, it would be more expedient to develop escape clause that regulate the possibility of temporary deviation from fiscal rules in the crisis period.

The experience of a large number of countries shows that fiscal rules increase the chances to run a sustainable fiscal policy, if fiscal targets are set realistically and stable, if a solid escape clause and counter-cyclicalities are incorporated into the fiscal framework and fiscal rules are set in clear and transparent manner. New fiscal rules in Serbia are clear, transparent and realistic, but lacking direct counter-cyclicalities and escape clause. However, it is estimated that the new fiscal rules may have a positive impact on sustainability of fiscal policy in Serbia in the future, if the commitment of policy makers and attention of the general public to compliance of fiscal policy with the fiscal rules is substantially enhanced.

Conclusion

Sustainability of fiscal policy is a substantial element of overall macroeconomic stability, which plays an important role in shaping the long-run economic growth perspectives [10]. Fiscal sustainability can be evaluated in many ways. In this paper, it is assessed by means of the three indicators: actual and structural fiscal balance, level of public debt and volume of government spending on interest payments. In the last three years, Serbia was running large fiscal deficits, both in absolute terms and in comparison to the other European countries, due to programs of financial support to businesses in pandemic, periodic non-targeted and non-means tested cash transfers to all citizens or to particular groups, as well as to sizeable outlays for subsidies to the state-owned companies in energy sector. Expansionary

fiscal policy in Serbia is expected to continue in 2023 with the projected fiscal deficit of more than 3 percent of GDP. However, large part of the 2023 deficit is linked to energy sector risks, which is why structural fiscal deficit is expected to substantially narrow to around 1 percent of GDP. This implies that general fiscal framework, in terms of the main revenue and expenditure items in 2023 is designed in relatively sustainable way, while the main fiscal risks come from unreformed state-owned enterprises – in particular those in the energy sector.

In spite of the significant deficits in the last three years and significant rise of public debt in absolute terms (by EUR 9.4 billion), debt-to-GDP ratio in Serbia in that period rose only slightly (by 1.6 percent of GDP), due to currency structure of public debt, close to unchanged exchange rate of dinar to Euro and the high inflation. With the public debt of around 55 percent of GDP at the end of 2022, Serbia was close to European median and close to the other Western Balkans countries average, but still considerably above the average for the EU-CEE countries. In spite of being European median in terms of the level of public debt, Serbia performs high in respect of the volume of government spending on interest payments and the effective interest rate. Taking into account the fact that public debt in Serbia is close to the prohibitive zone, while the interest payment burden is substantial with strong crowding-out impact on more productive government spending or on potential tax cuts, keeping the public debt relatively low is the key element of sound fiscal policy. This is especially important under rising interest rates conditions, which will inflate interest spending in the future.

Legislating fiscal rules raises chances for sound fiscal policy, although the outcome is dependent on many institutional factors. Serbia introduced fiscal rules in 2010. However, for the most of the time, actual fiscal outcomes have not been within the limits set-out by the fiscal rules. At the end of 2022 Serbia implemented reform to the fiscal rules, by raising the public debt threshold and defining conditional fiscal deficit targets which are not directly linked to the economic cycles. While reduction of the long-term deficit target is the main strength of the new fiscal rule, lack of counter-cyclicality in the fiscal deficit

rule and lack of clear escape clause are seen as their main limitation. Empirical literature suggests that in the developing countries, prohibitive threshold of public debt ranges from 45 percent to 60 percent of GDP [9], [13]. New fiscal rule in Serbia is at the upper bound of this range. Due to aforementioned reasons, it would be beneficial for Serbia to keep the public debt significantly below the limit introduced by new fiscal rules, thus creating the fiscal buffers for future crises and dampening the negative impact of monetary contraction on excessive rise in government spending on interest in the coming years.

Running fiscal policy within the sustainable fiscal outcomes is one way through which fiscal policy affects growth conditions. In addition to that, both theoretical and empirical literature suggest that structural characteristics of fiscal policy also plays an important role in creating conditions for economic growth [7]. In that respect, on the revenue side, shifting the tax burden from production factors (e.g. from labour taxes) to generators of negative externalities (e.g. to green/consumption taxes) in Serbia could be growth and welfare enhancing. At the same time, the tax policy reform should address the horizontal and vertical equality concerns, especially in terms of personal income and inheritance taxation, but to the extent that would not excessively harm economic efficiency. On the public spending side, continuing policy of large public investment in the long-run, with improvement of the system of selection, contracting and implementation of investment projects could make a considerable contribution to long-run growth perspectives. At the same time, other items of expenditure policy should be calibrated so as to fit into sustainable fiscal framework. To enhance the redistributive effects and equitability of expenditure policy, abandoning the policy of one-off or periodical non-targeted cash transfers and using that resources to increase the amount and coverage of well-targeted means-tested social welfare programs would be beneficial.

Fitting the fiscal policy into sustainable fiscal framework and continuous improvement in structural characteristics of fiscal policy may provide substantial contribution to Serbia's growth dynamics in the future. However, large fraction of economic growth drivers lay beyond the direct impact of fiscal policy. For the fiscal

policy to exhibit maximum positive impact on economic growth, its refinement should go hand-in-hand with the reforms that should enhance other growth drivers – by means of strengthening the institutions and the rule of law, enhancing the efficiency of public administration and continuously improving the doing business environment.

References

1. Arsić, M., Nojković, A., Ranđelović, S., & Mićković, S. (2012). Strukturni fiskalni deficit i dinamika javnog duga Srbije [Structural fiscal deficit and dynamics of public debt of Serbia]. *Beograd: CID, Ekonomski fakultet*.
2. Baum, A., Checherita-Westphal, C., & Rother, P. (2013). Debt and growth: New evidence for the euro area. *Journal of international money and finance*, 32, 809-821.
3. Blanchard, O., Leandro, A., & Zettelmeyer, J. (2021). Redesigning EU fiscal rules: From rules to standards. *Economic Policy*, 36(106), 195-236.
4. Caselli, F., & Wingender, P. (2021). Heterogeneous effects of fiscal rules: The Maastricht fiscal criterion and the counterfactual distribution of government deficits. *European Economic Review*, 136, 103748.
5. Cordes, T., Kinda, M. T., Muthoora, M. P. S., & Weber, A. (2015). *Expenditure rules: effective tools for sound fiscal policy?* International Monetary Fund.
6. Davoodi, M. H. R., Elger, P., Fotiou, A., Garcia-Macia, M. D., Han, X., Lagerborg, A., Lam, W.R., & Medas, M. P. A. (2022). Fiscal rules and fiscal councils: Recent trends and performance during the COVID-19 pandemic. Retrieved from <https://www.imf.org/external/datamapper/fiscalrules/Working%20Paper%20-%20Fiscal%20Rules%20and%20Fiscal%20Councils%20-%20Recent%20Trends%20and%20Performance%20during%20the%20Pandemic.pdf>
7. Easterly, W., & Rebelo, S. (1993). Fiscal policy and economic growth. *Journal of monetary economics*, 32(3), 417-458.
8. Ebeke, M. C., & Ölcer, M. (2013). *Fiscal policy over the election cycle in low-income countries*. International Monetary Fund.
9. Fetaj, B., Avdimetaj, K., Bexhet, A., & Malaj, A. (2020). Threshold effect of public debt on economic growth: An empirical analysis in the European transition countries. *Zbornik radova Ekonomskog fakultet u Rijeci*, 38(2), 381-406.
10. Greiner, A., & Fincke, B. (2016). *Public debt, sustainability and economic growth*. Springer International Pu.
11. IMF. (2021). Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic. Retrieved from <https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19>
12. Kvartalni monitor br. 70, Univerzitet u Beogradu - Ekonomski fakultet i Fondacija za razvoj ekonomske nauke. Retrieved from <https://fren.org.rs/kvartalni-monitor/kvartalni-monitor-70/>
13. Mencinger, J., Aristovnik, A., & Verbic, M. (2015). Revisiting the role of public debt in economic growth: The case of OECD countries. *Engineering Economics*, 26(1), 61-66.
14. Ranđelović, S. (2021). Determinants of volatility of economic activity in Europe during the COVID-19 pandemic: Stylized facts. *Ekonomika preduzeća*, 69(3-4), 231-241.
15. Ranđelović, S. (2022). Tax policy reform for sustainable economic growth in Serbia. *Ekonomika preduzeća*, 70(1-2), 101-112.
16. Reinhart, C. M., & Rogoff, K. S. (2010). Growth in a Time of Debt. *American economic review*, 100(2), 573-578.



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COMPETITIVENESS AND SUSTAINABILITY IN SMALL AND OPEN ECONOMIES IN THE AGE OF INDUSTRY 5.0

Konkurentnost i održivost u malim otvorenim
ekonomijama u doba industrije 5.0

Abstract

We are living in the times of the fourth industrial revolution, which is quickly accelerating towards the fifth, which assumes that our civilization, in addition to exponential technological development, is already transforming itself through a green and human-oriented transition. In such uncertain and challenging times, the circular economy model is emerging as one of the leading economic concepts which both nations and economic blocks will focus on because it encompasses all contemporary trends of humanity, namely the care for the environment and the planet earth, the proliferation of the state-of-the-art technologies and human-centric development approach. In such global economic tendencies, the question arises as to how small and open economies should strategically position themselves in order to strengthen the competitive edge of their firms on the one hand and at the same time strengthen their own national competitiveness. This paper explores the possibilities of using the latest technologies, foremost Industry 5.0, to develop new innovative business models within the circular economy, with a special emphasis on the energy sector. The authors conclude that the use of Industry 5.0 technology is not only preferable as one of the competitiveness boosters for firms, but represents one of the must-have key success factors, especially when competing in niche segments.

Keywords: *company competitiveness, industry 5.0, circular economy, small open economies, Internet of Energy*

Sažetak

Živimo u vremenima četvrte industrijske revolucije, koja se brzo ubrzava ka petoj, koja pretpostavlja da se naša civilizacija, pored eksponencijalnog tehnološkog razvoja, već transformiše kroz zelenu i ljudski orijentisanu tranziciju. U ovako neizvesnim i izazovnim vremenima, model cirkularne ekonomije se pojavljuje kao jedan od vodećih ekonomskih koncepata na koji će se fokusirati i nacije i ekonomski blokovi jer obuhvata sve savremene trendove čovečanstva, a to je briga za okruženje i planetu zemlju, proliferaciju state-of-the-art tehnologija i humancentrični pristup. U takvim globalnim ekonomskim tendencijama postavlja se pitanje kako male i otvorene ekonomije treba strateški da se pozicioniraju kako bi ojačale konkurentnu prednost svojih firmi sa jedne strane i istovremeno ojačale sopstvenu nacionalnu konkurentnost. Ovaj rad istražuje mogućnosti korišćenja najnovijih tehnologija, pre svega Industrije 5.0, za razvoj novih inovativnih poslovnih modela unutar cirkularne ekonomije, sa posebnim naglaskom na energetske sektor. Autori zaključuju da upotreba Tehnologije Industrije 5.0 ne samo da je poželjna kao jedan od podsticaja konkurentnosti firmi, već predstavlja jedan od ključnih faktora uspeha, posebno kada se takmiče u nišnim segmentima.

Ključne reči: *konkurentnost kompanija, industrija 5.0, cirkularna ekonomija, male otvorene ekonomije, Internet of Energy*

Introduction

Two processes in the 21st century have a dominant effect on the well-being of the individual and the future of humanity, as well as on the way companies operate and define their value propositions in new circumstances. On the one hand, the continuity of crises caused by various economic and geopolitical motives opened the issues of the price of ensuring long-term stability in supply chains, energy supply (from energy transition and decentralization to the issue of energy efficiency), but also sent a warning to the human population that at the top of the agenda they raise the issue of health, the effect of climate change and the issue of the green transition. On the other hand, the exponential development of new technologies that have opened up new opportunities for the development of humanity and which, thanks to the enormous growth in the amount of data in all areas of this hyperconnected world, are pushing the limits of production possibilities and opening up a new innovation space for both individuals and organizations. The key generator of change has become the individual, the consumer, who demands that the resultant of these two processes be a step towards the circular economy and the dynamic implementation of ESG (environment, sustainability, governance) principles both at the state level and in the business of companies. The key success factors will be the integration of the entire value chain into this process, the quality integration of a large amount of data and thus the effective implementation of new technologies, additional education, and the strengthening of the position of consumers in their demands for sustainability to be an important segment of companies' investment and business plans, all of which essentially affects redefinition of business strategies, innovating business models, while agility in using new opportunities will significantly determine the competitive advantages and required resilience of companies in the world of VUCA (volatility, uncertainty, complexity, ambiguity).

Industry 4.0 (I4.0), which marked a new industrial revolution based on new technologies, has already evolved into the concept of Industry 5.0 (I5.0), which places future development on human-centric values that promote the fifth element – environment and society, with the aim

of achieving sustainable development. It is precisely the intention of this paper to investigate how organizations can strengthen their competitive position, taking into account new value propositions catalyzed by Industry 5.0 technologies. Therefore, the leading research question of the paper is how emerging state-of-the-art technologies (SOA) can promote the development of companies in the appropriate national ecosystem in order to achieve a synergistic double effect, developing the competitiveness of organizations that are able to actively implement technologies on the one hand, and raise the competitiveness of nations that can then implement such developed products/services or business models in their economy.

Literature review

Two processes marked the 21st century. On the one hand, numerous challenges embodied in multiple crises (economic, health, environmental, geopolitical), and on the other hand, new opportunities created by the exponential growth of new technologies in a hyperconnected world, which have changed the way we live, how we communicate, how we innovate, how we create new value. The fusion of the technical, physical, and biological world has pushed the limits of production possibilities and there is a lot of literature dealing with the topics of Industry 4.0 and the impact of new technologies on many aspects of economic and social life. The pressures of all interested stakeholders (consumers - B2C, customers - B2B, employees, regulatory institutions, NGOs, banks, and investors) initiated a review of the linear take-make-waste model, which on a global scale does not return over 90% of materials to the production cycle. For businesses to understand that the circular economy, by transforming the value chain into a value circle, means not only sustainable business but also increases efficiency, innovation, and competitive advantage, new fields of research in the literature have been opened (BCG estimates that the transition to a circular economy has the potential to increase GDP for an additional \$4.5 trillion by 2030, [31]). The application of the circular economy concept is important because it contributes to the realization of the triple bottom line 3P goals, Paris climate goals, European Green Deal, as well

as energy and resource efficiency. A new step forward in literature was launching the concept of Industry 5.0 and shifting the focus from economic to social values, that is, from welfare to wellbeing [26]. For the purposes of this paper, we will review the literature that investigates the role of new technologies in promoting sustainable business in the context of the concept of circular economy and Industry 5.0.

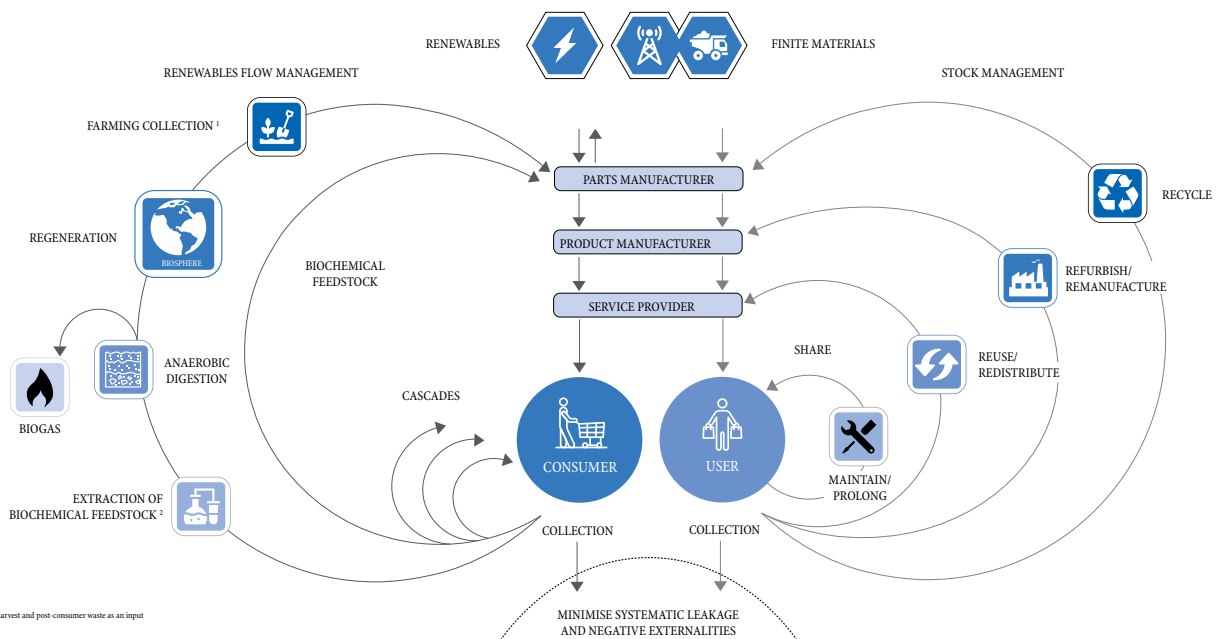
The conceptual basis in our paper that served as a methodological tool in understanding the convergence of digital technologies and the circular economy is the circular economy model known as the butterfly concept (Figure 1, [13]). The biological cycle, by returning food and biological materials to the system, regenerates living systems, thus providing renewable resources for the economy. The technological cycle through the 4R concept (reuse, repair, remanufacture, recycle) returns products and components to the system instead of waste.

This diagram provides a basis for understanding business strategies, as it not only indicates the necessary adjustments to reduce the negative effects of the linear economy but also possible steps forward in innovating business models based on the principles of sustainability, resilience, and agility. For the successful implementation of this concept, cooperation in the entire value chain is needed. The main factor in the implementation of the

circular economy is technological innovation, and the convergence of these two processes, aimed at increasing the efficiency of the use of resources, basically contains environmental sustainability, making digitization more useful [17]. There is an evident agreement among numerous authors on the importance of digitization in the application of the circular economy concept, using a large amount of data and their processing in order to monitor the entire flow of the product life cycle [23, 9, 49, 45]. The development of the circular economy, in the conditions of the rapid growth of new technologies, opens up space for numerous innovations, from new product designs, through the optimization of supply chains, to new circular business models (transition from classic ownership-based to result-oriented models), with possible benefits of lower costs, risk optimization, strengthening resilience in complex business circumstances, better financial performance, and increasing consumer satisfaction, as one of the most important stakeholders in this process [49, 37, 7].

In his paper, Trevisan systematizes the research into the impact of digital technologies on the circular economy in three directions [43]. The first refers to the role and importance of the influence of Industry 4.0 for the transition to a circular economy (we find a positive correlation in numerous other works, on the challenges of implementation [9, 27, 7, 28]). The second direction refers

Figure 1. Butterfly diagram



¹ Hunting and fishing
² Can take both post-harvest and post-consumer waste as an input

to the transition from linear to smart circular business models. The third one includes topics from the domain of sustainability, especially variations on the theme of waste management and industrial symbiosis. Antikainen sees the importance of digitization in obtaining reliable information about the location, availability, and conditions of products (smart connected products), as well as in the development of innovative circular business models aimed at creating value based on the concept of competitiveness and sustainability, increasing the efficiency of resource use, as well as closing the material loops [5, 40]. Exploring the potential of the Internet of Things (IoT), big data, and analytics in strengthening the circular economy, Bressanelli et al. identified eight possible processes: attracting target customers, monitoring and tracking products, improving product design, providing maintenance, providing technical support, optimizing the product usage, upgrading the product, enhancing renovation and end-of-life activities [8]. Liu et al. categorizing circular economy strategies, define a slightly different circular economy digital framework of seven mechanisms – empowering the reverse supply chain, fostering industrial symbiosis, supporting remanufacturing activities, enabling predictive and prescriptive maintenance, supporting reselling and sharing used products, improving energy and resource efficiency, supporting circular product design, manufacturing and use [28].

Using case studies, Ucar et al. identified two ways in which digital technologies (IoT, big data analytics, artificial intelligence – AI) correlate with the circular economy [45]. The first is when they act as an “enabler” of circular economy development and when they promote cooperation at all levels. The other is when they act as a “trigger” of innovative processes.

Numerous authors indicate the importance of integrated databases as the basis of monitoring, optimization, and innovation functions [27, 28]. Data availability is further enhanced by the data-sharing function, which initiates new forms of connection and cooperation. The importance of digital technologies is particularly indicated in the optimization of decision-making related to the principles of circular economy, based on data analysis, possible monitoring (IoT is of great importance), and the track

and trace function that monitors the status of the product during its life cycle [27].

IoT is a key integrator in promoting circularity for other digital technologies. Ingersmadotter claims that circular strategies based on IoT solutions extend the useful life of products, and enable data-based decision-making that helps to fulfill the 4R principles, as well as the integration of smart products into the business ecosystem (the case study in this paper analyzes the opportunities that IoT provides in the energy sector as part of decentralization and increasing energy efficiency in the context of the circular economy, [23]). With IoT technologies, companies have better monitoring of the supply chain and greater opportunities for control and innovation in the reconfiguration of the supply chain in accordance with circularity goals. There is a wide range of industries today in which companies form their competitive advantages on the principles of the circular economy by regenerating nature, eliminating waste, and using materials in the circular chain.

By ensuring digital identity and security in transactions between different actors, blockchain technology enables the development of new resource trading systems and commodity flows in the supply chain, reducing transaction costs and thus increasing efficiency and transparency and facilitating the design of mechanisms to encourage consumer actions in the direction of the green transition [9].

Artificial intelligence has tremendous potential to support the transition to a circular economy throughout the value chain. By analyzing a large amount of data, determining patterns in supply chains and the entire value chain, automating decision-making based on established algorithms, and predicting demand, it is possible to increase the efficiency of resource consumption on the one hand, smart inventory management, predictive maintenance, as well as speeding up the development of new products, components, materials, based on the principles of the circular economy. AI can help improve optimal reverse logistic operations by improving the process of remanufacturing components, and the reuse of materials [9]. Also, AI is very useful in innovating and creating new circular business models (product-as-a-

service or leasing) that give agile companies the chance to respond to the pressures of all stakeholders and at the same time strengthen their competitive position on sustainable principles.

