UDC 65 ISSN 0353-443X

YEAR LXIX MAY - JUNE 2021

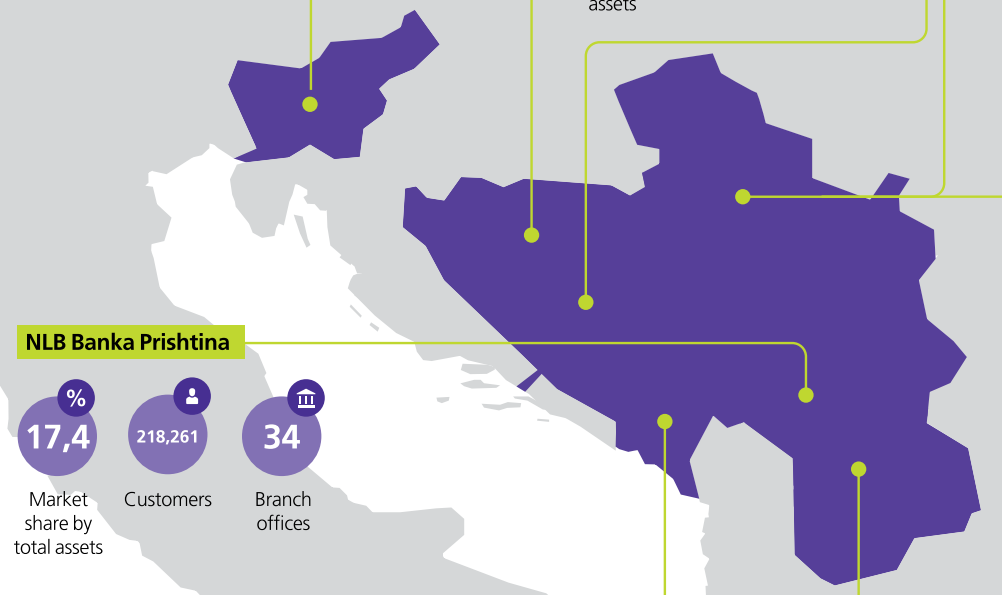
Ekonomika preduzeća

Serbian Association of Economists
Journal of Business Economics and Management

NLB Group

Your Partner in Southeast Europe

NLB Group is the leading banking and financial group with headquarters and an exclusive strategic interest in our home region – Southeast Europe (SEE).



NLB d.d.

Market share by total assets	Customers	Branch offices
24,4 %	672,275	80

NLB Banka Banja Luka

Market share by total assets	Customers	Branch offices
19 %	211,743	51

Komercijalna banka Banja Luka

Market share by total assets	Customers	Branch offices
5,5 %	46,173	19

NLB Banka Sarajevo

Market share by total assets	Customers	Branch offices
5,2 %	135,376	36

NLB Banka Beograd

Market share by total assets	Customers	Branch offices
1,8 %	141,003	28

Komercijalna banka Beograd

Market share by total assets	Customers	Branch offices
10,2 %	849,488	203

NLB Banka Prishtina

Market share by total assets	Customers	Branch offices
17,4 %	218,261	34

NLB Banka Podgorica

Market share by total assets	Customers	Branch offices
11,8 %	65,007	19

Komercijalna banka Podgorica

Market share by total assets	Customers	Branch offices
3,4 %	15,491	19

NLB Banka Skopje

Market share by total assets	Customers	Branch offices
16,5 %	455,068	50

Sources: Key Financial Data – Q3 2020 Results.

www.nlbgroup.si

NLB Group

For whatever may come.

UDC 65 ISSN 0353-443X

EP Ekonomika preduzeća

Journal of the Serbian Association of Economists
Founded in 1947 in Belgrade
Year LXIX May-June
No. 3-4 Page 117-288
Publisher:
Serbian Association of Economists
Editorial Office and Administration
Dobrinjska 11/1
Bulevar Mihajla Pupina 147
11000 Belgrade, Serbia
Phone: 011/264-49-80; 361-34-09
Fax: 011/362-96-89
Account No: 205-14935-97 Komercijalna banka
Web: www.ses.org.rs
E-mail: office@ses.org.rs

Printing office
"Kuća štampe" 011 307.5.307
stampanje.comw
Printed in 300 copies
The journal is published four times a year

The COVID-19 pandemic affects the economy in many different ways. Actually, we are faced with a complex crisis, a medical crisis within economic, ecological, geopolitical and social crises. These are extraordinary times with enormous difficulties, where the situation is changing on a daily basis.

Each crisis tends to accelerate deeply-rooted negative trends impacting the economy. For more than four decades the neoliberal model of capitalism and related economic policy platform have been wrongheaded and dangerous. When the economy cannot escape from hibernation, reflation dominates. Quantitative easing and postponed tapering cause near-term inflation bets to surge. Yield inflation and cost inflation are much higher than CPI and core inflation.

Economists don't have to accept such outcomes. Only the Great Reset could resolve structural imbalances from the past and bring positive outcomes in the future. Definitely, services are not part of the solution during and after pandemic. Global leaders in finance industry in 2020 cut office space by a third and closed half of branches. Moreover, the dilemma what to expect in the post-COVID-19 period when it comes to the workforce (back to work, hybrid work, or any) still remains unresolved. New industrialization based in the Industry 4.0 solutions is the only way of recovery.

Some sceptics might say it is not the time to run the economy, it is time to play political games. In a small and impotent economy such as Serbia's economy, catalytic role of the state in the Great Reset is imminent. With regard to this issue, the divide between the haves and have-nots is visible. The Serbia's government forecasts 6% growth for 2021. This forecast comes as a result of very strong momentum of -1% growth in 2020, which is very encouraging data point in the context of pandemic. With this edition of *Ekonomika preduzeća* we have launched big (and feasible) ideas for the Great Reset in the case of Serbia. The key ingredient in an emerging heterodox approach is a balance between the "visible hand" of state and the "invisible hand" of market. Because the heterodox approach treats core policies in a structural way, we give priority in analysis to industrial or structural policies.

In the first *Introductory Paper,* a duo of authors, *D. Đuričin* and *I. Vuksanović Herceg,* presented three big ideas to make the Great Reset happen in Serbia based on heterodox approach (in-house development of ICT components of intelligent production systems and products, implementation of net-zero carbon technologies, and creation of manufacturing and service hub for health care providers). In the second *Introductory Paper,* the governor of the NBS *J. Tabaković,* explained how Serbia entered the COVID-19 crisis, based on a long series of macroeconomic data, and what measures the NBS has taken in coordination with the Treasury to mitigate the last crisis.