The literature is very extensive when it comes to the need for circular economy development, as well as the positive role of digital technologies/Industry 4.0 in that process. However, it is evident that there are also costs for the implementation of this development, as well as certain obstacles. The material footprint of digital equipment quadrupled between 1995 and 2015, generating a lot of waste in both the technological and biological parts of the circular diagram [13]. The world annually produces over 50 million tons of e-waste and estimates are that further technological progress will additionally escalate this problem [7]. Powerful data centers and digital infrastructure are large consumers of energy (energy-intensive technologies, e.g. blockchain, which imposes urgency on the topic of energy transition and increasing energy efficiency) and various materials. Ingersmadotter emphasizes the lack of a structured approach to data management, the increase in transaction costs, the lack of adequate knowledge, but also the necessary regulations [23]. Pellegrini points to the problems of asymmetric information, lack of cooperation between companies and the inertia of business routines, inadequate institutional frameworks [36].

Industry 5.0 has recently appeared in the literature as a concept that does not represent a chronological continuation of Industry 4.0, but a symbiosis of technological, social, and environmental aspects, with the goal of realizing business and social visions. The basic values of I5.0 are marked as economic resilience, environmental sustainability, and human-centricity within the framework of the sustainable development agenda [3]. The difference is that I5.0 includes in its concept the perspectives of all stakeholders and shifts the focus from technology-driven productivity and profit as the basic functions of the company's operations to solving socio-environmental challenges that have been observed for a long time - climate change and environmental destruction, global challenges, increase in regional and other forms of inequality. New technologies certainly play an important role in this concept, but combined with functional prin-

ciples with the aim of strengthening corporate responsibility in the entire value chain [20].

One of the key challenges will be the speed of knowledge absorption and the creation of innovations that will enable companies to use I5.0 or other SOA technologies to create new value and strengthen their competitive position in the circular economy environment [47].

Small, open economies (SOEs), in order to strengthen their own robustness and resilience, have no other options but to choose directions of strategic guidance that go towards industries with more and high added value that can ideally be complemented and/or servitized with their existing service industry [35, 38]. In their work Geerken et al are evaluating the potential for a circular economy in SOE and conclude that there are development opportunities, specifically connected to public policy objectives in the following segments: reduction of dependency on materials, resource efficiency, creation of domestic jobs, competitiveness, reduced Greenhouse Gas (GHG) emissions [18].

Methodology

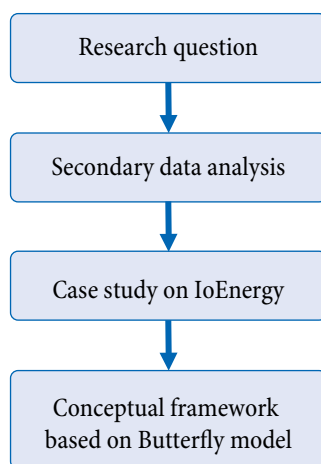
In the context of the elaborated theoretical background and research interest, the authors are hereby setting a leading research question. As also presented in the introductory part of this paper, the leading research question is how emerging state-of-the-art technologies, especially those that make up the concept of Industry 5.0, can catalyze firms' competitiveness of the companies in the appropriate national SOE ecosystem in order to achieve a synergistic double effect. First of all, developing their own competitive advantage by being able to agilely implement SOA technologies on the one hand, and raising the competitiveness of SOE nations that can implement such developed innovative products/services or business models in their economy.

In order to answer the leading research question on the one hand, and on the other hand offer answers on how to strengthen the competitiveness of companies that compete in SOEs and thereby strengthen national competitiveness, it was necessary to develop an adequate methodology that would correspond to the goals of this paper.

For the purpose of answering the leading research question, a cascading methodology was designed and

constructed, which combines two predominantly qualitative scientific research methods, as shown in Figure 2. The methodological approach consists of a combination of quantitative and qualitative research as follows. As a first step, an analysis of available secondary data sources was performed with a specific emphasis on the management perspective related to the introduction of SOA in firms in order to increase their competitiveness in the contexts of the circular economy, i.e. green transition and global trends.

Figure 2. Cascading combinatory methodology



The second methodological step represents the validation of previous research results through the presentation of a specific case presentation on the Internet of Energy (IoE) topic, which includes a typology of companies that currently disrupt the energy sector with their innovative business models.

When it comes to the conceptual model, the authors of this paper have chosen the previously presented framework of the circular economy represented by the Butterfly diagram (Figure 1) as the leading model. The results of this research will be validated and interpreted along with identified possibilities and recommendations and sketched on the diagram.

Interpretation

Secondary data analysis

Our secondary data research includes relevant sources issued as the most recent reports by relevant opinion makers in the field. KPMG Annual survey of 1,325 CEOs from 11

different markets has provided an in-depth look at three years giving insight into their views on the business and economic environment [25]. Despite the immense challenges posed by the pandemic, inflation, and geopolitical tensions, CEOs surveyed in the 2022 CEO Outlook remain confident in their companies' resilience and optimistic about their own growth prospects. Furthermore, according to McKinsey, technology "holds the key to unlocking decarbonization" since it can be used to help businesses reach their net-zero emissions goals [30]. Technology can be used to identify problem emission areas, prioritize investments, and use analytics to make green decisions.

UNIDO is recognizing that digitalization can be beneficial in achieving a green transition, for example, by allowing firms to become more resource efficient, also underlying that green and digital production is likely to turn into a competitive advantage in the future [46]. Global value chains will depend on green suppliers and be able to trace and verify their production methods, which usually require the use of digital technologies. Therefore, to be a part of the global economy, suppliers must meet green and digital standards. In its recent survey, Deloitte discovered that 98% of customers believe that brands have the responsibility to make the world better [11]. As the ESG agenda continues to shape the business landscape, CIOs have the chance and obligation to lead the transformation to achieve net-zero climate sustainability. To do this, they must ensure that technology tied to environmental sustainability is utilized efficiently, while also reducing the environmental effects of existing and new infrastructure and technology. There are three main areas where CIOs can become important leaders in sustainability: creating a unified data and insights program to monitor and promote environmental sustainability, using a sustainability-based tech strategy, and increasing transparency and accountability in the value chain. However, technology can be a blessing and a curse when it comes to environmental issues. Technology such as IoT sensors, AI, and blockchain can be used to aggregate real-time data and optimize processes to reduce environmental impact. On the other hand, some of these technologies have been known to increase the demand on the power grid, and CIOs must weigh the benefits against the costs of these technologies.

While the post-pandemic fatigue and economic issues, such as the increase in interest rates and inflation, are the most pressing worries for CEOs today, in the following three years they have identified emerging and disruptive technology as the number one risk and the greatest danger to growth with environmental and climate change issues included in top five risks. When looked at in combination with other identified matters of concern, such as regulatory pressures, supply chain issues, operational difficulties, and potential reputational damage, it appears that risks are more intertwined than ever. As the possibility of a recession looms, many are already prepared with a focus on planning and agility, and some are even seeing potential opportunities in the midst of uncertainty, such as those presented by technology and environmental/social/governance principle (ESG).

Our research has unveiled that ESG, similar to digital, has the potential to revolutionize how successful organizations strategize, execute, and function. However, ESG is a broad subject, making it difficult for organizations to know where to start. When it comes to digital, this hesitancy at the start has caused many organizations to take a gradual approach, testing out various projects and learning as they go, but also running the risk of being outpaced by more daring competitors who were quicker to recognize the chance to reinvent their business digitally. Now, most management teams understand that to truly take advantage of digital, they need to take an all-in approach, with digital impacting every aspect of the company. Digital is not just about doing the same things faster; it is about changing what you do.

According to S&P Global, another aspect proving how closely ESG and technology are interconnected and how there is a positive influence of both on one another is the impact of ESG on IT and technology [42]. We are in an early stage of assessment and trying to understand the implications of ESG and what it means for how technology is used. According to the report, ESG is expected also to become a growing part of the information technology industry narrative over the coming months and years since, like in other industries, the impacts and implications of ESG on technology are both wide-ranging and material. Most interesting given current hot topics are biased in

AI, consumer data privacy, and dependence on smart technology which gives rise to growing environmental, social, and governance risks across almost all aspects of human existence. So, ultimately, it seems not only technology can be a catalyst for the green transition, but also ESG will bring environmental awareness and ethical perspective to IT and digital.

Case study on IoE (Internet of Energy)

In order to support the leading research question, the following case study was conceived and produced, referring to a conceptual example of the use of technologies in the environment of the circular economy, specifically the energy transition according to the Internet of Energy model.

The existing model of centralized production and linear electricity supply chain is unsustainable for a long period of time for several reasons. First, the existing capacities cannot meet the growing needs. The expected growth in electricity consumption at the global level, 30% by 2040 compared to the consumption in 2017, requires a significant increase in production, which cannot be achieved only by using traditional energy sources (fossil fuels, nuclear power plants), but it is necessary to increase the share of electricity produced from renewable sources [43]. Also, in March 2020, the European Commission adopted the European Green Deal, a set of measures and recommendations, which include the energy sector, and foresee a reduction in the net emissions of gases that cause the greenhouse effect, primarily carbon dioxide and methane, by 55% by 2030 (decarbonization). In addition to a significant increase in the share of electrical energy obtained from renewable sources, these measures encourage the development of regenerative circular economic models in order to achieve sustainable growth in electricity consumption, while reducing negative environmental effects.

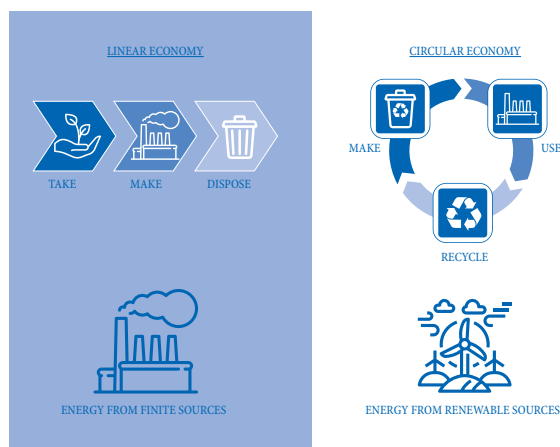
Secondly, the production of electricity from renewable sources, primarily wind energy, and solar radiation, water power, is characterized by instability and unpredictability of production, which depends on weather conditions. This requires additional costs of maintaining the central energy transmission network, i.e. its balancing, and supply and demand balancing. HROTE, the Croatian electricity

market operator, had balancing costs of EUR 25 million in 2022 [14].

In the existing energy infrastructure, by integrating advanced digital technologies of Industry 5.0, it is possible to include a large number of energy producers from renewable sources - DRS (distributed renewable energy system), which are connected by the smart grid. In addition to using the produced electricity for its own needs, DRS takes over (buys) the missing amounts, and hands over (sells) any surpluses back to the central energy system, thus achieving a two-way, circular flow of energy. This decentralization of production from renewable sources allows energy to be used at the place where it is generated, thereby increasing the efficiency of the transmission network. This is in accordance with the circular economic model, which, in addition to decentralized and sustainable production, foresees the use of resources from renewable sources, with minimal energy losses, pollution, and waste.

This new concept of distributed production and two-way energy flows, in which DRS, i.e. households and virtual groups of clients connected in an independent microgrid, create, exchange, and sell energy (*prosumers*), will lead to increasing digitization of the energy sector, as well as its decarbonization. This is how Deloitte US talks about 3D's, the three basic drivers of the development of smart energy systems – IoE [12]. Finally, the existing centralized energy infrastructure, designed for one-way transmission of electricity (producer → consumer), by including a large number of DRS, becomes inefficient.

Figure 3. Implementation of IoE in the context of the Circular Economy [47]



By applying IoT technology, Internet-connected devices, equipped with appropriate sensors and software, distributed energy systems can increase efficiency, and reduce consumption, as well as energy transmission losses. These devices, connected to smart meters, monitor in real time the production and consumption of each DRS connected to the central transmission network. By applying predictive machine learning algorithms to internal data (generated by sensors), as well as external data generated outside the energy network (e.g. weather data), consumption patterns can be identified. Thus, it is possible to predict the required amounts of electricity, as well as the amounts that can be produced. Based on these data, it is possible to balance the central transmission network more efficiently, even in the case of a two-way flow of electricity, which is the basic feature of the IoE platform.

By applying IoT, it is possible to automatically manage large consumers of electrical energy (heating, cooling, lighting, etc.), in such a way that, based on movement, occupancy of space, sound volume, and previous data (habits of space users), their operation can be optimized, i.e. adapted to real needs. In cases where DRS needs additional energy from the central energy network, it is possible to limit the takeover to periods when the demand, and thus the price of electricity is lower (*off peak time*). This reduces large fluctuations in the network, which is often the cause of outages and supply interruptions. The UK National Grid estimates that 30-50% of fluctuations in the network can be avoided by intelligently connecting consumers to the network, especially in *off-peak* times.

IoT devices and smart meters are the basic elements of a smart transmission network. Energy, which is gradually transforming into a decentralized system, is currently the largest user of IoT with 1.37 billion devices in 2020, while the number of smart meters at the end of 2021 in Europe reached 163 million, which is 53% of all installed meters [6, 39].

By applying blockchain technology as a component of I5.0 and *smart contracting*, IoE provides a high level of security and transparency, through the decentralized verification of every P2P (*peer-to-peer*) sales transaction (between producers, buyers, and *prosumers*), which is recorded in distributed registers, which guarantees high

availability of all data (transactions). The generation of transaction contracts, according to predefined conditions (which are part of the code of the *smart contract* application) is automatic.

In order to use SOA technologies as an accelerator of the energy transition, the importance of energy smart routers, as one of the key technologies applied in the IoE platform, is emphasized. Their basic role is to direct, control and coordinate the energy flow in the direction of the least load on the network. The intelligent *smart grid* can automatically recognize each new so-called *plug-in* device (consumer and/or producer of electricity).

The development of IoE has led to the disruption of the traditional, centralized energy business model. New digital technologies have made possible the integration of a large number of distributed producers and users of energy from renewable sources (DRS). Thus, traditionally vertically integrated large producers and distributors, who enjoyed the position of a natural monopoly, began to face competition, which was almost unimaginable until recently due to the necessity for large capital investments required to enter this industry. In addition to the decrease in sales, as a consequence of lower demand, due to the fact that DRS through the central transmission network, takes only the missing electricity, there was also an increase in the cost of maintaining the transmission network. The slow transformation (digitalization) of traditional companies, which would lead to increased efficiency and competitiveness, through the offer of new services (such as financing, planning, development, management of energy plants of the economy and housing),

opened space for the entry of new agile companies into the energy sector.

Aggregators represent companies that connect and unify the supply of distributed electricity producers. In case of additional energy needs, such requests are consolidated and brought to the market. By aggregating common energy needs or offering surpluses, better prices are achieved, and aggregators create new value for their clients (DRS), while reducing costs and balancing complexity for network operators [24]. Table 1 shows the new business models that disrupt the energy sector.

Energy as a service (EaaS) represents a new business model in which clients, without the need for capital investment in energy capacities, rent them with the aim of reducing consumption or generating additional amounts of electricity. In the energy sector, this business model most often occurs in the form of energy service agreements - ESA, according to which the customer pays the service company for the service, as well as the cost for the consumed electricity or gas, which in total should be less than the amount the client previously paid. The model of managed energy service agreement (MESA) is also very widespread, according to which the service company takes over the management of the existing energy capacities, for which it is paid from the savings realized by the client (industrial, commercial facilities, business parks, etc.) achieved as a result of lower consumption (pay for performance).

Serbia has many opportunities to improve energy efficiency and independence right away. These initiatives involve both public and private sectors, and include waste

Table 1. Disruption models and disruptive companies

Business model	Company disruptor	Country	Description
Aggregators	<i>Eneco CrowdNett</i>	Holland	a company founded in 2016, is a Dutch aggregator of batteries, used by households to store excess electricity. Households are offered the purchase of batteries at a significant discount, with an additional amount that the company pays monthly, in exchange for 30% of their capacity, which should be available throughout the day. <i>Eneco</i> offers these combined capacities to distribution network operators for balancing purposes.
Aggregators	<i>Next Kraftwerke</i>	Germany	the largest virtual power plant (capacity 11,182 MW, Q3 2022), which brings together the electricity supply and needs of a large number of DRS of different sizes across Europe. Using digital technologies, they offer clients electricity trading services, power scheduling), as well as balancing.
EaaS	<i>Metrus</i>	USA	one of the largest USA companies, which, based on the ESA model, offers financing and project implementation services, as well as analytics and reporting on consumption.
EaaS	<i>Petrol</i>	Slovenia (SOA)	offers energy solutions based on the principle of ESA and MESA models for industry, legal entities and individuals.

management, waste-to-energy solutions, taking advantage of waste heat from sources such as data centers, utilizing biomass, and utilizing solar energy. These solutions are currently available. Additionally, modern technological and smart solutions can be applied to the outdated distribution network. Data and analytics can also be used to optimize energy consumption in factories. The responsibility lies partly with the state to provide incentives to the economy since not all EU funds that could be used for such purposes are currently available.

Discussion

The previously produced results of this research offer principled answers to the research question of this paper from two basic perspectives. The first is that companies are increasingly aware of the changes that are coming, that the challenges, as well as the opportunities offered by SOA and I5.0 technologies, are placed high on the list of priorities that they need to address. In particular, this refers to the growing awareness of company management when it comes to strengthening competitive advantage through innovating the organizational offer in the conditions of circular economy development. Secondly, the presented case study confirms the thesis that by applying SOA and I5.0 technologies, in this presentation in the field of energetics through the IoE model, new business models, products, and services, ideally of a niche type can be found and innovated and also validated in the environment/ecosystems provided by SOEs.

Our research demonstrates that SOA/I5.0 technologies can help green transition and meet corporate (ESG) goals in emerging markets or SOAs by providing sustainable and energy-efficient solutions. Such solutions include renewable energy sources, energy storage technologies, energy efficiency solutions, smart grids, green buildings, and transportation solutions. In particular, digital technologies can be used to monitor and measure the performance of these solutions to ensure they are meeting their ESG goals. For example, AI and machine learning can be used to analyze large amounts of data in order to identify trends and potential areas of improvement such as GHG emissions and aimed reductions. Finally, blockchain

technology can be used to increase transparency and traceability for sustainability initiatives in order to ensure that ESG goals are met.

The growing importance of developing economies to the global economy cannot be overstated. In 2020, emerging markets contributed more than 50% of total global economic growth, and are home to more than 70% of the world's population. The well-being of people around the globe is inseparable from the economic and social progress of these countries, and ESG (environmental, social, governance) factors are increasingly influential in this development.

From a local point of view, companies operating in Serbia and other non-EU countries should not be complacent and should be proactively involved in the green transition, even though they may not currently be subject to the same pressures as those in the EU. In addition, Serbia's current energy profile, which is heavily reliant on coal for more than two-thirds of its electricity and has an energy intensity that is close to 50% higher than the European average, further emphasizes the need for an immediate increase in the proportion of renewable energy and an improvement in energy efficiency.

Funds to finance expensive green transition also seem to be more available than ever with investors rapidly incorporating ESG into their portfolios in emerging markets, recognizing the potential for greater positive impact and the shift towards ESG-based investing. The debate around the ethics of investing in emerging markets often centered around cost-related issues, is being addressed by an ESG-driven approach. This approach ensures that companies investing in these markets act responsibly and invest in the communities they serve.

The success of investing through ESG in emerging markets is in the numbers. Over the last decade, the MSCI Emerging Markets ESG Leaders Index, which tracks companies with high performance in ESG metrics relative to their peers, outshone the broader MSCI Emerging Markets Index according to the data from indexing firm [32].

By applying digital technologies, industry 5.0, which has become Europe's new development paradigm for sustainable, resistant, and ecological industrial development, and above all IoT, *Big Data*, *Blockchain*,

and artificial intelligence, the traditional energy system is transformed into a new energy platform IoE. The application of digital solutions per se is not enough, but it should lead to fundamental changes in work methods, organization, and company culture.

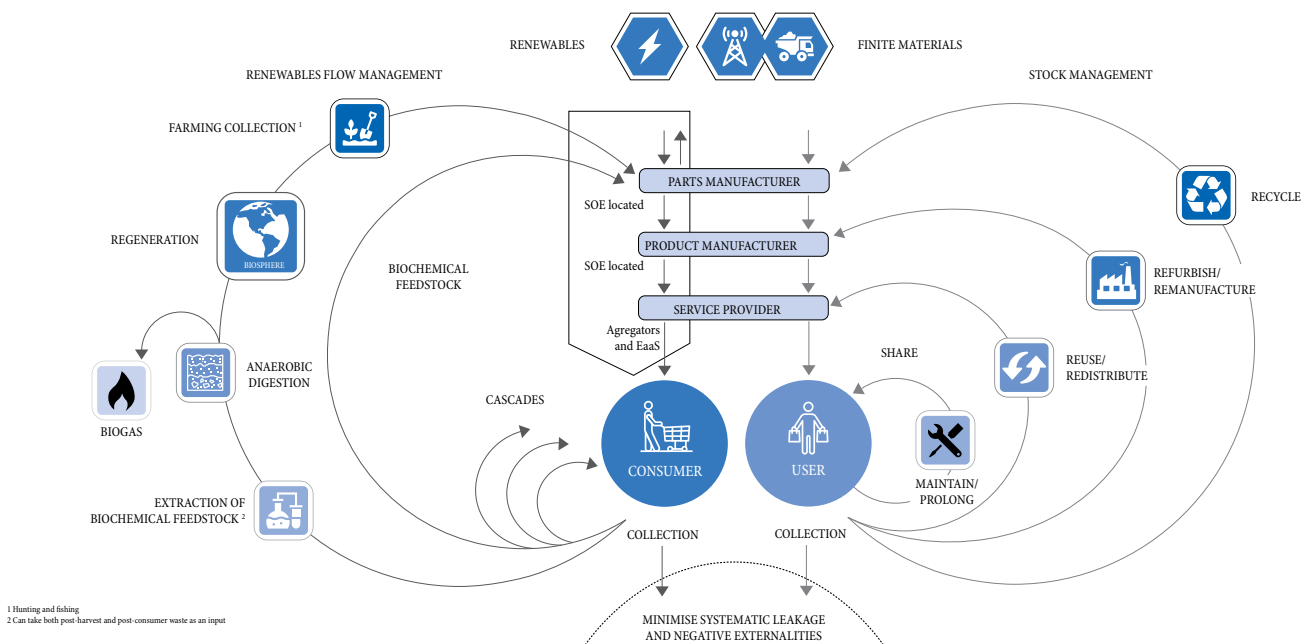
When it comes to the energy sector and the relevant companies, due to their monopolistic position, complexity, and size, they are slow to react to challenges from the environment, inertness representing the biggest threat to traditional companies. As a successful transformation of the energy sector can achieve immeasurable positive effects, it is necessary for managers not only to be sponsors of transformation projects but also their owners, because transformation changes their habits and work practice. In an industry that is in the phase of disruption, with the appearance of distributed energy producers and digital energy service companies, the path to the successful transformation of the company does not lead through sporadic big-bang projects but contains a series of agile transformation projects, by which digital solutions, ideally co-created with the employees, are quickly realized and implement.

The application of the principles of the circular economy in energetics represents the foundation for the development of the Internet of Energy (IoE) or intelligent

transmission smart grid. Unlike traditional energy systems, based on a linear one-way flow of energy from centralized, geographically concentrated producers to consumers, IoE is based on circular distributed production.

This new IoE business model enables both small and large economies to develop their own ecosystem and economic entities in which they operate. A new value chain is created or an existing one is modified, in which part manufacturers, product manufacturers and service providers are involved, as shown in Figure 5. The proliferation, then the use of SOA and I5.0 technologies, enable, especially companies in small and open economies, to develop niche innovative products. This is especially true for innovative business models, which for the purposes of this paper is shown through the energy sector. High-tech products, services or business models developed in this way enable production to take place at the point of consumption (parts manufacturers and product manufacturers), but in the case of SOE companies, at the same time, they should be export-oriented, i.e. internationalized. When it comes to evaluating new business models, they represent the company's offer with the highest added value in de facto all industries. In the case of the IoE case study described here, new business models have been presented those turn companies into aggregators or EaaS providers (Figure 4.)

Figure 4. Presentation and interpretation of research results on the Butterfly diagram, the case of the energy IoE sector in the SOE environment, authors' presentation



¹ Hunting and fishing
² Can take both post-harvest and post-consumer waste as an input

States and appropriate regulatory bodies should define new energy policies with the goal of decarbonization, affordable, safe, and quality supply, which will also encourage the application of new technologies in the sector.

Conclusions and recommendations

SOA and I5.0 technologies *per se* are not fundamentally changing the world but they possess enormous transformational potential, foremost helping companies to maximize their internal potential, and create and develop innovative products/services, particularly in the area of developing new innovative disruptive business models. At the same time, the proliferation of SOA technologies, especially Industry 5.0, offers today more than ever business opportunities for SOEs in order to strengthen all components and improve processes within the framework of the circular economy. The results of this research are advocating that business leaders have had to learn to adjust to the ever-changing environment, making changes to their workforces, supply chains, and more. In small and open economies, Industry 5.0 can unquestionably serve as a competitiveness booster for firms by enabling them to increase their productivity and efficiency while reducing transaction costs, while competing in specific market niches. This will differentiate them and enable their agile internationalization to be able to compete better with larger, more established firms in the global marketplace. One way Industry 5.0 can improve competitiveness in small and open economies is through the use of advanced technologies such as AI, IoT, and robotics implementing these technologies in specific market niches and sectors.

These technologies can automate repetitive tasks, increase the speed and accuracy of data analysis, and allow for greater customization of products and services. This can lead to increased productivity, improved quality control, and faster time-to-market for products and services. Industry 5.0 can also help small and open economy firms better compete by improving their ability to respond to changing market conditions and customer demands. For example, Industry 5.0 technologies can provide real-time data on customer preferences, allowing companies to quickly adapt their products and services.

Another way Industry 5.0 can help small and open economy firms is through the use of digital platforms to connect with global customers and suppliers, regardless of geographical location. This can provide access to new markets, customers, and suppliers that would be difficult to reach through traditional means.

Overall, Industry 5.0 can help SOA firms to increase their competitiveness by providing them with the tools to improve efficiency, reduce costs, increase productivity, and respond quickly to changing market conditions and customer demands

When the national ecosystems are in question, in order to transit towards a circular economy the SOA government policies should play a key role in order to flexibly and agile adjust their policies and make resources available, especially in public infrastructure and governmentally managed segments, ideally through public procurement of innovation. Governments in SOEs should strongly encourage their companies to innovate and excel in niche segments, where they can relatively more easily strengthen their competitive advantage, which should be confirmed from the very beginning of developed offerings on global markets as well.

However, as much as SOA technologies might be available at an affordable price, SOE economies are on the other side confronted with a chronic lack of investment capital, chronic problems with skilled labor, as well as growing operating costs, especially in the energy segment. All these hampering issues should not be neglected when taking in consideration the use of SOA and their proliferation in SOE.

Due to the relatively wide scope, this paper covers, i.e. circular economy and a green transition, the limitations of the research are primarily linked to the single nevertheless robust case study presented on the IoE topic. Other areas and sectors most certainly eligible for the proliferation of SOA in SOE are smart agriculture, smart transport, and cities, quality of life and health, protection of critical infrastructures, and cyber security, all the way to a smart public sector. Further research should be focused in this direction, and it could be complemented with quantitative methods.

References

1. Adel, A. (2022). Future of industry 5.0 in society: human-centric solutions, challenges and prospective research areas, *Journal of Cloud Computing*, 11 (40), 1-15
2. Agrawal, R et al (2022) Nexus of circular economy and sustainable business performance in the era of digitalization. *International Journal of Productivity and Performance Management*, 71 (3), 748-774
3. Akundi, A. et al (2022). State of Industry 5.0—Analysis and Identification of Current Research Trends, *Applied. System Innovation*, 5(1), 1-14
4. Alhawari, O., Awan, U., Bhutta, M.K.S., Ülkü, M.A. (2021). Insights from Circular Economy Literature: A Review of Extant Definitions and Unravelling Paths to Future Research. *Sustainability*, 13, 1-22
5. Antikainen, M. et al (2018). Digitalization as an enabler of circular economy, *Procedia CIRP*, 73, 45-49
6. Asif, R., Ghanem, K., & Irvine, J. (2020). Proof-of-PUF enabled blockchain: Concurrent data and device security for internet-of-energy. *Sensors*, 21(1), 28.
7. Berg, H et al (2020). *Digital circular economy as a cornerstone of a sustainable European industry transformation*. White Paper, ECERA European Circular Economy Research Alliance
8. Bressanelli, G., Adrodegari, F., Perona, M., & Saccani, N. (2018). The role of digital technologies to overcome Circular Economy challenges in PSS Business Models: an exploratory case study. *Procedia Cirp*, 73, 216-221.
9. Chauhan C., Parida V., Dhir, A. (2022). Linking circular economy and digitalisation technologies: A systematic literature review of past achievements and future promises, *Technological Forecasting & Social Change*, Elsevier, 177, 1-18
10. Circle economy (2022), *Circularity Gap Report*, Annual Report presented on World Economic Forum
11. Deloitte (2022a), The CIO's call to action: Driving an environmentally sustainable tech agenda to accelerate organizational change, <https://www2.deloitte.com/xe/en/insights/focus/cio-insider-business-insights/esg-sustainability-in-technology-strategy.html>
12. DeloitteUS (2022b), Five in 5: Smart grid modernization Challenges and opportunities around smart grid modernization, <https://www2.deloitte.com/us/en/pages/consulting/articles/smart-grid-modernization.html>
13. Ellen MacArthur Foundation (2019). *Artificial intelligence and the circular economy - AI as a tool to accelerate the transition*, Working paper with McKinsey support,
14. eKapija (2022), SET 2022: Bauk balansiranja - Kako će na energetsku mrežu uticati priključenje novih kapaciteta iz OIE?, <https://www.ekapija.com/news/3643472/set-2022-bauk-balansiranja-kako-ce-na-energetsku-mrezu-uticati-prikljucenje-novih>
15. European Commission (2020). *Leading the way to a global circular economy: state of play and outlook*, EU, 1st edition
16. European Commission (2021). *Industry 5.0 Towards a sustainable, human-centric and resilient European industry*, R&I paper series, 1st edition, 1-48
17. Feroz, A.K., Zo, H., Chiravuri, A. (2021). Digital Transformation and Environmental Sustainability: A Review and Research Agenda. *Sustainability*, 13, 1530
18. Geerken, T., Schmidt, J., Boonen, K., Christis, M., & Merciai, S. (2019). Assessment of the potential of a circular economy in open economies—Case of Belgium. *Journal of Cleaner Production*, 227, 683-699.
19. Ghobakhloo, M., (2022). Identifying industry 5.0 contributions to sustainable development: A strategy roadmap for delivering sustainability values, Elsevier, *Sustainable Production and Consumption*, 33, 716-737
20. Grabowska, S., Staniuk, S., Gajdzik, B. (2022). Industry 5.0: improving humanization and sustainability of Industry 4.0, *Scientometrics*, 127, 3117-3144
21. Grguric, A., Vlacic, E., & Drvenkar, N. (2020). Assessing firms' competitiveness and technological advancement by applying artificial intelligence as a differentiation strategy—a proposed conceptual model. *Economic and Social Development: Book of Proceedings*, 43-61.
22. Henrysson, M., Nuur, C. (2021). The Role of Institutions in Creating Circular Economy Pathways for Regional Development, *The Journal of Environment & Development*, 30(2), 149-171
23. Ingemarsdotter, E., Jamsin, E., Kortuem, G., & Balkenende, R. (2019). Circular strategies enabled by the internet of things—A framework and analysis of current practice. *Sustainability*, 11(20), 5689.
24. IRENA (2019), AGGREGATORS INNOVATION LANDSCAPE BRIEF, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Feb/IRENA_Innovation_Aggregators_2019.PDF
25. KPMG (2022). *CEO Outlook. Growth strategies in turbulent times*, KPMG International
26. Kraaijenbrink, J. (2022), What Is Industry 5.0 And How It Will Radically Change Your Business Strategy?, *Forbes*
27. Kristoffersen, E., Blomsma, F., Mikalef, P., & Li, J. (2020). The smart circular economy: A digital-enabled circular strategies framework for manufacturing companies. *Journal of business research*, 120, 241-261.
28. Liu, Q. et al (2022). A framework of digital technologies for the circular economy: Digital functions and mechanisms, *Business Strategy and Environment*, 31, 5, 2171-2192
29. Maddikunta, P. K. R., Pham, Q. V., Prabadevi, B., Deepa, N., Dev, K., Gadekallu, T. R., ... & Liyanage, M. (2022). Industry 5.0: A survey on enabling technologies and potential applications. *Journal of Industrial Information Integration*, 26, 100257.
30. McKinsey (2022), Playing offense with green tech to achieve net-zero emissions, December 8, 2022 | Article, <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/playing-offense-with-green-tech-to-achieve-net-zero-emissions/>
31. Meyer, A. (2020), *CIRCelligence by BCG – It's Time to Close Our Future Resource Loops*, BCG, Boston
32. MSCI (2023), MSCI Emerging Markets ESG Leaders Index (USD), <https://www.msci.com/documents/10199/c341baf6-e515-4015-af5e-c1d864cae53e>
33. Okorie, O., Russell, J., Cherrington, R., Fisher, O., & Charnley, F. (2023). Digital transformation and the circular economy: Creating a competitive advantage from the transition towards Net Zero Manufacturing. *Resources, Conservation and Recycling*, 189, 106756.
34. Pagoropoulou, A., Pigossoa, D., McAloone, C.T. (2017). The emergent role of digital technologies in the Circular Economy: A review, *Procedia CIRP*, 64, 19 – 24

35. Pitić, G., Savić, N., & Verbić, S. (2018). Digital transformation and Serbia. *Ekonomika preduzeća*, 66(1-2), 107-119.
36. Pelegrini, M et al (2018). A new productive model of circular economy enhanced by digital transformation in the Fourth Industrial Revolution-An integrated framework and real case studies, Conference Paper,
37. Planning, P. (2017) Will digital boost circular? Evaluating the impact of the digital transformation on the shift towards a circular economy, *International Journal of Management Cases*, Volume 19, Issue 1, 22-32
38. Rapaccini, M., Saccani, N., Kowalkowski, C., Paiola, M., & Adrodegari, F. (2020). Navigating disruptive crises through service-led growth: The impact of COVID-19 on Italian manufacturing firms. *Industrial Marketing Management*, 88, 225-237.
39. RCR (2022), At the end of 2021, the EU + UK region had nearly 163 million smart electricity meters, <https://www.rcrwireless.com/20221124/internet-of-things-4/smart-electricity-meter-penetration-eu-reaches-56-end-2022#:~:text=At%20the%20end%20of%202021%2C%20the%20EU27%2B3%20region%20had,a%20penetration%20rate%20of%2053%25>.
40. Savić, N., Pitić, G., & Trbovich, A. S. (2016). Smart, connected products as a new competitive advantage: Challenges for Serbia. *Ekonomika preduzeća*, 64(1-2), 143-155.
41. SoftwareAG (2022), IoT, enabling sustainability for a circular economy, <https://blog.softwareag.com/circular-economy-sustainability/>
42. S&P Global (2022), ESG and Technology: Impacts and Implications, <https://www.spglobal.com/marketintelligence/en/documents/451-esg-and-tech-dckb-report.pdf>
43. Stanelyte, D., Radziukyniene, N., & Radziukynas, V. (2022). Overview of Demand-Response Services: A Review. *Energies*, 15(5), 1659.
44. Trevisan, A. H., Zacharias, I. S., Liu, Q., Yang, M., & Mascarenhas, J. (2021). Circular economy and digital technologies: a review of the current research streams. *Proceedings of the Design Society*, 1, 621-630.
45. Ucar, E., Dain, M.A., Joly, I. (2020). Digital Economy in Circular Economy Transition: Evidence from Case Studies, *Procedia CIRP*, 90, 133-136
46. UNIDO (2022), How to achieve the twin transition towards green and digital production, Sep. 2022, <https://iap.unido.org/articles/how-achieve-twin-transition-towards-green-and-digital-production>
47. Vlačić, E., Dabić, M., Daim, T., & Vlajčić, D. (2019). Exploring the impact of the level of absorptive capacity in technology development firms. *Technological forecasting and social change*, 138, 166-177
48. WBCSD (2022). *Circular transition indicators V2.0. Metrics for business, by business*, powered by KPMG, Circular Economy Program
49. Wynn, M.; Jones, P. (2022). Digital Technology Deployment and the Circular Economy. *Sustainability*, 14 (15), 9077.



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Транснафта



SERBIAN BIOGAS ASSOCIATION

🔥 Serbian Biogas Association is a non-profit, non-governmental association founded in March 2012 to rally companies planning to build the first biogas facilities in Serbia. The association was established to achieve the goals of developing and encouraging the production and utilization of biogas as a renewable energy source.

🔥 Today, the Serbian Biogas Association is a representative association with over 60 members, mainly owners of biogas plants, but also other institutions and companies related to biogas technology directly or indirectly. In the coming years, the member-financed association wants to become a mouthpiece for politics and society and actively promote the creation of framework conditions and standards.

🔥 In partnership with domestic and international institutions, the SBA is intensively engaged in the further training of its members in the utilization of biogas and the operation of biogas plants.

🔥 SBA is in a partnership project with the German Biogas Association (GBA), financed by the Chamber and Association Partnership Program (KVP) of the German Ministry for Economic Cooperation and Development (BMZ).





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Takođe, pokrenut je **Fond za klimatske inovacije** sa ciljem ubrzanja razvoja tehnologije i klimatskih inovacija, a tu je i **Microsoft program pozitivnog preduzetništva** koji pruža širok spektar podrške kompanijama koje rešavaju najurgentnije izazove sa kojima se svet suočava.



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GENERATION Z'S LETTER TO CEOs

Pismo generacije Z upućeno generalnim direktorima

Abstract

The research focuses on the needs and demands of Generation Z that enters the labor market with different expectations and attitudes than previous generations. We present an analysis based on a conducted online survey among 519 Gen Z members and compare it with similar surveys conducted globally. Members of Generation Z in Serbia want to independently create their work environment and ensure the financial security, often through the establishment of their own company, while at the same time striving for stable earnings and job security. Like global peers, Gen Z in Serbia is concerned about ensuring financial security. It's a priority when they're looking for a job they'd leave if they can't progress. Globally and in Serbia, this generation placed great emphasis on mental health and ranked it as a high priority in defining a desirable working environment. However, members of this generation in Serbia differ from their global peers in terms of the importance of the sustainable aspect of the future employer. Although there are those who believe that this challenge, as well as other global challenges, should be solved by companies, this group of young people in Serbia still believes that the state should have the key responsibility in solving the problems they consider important. The results of the research clearly show that digital native, Generation Z in Serbia has clear expectations and demands from future employers while putting mental health, financial stability, and the opportunity for advancement as a priority when applying for and maintaining a certain job.

Keywords: *Global Innovation Index (GII), Global Talent Competitiveness Index (GTCI), Generation Z, Serbia*

Sažetak

Istraživanje se fokusira na potrebe i zahteve generacije Z koja ulazi na tržište rada sa drugačijim očekivanjima i stavovima nego bilo koja druga generacija ranije. U radu je predstavljena analiza podataka prikupljenih putem onlajn ankete sprovedene među 519 pripadnika ove generacije. Rezultati sprovedene ankete stavljeni su u poređenje sa sličnim anketama koje su sprovedene među pripadnicima generacije Z na globalnom nivou. Pripadnici generacije Z u Srbiji žele da samostalno stvore svoje radno okruženje i obezbede finansijsku sigurnost često kroz osnivanje svoje kompanije, dok istovremeno teže stabilnoj zaradi i sigurnosti na poslu. Kao i globalni vršnjaci, ova grupa mladih u Srbiji veoma brine oko obezbeđivanja finansijske sigurnosti pa je to prioritet pri pronalasku posla, dok bi isti napustili ukoliko nemaju prostora za napredak. Globalno i u Srbiji, ova generacija jako polaže na mentalno zdravlje i postavlja ga kao visoko rangirani prioritet koji definiše poželjno radno okruženje. Međutim, pripadnici ove generacije u Srbiji se razlikuju od svojih globalnih vršnjaka po važnosti aspekta održivosti prilikom odabira poslodavca. Iako postoje oni koji smatraju da ovaj izazov, kao i druge globalne izazove, treba da rešavaju i kompanije, ova grupa mladih u Srbiji i dalje smatra država treba da ima ključnu odgovornost u rešavanju problema koje smatraju važnim. Rezultati istraživanja jasno pokazuju da, po prirodi digitalna, generacija Z u Srbiji ima jasna očekivanja i zahteve od budućih poslodavaca, a mentalno zdravlje, finansijsku stabilnost i mogućnost za napredak stavlja kao prioritet pri odabiru i zadržavanju na određenom radnom mestu.

Ključne reči: *Globalni indeks inovativnosti, Globalni indeks konkurentnosti talenata, generacija Z, Srbija*

Introduction

Current trends impose numerous choices that can have their own long-term and short-term dilemmas and outcomes. Economic theory has undergone several paradigm shifts. Today we are in a phase of changing the paradigm that began with the Great Recession of 2008. On the other hand, the geopolitical fractures that culminated in 2022 have further made the problems more complex and challenging. This raised several new dilemmas and brought great uncertainty. That uncertainty has not erased the challenges companies face in a complex innovation ecosystem that puts people at the core.

Under those circumstances, new competitive advantages and the uniqueness of value propositions are human-centric and the most important for improving competitiveness in the digital era. For all these profound changes, it is necessary to attract talent in the completely new business model creation process. And underlying everything is never more intense technological progress. The world has entered deeply into the process of digitization, but we are also faced with climate change and the need to implement a green economy and protect the environment. This need is additionally supported by Generation Z's demand and dedication to a more sustainable work and life environment.

In such a complex situation, the authors of this article aim to elucidate the challenges and opportunities for Serbian innovation- and knowledge-based development while discovering the demands and needs of Generation Z that is entering the labor market. The research starts with a literature review that presents some open dilemmas in the current context of economic development. Additionally, the literature review considering Generation Z helped us define the important fields when researching Generation Z expectations from employers. The literature review is followed by the overall framework for innovation and knowledge-based development in the second part of this article. This part shows the position of a group of selected countries, including Serbia, in the field of innovation as the key determinant of growth and development, and the role of talents in the modern world described by the war for talents as dominant and crucial for further development.

In the third part of the paper, we also focus on talent entering the labor market. Thus, we based the research on the results that arose from the survey conducted with over 500 respondents. We analyzed the secrets of Generation Z, which should become one of the carriers of all changes expected to be realized in the economic development context to come. In the concluding remarks, we present the main conclusions and areas for further research in the field.

Literature review

Current trends. Nouriel Roubini, in *MegaThreats: Ten Dangerous Trends* [37], highlights that we went through the Great Inflation period (1965-1982) swings in the 1970s and the U.S. stagflation with inflation by 12% and 14% and entered the Great Moderation period (1983-2008), during which it achieved decades of growth with stabilization of low-level inflation and low unemployment. Today it is likely to enter the Great Stagflation period, with high inflation, recession, and debt crisis. Current problems started on the supply side but were significantly fueled by excessive demand in the last phase. The supply side was dominated by globalization and protectionism, friend-shoring the shifting of the industry from low-cost China to high-cost Europe and America, with the population straining into younger generations who work but spend less and save less, while older unemployed generations spend less. This is followed by migration, which in the past had a south-north direction, the decoupling of America and China, the geopolitical depression, which act to reduce growth and increase the cost of food, water, and energy, and then Covid-19... The demand side was dominated by huge public and private debt and high fiscal deficits that the central banks of the most advanced countries monetized, as they did in the crisis of the 1970s. All this has led to the current global crisis – geopolitical and economic, inflation, threatening recession, and stagflation.