In the second part of this edition the focus consistently alternates between structural and core policies. We have started with structural perspective. A duo of authors, *B. Paunović* and *Z. Aničić,* discussed the impact of the pandemic on innovations and SMEs. In core policies segment *M. Labus* dealt with former recession episodes in Serbia covering the period 2006-2020 with the aim of comparing macroeconomic indicators in the related period with the COVID-19 period, as well as DSGE model which was updated. In micro segment, a trio of authors, *M. Arandarenko, D. Aleksić* and *D. Lončar* discussed the impact of direct investments on labor market. In macro segment, *D. Vujović* confronted the standard IMF conceptual platform and policy response in times of crisis with new approaches taking into account negative external effects, public goods, sustainable development goals and related issues. *S. Randelović* discussed three key forces in the COVID-19 crisis driving derailment of the economy from sustainable path, fiscal policy response, non-medical measures and the economy structure. The group of authors from FEFA under the leadership of *N. Savić,* apart from unconventional core economic policies, reaffirmed the role of industrial policy as the highest goal for recovery, this time by using cluster approach. V. *Kostić* addressed the issue related to the fight in talent management between domestic and foreign ICT companies, from fiscal perspective. Finally, the group of authors under the leadership of *J. Antanasijević* pointed out untapped export opportunities in post pandemic period.

Prof. Dragan Đuričin, Editor in Chief

Build a sound business with solid legal advice

How we can support your business

We are a full service corporate law firm with over 200 lawyers at your disposal. We strive to provide our clients with efficient, business-oriented advice based on our outstanding knowledge of local economic, political and social circumstances. Our multidisciplinary approach enables us to proactively help our clients to solve challenges and seize opportunities that they may encounter when doing business in Serbia.

Paving the way to success

Our legal practice is particularly focused on helping investors, local and international companies who are looking to set up or further develop their business or projects in Serbian market.

ALEKSIC AND ASSOCIATES
LAW OFFICE

www.lawofficealeksic.rs

VOJVODINAŠUME

PC "Vojvodinašume"
Company Directorate

FSC
www.fsc.org
FSC™ C021645

The mark of responsible forestry

Please ask us for details of our FSC™ certified products

Public Company "Vojvodinašume" Petrovaradin was established on 8 May 2002, with the aim of ensuring an integrated forest management and management of protected natural resources and hunting grounds following the principles of sustainable development (sustainable forestry) and profitability, while increasing the forest cover and improving the existing growing stock of the AP Vojvodina. The Company carries out its public and economic mission through six branch offices.

Company Vision

The Company strives to preserve one of the leading positions in the field of forestry, both nationally and regionally, by using technical, technological and scientific achievements in the field of forestry, while enhancing the infrastructure and human resources capacities, as well as improving the quality of forests and forest eco-systems in the areas whose management was conferred upon the Company.

- www.vojvodinasume.rs -

Roche d.o.o. ▪ Milutina Milankovića, 11a, 11070 Novi Beograd ▪ Tel. 011/2022803 ▪ Fax 011/2607270

AD042021

INTRODUCTORY PAPER
UDK: 616.98:578.834]:338.12.015
330.342(497.11)
DOI: 10.5937/EKOPRE2103117D
Date of Receipt: December 29, 2020

Dragan Đuričin
University of Belgrade
Faculty of Economics
Department of Business Economics and Management

Iva Vuksanović Herceg
University of Belgrade
Faculty of Economics
Department of Business Economics and Management

THE GREAT RESET OF SERBIA'S ECONOMY DURING AND AFTER THE COVID-19 CRISIS

Veliko resetovanje ekonomije Srbije tokom i posle kovid 19 krize

Abstract

Since 2020 the modern world has been witnessing a complex crisis, which is essentially a medical crisis (the COVID-19 pandemic) within a structural economic crisis. In addition to the current nexus of risk stressors, such as anthropogenic climate crisis, biodiversity loss, financialization and income inequality, all global and cross-cutting by their very nature, in the last period biorisk has been growing dramatically. The COVID-19 pandemic is a devastating and tragic moment which is rapidly becoming a matter of primary public concern. Social distancing, as the most effective anti-pandemic measure, has pushed the economy into sleep mode. Hibernation provokes a truly systemic economic downturn. The current crisis is particularly deepening structural imbalances of the neoliberal model of capitalism. Core policies responses, such as liquidity infusion and fiscal stimulus, are massive and permanent. Increasing moral hazard and irrational exuberance, such policies are destroying capital markets, as a brain of the market economy. But every crisis is also a chance to change. By tackling the neoliberal capitalism' fault lines in a more effective way, it may actually accelerate the pace to the future we had in mind. A quick restart (or recovery) of the economy and a later rebound require systemic and concerted action in order to mitigate the negative effects of both medical and economic crisis. In managing a complex crisis such as this one, guided by the vision of a sustainable, inclusive and prosperous economy, governments all around the world should take radical reform steps. It means, at least, two things at once. First, dealing with the pandemic as a macroeconomic variable. Second, implementing core economic policies (monetary and fiscal) in a structural way. To do so, the transition from shareholder capitalism to stakeholder capitalism is imminent. An emerging system will combine two institutional choices, the "visible hand" of state (impact investments based on structural or industrial policies) and the "invisible hand" of market forces. It's time to give the government a stronger voice in the economy. To create value instead of redistributing value, the major part of impact investments will be in circular and regenerative economy, health care, infrastructure (physical and conceptual), science, and education. The objective of this paper is twofold. First, to fill the present conceptual vacuum created by the neoliberal doctrine economics rules with the aim of identifying key components of Serbia's economy revival based on its macroeconomic specifics and catalytic impact of new economics rules during and after the COVID-19 pandemic. Second, to highlight the relevance of key components of stakeholder capitalism, including the regenerative and circular model of growth and heterodox economic policy platform for the Great Reset, or recovery and rebound respectively.

Keywords: *COVID-19 pandemic, Serbia, Industry 4.0, circular economy, heterodox economic policy platform, manufacturing sector*

Sažetak

Od 2020. godine savremeni svet je svedok složene krize, medicinske krize (pandemija kovida 19) unutar strukturne ekonomske krize. Pored postojećih faktora rizika kao što su antropogena klimatska kriza, gubitak biodiversifikacije, finasijalizacija i ekonomska nejednakost, svi globalnog i prožimajućeg karaktera, u poslednjem periodu došlo je do naglog skoka biološkog rizika. Pojava pandemije kovida 19 je tragičan i urušavajući trenutak koji ubrzano dobija najveći značaj u javnosti. Socijalno distanciranje, kao primarni način borbe protiv pandemije, gura ekonomiju u stanje sna. Hibernacija izaziva potpuni pad sistema. Nova kriza je produbila strukturne neravnoteže neoliberalnog modela kapitalizma.