The complexity of the business environment is additionally driven by the disruption of new technology and calls for contribution to sustainability. Jeffrey Sacks [38] says the development of modern civilization has undergone a series of seven distinct waves of technological and institutional changes. He offers a fresh perspective

on globalization based on digital technologies. Sacks [38] emphasize the need for new methods of international governance and cooperation to prevent conflicts and achieve economic, social, and environmental objectives aligned with sustainable development.

Faced with crises over the past few decades, we hear more and more calls for radical changes. But the answer to the problems is not revolution. According to Philippe Aghion, Céline Antonin, and Simon Bunel [1], the answer is to create a better capitalism by understanding and harnessing the power of creative destruction - an innovation that disrupts. They show that we owe our modern standard of living to innovations enabled by free-market capitalism. But we also need state intervention with the appropriate checks and balances to simultaneously foster ongoing economic creativity, manage the social disruption that innovation leaves in its wake, and ensure that yesterday's superstar innovators don't pull the ladder up after them to thwart tomorrow's.

Mariana Mazzucato in *Mission Economy* [28], a critical analysis of modern capitalism, points out that a new approach is needed that involves not only risking together but also sharing the results. She argues we need to think bigger and mobilize our resources. We can only begin to find answers if we fundamentally restructure capitalism to make it inclusive, sustainable, and driven by innovation that tackles concrete problems from the digital divide to health pandemics to our polluted cities.

Generation Z. Mentioned values are especially demanded by Generation Z which enters the market as a labor force and consumer. The new generation of influencers, Generation Z, is represented by people born between 1995-2010 [12, p. 1], [25]. This generation is truly digital-native [12, p. 1], [9, p. 6], [10], [40, p. 2], struggling with financial anxiety but dedicated to investment in sustainable choices [8]. Generation Z is the first truly global generation [5], [17] that will, as the authors see it, make the greatest shift in the workplace [42]. AnneMarie Hayek [18] points out that at this critical moment, Generation Z is a new generation that is now both of age and is at the center of the most pressing issues of our time. The next decade will bring unsurpassed change, and Zs will shape the path ahead.

Generation Z's work ethic is related to transparency and flexibility [3]. As Gomez et al. [14, p. 11] showed, this generation strives to work in industries that they interact with and tend to have entrepreneurial opportunities while preferring individual tasks over team-based activities. Generation Z is more sustainably conscious and they are prioritizing environmental actions by employees [8]. This generation appreciates the work-life balance [14, p. 12] and inspires organizations to actively address mental health [8]. They are expecting companies to take a stand [15], and to put people before profit [16, p. 2].

Generation Z also differs as a consumer, they see consumption to express their individual identity [12, p. 8]. They are willing to pay more for personalized offerings but are not comfortable sharing personal information with companies [12, p. 8]. Still, being technology-dependent [45], this generation is comfortable with the virtual world [44, p. 1]. Generation Z has more power than all others to redefine consumption [35].

Innovations and competitiveness. Generation Z's interest in new technology are one of its characteristics as a consumer [44]. A technology-driven mindset is one of the determinants that differentiates the most successful companies from those that are not. Generation Z expects to access and assess a wide pool of information before making a purchase decision. That information is generated through gathered data. Rado Kotorov in *Data-Driven Business Models for the Digital Economy* [21], points out that the fastest-growing companies have almost no physical assets because they are focused on: (i) creating innovative digital products and (ii) new data-driven business models. This competitive pressure has been imposed on all companies, from start-ups building digital products or services to established companies, to rethink their business models and start digitizing their products and services. Harald Øverby and Jan Arild Audestad [30] argue that innovations and developments in technology have laid the foundations for an economy based on digital goods and services - the digital economy.

Generation Z is also more focused on innovation [35] and perceives that constant innovation is a given [44, p. 1] Nobel Laureate Michael Kremer [22] advocates a very broad definition of innovation by incorporating

everything that enables the creation of more value with as few resources as possible. As innovation is the driver of long-term development, it can also be crucial for environmental sustainability, one of the aspects prioritized by Generation Z, but it requires appropriate institutions to accelerate innovation and build competitiveness on those bases.

The environment for innovation acceleration is proactively built through clusters. Christian Ketels [19] believes that a cluster approach can be a useful tool for analyzing innovation-driven development opportunities and removing obstacles faced by companies in certain locations. This has been demonstrated in numerous examples of countries since the early 1990s when Porter [32], [33] launched the first wave of cluster initiatives (USA, Catalonia, Basque Country, Denmark, Chile, Colombia, Mexico...).

Improving competitiveness is also based on productivity and it is a key driver in long-term prosperity. Productivity is widely understood as the ability of an economy to effectively mobilize available labor and other resources to create value. The concept of productivity in competitiveness theory is not only a value created by every employee, but it is also capable of engaging a large part of the available workforce in productive activities. Therefore, productivity is not only as technical as possible and efficient, but it is also the ability to find new and unique ways of creating value for citizens and customers.

Ketels [19] points out that the digital age has brought some challenges to the concept of competitive advantage. There have been comments related to a lot of changes going on in the economy today and difficulties in building sustainability into a competitive advantage. It is not disputed that it should be agile, and fast... It is important to (i) define a unique value proposition in conditions of increased market dynamism and (ii) define the competitive advantage for strategy development.

Ketels adds that in the current conditions, there is a redesign of a global business and a replacement of the global platform that dominated until 2008 with the dominance of the super-efficient global supply chain. These changes lead us to regionalization, to regional value chains, instead of the global value chain. This includes new technologies that

reduce labor costs and reduce the importance of economies of scale, which all allow competition in new regionalized circumstances. A completely new global business model is emerging, which opens space for smaller companies to enter the market quickly. In essence, two perspectives are crystallized:

- one perspective is the competitiveness of locations – we know that clusters, as regional versions of ecosystems, enable participants to be innovative, to make suppliers specialize faster and function at the regional level; clusters become more specialized, focus on market niches and on individual parts of the value chain, and become more connected.
- the second perspective is related to companies and is not directly related to geography but is related to the reaction of the market; it is associated with what creates value for your customers, which is a combination of different products and services that represent the right choice in a chosen ecosystem.

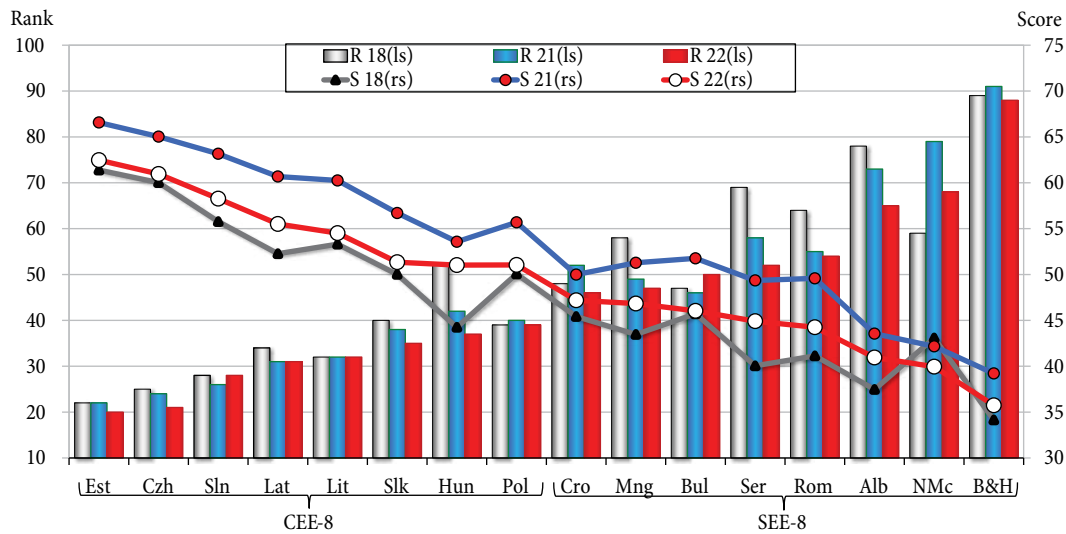
The role of innovation and talent in the new economic theory paradigm

The current economic theory paradigm indicates the increasing importance of new development factors. At the center are human resources (and not only financial), innovation in a broader sense (not only technological innovation but all other forms of innovation), as well as the battle for talent that needs to secure new development breakthroughs based on digitalization and green development agenda.

Below we can see the position of the group of countries in Central and East Europe, including Serbia, by two very important indicators – in terms of innovation and talents for which all countries today are fiercely fighting in the world. We opened this topic even earlier when we analyzed the phenomena of telemigrants and the talent paradox [39].

The Global Innovation Index (GII). GII [11] is a very important indicator of innovation based on country-level data. Comparing 2022 and 2018, we see that Estonia, Bulgaria, and Hungary achieved the biggest improvements in the ranking of innovation in the group of selected countries of Eastern Europe, that Serbia and Albania maintained

Figure 1: Global Innovation Index - GII



Source: WIPO, The Global Innovation Index 2022

their ranks, and that Latvia, Slovakia, and Montenegro achieved lower rankings (see Figure 1).

However, if we look at the scores achieved, instead of ranks, all countries achieved fewer scores in 2022.

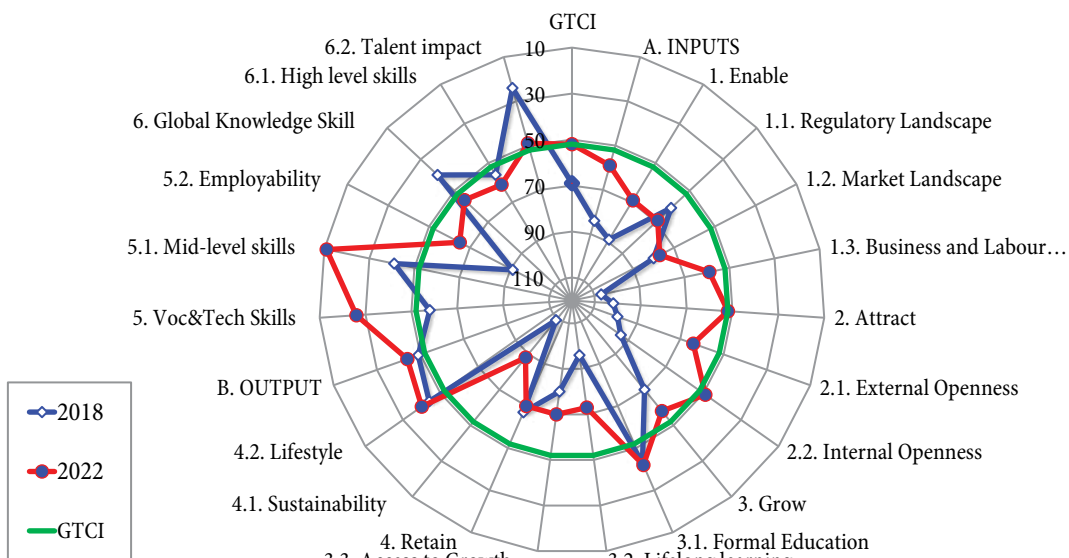
This indicates that there are significant spaces for improving the innovation of all countries in the sample. It also applies to Serbia.

Serbia has achieved a significant improvement in Infrastructure (Ranking from 48 to 38th place), especially in Ecological sustainability (by introducing the ISO 14001 standard) and improving the General infrastructure (Ranking from 96th to 57th place). Also, improvement

was achieved in Knowledge and technological outputs (Rank from 50th to 42nd place), primarily thanks to the introduction of ISO 9001 standard and Diffusion of knowledge, although there are weaknesses in terms of Software spending on the level of firms. And within the Market sophistication (Rank from 101st improved to 83rd), the key contribution was achieved according to the Indicator Trade, competition, and market scale (Rank from 102nd to 35th).

When it comes to the deterioration of the GII in Serbia, it is most prominent in two areas: Business sophistication (Rank is exacerbated from 50th to 65th place)

Figure 2: GII of Serbia in 2018 and 2022



Source: WIPO, The Global Innovation Index 2022

and Creative output (from 64th to 76th). In the Business sophistication index, although a significant improvement was achieved based on FDI inflow, adverse effects based on knowledge workers prevailed (from 45th to 69th). Of particular concern is the creative output rank (which has deteriorated from 64th to 76th), especially because creative industries are one of the most important factors of modern development (see Figure 2).

Global Talent Competitiveness Index (GTCI). Bruno Lanvin and Felipe Monteiro [24] argue that we are living in the tectonic changes of talents. Countries around the world compete globally to grow better talent. It is important to attract the talent they need but also to retain those workers who contribute to competitiveness, innovation, and growth. So, it is important to follow economic and social policies in place that will facilitate this process. Preparing Global Talent Competitiveness Index (GTCI) Lanvin and Monteiro refer to the set of policies and practices that enable a country to develop, attract, and empower the human capital that contributes to competitiveness. Practically the GTCI is an Input-Output model which combines an assessment of what countries do to produce and acquire talents (Input) and the kind of skills that are available to them as a result (Output).

The Input side of the GTCI consists of Enable – Attract – Grow - Retain framework used by corporations to steer talent management.

Attracting talent is viewed from two perspectives: (i) as a draw towards external (i.e., foreign) valuable resources – both productive businesses (FDI...) and creative people (through high-skilled migration) and (ii) as an internal attraction that is focused on removing barriers to entering the talent pool for groups.

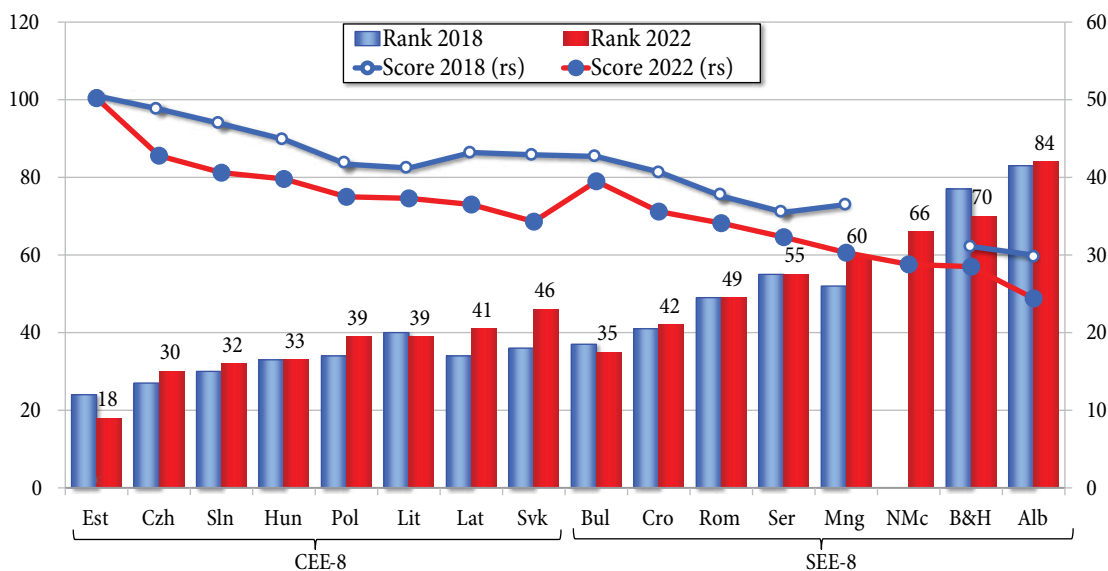
Growing talent depicts not only education but also includes apprenticeships, training, and continuous education, as well as experience and access to growth opportunities.

Retaining talent is very important because if you have the more talented person, the wider the global opportunities they have. In this field, two key components are sustainability (both personal and national) and quality of life.

Enabling component is also important and includes the regulatory, market, business, and labor landscapes within a country that facilitate or impede talent attraction and growth.

On the Output side, the GTCI consists of two levels of talent: mid-level and high-level skills. Mid-level skills labeled Vocational and Technical Skills (VT Skills), describe skills that have a technical or professional base acquired through vocational or professional training and experience. The impact of VT Skills is measured by the degree of employability (skills gaps and labor market mismatches and the adequacy of education systems). High-

Figure 3: GTCI country ranks and scores (2018, 2021 and 2022)



Source: GTCI, INSEAD, 2018, 2019, 2021 & 2022

level skills labeled Global Knowledge Skills (GK Skills) deal with knowledge workers in professional, managerial, or leadership roles that require creativity and problem-solving.

Based on the GTCI Input-Output model, there are three main talent competitiveness indices: (i) Input sub-index with four components describing the policies, resources, and efforts that a particular country can harness to foster its talent competitiveness, (ii) Output sub-index with two components: Vocational and Technical Skills and Global Knowledge Skills and (iii) The Global Talent Competitiveness Index (GTCI).

All the countries we analyzed achieved improvements in GTCI scores during 2021 and 2022 compared to 2018, but also weaker GTCI scores in 2022 compared to 2021 (see Figure 3). The country that has experienced the biggest drop across the two periods is North Macedonia.

When it comes to GTCI rankings, most countries have improved their ranks. When comparing the ranks in 2022 with the ranks in 2018, the biggest improvements were made by Serbia, Romania, and Albania.

Serbia achieved a significant improvement in the GTCI score in 2022 compared to 2018 (from 69th to 52nd) by both sub-indices: especially in Input (from 84th to 69th) but also Outputs (49th to 44th).

Inputs have been improved in the following components (see Figure 4): Enable (from 89th to 69th), Attract (from 102nd to 52nd) and Grow (from 79th to 58th), but there

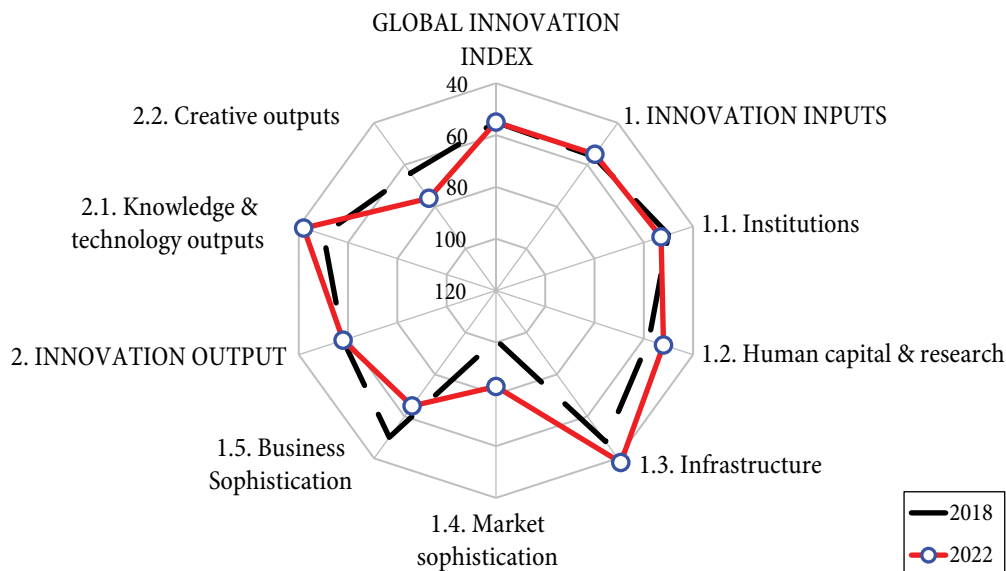
was a deterioration in retain component of the GTCI Input (from 67th to 70th).

The Output subcomponent is also improved (from 49th to 44th), which is still better than the Input subcomponent, but when we decompose it, we come to very complex results. For example, Vocational and technical skills have been improved (from 58th to 26th), but Global knowledge skills have deteriorated (from 40th to 56th), especially with Talent impact (from 24th to 49th).

The analysis of these two reference indicators – GII and GTCI – indicates the following:

- Globally, the GII scores achieved in 2022 are weaker, lower than those of 2018, indicating the global negative impact of the Pandemic and the War in Ukraine on innovation; when it comes to countries' GII rankings, countries' positions are different depending on the policies applied by countries.
- The GII for Serbia improved significantly in 2022, particularly in the components of Infrastructure (from 48th to 38th), Knowledge and technology outputs (from 50th to 42nd), and Market sophistication (from 101st to 83rd), but also showed significant deterioration in Business sophistication (from 50th to 65th) and Creative output (from 64th to 76th).
- Globally, GTCI indicates that the war for talent is escalating dramatically and that the current pace of talent development is not enough to meet the

Figure 4: GTCI in Serbia (2018 and 2022)



Source: GTCI, INSEAD, 2018, 2019, 2021 & 2022

needs of the labor market; in this case, the scores in 2021 and 2022 are better than 2018, indicating that the war for talents has intensified, but the scores in 2022 are weaker than those in 2021, which can be partly explained by the war in Ukraine; when it comes to the rankings of countries, a large number of countries have managed to Improve rankings in 2022 and compared to 2018 and 2021.

- THE GTCI rank and score for Serbia improved significantly in 2022 (score from 69th to 52nd), with improvements in both components of the index, both Input (69th to 52nd) and Output (49th to 44th); within the Output component, the deterioration was achieved in the Global Knowledge Skill sub-index (from 40th to 56th), and especially in the Talent impact sub-index (from 24th to 49th).

As talents have become one of the most important resources of the modern economy in several previous papers we dealt with talents. This time we decided to conduct research based on the analysis of over 500 respondents belonging to Generation Z. This generation consists of all who were born from 1995 to 2010. This generation is younger than the so-called Millennials, who are too deep in their business careers but also aged from the Alpha generation, which is made up of those born after 2010.

What GENERATION Z tells us?

In the third part of the paper, we will present the results of the research conducted on a sample of over 500 GEN Z members who were born between 1995 and 2010. In that generation, there is a new wave of talent that has already come out or is soon entering the labor market. Their role will be increasingly important in managing human capital, and they need to become new innovators, and new entrepreneurs... What do they say to us, and what messages do they send to the CEOs?