Infuzija likvidnosti i stimulansi kao glavni odgovori ekonomskih politika su obilni i kontinuelni. Takve nekonvencionalne politike urušile su tržište kapitala i povećale moralni hazard. Ipak, poslednja kriza predstavlja šansu za promene. Ona ubrzava pojavu budućnosti koju imamo na umu kada razmišljamo o saniranju strukturnih neravnoteža neoliberalnog kapitalizma na efektniji način. Brz restart (ili obnova) ekonomije i kasniji uspon zahtevaju sprovođenje aktivnosti na sistematičan i sinhronizovan način, kako bi se sanirale negativne medicinske i ekonomske posledice krize. Upravljajući složenom krizom kao što je poslednja kriza sa vizijom da ekonomija postane održiva, inkluzivna i prosperitetna, vlade širom sveta preduzimaju radikalne reformske korake. To znači najmanje dve stvari istovremeno. Prvo, tretman pandemije kao makroekonomskog faktora. Drugo, opredeljenje da se ključne makroekonomske politike vode na strukturni način. Da bi se prethodno ostvarilo, neophodna je transformacija „kapitalizma akcionara" u „kapitalizam interesnih grupa". Sistem koji nastaje kombinuje dva institucionalna izbora, „vidljivu ruku" države (impakt investicije zasnovane na strukturnim ili industrijskim politikama) i „nevidljivu ruku" tržišta. Vreme je da se industrijskim politikama u ekonomiji da veći značaj. Stvaranjem umesto redistribucijom vrednosti, najveći deo impakt investicija će biti u uložen u cirkularnu i regenerativnu ekonomiju, zdravstvo, infrastrukturu (fizičku i koncepcijsku), nauku i obrazovanje. Ovaj rad ima dva cilja. Prvo, da popuni trenutni koncepcijski vakum koji je posledica pravila neoliberalne doktrine, sa ciljem da se identifikuju ključne komponente programa restrukturiranja u Srbiji koji bazira na njenim makroekonomskim specifičnostima i katalitičkom dejstvu novih ekonomskih pravila koja su korisna za restart i uspon ekonomije tokom i posle pandemije kovida 19. Drugo, da se osvetli legitimitet kapitalizma interesnih grupa i njegovih ključnih komponenata kao što su regenerativan i cirkularan model rasta i heterodoksna platforma za vođenje ekonomskih politika za „Veliko resetovanje", odnosno obnovu i uspon.

Ključne reči: *COVID-19 pandemija, Srbija, Industrija 4.0, cirkularna ekonomija, heterodoksna platforma za vođenje ekonomskih politika, industrijski sektor*

The collapse of market fundamentalism

Economics is not an exact science. It is a social science, the science about the context or the nexus of social conventions framing and directing the behavior of economic agents and their interactions. Put simply, the economy is mainly a man-made non-linear system, an aggregation of the different forms of behavior (or heuristics) of players of competitive game, regulators and institutions.

Contrary to the previous logic of reasoning, the neoliberal doctrine in Economics (or market fundamentalism), as the most extreme version of free market capitalism, understood Economics as an exact science and the economy as a linear system, actually as a context with diminished role of the state. Maybe that is the reason why Economics ignored the laws of nature. Frequent and even worse economic crises, along with the disruption of nature and biodiversity loss, have exposed the fault lines in this way of reasoning. Such a theory has made unsustainable the global economy and exposed to existential risk the planet Earth as a whole.

The COVID-19 pandemic is closely linked with the structural imbalances we have already identified in relation with market fundamentalism, such as financialization (and deindustrialization), sputtering productivity, rising income inequality, slowing growth, and unsustainable debt levels. This is an age of entropy, an era of drastic, frequent and contradictory changes. If you go back to the period before the COVID-19 crisis, you can see everywhere, in core and emerging economies, structural imbalances due to the neoliberal economic theory's fault lines and inconsistencies in the related economic policies.

The neoliberal boom during the 1980s and 1990s, with the aim of promoting market fundamentalism, was largely geared by liberalization, deregulation, and privatization. The key ideological components of the freedom-loving state were individualism and free market or free (or private) enterprise. Given that an even smaller part of the population benefited from economic growth and even more harm was done to the planet Earth to achieve it, such growth was unsustainable, both socially and physically. After the neoliberal boom plateaued in the core world economies at the beginning of the new century, environmental, economic and social issues came to the surface. The period of 5-6 percent growth rate was over. The economy cannot continue to rely on the system driven exclusively by a selfish mindset based on short-termism of profit maximization and systemic tax avoidance. A system which externalizes environmental and social harm cannot take care of humanity and the planet Earth as a whole.

After the core world economies had entered a structural crisis, the rescue plan to save neoliberal capitalism was launched. Paradoxically, the dominance of unconventional policy measures as panacea for the mitigation of structural crises fundamentally deteriorated the free market and free enterprise context. On the ruins of Dot Com Crisis of 2001 and the Great Recession of 2008,

the fourth industrial revolution began. Thanks to a new technology push, a new growth episode has emerged, this time in a shorter cycle. As always, technology is an enabler. However, sustainability of the growth trajectory depends primarily on the context.

The most effective indicator of inefficiency of the neoliberal model of growth is the rise of global debt. According to the IMF data [9], in the wake of COVID-19 pandemic sovereign debt in core economies reached more than 120 percent of GDP and in emerging economies over 60 percent of GDP. In 2020, the global sovereign debt surged by USD 24 trillion. An additional indicator of the system's vulnerability is growing popularity of cryptocurrencies. Cryptocurrency is neither a new class of financial assets nor a cash surrogate. It is a store of value (or "digital gold") when the dominant narrative is "a fear of fear". In the middle of April 2021, the market capitalization of cryptocurrencies was about USD 2T. Interestingly, the cryptocurrency market is extremely volatile. After a one-year period in which value was quadrupled, in the period of only two months, from the middle of February, when prices hit record highs, to the middle of April this year the prices of cryptocurrencies tumbled 70 percent.

Scientific understanding of modern economic reality requires the objective evaluation of basic economics rules and evidence-based estimations. When it comes to the basic neoliberal economics rules, at least three of them collided in a way that broke down the economic system.

First, well-being as the first derivative of egoism. By affirming that the economy is an aggregation of people whose dominant characteristic is egoism, almost all schools in Economics taught that a system which maximizes value for the so-called "homo economicus" is a natural habitat for sustainable growth. The extreme version of this line of reasoning is "shareholders capitalism", being used to maximize shareholder value [8]. Unfortunately, the basics of such a theory are fundamentally wrong. D. Kahneman [12], eloquently and empirically confirmed that, in the real world, economic agents are not just so-called "homo economicus", as many of them simply behave like "humans", which means that they also engage in altruistic acts. In the age of climate crisis, anyone who seeks to maximize personal benefits in a way that leads to the increase in greenhouse gas emissions could be labelled as "ugly sociopath".