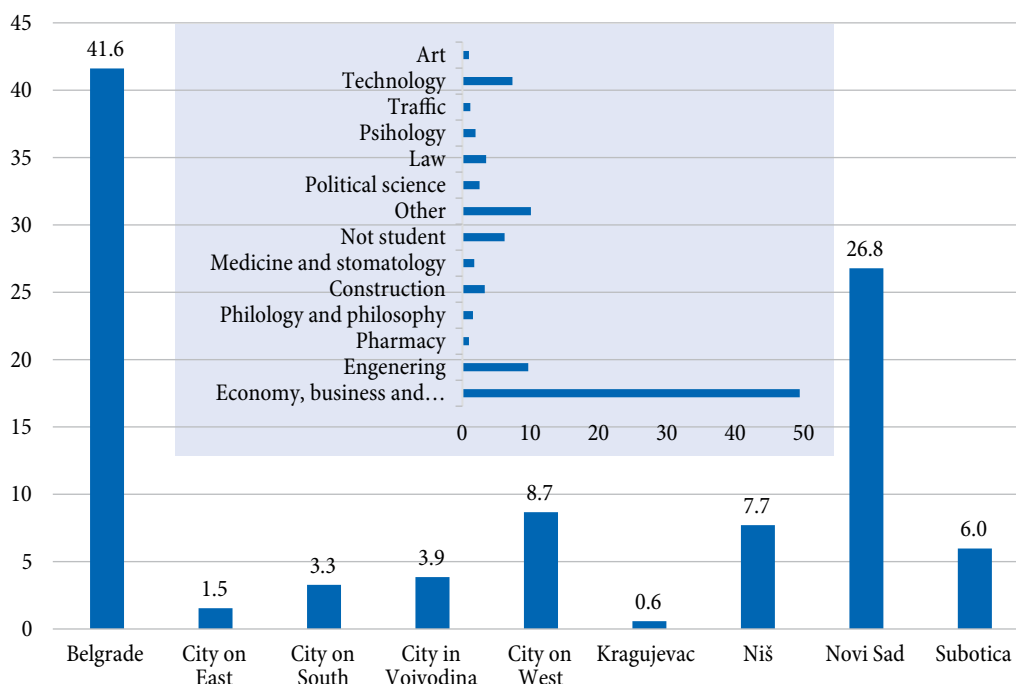
Methodology¹

The research starts with the overall framework for innovation and knowledge-based development that shows the strength and weaknesses in the Serbian economy based on Global Innovation Index and Global Talent Competitiveness Report indicators which we already depicted.

Additionally, for this paper, we conducted an online survey among 519 Generation Z members (those born between 1995-2010) between December 2022 and the beginning of January 2023. The survey has 30 questions, mostly closed-ended, with pre-defined responses or rating

¹ Authors would like to thank Katarina Šonjić, Employer branding Strategist at Kat on coffee, for her contribution to the online survey design.

Figure 5: Place of residence and area of study, in %



scales. The survey was equally distributed between female (60%) and male respondents. The majority are 21-23 and 18-20 years old, 42.4% and 35.3% of examinees respectively.

The survey was done by students in different fields, and almost half of them are studying economy, business, and organization. The survey is also regionally equally distributed, with 41.6% of respondents from (or living in) Belgrade, and 26.8% and 7.7% of them are from Novi Sad and Niš, respectively (see Figure 5).

Since most respondents are still students in high and secondary education, almost half of them are not employed, but almost a fifth of them are volunteering. Even though they still don't work, Generation Z members do know who their favorite future employer is. Therefore, we gather data to illuminate this field and to answer the questions regarding Generation Z's expectations of the workplace and the future of work. We are comparing the Serbian Generation Z's aspirations and demands in this sense with their peers worldwide. This article compares the results gathered through a survey with similar surveys conducted by Deloitte and McKinsey.

The GEN Z aspirations and demands

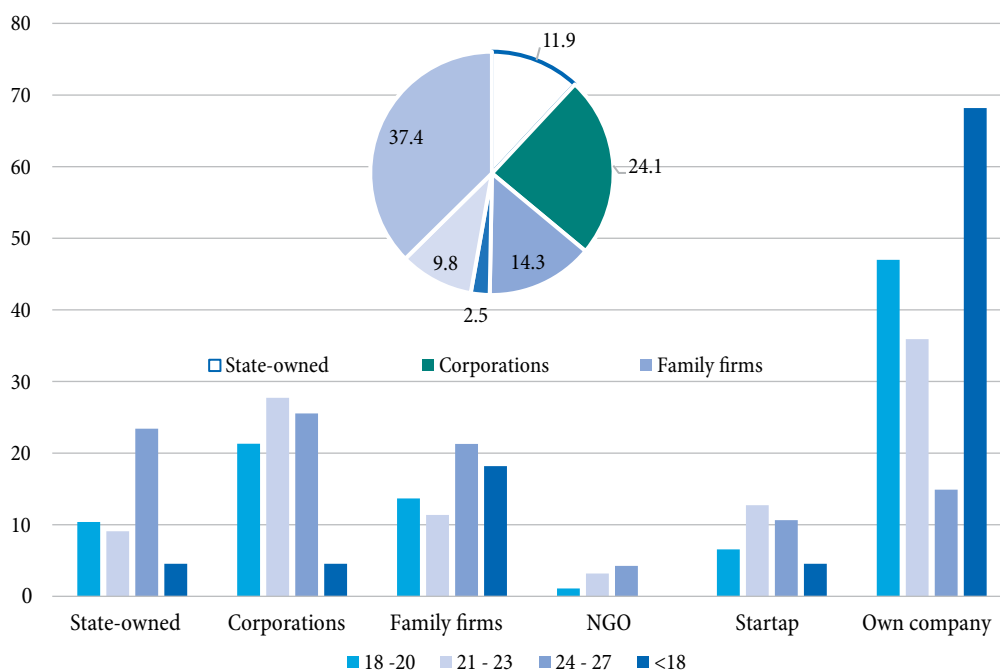
Already, based on the Census's latest data, Generation Z makes up around 8% of the Serbian population. Those

people are becoming powerful influencers in our society's development, and they are about to step onto the labor and the overall market stage. Their main difference compared to other generations is their digital nativeness since they have been exposed to the internet and social networks from the very beginning of their childhood. Therefore, like all other generations, this one is shaped by the context in which they grow, and it is always connected. Generation Z is the most ethnically and racially diverse generation in history [14]. This generation has different values, habits, and behaviors. As the McKinsey survey shows [12] this generation is searching for truth.

As for all other fields, Generation Z also differs in their attitude toward the workplace. Gomez and Mawhinney's survey results [14] showed that Generation Z is an "independent and entrepreneurial generation when it comes to career opportunities and development, but at the same time, they are striving towards safety of stable employment".

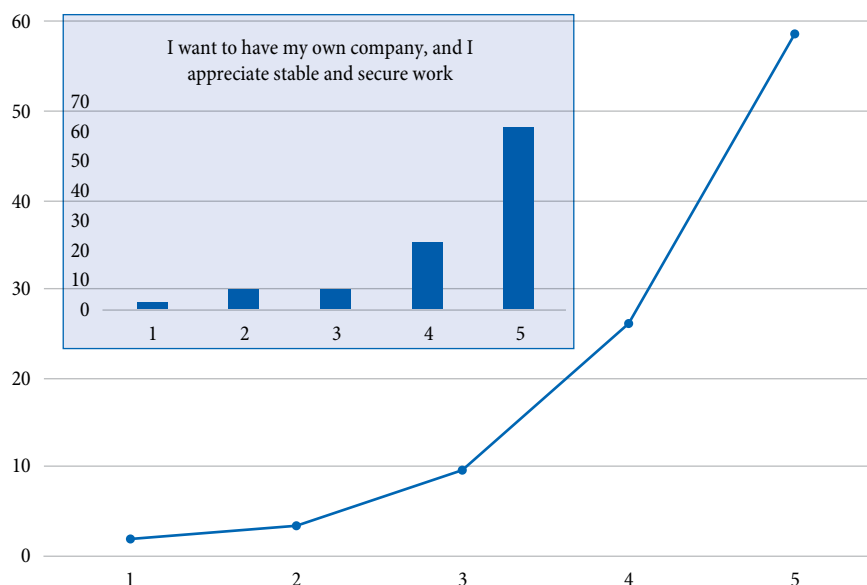
Our research results show that more than a third of respondents want to establish their own company (see Figure 6). Even a fifth of those aged 24-27 want to work in a state-owned company which is related to secure earnings and a job position, and we need to state that the majority of those are studying medicine. Given the

Figure 6: Desirable employer, total and by age group, in %



Source: Conducted survey

Figure 7: Importance of stable and secure job, total and by those who want to start their own business, in % (5 – very important)



fact that the health industry is still dominated by public health infrastructure, this is not surprising.

The surprise is the way they see entrepreneurial activity. Entrepreneurial activity is, by its definition, related to a higher risk appetite. However, generation Z is striving towards establishing its own company while simultaneously wanting to have stable salaries and secure work. Our results show that youth want their independence and freedom with loyalty to stability and security (see Figure 7). This is related to the fact that this generation doesn't feel financially secure, both in Serbia and globally, but Z people want to have the freedom to secure financial stability.

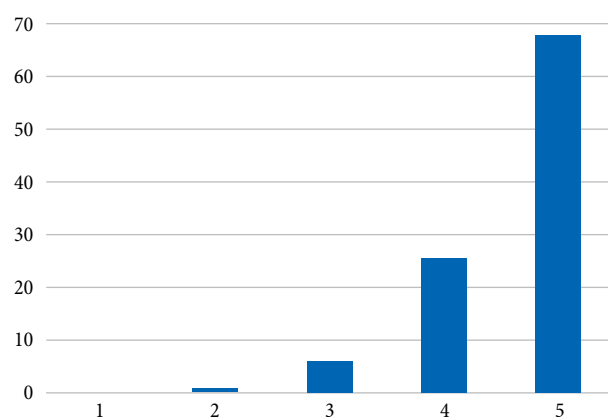
The Deloitte Generation Z and Millennials 2022 survey [8] showed that pay is the number 1 reason why they quit with employees, while it is the third most highly rated reason when they choose their job. Our survey shows some different results. The majority of Generation Z in Serbia will leave work if they don't have opportunities for further development, while they value the most salary and benefits when searching for a job (see Figure 8).

Globally, the cost of living is a great concern among this generation, and they are working on an additional part- or full-time jobs to overcome this concern [8]. The same concern is present among Generation Z members in Serbia, but although financial anxiety is present, it will not prompt them to stay at their jobs. The salary is the

most important factor when choosing a job (see Figure 9), but if there are no development opportunities and the working surrounding and people are negative, salary becomes irrelevant, and they quit the employer.

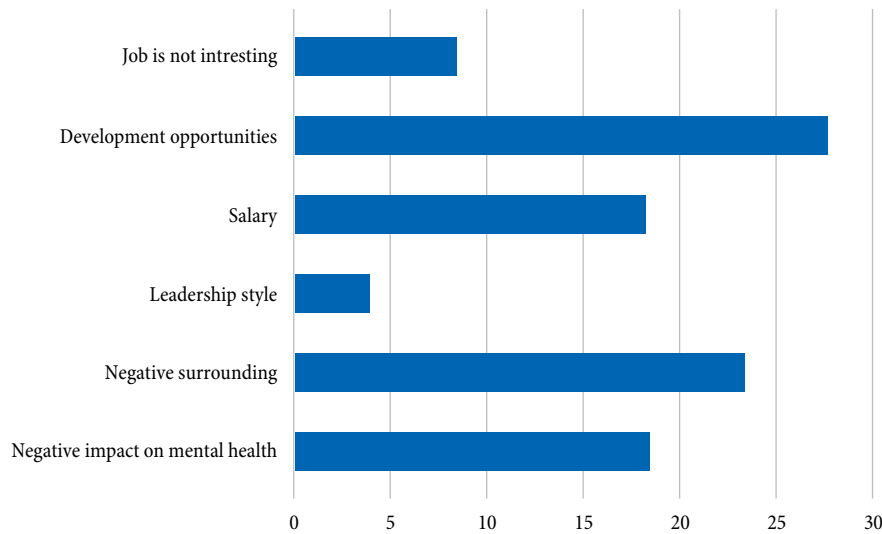
When looking together, negative surroundings and negative impact on mental health have the greatest ponder as a reason why Generation Z members would leave their job. Regularly, generation Z is stressed and anxious, and 46% of them globally fill burned out due to the intensity of work [8]. Members of this generation in Serbia share the importance of mental health being nurtured by employees with their peers around the globe (see Figure 10). Particularly with the pandemic, UNICEF warned that

Figure 8: Importance of benefits and salary when searching for a job, in % (5 - very important)



Source: Conducted survey

Figure 9: Reasons for leaving the job, in %



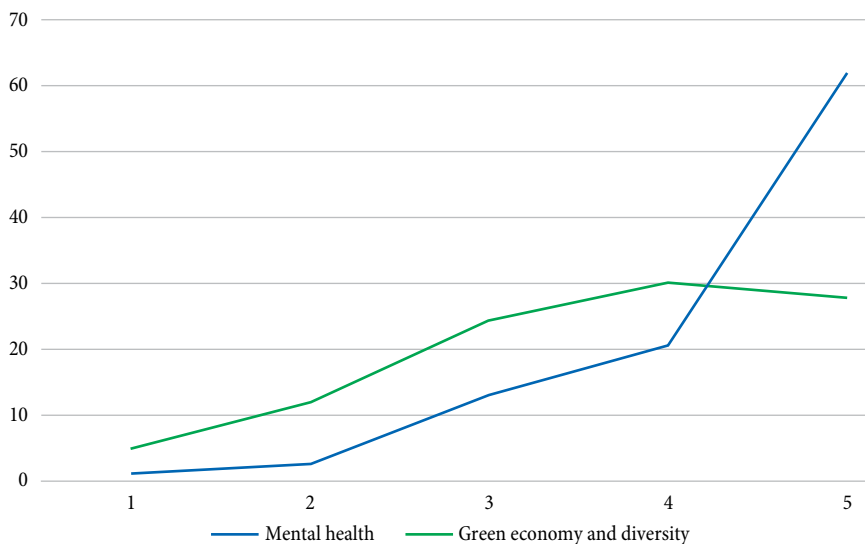
Source: Conducted survey

youth in Serbia noticed a deterioration in mental health, and every sixth adolescent is at risk of poor mental health. Since the companies in Serbia are in a “war for talents” and are struggling with talents retention [39], [23] securing good benefits and surrounding for personal development while taking care of mental health seems to be the right for attracting a generation that is about to step the labor market, Generation Z.

So far, we have seen that Generation Z in Serbia shares almost the same demand and aspirations for the workplace as peers around the globe. However, there is

one important difference, and it is related to sustainability. Generation Z globally is prioritizing environmental actions by employees [8]. However, it’s not the case in Serbia. In the Serbian case, only the nurture of mental health is an intangible benefit that youth are looking for when searching for a job; all the others are related to securing financial stability (see Figure 11). Only a third of the surveyed Gen Z in Serbia are looking for employers dedicated to sustainability. However, it’s not about this challenge being irrelevant for Gen Z in Serbia; instead, it’s about who they think should respond to it.

Figure 10: Importance of a company’s dedication to mental health and green economy and diversity in the process of searching for a job, in % (5 – very important)



Source: Conducted survey

Globally, more than half of Generation Z members are not satisfied at all with their organization’s impact on sustainability which has a direct impact on job loyalty [8]. The Deloitte survey also showed that Generation Z is prioritizing visible actions where employees are also taking part, and they believe that both businesses and governments need to do more to fight this issue.

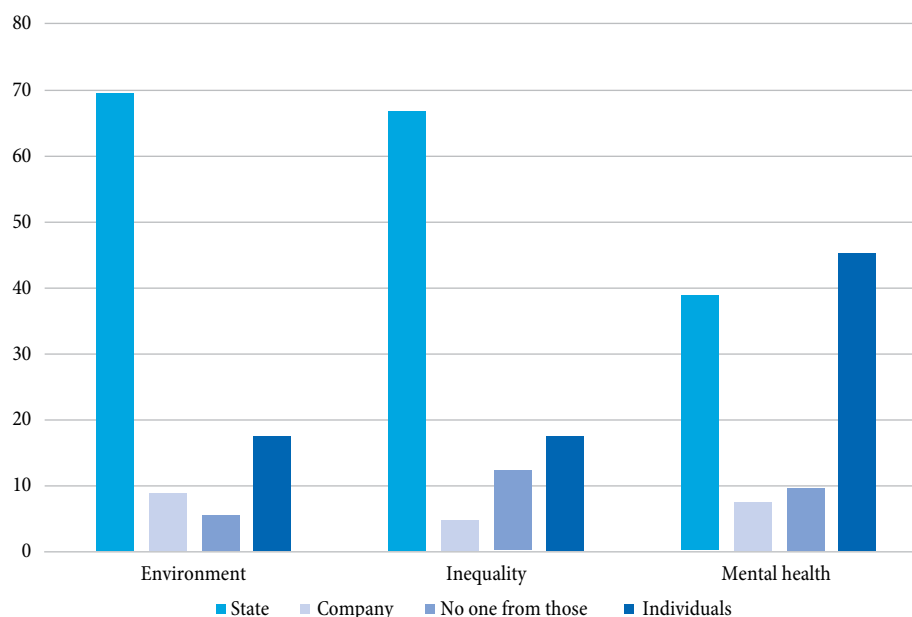
Due to the strong role of state heritage in economic development, youth in Serbia believe that the government is the one who should take responsibility for climate change (see Figure 12). They find the role of the state strong and responsible for all important global challenges. Although mental health nurturing by employees is important to them when searching for a job, in general, they think that individuals should take care of youth mental health. At the fact that Gen Z believes that mental health problems should be solved by individuals, we can look from two aspects. Due to the availability of information and extremely facilitated and accelerated communication, it is very easy for individuals to obtain information on how to solve problems, ask experts for help, and exchange opinions with their peers or with people facing similar problems. On the other hand, we must not ignore the still existing (but decreasing) cultural problem that it is a pretty shame to talk publicly about the mental health problem and ask for help in overcoming it. All of this has its roots in

social heritage and is related to the level of the country’s development. The strong role of the state in handle with other challenges could be related to the fact that Serbia is still a middle-income country with a strong state-role heritage. Therefore, there is still a clear split between social and economic development – where respondents see the state as responsible for social aspects of development and companies as a place where they can earn for life and develop their careers. In more developed countries, youth see both government and companies as responsible for solving social and environmental challenges. However, it also could be noticed that Gen Z in Serbia is going to shift to such an approach since the social aspects, although not the most, are still important when searching for an ideal place to work. They also do not exclude the role of the company in responding to those challenges.

Conclusion

The research focuses on the needs and demands of Generation Z that enters the labor market with different expectations and attitudes than previous ones. Our research results are showing expectations, but also pave a direction for companies’ initiatives and goals regarding talent attraction and retention in the time of battle for talent. Those directions are not directly related to talent

Figure 12: Responsibility for solving challenges, in %



Source: Conducted survey

development, but to their expectations of companies to be actively involved in solving challenges, which they find important. Our research results show that Generation Z's open letter to CEOs would have three important points related to financial security, nurturing of mental health, and development opportunities.

As global peers, Gen Z members in Serbia are independent and entrepreneurial individuals aiming to develop their own companies. We have also confirmed that Generation Z in Serbia is similar to global peers in terms of financial anxiety, and financial stability is important to them when searching for work. However, unlike their global peers, Generation Z in Serbia would not stay in the workplace due to financial security, but would if the workplace provided an opportunity for their development. On the other hand, members of this generation in Serbia share the importance of mental health being nurtured by employers with their peers around the globe. Our results showed one important difference in comparing this group of youth in Serbia with global peers. This is related to sustainability and only a third of the surveyed Gen Z in Serbia are looking for employers dedicated to sustainability. Additionally, mental health is a standalone dominant intangible benefit that youth are looking for when searching for a job; all the others are related to securing financial stability.

Although there are those members of Gen Z in Serbia who consider companies as important players in solving some of the greatest global challenges, the majority of youth in Serbia believe that the government is the one who should take responsibility for environmental issues. Global peers believe that both businesses and governments need to do more to fight this issue. Generation Z in Serbia state that individuals need to take responsibility for once mental health, but at the same time this is high ranked priority when choosing a job. We show that they expect the company to take care of their mental health.

The further opportunities for research in this field are mainly related to a deeper understanding of Generation Z expectations when it comes to activities that need to be undertaken for their development. Additionally, future research can elucidate Gen Z's expectations as consumers since they want to own brands related to their identity.

Finally, Gen Z prioritized mental health nurturing in both searching for a job and retention in a certain one. Therefore, there is room for further research on ways of building environments that support the development of this and other intangible benefits.

References

1. Aghion, P., Antonin, C., & Bunel, S. (2020). *The Power of Creative Destruction: Economic Upheaval and the Wealth of Nations* (April 20, 2021). Cambridge, Massachusetts: The Belknap Press of Harvard University Press.
2. Ball, M. (2022). *The Metaverse: And How It Will Revolutionize Everything*. New York: Liveright.
3. Bascha, Z. (2011). *The open source generation*. Retrieved from <https://opensource.com/business/11/9/z-open-source-generation>
4. Blanchard, O., & Summers, L.H. eds. (2019). *Evolution or Revolution? Rethinking Macroeconomic Policy after the Great Recession*. Cambridge, Massachusetts: The MIT Press.
5. Bolser, K., & Gosciej, R. (2015). Millennials: Multi-Generational Leaders Staying Connected. *Journal of Practical Consulting*, 5(2), 1-9.
6. Brynjolfsson, E., & Kahin, B. eds. (2002). *Understanding the Digital Economy: Data, Tools, and Research*. Cambridge, Massachusetts: The MIT Press.
7. Comprehensive Technological Research. (2022). *The New Digital Revolution For Beginners: Practical uses of Metaverse, Web 3.0, Blockchain, Cryptocurrencies, NFTs, DeFi, Virtual and Augmented Reality*. Comprehensive Technological Research.
8. Deloitte. (2022). *The Deloitte Global 2022 Gen Z and Millennial Survey*. Retrieved from <https://www.deloitte.com/global/en/issues/work/genzmillennialsurvey.html>
9. Dimock, M. (2019). Defining generations: Where Millennials end and Generation Z begins. *Pew Research Center*, 17(1), 1-7.
10. Dolot, A. (2018). The characteristics of Generation Z. *e-mentor*, 2(74), 44-50.
11. Dutta, S., Lanvin, B., Rivera León, L., & Wunsch-Vincent, S. eds. (2022). *Global Innovation Index 2022: What is the future of innovation-driven growth?* (15th Edition). Geneva: WIPO.
12. Francis, T., & Hoefel, F. (2018). True Gen': Generation Z and its implications for companies. *McKinsey & Company 12*. Retrieved from <https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/true-gen-generation-z-and-its-implications-for-companies>
13. Global Innovation Index, WIFO, 2022.
14. Gomez, K., Mawhinney, T., & Betts, K. (2022). *Welcome to Generation Z*. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/consumer-business/welcome-to-gen-z.pdf>
15. Greene, K. (2021). Gen Zer's Open Letter to His Future Employers (digital article). *Harvard Business Review*.
16. Gutfreund, J. (2016). Move over, Millennials: Generation Z is changing the consumer landscape. *Journal of Brand Strategy* 5(3), 245-249.

17. Half, R. (2015). Get ready for generation Z. *Maclean's*, 127(28), 42-45.
18. Hayek, A. M. (2021). *Generation We: The Power and Promise of Gen Z*. Lioncrest Publishing.
19. Ketels, C. (2022). Lecture delivered on FEFA seminar, May 2022.
20. Ketels, C., & Duch, E. (2022, July 11). *Industrial policy in a new global reality: Towards a more location- and sector-driven approach* (blog post). Retrieved from <https://blogs.worldbank.org/psd/industrial-policy-new-global-reality-towards-more-location-and-sector-driven-approach>
21. Kotorov, R. (2020). *Data-Driven Business Models for the Digital Economy*. New York: Business Expert Press, LLC.
22. Kremer, M. (2022, November 30). Innovation, Experimentation, and Economics, The International Monetary Fund (IMF) will hold its eighth annual Richard Goode Lecture on November 30, 2022. Retrieved from <https://www.youtube.com/watch?v=lbaYSFhXypg>
23. Kuhl, J. S., & Zepherin, J. (2016). *Misunderstood Millennial Talent: The Other Ninety-One Percent*. Center for Talent Innovation.
24. Lanvin, B., & Monteiro, F. eds. (2022). *The Global Talent Competitiveness Index 2022 - The Tectonics of Talent: Is the World Drifting Towards Increased Talent Inequalities?* INSEAD, Portulans Institute, and the Human Capital Leadership Institute. Fontainebleau, France.
25. Levickaite, R. (2010). Generations X Y Z: How Social Networks Form The Concept Of The World Without Borders The Case Of Lithuania. *Limes Cultural Regionalistics*, 3(2),170-183.
26. Mazzucato, M. (2015). *The Entrepreneurial State: Debunking Public vs Private Sector Myths*. New York: Public Affairs.
27. Mazzucato, M. (2020). *The Value of Everything: Making & Taking in the Global Economy*. New York: Public Affairs.
28. Mazzucato, M. (2021). *Mission Economy: A Moonshot Guide to Changing Capitalism*. New York: Harper Business.
29. Miller, C. (2022). *Chip War: The Fight for the World's Most Critical Technology*. New York, London: Scribner.
30. Øverby, H., & Audestad, J. A. (2021). *Introduction to Digital Economics: Foundations, Business Models and Case Studies*. Springer.
31. Pentland, A., Lipton, A., & Hardjono, T. (2021). *Building the New Economy: Data as Capital*. Cambridge, Massachusetts: The MIT Press.
32. Porter, M. E. (1990). The Competitive Advantage of Nations. *Harvard Business Review* 68(2), 73-93.
33. Porter, M. E. (1998). Clusters and the new economics of competition. *Harvard Business Review*, 76(6), 77-90.
34. Porter, M. E. (2022). *Competitiveness Roadmap for India*. Retrieved from <https://www.youtube.com/watch?v=eojA8VCKEB8>
35. Priporas, C-V., Stylos, N., & Fotiadis, A. K. (2017). Generation Z consumers' expectations of interactions in smart retailing: A future agenda. *Computers in Human Behavior*, 77 (2017), 374-381.
36. Rodrik, D. (2022). *What Next After Exportoriented Industrialization?* Lecture delivered at The World Bank Seminar, Washington DC. March 2022. Retrieved from <https://thedocs.worldbank.org/en/doc/4aa91f5f6d61149d78440d51b5d42ffe-0350012022/original/What-Next-after-EOI-March-2022.pdf>
37. Roubini, N. (2022). *MegaThreats: Ten Dangerous Trends That Imperil Our Future, And How to Survive Them*. New York, Boston, London: Little, Brown and Company.
38. Sachs, J. D. (2020). *The Ages of Globalization: Geography, Technology, and Institutions*. New York: Columbia University Press.
39. Savić, N., Drašković, B., Lazarević, J., & Marinković, E. (2020). Nurturing and Retaining Talents in Serbia. *Ekonomika preduzeća*, 68(1-2), 75-89.
40. Singh, A. P., & Dangmei, J. (2016). Understanding the generation Z: the future workforce. *South-Asian Journal of Multidisciplinary Studies* 3, 1-5.
41. Terry, Q., & Keeney, S. (2022). *The Metaverse Handbook: Innovating for the Internet's Next Tectonic Shift*. New York: Wiley.
42. Tulgan, B. (2013). Meet Generation Z: The second generation within the giant "Millennial" cohort. *Rainmaker Thinking* 125 (2013), 1-13.
43. WIPO. (2022). *Resources*. Retrieved from <https://www.wipo.int/reference/en/>
44. Wood, S. (2013). Generation Z as consumers: trends and innovation. *Institute for Emerging Issues: NC State University*, 119(9), 7767-7779.
45. Zhitomirsky-Geffet, M., & Blau, M. (2016). Cross-generational analysis of predictive factors of addictive behavior in smartphone usage. *Computers in human behavior*, 64(2016), 682-693.



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CRISIS MANAGEMENT IN THE FUNCTION OF EFFECTIVE DESTINATION MANAGEMENT

Krizni menadžment u funkciji efektivnog upravljanja
destinacijom

Abstract

Contemporary destination management implies a broader mandate that has shifted the focus from traditional marketing and promotional activities to strategic planning, coordination, and management activities, integrating various stakeholders with a common goal. However, environmental influences, especially negative ones, to which tourism is highly susceptible, as shown by practice in recent years, also affect the overall destination management process. The integration of crisis management into the destination management process assumes that specific procedures exist, adequate task forces are organised, and all necessary resources are recognised, planned and activated at the onset of the crisis. Recent experiences have shown that destinations like Serbia, which failed to establish a destination management system, face much more significant challenges regarding crisis management in tourism. Given that we are increasingly living in the so-called VUCA environment, tourism crisis management is exposed to unique challenges and requires special skills and leadership that will be activated in risky moments. In addition, it is essential to establish institutions with clearly defined tasks and capacities because only the synergy of skills and knowledge, on the one hand, and institutions (structures) will enable successful crisis management in tourism.

Keywords: *crisis management, destination management, skills, resources, institutions, procedures, synergy, Western Balkans, Serbia*

Sažetak

Savremeno upravljanje destinacijama podrazumeva širi mandat koji je pomerio fokus sa tradicionalnih marketinških i promotivnih aktivnosti na aktivnosti strateškog planiranja, koordinacije i upravljanja uz integraciju različitih stejkholdera sa zajedničkim ciljem. Međutim, uticaji iz okruženja, posebno oni negativni, kojima je turizam izuzetno podložan, kako pokazuje praksa poslednjih godina, takođe utiču na ukupan proces upravljanja destinacijom. Integracija kriznog menadžmenta u proces upravljanja destinacijom pretpostavlja da su definisane određene procedure, formirane adekvatne radne grupe i identifikovani i isplanirani resursi koji se aktiviraju u trenutku otpočinjanja krize. Nedavna iskustva su pokazala da destinacije poput Srbije, koje nisu uspele da uspostave destinacijski menadžment sistem, pred sobom imaju i daleko veće izazove kada je reč o kriznom menadžmentu u turizmu. S obzirom na to da sve više živimo u takozvanom VUCA okruženju, krizni menadžment u turizmu je izložen posebnim izazovima i zahteva posebne veštine i vođstvo koji se koriste u rizičnim trenucima. Pored toga, od esencijalnog značaja je uspostavljanje institucija koje će imati jasno definisane zadatke i kapacitete, jer samo sinergija veština i znanja sa jedne strane i institucija (strukture) omogućiće uspešno upravljanje krizom u turizmu.

Ključne reči: *krizni menadžment, destinacijski menadžment, veštine, resursi, institucije, procedure, sinergija, Zapadni Balkan, Srbija*

Introduction

Tourism increasingly contributes to national economies, especially in developing countries, where it creates jobs, supports regional development and serves as a vehicle for attracting foreign exchange. The sector is dominated by small and medium-sized businesses that are loosely interconnected and frequently operate with very slim margins, leaving them sensitive to a decline in demand. A crisis such as a natural catastrophe or terrorist attack may not only destroy a destination's infrastructure but also threaten its reputation as a safe location to visit, hence having a catastrophic impact on tourist demand, consumer confidence and local business. The recovery following any crisis may not be simple, the status quo must be restored swiftly and effectively. Crises can arise at any level of operation, be it a single restaurant or a local bus company, a destination, a region, a country, or the worldwide tourist sector. In the case of a destination, a crisis is typically marked by a loss in tourist numbers, followed by a decline in employment, a decrease in private sector profits, a decline in government income, and perhaps a suspension of future investment. In these circumstances, it is crucial to choose an optimal response, and the set of applied procedures is, in the broadest sense, called crisis management in tourism. Crisis management is intervening during the escalation of a crisis to prevent the situation from worsening further or, if this is not feasible, to mitigate the damage inflicted, to enhance recovery and return to normal operations.

Many destinations have well-established crisis management procedures, but others respond ad hoc. This paper aims to deploy the comparative analysis method of good practices in national tourism management with a focus on crisis management. The situation in the Western Balkans region is presented through the COVID-19 experience, which shows all shortcomings of the existing management system. Finally, a new model of crisis management in the tourism sector has been presented.

Literature background

Tourism is influenced by numerous external elements, such as political instability, economic situations, the environment,

and the weather [40]. Despite the subject's significance, the scientific literature lacks a defined conceptual and theoretical foundation for the crisis management in the tourism industry. Before 2000 literature was poor and mainly ad hoc, concerning response measures and mainly focused on specific fields or topics (i.e. forest fires) [48]. In the new millennium, numerous scientific papers and studies appeared to respond to the challenges caused by crises that affected tourism [7] and mainly to explore the impact of terrorist attacks and natural disasters pandemics such as the unprecedented COVID-19 pandemic. Wut et al. [57] conducted a meta-analysis on crisis management in tourism and hospitality. Their research includes 512 articles published between 1985 and 2020, spanning 36 years. They concluded that the vast literature concerns terrorism, political tensions, social media and, particularly in 2020, health-related crises. The analysis includes 79 studies on the COVID-19 pandemic. The findings revealed that crisis management, crisis impact, and crisis recovery, as well as risk management, perceived risks, and disaster management, constituted the majority of mainstream crisis management research. Examining the previous decade (2010 to the present), health-related crises (such as COVID-19), social media, political turmoil, and terrorism have been the most prevalent topics.

Literature offers various definitions of the term crisis. UNWTO [50] defines crisis (as it pertains to tourism) as *"any unexpected event that affects traveller confidence in a destination and interferes with the ability to continue operating normally"*. Crisis can be defined [41, p. 15] as *"a disruption that physically affects a system as a whole and threatens its basic assumptions, its subjective sense of self, its existential core"*. Authors stressing relationship rather than resource approach [10, p. 3] consider a crisis as *"an unpredictable event that threatens important expectancies of stakeholders related to health, safety, environmental, and economic issues, which can seriously impact an organisation's performance and generate negative comment"*. Regardless of the definition, cause, extent or duration, these situations have several elements in common – actors should take immediate action to address the concerns and needs of those directly impacted, mitigate the harm that might occur from negative publicity and subsequent loss of business,

and resolve any issues that may develop during the acute phase [34]. The crisis is viewed [35] as a phenomenon of a global society (wars) but also of societal sub-systems such as political sub-systems (revolution or military coup) and national economy (internal and external shocks or downtrends, like a recession). De Saumarez [15] recognises three levels of impact of tourism crises. The most challenging situation is when the crisis occurs at the national level and affects the entire tourism sector (macro-level). However, it can also impact tourism at the destination level (meso-level), but also at the level of organisations and business entities (micro-level). Despite the level, the crisis can be discrete, with no warnings and massive impact, and this type is very challenging to manage [6].

Although crises are unfavourable events, they cannot be viewed similarly due to intensity and duration differences. In tourism, Moreira [38] recognises three crisis intensity levels. Level 1 should be considered a *mild crisis* with a small number of fatal outcomes (death cases), reduced material losses, and slight damage to the infrastructure, while arrivals and occupancy levels are unchanged, infrastructures and public services have remained steady or decreased slightly, the economy is not substantially harmed, and the prices related to tourism are slightly decreased in the following period. In the case of Level 2 intensity, i.e. *moderate crisis*, the destination records a considerable number of fatal events and both minor and terrible injuries, huge material loss, significant harm to infrastructure, drop of arrivals and occupancy together with unwanted economic effects, which however do not last long while prices in tourism experience a significant drop. Level 3 implies the most profound intensity of a so-called *severe crisis*, with a significant number of fatalities, massive material losses where vital infrastructure is affected, arrivals and occupancy record huge drops, economic consequences are indisputable and are anticipated to remain throughout time while the tourism sector remains in a deep crisis.

Consequently, crisis management is developed as a set of activities that help the system overcome the crisis as quickly as possible (see Table 1). The term was introduced to reflect the understanding gained in diplomatic relations and conflict resolution [23]. Glaesser [25] defines crisis

management “as the strategies, processes and measures which are planned and put into force to prevent and cope with a crisis”, while Pforr and Hosie [42] state that crisis management refers to the proactive mental and physical anticipating of unfavourable situations. With the development of specific reaction patterns or, more concretely, practical instructions for responding to a crisis, industry groups and government authorities, particularly, have taken a leadership role, although more in line with reactive crisis management. Government aid packages (for the accommodation sector, for example), the promotion of domestic tourism, and the creation of new forms of tourism, such as sustainable tourism and ecotourism, have all been common reactive crisis management strategies in the past [28]. Key stakeholder participation and coordination are also essential for efficiently managing a crisis scenario.

Proactive crisis management can be observed as a group of activities that should prevent crisis, like in the nuclear industry, which has a motto: “*The crisis should not be managed, but avoided*”. Considering the importance of crisis prevention or even the ability to respond swiftly, preventative and coping crisis management must be recognised as a separate process within crisis management. Crisis prevention is distinguished from crisis management by ongoing attention to the issue. It consists of two components: crisis prevention and preparation, neither of which should be assumed to be temporally successful [31]. Crisis precautions are the activities taken in advance to decrease the severity of damage. They also include strategies to better cope with a crisis. This area, which has a strategic orientation, produces operational crisis plans and risk policies. The goal of crisis avoidance is to take actions that prevent identified potential crisis situations from materialising into real crises. Weick [54] considers that early warning, which deals with scanning and evaluation, is primarily responsible for this task. Early warning systems are designed to identify events while they are happening and gauge their seriousness so that immediate countermeasures can be taken. The possibility to enhance the use of instruments is the primary assumption upon which the competence of crisis management is founded. It can be supported by observations of crises where a reason or causes can be determined to

be the crisis trigger through ex-post reflection. It is well recognised that the harmful effect of an adverse event grows over time. However, it is also true that there are fewer potential solutions available as time goes on, until the impacted organisation loses control of the problem. However, the cost of early warning cannot be seen as an ongoing expense but rather as an extra outlay that is primarily related to the realisation on time. Since the appraisal of developments gets more straightforward and affordable over time, this expense declines. It becomes evident, then, that the goal of early warning systems must be to provide adequate time for reactions, not to realise something “at the earliest stage”, but rather to realise something “early enough” [25]. Garcia and Fearnley [24] add that crisis avoidance deals with the system’s adaptation to the circumstance in that it accelerates the response time and early warning. The distinction between preventive and coping behaviours becomes unclear because a bad experience can spur an adjustment process. Coping with a crisis has a defeating quality. It is started unexpectedly and suggests an intentional exertion of control over the circumstance that the impacted stakeholders can do.

The conventional method of assessing the extent of a tourism crisis is to express it as the number (or proportion) of lost arrivals, visitor nights, or visitor expenditures, but this is far less significant than the loss of life, infrastructure damage, loss of homes, and economic or cultural damage. The identification of relevant indicators is one of the most challenging obstacles for crisis managers, according to Pauchant and Mitroff [41], and it is possible to take preventative measures only if the oncoming crisis is discovered early enough. During the pre-crisis phase, warning signs may be present, but they may not be recognised as indicators of a specific crisis. This situation occurs because crises are rarely the result of a single occurrence but rather a series of interacting or concurrent events.

According to the UNWTO [52], three categories of indicators should be observed in the key national markets. *Short-term indicators* are usable for up to three months. Example: any extension of the period needed to settle accounts between airlines and travel agencies; *Medium-term indicators* for the period 3-12 months. Example: the failure rate of tourism-related businesses in important markets; and *Long-term indicators* for a period longer than one year. Example: significant anticipated increases in room capacity when there is no demand.

From a methodological point of view, Prideaux, Laws, Faulkner [44] suggest a mixture of risk categorisation, recognition and management, and prediction. As an alternative to the current forecasting approaches, prediction might be based on new or updated variables defined by a risk assessment or forward-looking possibilities in such a synthesis. In a discussion of quantitative risk analysis, Haimes, Kaplan, Lambert [27] stated that it is evident that the first and most crucial phase of a Quantitative Risk Analysis (QRA) is to determine the set of risk scenarios. If there is a considerable number of risk scenarios, the second step must be to filter and rank them according to their importance. Scenarios, a technique for anticipating the source, impact, and cost of a range of potential crisis occurrences and their future evolution, are one instrument that has grown in importance for understanding and managing crises. Using scenarios as the foundation for forecasting the effects of various disruptions, including environmental, economic, natural, and even multiple disasters, is a widely acknowledged form of crisis planning in many academic fields. The use of scenarios as an alternative to the current forecasting and prediction approaches has hardly been explored in the tourist literature.

Additionally, Blake and Sinclair [4] propose other techniques such as impact analysis, cross-cultural analysis of different perceptions, input-output analysis to maintain intersectoral effects of various external shocks on an

Table 1: Phases of crisis management

Risk management				Crisis prevention		Coping with crisis	
Risk management		Crisis precautions		Crisis avoidance		Limitation of consequences	Recovery
Analysis	Evaluating / Planning	Protection / Implementation	Training	Early warning	Adjustment	Employment of instruments	

Source: Gleasster [25, p. 22]

economy and computable general equilibrium model (GGE) to examine both prospective and actual responses to the crisis. In order to be able to calculate the indicators of early crisis symptoms or to monitor the way out of the crisis, it is necessary to have accurate national tourism statistical data. However, this appears to be a significant limitation in emerging and undeveloped countries, where data collection and publication are at a low level [2].

In a practical sense, *the first step in crisis management* is to recognise the source of the crisis, i.e. where the danger may come from so that adequate countermeasures can be pre-planned. Different reasons can cause a crisis, so authors categorise critical situations differently. However, it seems that UNWTO categorisation, recently improved by regional organisations, is the most comprehensive one. According to the COMCEC upgrade of UNWTO categorisation [9, p. 24], there are seven primary sources of crisis in tourism: 1. Environmental, including geological (earthquakes, volcano, tsunami, avalanche), bad weather (storms, hurricane), human-induced (fire, pollution, climate change, erosions); 2. Sociological and political (wars, organised crime, terrorism, revolutions, political disturbances, endangered human rights, pet abuse, etc.); 3. Health crisis (global pandemic, local infections and poisoning, microlevel illnesses due to hygiene, etc.); 4. Technological accidents (nuclear accidents, explosions and large-scale pollution due to malfunctioning industrial facilities, IT accidents, large-scale traffic accidents); 5. Economic crisis (recessions, financial crises, exchange rate shocks, failure of major banks or insurance companies, etc.). Two types of crises are added relating to specific events: 6. Specific accidents in public areas (local crime, individual traffic accidents, shark attack, drowning, the lost mountaineers, etc.); 7. Accidents connected with individual businesses (individual object destruction, malfunctioning of private systems like water supply or anti-fire devices, poisoning, local fire, etc.). However, this is not a complete list, particularly in the era of social media characterised by sharing, liking, and ranking in real-time, with the consequence of news spreading at an unprecedented speed. Thus, a man-made tourism crisis [26] can come from the sources that are not such evident

crisis factors, such as rumours, regional instability, bad publicity, crime rates, and the like.

The second step in crisis management, when knowing that a crisis can emerge from very different sources, adequate strategy and measures should be pre-planned. During the 1980s, strong recommendations were announced to prepare protocols for hazardous situations, but in the first decade of the XXI century, it appeared that many major tourism destinations still did not have such plans [26]. Many authors developed different crisis management models, differing in the number of stages (steps). A simple and logical model proposed by Sausmarez [47] is sorting pre-planned activities along time dimensions on pre-crisis, crisis and post-crisis. This model simplifies the older 7-step model proposed by Ritchie [47], which is visible in the description of the following phases. In the pre-crisis period, it is possible to do a risk assessment and prioritisation to plan resources according to the level of probability and level of impact on tourism. An essential part of resource planning is the education of stakeholders to be aware of their role in a critical situation. During the crisis, efficient organisation is critical, focusing on a) information gathering and dissemination, damage control, and b) visitor care management (safety, communication, health treatment and, if needed, evacuation). Post-crisis activities focus on the tourism sector recovery: destination image, capacities and other resources (human and other) recovery. A similar 3-step model was proposed a couple of years earlier [58] but with additional stress on reporting and upgraded crisis management in the third stage, along with the recovery efforts.