Also, behavioral economists empirically proved that people are not rational and consistent in expressing their choices as well as that the symmetry between risk and reward does not lie behind investors' habits. Irrational exuberance as the dominant mindset of investors before the bubbles burst is an example of irrational, inconsistent and asymmetric behavior of economic players. The climate and medical crises particularly encouraged the emergence of conceptual alternatives to shareholder capitalism such as "stakeholder capitalism" [19], "entrepreneurial capitalism" [14], and "progressive capitalism" [21]. All concepts advocate a greater role of governments in ensuring well-being, often represented by the seventeen sustainable development goals (the 17 SDGs) defined by the UN [24].

Second, the model of growth or, practically, the model of capitalism, largely ignored the laws of nature. In neoliberal capitalism, as the last version of free market capitalism, the relationship between the economy and nature is poorly defined. Namely, this model ignores the rules and operating principles of physical system and biosphere. It does not take into account negative externalities and prices of public goods, nor the depletion of natural resources. By advocating such a model of growth, economic theory, along with the structural imbalances of economic system, contributes to the anthropogenic climate crisis, biodiversity loss, and even microbe mutations. Through its impact on the destruction of physical system and biosphere, a linear model of growth separates people from nature. Wealth concentration separates people from people. The loss of confidence and trust separates followers from leaders and breaks down social cohesion.

This model of growth is not sustainable, particularly in the case of late developers. Late developers do not have financial, organizational and human capital to deploy natural capital in the process of industrialization. Neoliberal opinion makers have argued that the role of the government, in the case of late developers, is to create a free-market setting and, by doing so, to attract foreign direct investment (FDI) to close capital gaps. So, technology transfer was prescribed as a blueprint for industrialization. Unfortunately, such a way of industrialization is not effective

in maintaining macro balances. Due to a growing debt burden, late developers, sooner or later, enter the middle-income trap [6, pp. 19-24]. Namely, an economy cannot finance the future growth, or structural adjustments, based on the internal earnings power or credit potentials. According to R. Rajan [18], the most effective way to overcome this problem is the development of in-house technology based on industrial policies for tradable sectors. This alternative approach, known as "managed capitalism" or "development state", was adopted by the late developers from Asia in the early 1960s.

Third, dual economic policy platform. In neoliberal capitalism, the platform for economic policies is based on market forces as a primary coordination mechanism, globalization as a framework for competition, and inflation targeting as an almost exclusive policy tool to maintain macroeconomic stability. The problem with this policy platform is its inconsistency during the business cycle, namely one set of policies for the "good times", based on market fundamentalism both internally and externally, and another set of policies for the "bad times", following Keynesian deficit financing and related unconventional policy measures. Unconventional monetary policies, such as "too big to fail", quantitative easing (QE), near-zero or even negative interest rates or fiscal policies, such as subsidies, furlough schemes or simply fiscal easing to essential sectors, have no limitations. For example, the magnitude of the money printing of reserve currencies during 2020 has not been seen since the 1980s, when neoliberalism started to flourish. For example, about 20 percent of all US dollars in circulation were printed in 2020.

All policy measures in the neoliberal model are a consequence of two theoretical assumptions, the linearity of economic system and pattern matching behavior. Apart from difficulties with the calibration of unconventional policy measures, a key problem of this policy platform is related to the fact that there is no exit strategy. Money printing and fiscal stimulus inhibit creative destruction of the market and force dependent agents to act impurely. Such policies have called into question the market efficiency hypothesis, stating that when the number of start-ups goes down, then the relative number of dependent companies goes up.

Despite the unintended consequences of fault lines, during the current crisis central banks and treasuries all around the developed world have proposed additional stimulus schemes based on these fault lines. Due to near-zero or negative interest rates, prices of equity and bonds are significantly overvalued, practically not correlated with economic fundamentals. When signals from capital markets are wrong, the result is a misallocation of resources due to the divergence of forecasts. By now, legitimate prospects about the days ahead, such as inflation, reflation (recession + inflation) and deflation, are quite divergent. All these views could provide a platform for (re)interpretations and/or creative interpretation of the basics by interested stakeholders with power and impact, or simply by ideologically motivated scholars. Governance without the government, or an increasing impact of international financial organizations, has triggered a wider change in the opinions of economics scholars about the universality of market fundamentalism. The previous fact provokes some critics to qualify neoliberal economics as an ideology, or the "dismal science", a toy in the hands of politicians. Some expressions of the loyalty to neoliberal theory seem very grotesque, especially heard from some scholars from the late developers such as Serbia. Due to ideological predilections, those proponents are not able to evaluate fact sheet and get to the bottom of the truth.

Frequent and even deeper economic crises indicate that dominant economics rules are the causes of the fractures of the system. The repercussions are not encouraging. This system is producing, reproducing and deepening structural imbalances. The global economy, full of structural imbalances, unconventional policies and their unintended consequences on economic value and nature disruption, cannot recover by itself and make the planet Earth sustainable. Not only to thrive, but to survive, the economic system requires multiple changes, practically the Great Reset. The need for the Great Reset has become of the utmost importance, particularly during the COVID-19 pandemic. The virus mutations, as a "black swan", are intertwined with many other issues.

The Great Reset does not mean changing everything, but changing what needs to be changed. The first in line for undergoing changes is the economic system that should

be oriented toward global commons (or the SDGs). A sustainable, inclusive and prosperous economic system should be built by analogy with circular processes and adaptive evolution in nature.

The COVID-19 pandemic accelerated the trends towards change. It reiterates the emergence of the vision of global commons based on circular and regenerative growth model, heterodox economic policy platform, universal medical system and digital democracy as the future we want. This could be a platform for the Great Reset in Serbia, too [5].

How do the core world economies respond to the COVID-19 crisis?

In the COVID-19 crisis, the rise of Keynesianism is an explanatory parallel of how the core economies had recovered after the Spanish Flu after the end of the Great War. In the current crisis, a part of stimuli is going to essential sectors (medical equipment, pharmacy, biotech, food, energy, logistics, etc.), as well as to highly socially sensitive companies ("too big to fail") and the most vulnerable groups ("helicopter money"). In contrast to the Spanish Flu crisis, where deficit financing was exclusively allocated to the real economy, in the COVID-19 crisis constant stimuli have been used in the financial sector, again for a very long time and in a very aggressive manner. Such behavior is pushing capital markets investors out of reasonable risk spectrum.

In the monetary sphere, massive liquidity pumping through bailouts of creditors, capital injections through QE as well as near-zero or negative interest rates are new variations of the role of the central bank as a "lender of last resort". The balance sheet expansion and emergency purchase of government and corporate bonds through the conversion of government bonds into long-term debt and hybrid equity classes, tell us that in the meantime the central bank is going to be a "buyer of last resort". The sad reality is that the central bank is continuously monetizing treasury losses.

After a massive and long monetary relaxation, the monetary policy is much more limited than it was in the recent past. Inflation risk is very much effective. Inflation bets in 2021 are at multi-year highs. Moreover, permanent stimulus made dependent sectors of the economy act impurely. In the US approximately 20 percent of companies in 2020 are the so-called "Zombie Companies" or the companies dependent on stimuli. In the 1980s, at the start of neoliberalism, the same indicator was 2 percent. Consequently, when the impact of creative destruction of market on incumbents does not exist anymore, productivity and growth stagnate and the economy goes into structural recession.

Another negative consequence of such anti-crisis policy mindset is a growing inflationary pressure. Anti-crisis program for the Great Recession of 2008 and particularly for the COVID-19 pandemic showed that stimulus postpones market check and constantly encourages the investors' hysteria. By provoking the animal spirit of equity investors, the central bank and treasury duo actually creates regulatory bubbles. A belief in the capital markets efficiency with such massive money printing is totally unreasonable. The question without answer is: How to restore investors' enthusiasm in the stage of hysteria? This bubble of epic proportion will influence yields inflation. Such capital markets are going to end up, sooner or later. Nobody can explain what happens when regulatory bubbles burst and capital markets crack. The previous imbalances create secular vulnerability. A new buzzword is "reflation". Namely, due to the previously mentioned side effects of unconventional policies, a threat of reflation is a very powerful narrative. An immense rise in commodity and material prices is a pervasive lead indicator of reflation. When industrial output stagnates or decreases, yields rise is a better measure of inflation than consumer price inflation or core inflation. Due to reflation, the world economy is at risk of double-dip (or W-shape) recovery.

A key problem of unconventional policies set is limited fiscal space of the government. Fiscal unbalance is contributing to debt increase.

We must reconsider the regular way of thinking in economics because the planet Earth is less habitable than ever before and people have lost confidence and trust in leaders. The circular model of growth and heterodox economic policy platform clarify the philosophy of new economics rules.

When it comes to the model of growth, the way to recovery is to invest in the economy that is increasing instead of redistributing the output. Also, the heterodox economic policy platform "keeps some powder dry" for structural changes with a catalytic role of Industry 4.0 solutions. Tesla's 15 thousand percent capital gain since its formation is a colorful example of how the reinvention in mature industry from a cumbersome engine to a powerful chip could be economically and environmentally viable.

In the current crisis, the pandemic outweighs other worries. But economics scholars must not forget the urgency of the regenerative and circular economy build-up. Actually, the COVID-19 pandemic is going to be a catalyst for the climate crisis awareness. Moreover, improvements in medical system and climate actions together are seen as historic opportunities for the economy to reset (and rebound). Definitely, someone who understands anti-establishment appeals cannot continue with the implementation of neoliberal rules. The keyword is intelligent industrialization.

How did Serbia's economy look like at the start of the COVID-19 crisis?

Serbia is a small economy, practically a late developer[1] situated on the periphery of the world economy. Before the dissolution of Yugoslavia, the country was geopolitically "stuck in the middle" between progressive free market economies and stagnating socialist economies, for a long time suffering from the "middle income trap". After the breakup of the former state in the early 1990s, Serbia was excommunicated from Europe's mainstream. So, over a long period of time the economy was impotent and out of tune. The turnaround started to take hold after the program of fiscal consolidation 2014-18. Serbia made a remarkable progress in macroeconomic performance which was a prerequisite for the rebound in 2019.

Before we make quick takes on macroeconomics in the last year of analysis, let's take a tour through data points in previous years. Table 1 portrays basic macroeconomic indicators during the period of fiscal consolidation, rebound and the COVID-19 crisis. The COVID-19 crisis has strongly affected the performance in 2020 and chances for the Great Reset.

In terms of laying the groundwork for macroeconomic stability, job creation and growth, the fiscal consolidation program 2014-18 truly delivered a rebound. However, an unprecedented complex crisis caused by the COVID-19 pandemic provoked an upheaval. The government's greater involvement in the economy led to fiscal deficit of 8 percent. However, thanks to massive stimulus, macroeconomic fundamentals remained in relatively good conditions, with the only exception of increased level of debt. This especially refers to price and currency stability and unemployment rate which even decreased in the crisis year (from 10.4 to 9.0 percent), the result that could hardly be repeated in the region, even in Europe. Also, the level of NPL ratio

1 According to the IMF World Economic Outlook [10], in 2020 GDP p.c. in current prices was USD 7,635. According to the authors' calculations in steady USD this is a smaller level of income in comparison with the GDP level from pre-transitional 1990 (steady USD 6,000).

Table 1: Trends in macroeconomic indicators: period 2014-20

Macroeconomic data	Fiscal consolidation program					Rebound	Covid-19
	2014	2015	2016	2017	2018	2019	2020
Consolidated fiscal result as % of GDP	-6.2	-3.5	-1.2	1.1	0.6	-0.2	-8.0
Current account as % of GDP	-5.6	-3.5	-2.9	-5.2	-4.8	-6.9	-4.3
CPI (%, relative to the same month a year earlier)	1.7	1.5	1.6	3.0	2.0	1.9	1.3
Unemployment rate (%)	19.2	17.7	15.3	13.5	12.7	10.4	9.0
Real GDP growth (%)	-1.6	1.8	3.3	2.1	4.5	4.2	-1.0
Public debt as % of GDP	66.2	70.0	67.8	57.9	53.7	52.0	56.8
NPL ratio (share in total loans)	21.5	21.6	17.0	9.8	5.7	4.1	3.7
RSD/EUR exchange rate (period average)	117.31	120.73	123.12	121.34	118.27	117.85	117.58
External debt as % GDP	72.4	73.4	72.0	65.1	62.2	61.5	66.3
FDI net (mil EUR)	1,236	1,804	1,899	2,418	3,157	3,551	2,902

decreased from 4.1 to 3.7 percent, which tells us that the economic burden of the crisis was taken by sovereign debt, not by the economy.

The increase of medical costs was 1.6 p.p. of GDP. So, the share of health care in GDP formation reached 6.0 percent at the end of 2020. That is the price of keeping the medical system going. Stimulus is another price of keeping the economic system going. Stimuli participate in GDP formation with 14 percent. The great means for a great purpose. The following period will demonstrate whether the price to be paid is even greater, and whether the economy is capable of paying such transaction costs increase in a sustainable way. The rise in budget deficit is logically followed by public and external debt increase (from 52 in 2019 to 56.8 and from 61.5 to 66.3 percent of GDP in 2020, respectively). FDI is at a lower, but still satisfactory level (about EUR 3 billion), maintaining a positive trend and considerably higher figures since 2014.

Despite a remarkable rebound after the period of fiscal consolidation, the previously rooted vulnerabilities have deepened during the COVID-19 crisis. Serbia made some progress in macroeconomic indicators, but if you look at vulnerability indicators, the results indicate a growing complexity of risk exposure (see Table 2).

However, debt increase is not depressing, rather cautionary bearing in mind that credit rating is stable and still at an acceptable level and is even improving. S&P and Fitch affirm Serbia at BB+/stable. Moody's has increased rating from Ba3/stable to Ba2/stable. Fiscal capacity has been decreasing, but it is also manageable under some conditions. To summarize, short-term debt is sustainable, but long-term debt is not under control, even for as-is scenario.