The third step in tourism crisis management, when knowing the type of crisis and measures and protocols, is to engage the right stakeholders. According to Cooper [11], key stakeholders are a) media; b) national and regional authorities; c) corporate and SME sector; d) local authorities; e) visitors. In each of these five groups, it is necessary to identify important performers that have the capacity to contribute to a particular crisis. One approach is that crisis management has its institutional framework and time dynamics. This institutional framework consists of regular institutions complemented by ad hoc delivery units involved in solving the crisis [36]. In each paper

dealing with the tourism crisis, media influence is stressed since it is known that in search of popularity, media often exaggerate and may turn incidents into a disaster for the tourism industry.

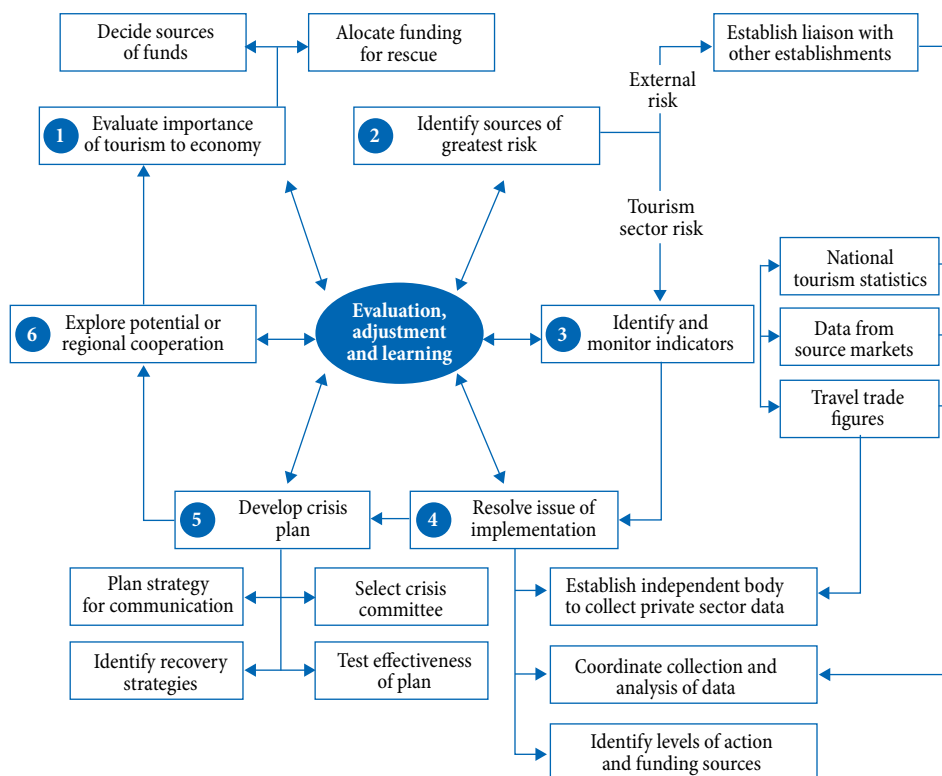
Figure 1 shows the detailed process of crisis management in tourism. In a nutshell, each phase described in the previous text is presented with two steps and key activities to be undertaken. The presented algorithm again shows the importance of communication and relations with the media before, during and after the crisis. Particularly sensitive is social media, where everybody acts as the field reporter, often with partial information but always interested in boosting the number of followers and views. That is why the special task force in charge of social media and networks became a fixed participant in the crisis management team.

Global perspective of tourism destination management

On the global level, as a highly fragmented activity whose results largely depend on the results and actions of many

other economic sectors, tourism is coordinated and slightly tuned by two key authorities, the UNWTO and the WTTC. UNWTO, as a specialised agency of the UN, gathers representatives of the public sector, giving them guidelines and examples of good practice for creating the best possible policies and establishing effective management models. The emphasis is on defining tourism policy and strategic planning, insisting on governance and vertical cooperation, i.e. national-regional-local levels and the development of Public-Private Partnerships [51]. In this sense, destination management (DM) should take a strategic approach to different link elements and avoid overlapping functions and duplicating efforts. DM is moving from traditional marketing and promotion focus to a broader mandate which includes strategic planning, coordination, and management of activities within an adequate governance structure and integration of different stakeholders operating in the destination under a common goal [56]. Hence, the UNWTO emphasises the importance of establishing a destination management organisation (DMO) to realise three areas of key performance in destination management: strategic leadership, effective implementation, and efficient

Figure 1: Elaborated process of tourism crisis management



Source: De Sausmarez [14, p. 162]

governance [51]. WTTC, on the other hand, was created as a response from the global private sector, which has been advocating for sustainable tourism development for more than 30 years, believing that new structures and new management models are needed to bring balance and greater involvement of the local community in managing tourist supply and demand. Besides, WTTC advocates for ensuring sustainable development through more efficient destination management, strengthening the resilience of tourism, and obtaining more substantial social inclusion [56] to overcome the identified obstacles, which include the lack of a clear mandate of responsible bodies, possible conflicting cultures, and agendas, insufficient knowledge and data, which is often a result of the fragmentation of the tourism sector [55]. For successful destination management, a clear division of roles and involvement of actors from the public sector at all levels, businesses, educational institutions, civil society organisations, and business associations are important to enable the most effective approach in solving the multi-sector, multi-stakeholder, multi-thematic matrix of challenges and opportunities facing sustainable tourism development [16].

Consequently, due to the need to form a unique tourist product of the destination and the guest's need to recognise the tourist product as a whole, which will enable a unique tourist experience, effective coordination of all entities on the supply side is necessary. Initiating and establishing a network of partnerships implies the existence of a leader, in the form of a DMO, to achieve these goals through various forms of cooperation among stakeholders. In fact, a holder from the public or public-private domain is needed, flexible enough to form a broad strategy that will include all holders of the offer and other interested subjects, including the civil and educational sectors. In this context, the role of DMO is irreplaceable in creating competitive and sustainable destinations.

Overview of successful destination management models/practices

On the national level, the organisation and implementation of destination management differ from country to country, and no universally accepted standard model can be applied.

It is common for all organisation forms to keep track of strategy, financing, budget, human resources, management in crises, branding, marketing implementation, and results analysis. The most common forms of DMO that appear on the market are agency, authorities, board, community, office, centre, coalition, commission, company, corporation, council, destination development, administration, institute, ministry, and organisation of regions. Most DMOs are financed from the state budget through subsidies or taxes paid by visitors and companies. However, it is impossible to rely on state financial resources in the long term, so other forms of financing are increasingly appearing: residence tax, corporate profit tax, membership fee, commercial activities, coordinated campaigns, and state non-refundable funds.

In Austria, tourism management is entrusted to the Austrian National Tourist Office (ANTO), which was established by the state. Austrian private sector and tourism associations participate in the structures of DMOs at the level of provinces and individual destinations. They all have transformed from destination marketing organisations to destination management organisations whose priority is bundling in product development, quality assurance, mobility solutions, visitor flow, and innovation management [19]. In addition, Austria records the consolidation of DMOs; the number DMOs decreased from 254 at the end of the 1990s to around 40 [32], as there are today. The Austrian Bank plays a vital role in destination management for Tourism Development (ABTD), whose task is strengthening family-run and owner-managed enterprises as the backbone of Austrian tourism. This bank uses financing and subsidisation mechanisms, creating equity mezzanine financing instruments and providing the necessary know-how to SMEs. ABTD has been closely coordinated with the ANTO, Federal Provinces, their DMOs, and commercial banks [19]. ANTO's budget is made up of fees from the Federal Ministry of Agriculture, Regions and Tourism (75%) and the Austrian Federal Economic Chamber as well as of the Austrian tourism trade's (provincial DMOs, regions and tourism operations) partnership contributions for marketing services. In addition, regional and provincial DMOs are financed in different percentages from three

types of tourist taxes: visitors, overnight, and tourism (corporate) taxes [32].

The organisational chart of Croatian tourism shows that the Ministry in charge of tourism affairs is at the top of the pyramid which coordinates a system of Croatian tourist organisations headed by the Croatian Tourist Board. The president of CTB is the Minister responsible for tourism with defined authority and responsibilities by area of activity and the Committee for Tourism of the Croatian Parliament [12]. Lower management levels are administrative departments for tourism and tourist boards of counties, cities, municipalities (presidents of tourist boards are prefects, mayors, or municipal leaders), business associations, chambers, and guilds. With the latest legal changes from 2020, Croatia made essential changes in the system of tourist organisations, which entail the establishment of tourist boards based on the destination management principle. In this sense, the tourist board system is being reorganised, guided by the rationalisation within the system, applying the principle of financial self-sufficiency. Thus, among other things, tourist boards that spent more than 30 per cent of the budget on gross salaries were abolished [17]. These legal changes directly encourage the association of local tourist boards and the establishment of the tourist board for the area of several local and regional self-government units through the allocation of financial resources. In addition to advertising and promotion, local tourist boards started dealing with product development and creating new motives for the guests' arrival. Instead of mayors and prefects, who automatically held the position of president of the tourist boards, the new law enables local leaders to leave that duty to others, qualified persons for that job [12]. The role of the Croatian Tourist Board has also changed. It becomes a national marketing organisation with the task of creating a recognisable tourist brand and promoting the tourist offer on various channels.

Germany is becoming an increasingly popular tourist destination, and the growth trend has been particularly pronounced in recent years. Small and medium-sized enterprises occupy a special place in German tourism, and strategic emphasis is placed on their financing. The central government implements Germany's tourism

policy under the jurisdiction of the Federal Ministry for Economic Affairs and Energy, which established the Centre of Excellence for Tourism [20]. The Ministry cooperates with the advisory body for tourism (Advisory Council on Tourism Issues), which coordinates the interests of the government, tourism, and other interest groups. The Commissioner for Tourism coordinates tourism policy within the government and parliament [21]. The federal states are responsible for shaping and promoting tourism policy at the regional level and organising its implementation at the regional, local and municipal levels through regional, local and municipal DMOs. The German National Tourist Board (GNTB) represents Germany abroad; it is in charge of developing innovative tourist products and marketing activities. It closely cooperates with national and international organisations [21].

In France, the division of tasks and responsibilities regarding tourism is clearly defined at the national, regional, and local levels, which has resulted in the country's leading tourism results. The central government is responsible for defining and implementing tourism policy. Interestingly, this country does not have a Ministry of Tourism, but the organisational structure is straightforward and results in great functionality. Since 2014, responsibility for tourism policy has been divided between the Ministry of Europe and Foreign Affairs, which has the task of promoting France as a tourist destination abroad, and the Ministry of Economy and Finance which is responsible for the regulatory framework. The Inter-Ministerial Tourism Council, which meets twice a year to work with all ministries and the economy on projects and issues related to tourism and the economy, operates under the jurisdiction of the Prime Minister. Two national-level development agencies specialise in tourism: Atout France, which promotes France abroad, and ANCV (National Agency for Holiday Vouchers) [37]. It is legally defined that tourism must also be organised at the regional level so that each region has its own regional DMO, which is responsible for implementing the tourism development plan and organising tourism at the local and municipal levels [37].

In Switzerland, the leading role in implementing tourism policy is the State Secretariat for Economic Affairs, which is the federal centre of excellence in sustainable economic

development, high employment, and economic working conditions. This organisation coordinates Innotour, which promotes innovation, cooperation, and implementation of knowledge in tourism, oversees the work of Switzerland Tourism, which is in charge of marketing, and the Swiss Society for Hotel Credit, which encourages investment in accommodation resources [5]. Given the importance of tourism and the specific organisation of the state, great importance is attached to the long-term development and strategy of tourism, as well as coordination at all levels and institutions within the country and abroad. In this context, the Tourism Forum Switzerland (TFS) platform was established as a working group that includes the private sector, cantons, and cantonal DMOs, the federal government, and which meets regularly on tourism and tourism policy, and which has proven to be highly suitable for the promotion of start-up activities and entities [5].

“*Brand USA*” is the organisation in charge of destination management in the USA that aims to promote and improve tourism in the USA. The organisation was founded in 2010 and, from the very beginning, operated on the public-private partnership principle, closely cooperating with the entire tourism sector in the USA [49], intending to maximise the economic and social benefits arising from travel. These benefits include fostering understanding between people and cultures and creating new jobs. The organisation’s activities are not financed by taxpayers’ money but through a combination of private sector investments and income generated from international visitors coming to the USA under the auspices of the Visa Waiver Program. This is an online system based on the Electronic System for Travel Authorization (ESTA), enabling citizens of many countries to travel in the USA, not traditionally asking for visas. Some of the tasks of the organisation are the creation of media and PR strategies, the creation of social plans and promotional and incentive campaigns, the organisation of trade fairs and sales and educational campaigns, and increasingly also, the development of innovative tourist products.

In Serbia, as well as in many European countries, the organisation of destination management is carried out simultaneously on the so-called two tracks: one is the Ministry in charge of tourism affairs, as an administrative

body, and the other is the Tourist Organization of Serbia, as a particular public service established by the Law on Tourism. The Ministry responsible for tourism affairs is, among other things, in charge of determining and implementing the strategy and policy of tourism development in Serbia; integral planning of the tourism and complementary sectors development; tourism sustainability; creation and implementation of incentives and provision of material and other conditions for encouraging the tourism development; improvement in the supply value chains and competitiveness of tourist products; tourism research and development of the tourist information system; as well as inspection supervision in the tourism and hospitality field. On the other hand, the Tourism Organization of Serbia is entrusted by the Law on Tourism with the competence to carry out tourism promotion activities in the country and abroad as well as to coordinate the activities of the system of local tourist organisations. This represents the critical link that connects the national tourism authorities with local self-governments aiming to valorise local tourism potentials and achieve a positive impact on local economic development. However, apart from the legally introduced obligation to obtain approval for the annual plan of promotional activities of local tourist organisations, the Tourist Organization of Serbia has neither trusted nor developed mechanisms for more efficient coordination of the system of local tourist organisations; it is based primarily on voluntariness and personal relationships. In recent years, contrary to the trends of developed tourist destinations like Austria, the number of local tourist organisations in Serbia has increased, and today 135 are active [39]. Some of them have only 1 to 3 employees. Apart from promotional activities (mainly domestic fairs and print material), in a small number of cases they use the legal possibilities of performing other entrusted jobs such as managing the tourist area, mediation in the provision of hospitality services provided by individual providers, implementation of the tourist infrastructure and spatial planning projects, participation in the implementation of projects financed by domestic and international donors and funds, etc. Besides, local tourism organisations also face financing problems in terms of complete dependence on local authorities’ budgets. According to the Law on

Financing of Local Self-Government of the Republic of Serbia from 2018, the tourist tax charged to tourists is automatically the local authorities' income.

In contrast to Croatia, where local tourist organisations are encouraged to earn and generate their income, the Ministry of Finance of Serbia (amendments to the Local self-government financing law in 2018) abolished the right of local tourist organisations to dispose of their generated revenue, which further demotivates them, i.e. reduces their ability to manage entrusted destination, especially in terms of the development of tourism products, coordination of stakeholders and destination development planning in Serbia. A particular problem is the fact that although the Law on Tourism provides quite a broad scope for the formation of DMO in Serbia, either by the public or private sector or through a public-private partnership to manage the tourist destinations (planning, organising, marketing, and management activities), this concept did not take off. The exceptions are the Tourism organisation of Vojvodina and the Regional Tourism Organization of Western Serbia, which are predominantly engaged in promotional activities. Also, although there is a legal possibility, establishing (regional) tourist organisations by several municipalities encounters many difficulties in practice, which results in the fact that specific destinations that include several municipalities have no unified, efficient management, development planning, or promotion.

In other words, Serbia, unfortunately, has not yet succeeded in establishing destination management at the level of its tourist destinations. Still, to a significant extent, the approach of planning and management within the boundaries of local self-government units prevails. However, there are several tourist destinations in the Republic of Serbia that the Tourism Development Strategy 2016-2025 defines as priority tourist destinations that generate significant tourist traffic. Still, there is no organised and integral approach to their management and even less to planning their future development. As an example, Kopaonik, which essentially represents one destination, is managed by two municipalities (two local tourism organisations) separately. Despite the existence of an integral approach to the planning of this destination (a master plan for Kopaonik), separate and individual programs

of tourism development were adopted at the level of both municipalities, Raška and Brus. Also, a unique mechanism (e.g. DMO) that would manage the implementation of the strategic master plan has not been built and established [43]. A similar situation is with the destinations of Golija (municipalities of Ivanjica, Raška, Sjenica, the cities of Kraljevo and Novi Pazar) and Stara Planina (Knjaževac and Pirot), for which strategic master plans were drawn up, but their implementation was stopped.

Crisis management in the tourism sector

Tourism crisis management in specific critical situations

Countries usually have some Disaster Risk Reduction plan (DRR) and institutions in charge [9, p. 47], such as the Disaster Management Authority in Pakistan, Emergency Management Australia, Emergency Committee Great Britain, and the Department of Homeland Security USA. Institutions are intersectoral, enabling the coordination of different resources. The standard algorithm of action is:

- a) adopt an institutional framework to be activated in crisis;
- b) nominate participants, including the business sector;
- c) make a list of crises (triggers);
- d) design procedures, activities and measures to be activated.

- The critical issue for the tourism sector is to recognise and correct a possible set of activities that could damage tourism image and business interest due to neglecting tourism interests caused by the ignorance of other stakeholders.
- The tourism sector should be integrated into a general risk management plan because visitors cannot manage in an unknown environment; visitors instinctively overload traffic infrastructure trying to evacuate; visitors immediately share negative experiences destroying confidence in their destination; the tourism sector has expertise in moving and accommodating people and can be of use in a crisis.

Key stakeholders in most cases are the National Tourism Administration (either ministry or part of administration), National Tourism Organization (promotional institution working with communication channels), DMO (industry-

led, participants-led, or public-led) managing particular destination. These stakeholders should join the efforts of the chief DRR institution as soon as possible to perform damage control. The crisis and clumsy anti-crisis measures and activities can initiate additional damage. The following example illustrates it.

The presented model can be best captured through the example of Bali, an idyllic tropical island province of Indonesia, which suffered a terrorist bomb attack on October 12, 2002 [26]. This peaceable and quiet island, attracting many visitors, was hit by explosions in a nightclub causing over two hundred victims. The reaction only after this event was disorganised, showing significant omissions in healthcare and public relations areas. The result was immediate image weakening. However, recovery activities started in the short term, and the Bali Recovery Group, a local NGO committee in coordination with authorities, supported it. The location was cleaned, victims' families were supported, and the functionality of the systems was recovered. Some marketing efforts returned local visitors, relying on discounts, but financial results were poor, and many businesses were broken. Citizens abandoned their traditional life in villages during the tourism progress, searching for better job placements in tourist areas. However, pressed by the loss of jobs and the tourism crisis, they started to return to their land but then were in a position to restart devastated agricultural households. However, the slow recovery of tourism was interrupted again by the new regional crisis, the tsunami on December 26, 2004. A new crisis initiated new activation in Bali. NGOs started their activities again, and authorities established new health centres on the destination. A new marketing campaign attracted a tremendous number of visitors in 2005. A new terrorist attack happened on October 1, 2005. However, Bali structures were ready for an efficient response. The Chief of Indonesian Police acted as an official speaker communicating with the media, showing that situation was under control. The volunteer network immediately engaged and assisted everybody asking for help. Medical capacities were sufficient, and worked permanently. Bali Security Council started to act through its members from the police, army, academia, NGO sector, and authorities on a national and local level. New marketing campaigns

were launched to support the attraction of new visitors. Some decrease in tourism turnover was recorded, but it was controlled. Some businesses suffered (local Paradise airline had finally gone bankrupt after surviving the shocks of the previous two crises), but the island continued to develop tourism. Along with tourism, however, authorities also pursue other sectors to decrease their dependency on one business.

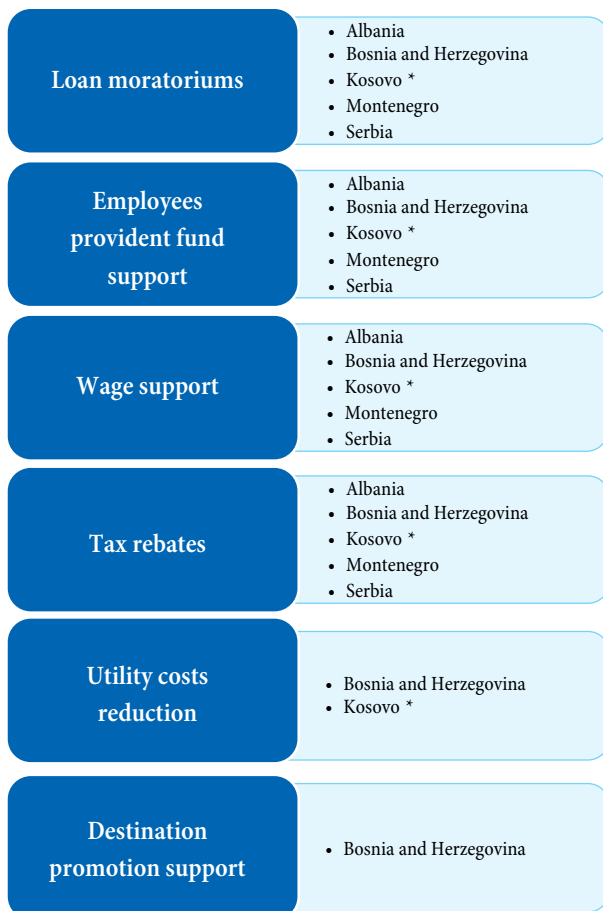
Crisis management in Western Balkans and Serbia during the COVID-19 pandemic: Lessons learned

In crises initiated by different causes (i.e. natural, political, financial, health, and other), the role of the destination management entities becomes even more significant. Three big crises hit the tourism sector of Serbia and the region of Western Balkans six countries (WB6) in the second decade of the XXI century - the global financial crisis from 2007, which lagged and showed full impact from 2010 in the region, then big floods in 2014 and the COVID-19 pandemic in 2020. Only the last one initiated some organised effort in damage control and recovery.

Due to the lack of a sound management system and procedures in Serbian tourism, entities from the tourism sector in crises often depend on the actions and decisions of authorities from other areas (e.g. Ministry of Interior, Ministry of Foreign Affairs, etc.). These institutions, driven by other priorities and motives, may unintentionally cause damage to the tourism and hospitality sector. In 2014, when the great floods hit Serbia, some municipalities were not catastrophically affected by the floods, and without considering the possibility of negative consequences for their tourism development and tourism businesses, but aiming to obtain support and help from the central authorities at certain moments, communicated to some extent unclear and imprecise data, which resulted in the cancellation of tourist arrivals and reduced tourist traffic and generated income.