The competitiveness of Serbia's economy was not its strongest card at the beginning of the COVID-19 crisis. Competitiveness has not deteriorated during pandemic, but a "buffer" for bouncing back once the crisis is over still doesn't exist. However, the share of export (without services) in GDP formation remained at a similar, and unsatisfactory, level as in the previous years (34.5 percent). Competitiveness, seen through the eyes of the WEF, is pretty much the same, mainly due to a large share of agriculture,

Table 2: Vulnerability indicators in 2020

Financial vulnerability indicators		
Indicators	Value	Reference value
Indebtedness		
• Public debt***/GDP	56.8%	<45%
• External debt/GDP	66.3%	<45%
• External debt/Export	138.8%	<220%
Credit rating		
• S&P	BB+/stable	rank > BB+
• Fitch	BB+/stable	rank > BB+
Fiscal capacity		
• Tax revenue as % GDP	37%	<34%
• Shadow economy as % GDP	34%	<31%

Operational vulnerability indicators		
Indicators	Value	Reference value
Transitional output gap	20%	0%
Okun index (inflation + unemployment)	10.3%	<12%
Gini coefficient*	33.3%	<30%
Current account as % GDP	-4.3%	<5%
Consolidated fiscal result as % GDP	-8.0%	>-3%
Dependency ratio	0.52	>1
Youth unemployment**	32.4%	<20%

Competitiveness vulnerability indicators		
Indicators	Value	Reference value
Export (goods)/GDP	34.5%	>50%
Currency change (Dec 2020/Dec 2019)		
• Nominal change	/	<5%
• Real appreciation	1.6%	<0%
Global Competitiveness Index	72 of 141	65- SEE average
Corruption Perception Index	94 of 179	59-SEE average
Ease of Doing Business	44 of 190	60-SEE average
Economic Freedom Index	54 of 178	62-SEE average

*Gini coefficient of equivalised disposable income - EU-SILC survey 2019, Eurostat

**The share of young people who are not in employment, education or training (NEET) is 17.6%

*** Central Government

commodities and low value-added industrial products in GDP formation. The WB's Ease of Doing Business and Economic Freedom Index have been maintained on a good scale for the purpose of keeping the level of FDI. The national currency appreciated in real terms, but we would actually like to raise the discussion on whether this was unfavorable for the national economy since the decoupling of global value chains and border closures led to a significant increase in commodity, materials and other inputs prices.

The Okun index and Gini coefficient are around the tolerable corridor. However, they need to be monitored. Stimulus has not been targeted and distributed so far, but the following period might call for more prudent measures to keep the most vulnerable social layers groups from slipping below the poverty line. As expected, the crisis period has not brought many job opportunities for the youngsters. The young unemployment is still on a high 32 percent level and, together with demography which is not impressive and pan-European vulnerability of having a population much too old (0.52 dependency ratio), leads us to the alarming question whether such a system could be truly sustainable from the perspective of the most potent part of workforce.

Finally, the root cause behind Serbia's inability to keep up with other Central and Eastern Europe economies is transitional output gap. In contrast to peer economies, which in 2020 recorded a surplus of more than 40 percent, Serbia's transitional output gap is on 20 percent level in steady USD benchmarked against the pre-transitional 1990. In the last two decades, the main reason for that is slow reindustrialization.

In each prosperous national economy industrial output is a key driver of the sustainable growth trajectory. In pandemic 2020, China's economy remained healthy and achieved the growth of 4 percent. The share of industrial output in GDP formation was about 40 percent. The economy is still growing and in 1Q 2021 record growth since1992 was fueled by the industrial output jump of 18.2 percent.

Industrial production is particularly important when the threat of recession is real, due to the pause in demand and supply as well as the global supply chains decoupling. A complex crisis, such as the current one, exacerbates the role of industrial production in ensuring the continuity of economic activities as well as the surveillance of medical system.

How has Serbia responded to the COVID-19 crisis?

It is practically impossible to deal with a complex crisis, actually a medical crisis within an economic crisis, without an anti-crisis program. The purpose of the program is twofold. First, flattening the pandemic curve with the aim of saving human lives and avoiding the medical system overload. Second, steepening the J-shaped recession curve with the aim of preventing economic freefall and making recovery and rebound as soon as possible.

The synchronization of medical and economic policy measures is a challenging task. Double-dip (or W-shape) crisis is a realistic scenario if inadequate medical response contributes to virus mutations, lockdown and economic downturn and/or if premature easing of lockdown strictly for economic reasons triggers virus rebound. Both groups of anti-crisis measures must be taken in a systematic and synchronized way to ensure that short-term solutions do not create long-lasting problems.

In the economic part of anti-crisis program, the main priority was a rescue plan of socially sensitive companies, along with stimulus for the real economy. By using core economic policies (monetary and fiscal), the government and monetary authority gather momentum for stimulus release with the aim of boosting a general level of economic activities. Serbia has never seen such massive stimulus program, amounting in the first year of the pandemic to 14 percent of GDP. The treasury has recently extended the economic support program for 2021 with EUR 2 billion for stimulus and EUR 0.5 billion for guaranteed scheme. The central bank backed up indirectly the real economy by proposing credit moratorium, three times so far. Also, it demonstrated the efficacy in dealing with inflationary pressures and maintaining stability of the financial system. FX auctions helped stabilize exchange rate. The treasury furloughed wages and postponed taxes in the private sector. The equity investors' behavior was not strongly impacted by the threat of the economy entering

hibernation. Infrastructure and construction are picking up mainly owing to capital investments. Unfortunately, the pandemic has halted growth in services, non-essential industrial production, and real estate (particularly commercial part).

In the medical part of anti-crisis program the main priorities were: capacity building in medical system, technology revamp (including digitalization), and vaccination. Within a short time two new Covid hospitals were built and started to operate.

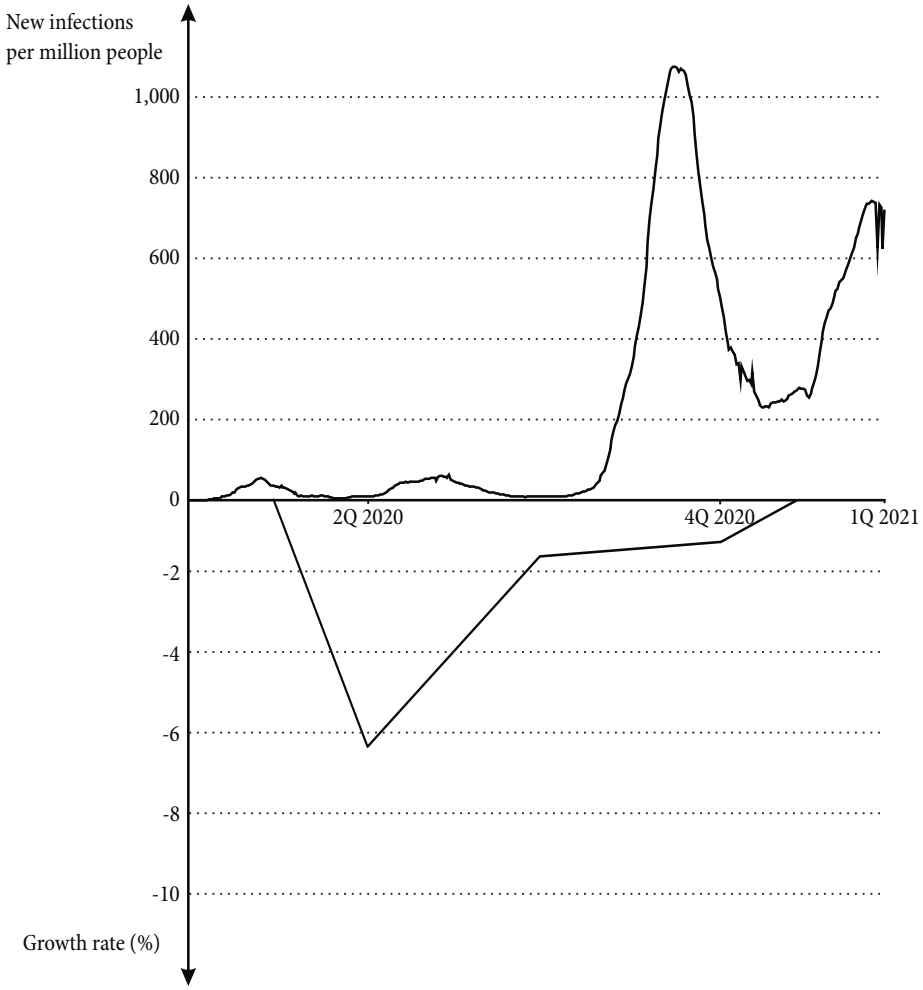
Figure 1 portrays economic and medical results of the anti-crisis program in a synchronized way. Economic results are presented by growth rate, quarter-on-quarter. A critical medical result is the number of infections per million people, quarter-on-quarter.

Serbia's economy entered 1Q 2020 with a positive growth rate of 4.6 percent. It was an echo effect of the growth push from 2019 rebound. Unfortunately, the COVID-19 pandemic turned the growth curve into negative territory. We see from Figure 1 that in 2Q 2020 growth rate was -6.4 percent. Economy reacted positively (factory orders rose significantly) to the treasury-central bank rescue program at the end of March 2020. In 3Q and 4Q the government started to finalize the recovery with complementary measures. So, a negative growth rate eased at the end of 2020. The key result of anti-crisis program is a minimal drop in GDP of -1 percent.

Empirical J-curve is a very good indicator of what is going on with the economy during the crisis. According to growth rate, the economic part of anti-crisis program could be qualified as: so far so good, reasonably good.

When it comes to the medical part of rescue plan, the situation was relatively under control until 4Q 2020. The second wave of infection reached its peak in December

Figure 1: Anti-crisis program: Key economic and medical results



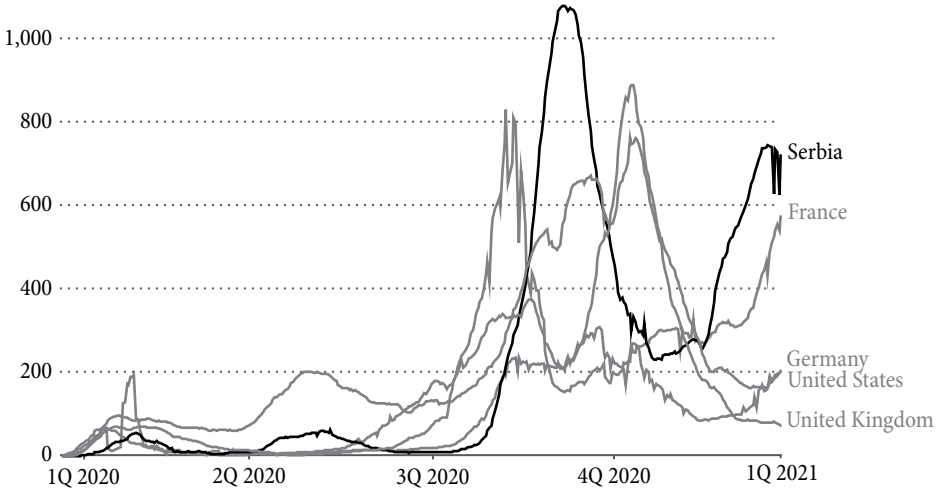
Note: Daily new confirmed COVID-19 cases per million people are shown based on rolling 7-day average
Source: Johns Hopkins University CSSE COVID-19 Data (collated by Our World in Data)

2020 and was immediately succeeded by the third wave in 1Q 2021. The infection curve steepened again amid new virus mutations. Comparative data about the level of infection are not encouraging, particularly for 1Q 2021 (see Figure 2). Mutations are making virus more contagious and severe. So, the pandemic is reinforcing stress for the economy again.

When it comes to the main achievements of the medical component of anti-crisis program, vaccination is on the top of the list. Figure 3 presents comparative data on the world's leaders in vaccine rollout. The way in which Serbia has been managing the vaccination campaign is truly remarkable. Economic activities have worsened, but the intensification of vaccine rollout has been fueling economic revival. Growth rate of 1.2 percent in 1Q 2021 indicates that the economy is on the road to recovery.

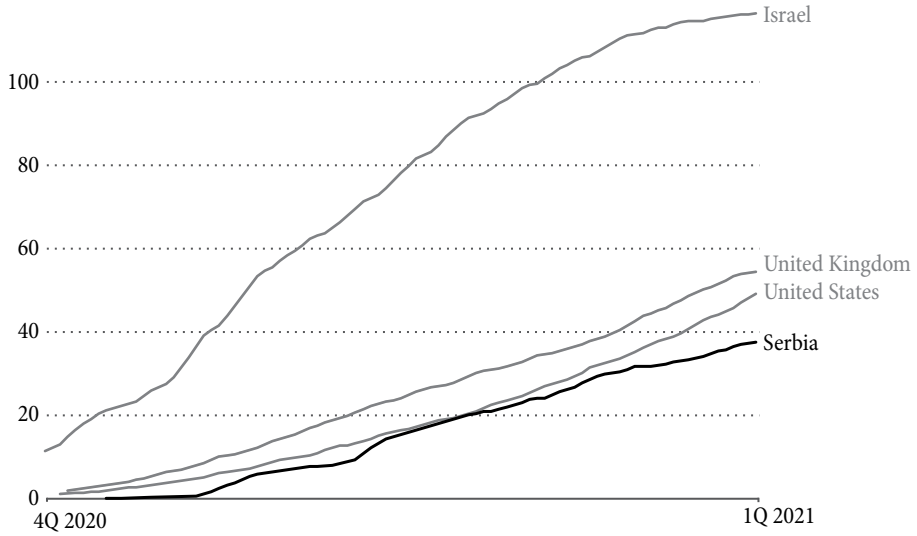
Putting all facts together, we can see that the secret of the revival in a complex crisis such as the COVID-19 crisis is really about impact investments. It is very difficult to generate systemic demand in downturn without impact investments. The main concern is fiscal cliff because fiscal measures should be more conservative in Serbia than in the countries with reserve currency. Massive stimulus, along with a substantial increase in medical costs, has