Regional research on the pandemic impact on tourism and responses revealed mainly financial measures in all economies, shown in Figure 2 [30, p. 39]. In most cases, there was demand from the government to settle relationships with influential stakeholders, and the

Figure 2: The most frequent government support measures in WB6 during the COVID-19 pandemic



Source: Horwath, 2020, p.39

most powerful appeared to be banks, employees, utility suppliers and tourists. So, most measures were directed to postpone or relieve loan repayment and other fixed payments, particularly wages and utilities. On the other hand, when speaking about tourists, the only guarantee for postponed travel was the frequent measure, while communication campaigns were almost entirely neglected in the whole literature on the tourism crisis, which was one of the most frequent mistakes in crisis management.

The COVID-19 pandemic was a new challenge for the tourism sector in Serbia, not only in terms of the losses that were produced but also in how the entire situation was communicated, especially at the very beginning. In the absence of a clear management system, and consequently, of communication in a crisis, the Serbian tourism sector was utterly dependent on the decisions of the national Crisis Headquarters established by the central authorities for that occasion, which at certain moments made decisions

that were difficult to implement in tourism and hospitality sector. For example, serving New Year's dinner only until 6 p.m. when hospitality businesses were allowed to operate with prescribed safety and security measures or defining the distance of tables in restaurants, resulted in entirely uneconomic reasoning for performing business activities, etc. The needs and voice of the Serbian tourism and hospitality sector were not adequately represented due to the lack of previously defined management procedures. The decisions of the Crisis Headquarters related to the tourism and hospitality sector were disseminated to municipalities' crisis headquarters and then to local businesses. However, in practice, to a large extent, critical information was disseminated by announcements on electronic media with national frequency and later, after a specific time, through the official internet portal www.Covid19.rs and the official internet presentations of competent authorities (Ministry of Interior, Ministry of Health, Public Health Institute, etc.). Citizens, tourists, and business entities could timely and accurately be informed through these new communication channels. At the same time, the Ministry of Foreign Affairs of the Republic of Serbia and its internet presentation were the primary source of official information and instructions for foreigners to enter and stay in the Republic of Serbia, or for Serbian citizens about the conditions for travelling abroad. However, except in the mentioned cases, all other activities, above all, daily communication with tourism stakeholders in the country and abroad, without previously established clear procedures, took place ad hoc, whether it was in the public sector (commissions, working groups, etc.) or business associations, through formal and informal forms of communication.

At the same time, although aware of the large scale of the crisis over time, the focus of the activities of tourist organisations (national and local) remained on monitoring and reporting on the situation in the previous most important broadcast markets and transmitting information from local crisis headquarters [30]. Only in sporadic cases have efforts been made to develop a communication system with the private sector and improve the exchange of information [53], [30], which indicates that the absence of previous efficient and precise destination management had

negative consequences on the development of efficient and sound crisis management. In addition, the absence of an efficient destination management system has undoubtedly influenced the lack of standard recovery guidelines at the central and local levels (including AP Vojvodina and the Tourism Region of Western Serbia), but also the capacity building [30] that will be ready to adequately respond to the changes in global tourism demand that are the result of the pandemic but also for the future crisis management.

Proposing a new model of crisis management in the tourism sector

Contemporary management takes place in an environment that is not only turbulent (rapid changes and unknown outcomes). Instead, we use the acronym VUCA for an even more unpredictable environment. The acronym came from the US army in 1990 when general Reimer undertook a transformation of military forces since one significant threat (SSSR) disappeared, but many new points of conflict arose worldwide [22]. The acronym describing the new environment stands for Volatile, Uncertain, Complex and Ambiguous. A rapid sequence of crises, combined with strategic changes such as rapid digitalisation, and significant differences in generational marketing make the tourism environment a typical VUCA one. This means that crisis becomes an everyday possibility for which one

should prepare through regular management mechanisms that will incorporate crisis management. In this direction, one should first understand that the different dimensions of the VUCA environment have different meanings and therefore require different responses (see Table 2).

It is obvious that tourism sector crisis management needs to be integrated into the regular management structure and that it assumes that particular a) procedures, b) task forces and c) resources need to be planned in order to be triggered when a crisis emerges. A particular problem arose since the crisis, particularly in tourism, requires special skills and leadership to be deployed in difficult moments. One list of such skills follows [8, p. 238]: 1. Pacifying skills – the ability to decrease tension and bring disturbed stakeholders together; 2. Learning through simulations, games and role play – in risk-free situations to prepare for critical moments; 3. Intuitive motivation skill – characterises people with internal motivation (curiosity) to improve things around them and is very important for the permanent upgrading of crisis management tools that often need to be improved in new circumstances; 4. Skill of turning a challenge into business chance – knowing that each problem opens some strategic window for those who can identify and develop this opportunity into a successful business case; 5. Skill in managing virtual task forces – using internet tools to connect and coordinate different specialists scattered in different locations on

Table 2: VUCA implementation in the tourism crisis

	Meaning	Illustration in tourism	Crisis management response
Volatility	Frequent, even unpredictable changes but with known consequences	Changes in the price of fuel and other inputs for the tourist product	<ul style="list-style-type: none"> Monitoring and early warning centre Hedging/critical stocks and sources of supply
Uncertainty	Events with uncertain consequences that cannot be predicted when it will happen; general lack of knowledge	Terrorist attacks with unpredictable consequences on the tourism industry, natural disasters, etc.	<ul style="list-style-type: none"> Information gathering to understand the development of the situation quickly Action procedures in a crisis to act quickly Communication based on facts showing control of the situation
Complexity	The complex network of interacting parts, units and actions with many relations, sometimes but not always causing change	Medical disasters, to some degree, some political turmoil with known consequences but with complicated impacts	<ul style="list-style-type: none"> Quick restructuring/division of labour so that specialised task forces care about new challenges Decentralisation, leaving local task forces to perform different procedures Communication
Ambiguity	No precedent, no cause-effect rule, so no predictions about what will happen	Major medical or political disasters, major technical (nuclear) disasters	<ul style="list-style-type: none"> Smart “try and error” with prompt reporting on “lessons learned” Monitoring and analytic centre to evaluate results of “experiments” Communication based on success stories

Source: Adapted from Bennet, N., & Lemoine, J. G. [3]

instant problem solving; 6. Skill in discovering and mobilising additional resources (enlarging the cake); 7. Quick learning by doing – adopting new knowledge from actual problem solving and learning from mistakes how to upgrade the system; 8. Skill of simplification helps to understand hidden structure cause-effect relations in chaotic situations (the skill to achieve through the mental process what multivariate analysis achieves through the process of extracting the principal components or factors); 9. Professional modesty – skill to be transparent and put problem-solving before showing own capabilities; 10. Empathy skill as the ability to understand the emotions and needs of tourists, to “step into someone else’s shoes” and see the picture how visitors see it.

These ten skills are just the tip of the iceberg representing knowledge, skills and capabilities that need to be developed, adopted, and upgraded in tourism crisis management. However, skills and knowledge live in an organisation. Otherwise, it is a “dead letter”. That is why a set of institutions is necessary for tourism crisis management. Besides the Coordination structure (first institution), two more institutions are critical in crisis management. The second institution is the Capacity development (training) centre, responsible for disseminating knowledge in the regular tourism management hierarchy. The third institution is the Communication centre in charge of data collection and processing (Observatory) and data and information dissemination (PR manager). Only the synergy of skills and knowledge (content and culture) on one side and institutions (structure) will enable successful tourism crisis management.

Conclusion

The analysis of existing literature and the analysis of individual experiences of tourist destinations in various crises, including the latest global COVID-19 pandemic, indicates the practical importance of the position known in theory that prevention is far better than a reaction to a crisis when it arises. This is in line with the VUCA approach, transferred from military use and accepted in management literature. According to this concept, changes (and crises) are permanent and therefore require

the improvement and adaptation of common management mechanisms rather than the creation of special management mechanisms to solve individual situations. Two-way communication systems are at the top of the priorities related to the upgrade of management mechanisms. It means collecting and analysing data in one direction and the timely distribution of correct information to different segments of the public in a reverse direction. In this sense, the key part of preparation activities is carried out before the emergence of a crisis, while during a crisis, previously prepared processes and resources are activated and improved. In the post-crisis phase, which should start as soon as possible, recovery procedures for both the capacity and the image of the destination are activated, emphasising communication with the business community and potential visitors.

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References

1. Al-Dahash, H., Thayaparan, M., & Kulatunga, U. (2016). *Understanding the terminologies: Disaster, crisis and emergency*. Association of Researchers in Construction Management (ARCOM). Manchester 05 - 07 Sep 2016, 1191-1200.
2. Baum, T. (1994). The development and implementation of national tourism policies. *Tourism Management*, 15(3), 185-192. [https://doi.org/10.1016/0261-5177\(94\)90103-1](https://doi.org/10.1016/0261-5177(94)90103-1)
3. Bennet, N., & Lemoine, J. G. (2014). What a difference a word makes: Understanding threats to performance in a VUCA world. *Business Horizons*, Elsevier, 1126.
4. Blake, A., & Sinclair, T. (2003). Tourism Crisis Management – US Response to September 11. *Annals of Tourism Research*, 30(4), 813-832. [https://doi.org/10.1016/S0160-7383\(03\)00056-2](https://doi.org/10.1016/S0160-7383(03)00056-2)
5. Boksberger, P., Anderegg, R., & Schuckert, M. (2011). Structural change and re-engineering in tourism: a chance for destination governance in Grisons, Switzerland? In *Tourist destination governance: Practice, theory and issues* (pp. 145-158). Wallingford UK: CABI. <https://www.cabidigitallibrary.org/doi/abs/10.1079/9781845937942.0145>
6. Bundy, J., Pfarrer, M., & Coombs, T. (2016). Crises and Crisis Management: Integration, Interpretation, and Research Development. *Journal of Management*, 43(6), 1661-1692. <https://doi.org/10.1177/0149206316680030>
7. Carlsen, J., & Liburd, J. (2008). Developing a Research Agenda for Tourism Crisis Management, Market Recovery

- and Communications, *Journal of Travel & Tourism Marketing*, 23(2-4), 265-276. http://dx.doi.org/10.1300/J073v23n02_20
8. Çiçeklioğlu, H. (2020). VUCA Concept and Leadership. In G. Mert & K. Kitap (Eds), *Management & Strategy*. ISBN 978-605-06365-5-0
 9. COMCEC COORDINATION OFFICE. (2017). *Risk and Crisis Management in Tourism Sector: Recovery From Crisis in the OIC Member Countries*. Ankara, Turkey: COMCEC Coordination Office.
 10. Coombs, W. T. (2019). *Ongoing crisis communication* (5th ed.). Thousand Oaks, California: Sage Publications, Inc.
 11. Cooper, C. (2012). *Essentials of Tourism*. Harlow: Pearson.
 12. Corak, S., & Boranić Zivoder, S. (2017). Tourism Destination and DMO Transformation. In R. Dwyer, R. Tomljenović, & S. Čorak (Eds), *Evolution of Destination Planning and Strategy: The Rise of Tourism in Croatia*, (pp. 99-119), Palgrave Macmillan. Retrieved from <https://www.co-plan.org/wp-content/uploads/2018/11/Evolution-of-Destination-Planning-and-Strategy-The-Rise-of-Tourism-in-Croatia1.pdf>
 13. Cró, S., & Martins, A. M. (2017). Structural breaks in international tourism demand: Are they caused by crises or disasters? *Tourism Management*, 63, 3-9.
 14. De Sausmarez, N. (2004). Crisis management for the tourism sector: Preliminary considerations in policy development. *Tourism and Hospitality Planning and Development*, 1(2), 157-172.
 15. De Sausmarez, N. (2007). Crisis Management, Tourism and Sustainability: The Role of Indicators. *Journal of Sustainable Tourism*, 15(6), 700-714. <http://dx.doi.org/10.2167/jost653.0>
 16. Destinet. (2023). *Destination Management*. Retrieved from <https://destinet.eu/topics/destination-management-good-governance>
 17. Fabrègue, B. F. G. (2022). *Sustainable tourism policies in Croatia: setting a new goal* (Analysis and Research). Blue Europe. Retrieved from <https://www.blue-europe.eu/analysis-en/short-analysis/sustainable-tourism-policies-in-croatia-setting-a-new-goal/>
 18. Faulkner, B., & Russell, R. (2001). Turbulence, chaos and complexity in tourism systems: A research direction for the new millennium. In *Tourism in the twenty-first century: Reflections on experience* (pp. 328-349).
 19. Federal Ministry of Agriculture, Forestry, Regions and Water Management. (2019). *Plan T - Master Plan for Tourism*. Federal Ministry of Agriculture, Forestry, Regions and Water Management, Republic of Austria. Retrieved from <https://info.bml.gv.at/en/topics/tourism/plan-t-master-plan-for-tourism/plan-t-master-plan-for-tourism.html>
 20. Federal Ministry of Economic Affairs and Energy (2017). *Federal Government Report on Tourism Policy*. Federal Ministry of Economic Affairs and Energy, Germany. Retrieved from https://www.bmwk.de/Redaktion/EN/Publikationen/federal-government-report-on-tourism-policy.pdf?__blob=publicationFile&v=4
 21. Federal Ministry of Economic Affairs and Energy (2022). *Corona Navigator Provides Orientation for the Tourism Sector*. Federal Ministry of Economic Affairs and Energy, Germany. Retrieved from <https://www.bmwk.de/Redaktion/EN/Pressemitteilungen/2020/20200313-corona-navigator-provides-orientation-for-the-tourism-sector.html>
 22. Forsythe, G., Kuhla, K., & Rice, D. (2018). Can You Do VUCA? 5 Key Strategies for Success. *Chief Executive*. Retrieved from <https://chiefexecutive.net/5-key-strategies-success/>
 23. Frei, D. (1978). International Crises and Crisis Management: An East–West Symposium. *International Crises and Crisis Management Conference 1976*, University of Zurich (Farnborough: Saxon House).
 24. Garcia, C., & Fearnley, C. (2012). Evaluating critical links in early warning systems for natural hazards. *Environmental Hazards*, 11(2), 123-137. <https://doi.org/10.1080/17477891.2011.609877>
 25. Glaesser, D. (2006). *Crisis Management in the Tourism Industry*. Burlington, UK: Butterworth-Heinemann.
 26. Gurtner Y. (2007). Tourism Crisis: Management and Recovery in Tourist-Reliant Destinations. In D. King & A. Cottrel (Eds.) *Communities living with Hazards* (pp. 82-101).
 27. Haines, Y., Kaplan, S., & Lambert, J. H. (2002). Risk filtering, ranking, and management framework using hierarchical holographic modelling. *Risk Analysis* 22, 383-397.
 28. Henderson, J. C. (2003). Case Study: Managing a health-related crisis: SARS in Singapore. *Journal of Vacation Marketing*, 10(1), 67-77. <https://doi.org/10.1177/135676670301000107>
 29. Hoise, P., & Smith, C. (2004). Preparing for crisis: Online security management education. *Research and Practice in Human Resource Management*, 12(2), 90-127.
 30. Horwath HTL Belgrade. (2020). *WB6 Tourism and Travel Industry Assessment: Covid-19 Diagnostic and Future Prospects*. Authors: Miletić, B., Petković, G., Kovačević, I., Imbsen, C., Bradić-Martinović A., Bradić, P., Petković, J., Regional Cooperation Council (RCC), Sarajevo
 31. Kanel, K. (2012). *A Guide to Crisis Intervention* (Fourth edition). Belmont USA: Brooks/Cole Cengage Learning.
 32. Kohl & Partner (2014). *Effective Governance and Policy Instruments in the Alpine Region*. Kohl & Partner Hotel & Tourism Consulting Report. Retrieved from https://webunwto.s3.eu-west-1.amazonaws.com/imported_images/42778/6_0_christopher_hinteregger.pdf
 33. Laws, E., & Prideaux, B. (2005). Crisis Management: A Suggested Typology, *Journal of Travel & Tourism Marketing*, 19(2-3), 1-8. http://dx.doi.org/10.1300/J073v19n02_01
 34. Laws, E., Prideaux, B., & Chon, K. (2007). Crisis Management in Tourism: Challenges for Managers and Researchers. *Crisis Management in Tourism*. Cambridge, USA: CAB International 2007.
 35. Linde, F. (1994). *Krisenmanagement in der Unternehmung: eine Auseinandersetzung mit den betriebswirtschaftlichen Gestaltungsaussagen zum Krisenmanagement*. Berlin: Verlag für Wissenschaft und Forschung.
 36. Martens, H. M., Feldesz, K., & Merten, P. (2016). Crisis Management in Tourism – A Literature Based Approach on the Proactive Prediction of a Crisis and the Implementation of Prevention Measures. *Athens Journal of Tourism*, 3(2), 89-102. DOI:10.30958/AJT.3-2-1
 37. Ministry for Europe and Foreign Affairs. (2023). *Atout France tourism development agency*. France Diplomacy. Retrieved from <https://www.diplomatie.gouv.fr/en/french-foreign-policy/tourism/the-action-of-maedi-in-promoting/atout-france-tourism-development-agency/>
 38. Moreira, P. (2007). Aftermath of Crisis and Disasters: Notes for the Impact Assessment Approach. *Crisis Management in Tourism*. Oxon, UK: CAB International.

39. National Tourism Organization of Serbia – NTOS. (2023). *Local Tourism Organizations in Serbia*. NTOS. Retrieved from <https://www.serbia.travel/sr/korisne-informacije/turisticke-organizacije>
40. Okumus, F., Altınay, M., & Arasli, H. (2005). The impact of Turkey's economic crisis of February 2001 on the tourism industry in Northern Cyprus. *Tourism Management*, 26(1), 95-104.
41. Pauchant, T. C., & Mitroff, I. I. (1992). *Transforming the crisis-prone organisation*. San Francisco: CA: Jossey-Bass Publishers.
42. Pforr, C., & Hosie, P. (2008). Crisis Management in Tourism. *Journal of Travel & Tourism Marketing*, 23(2-4), 249-264. https://doi.org/10.1300/J073v23n02_19
43. Pindžo, R., & Knežević, M. (2021). *Manual for Planning the Development of Tourism in Local Self-Governments*. SKGO, p. 64. Retrieved from <http://www.skgo.org/storage/app/media/BeCOLTOUR%20biblioteka/SKGO%20Prirucnik%20za%20razvoj%20turizma.pdf>
44. Prideaux, B., Laws, E., & Faulkner, B. (2003). Events in Indonesia: exploring the limits to formal tourism trends forecasting methods in complex crisis situations. *Tourism Management* 24, 475-487.
45. Richardson, B. (1994). Socio-technical disasters: Profile and prevalence. *Disaster Prevention and Management*, 3(4), 41-69.
46. Ritchie B. W. (2004). Chaos, Crisis and Disasters: A Strategic Approach to Crisis Management in the Tourism Industry. *Tourism Management*, 25(5), 669-683.
47. Sausmarez, N. de. (2013). Challenges to Kenyan Tourism Since 2008: Crisis Management from the Kenyan Tour Operator Perspective. *Current Issues in Tourism*, 16(7-8), 792-809.
48. Snepenger, J., & Karahan, S. (1991). Visitation to Yellowstone National Park after the fires of 1988. *Annals of Tourism Research*, 18, 319-20.
49. TheBrandUSA. (2020). *Annual Report*. Retrieved from <https://www.thebrandusa.com/system/files/Brand%20USA%20FY2020%20Annual%20Report.pdf>
50. UNWTO. (2003). *Crisis Guidelines for the Tourism Industry*. Retrieved from <https://www.slideshare.net/Nostrad/crisis-guidelines-for-the-tourism-industry>
51. UNWTO. (2022). *Policy and Destination Management*. Retrieved from <https://www.unwto.org/policy-destination-management>
52. UNWTO. (1999). *Impacts of the Financial Crisis on Asia's Tourism Sector*. Madrid: WTO.
53. WB6CiF. (2020). *Studies on obstacles and opportunities for doing business in the region: Prospects for Travelling and Tourism Sector in the Western Balkans in 2020 (impact of the coronavirus pandemic)*. Fidelity Consulting Ltd. Retrieved from <https://www.wb6cif.eu/wp-content/uploads/2021/09/WB6-CIF-Study-Prospects-for-Travelling-and-Tourism-Sector-in-the-WB-in-2020.pdf>
54. Weick, K. (1988). Enacted Sensemaking in Crisis Situations. *Journal of Management Studies*. 25(4), 305-317. Retrieved from <https://doi.org/10.1111/j.1467-6486.1988.tb00039.x>
55. WTTC. (2022). *Enhancing Resilience to Drive Sustainability in Destinations*. Retrieved from https://wtcc.org/Portals/0/Documents/Reports/2022/WTTCxICF-Enhancing_Resilience-Sustainable_Destinations.pdf?ver=2022-06-13-213556-557
56. WTTC. (2023). *New WTTC report provides framework for achieving Destination Stewardship*. <https://wtcc.org/news-article/new-wttc-report-provides-framework-for-achieving-destination-stewardship>
57. Wut, T. M., Jing, B. X., & Shun-mun, W. (2021). Crisis management research (1985–2020) in the hospitality and tourism industry: A review and research agenda. *Tourism Management*, 85, 104307. <https://doi.org/10.1016/j.tourman.2021.104307>
58. Xu, J., & Grunewald, A. (2009). What Have We Learned? A Critical Review of Tourism Disaster Management. *Journal of China Tourism Research*, 5(1), 102-130.
59. Yang, J., Vaghela, S., Yarnoff, B., De Boisvilliers, S., Di Fusco, M., Wiekmen, T., Kyaw, M., Mc Laughlin, J., Nguyen, J. (2022). Estimated global public health and economic impact of COVID-19 vaccines in the pre-omicron era using real-world empirical data. *Expert Review of Vaccines*, 22(1), 54-65. <https://doi.org/10.1080/14760584.2023.2157817>



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