Figure 2: Daily confirmed cases per million people, rolling 7-day average



Source: Johns Hopkins University CSSE COVID-19 Data (collated by Our World in Data)

Figure 3: Vaccine rollout: comparative data



Note: COVID-19 vaccine doses administered per 100 people. The total number of vaccination doses administered per 100 people in the total population. This is counted as a single dose, and may not equal the total number of people vaccinated, depending on the specific dose regime (e.g. people receive multiple doses)
Source: Official data collated by Our World in Data

breached the debt threshold of 60 percent of GDP. Current fiscal deficit is partially sustainable thanks to FDI influx and credit capacity. To keep short-term debt sustainable, the government needs to increase borrowing. The only sustainable way to keep long-term debt under control is to increase output through impact investments.

Both components of impact investments, public investment and FDI have played a critical role on the road to recovery. In 2020 the pandemic marginally slowed down the previous growth progress in the segment of public investments with some absolute decrease in the segment of FDI and a ramp-up in infrastructure (see Figure 4).

Economic stimulus and massive vaccination, along with capacity building in the medical sector, are helping to keep up the enthusiasm of foreign direct investors. Serbia cannot get an easy access to capital markets, so public investment in infrastructure should remain the key leverage to keep the role of impact investments in preserving fiscal balance.

Impact investments are closely associated with two questions: where to invest in the future and how. The common denominator for both answers is industrial output.

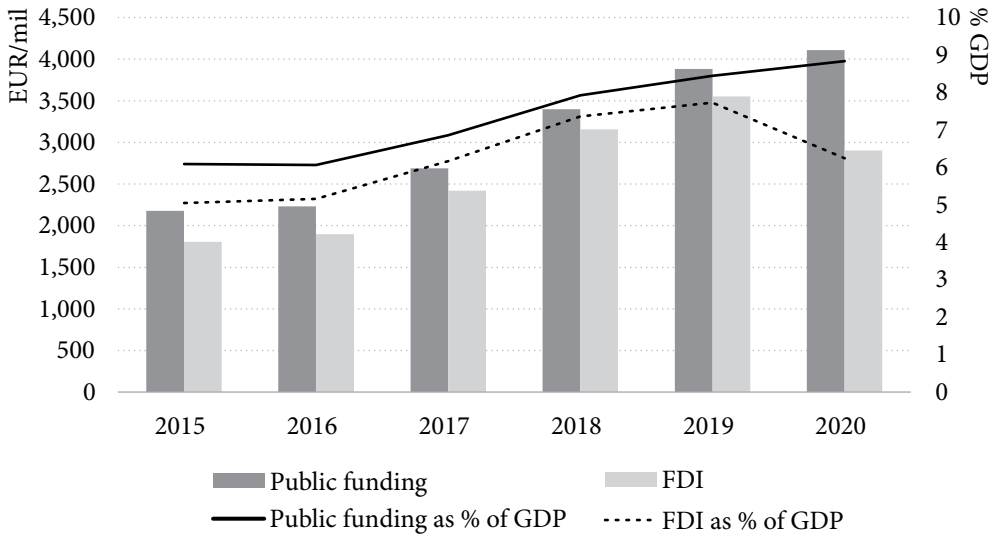
Serbia's industrial output: From industrialization to deindustrialization and back

To understand how Serbia ended up with such a level of industrialization and how it could improve the quantity and structure of industrial output, we must analyze some development milestones. So, let's give a very short background from economic history. The analysis of the growth model puts the problem of industrialization at the epicenter.

Serbia, as a republic in the federal state of Yugoslavia, had entered the second industrial revolution in early 1960s with the level of GDP p.c. of approximately 2,000 steady USD. The development strategy was based on technology transfer as a blueprint for the industrialization of late developers. Transfer of technology was a way for industrial output expansion, either through export expansion or through import substitution. At the end of this period in 1990, industrial production contributed with 27 percent to GDP formation and GDP p.c. reached approximately 6,000 steady USD.

Unfortunately, the idea that technology transfer alone is able to create sustainable growth was false. Despite the industrial output expansion, macro deficits were constantly increasing throughout the entire period of rapid industrialization. Current account deficit emerged as a consequence of foreign technology purchase, terms of trade and market liberalization. Deficit in capital balance was primarily a result of debt financing of technology purchase. Under the pressure of two macro deficits, the government almost regularly failed to maintain fiscal balance. So, macro deficits increased new borrowing and debt burden, constantly decreasing the speed of growth.

Figure 4: Impact investments in Serbia: period 2015-2020



In the middle 1980s, despite the continuous transfer of technology, Serbia entered the "middle income trap". Debt servicing cost contributed to the slipping of industrial output and productivity stagnation (or even decrease). With secular output gap, the progress toward growth was halted.

Burdened by structural imbalances from the past, Serbia entered the systemic transition from socialism to capitalism in the early 1990s. Moreover, the first decade of systemic transition coincided with the geopolitical cataclysm (the breakup of Yugoslavia, serial civil wars for the former country heritage, economic sanctions, etc.). As a consequence, at the beginning of systemic transition industrial production dropped by almost 60 percent. These shocking statistics signalized the beginning of deindustrialization. Isolated economy with a tremendous industrial output gap didn't manage to maintain macro balance. Hyperinflation was unescapable. So, the economy turned out to be not only impotent, but also out of tune. A new buzzword explaining blowout macroeconomic data was "reflation".

The period of reflation ended in 2000, actually after the consolidation of geopolitical position of the country. The recovery was triggered by the lifting of economic sanctions, privatization restart and financial sector rebuilding. Maintaining macro stability, the government started almost from nothing. In the absence of industrial policies, liberalization and financialization contributed strongly to the continuation of deindustrialization. The share of industrial production in GDP formation was constantly decreasing and reached a historic low of 20 percent of GDP in 2014. Increase in output came from very low base, and the effects of the recovery went to the financial sector and services, not to the real economy. Under such circumstances fiscal deficit was constantly growing, along with inflationary pressures. The economy continued to be impotent and out of tune. So, the ultimate goal for the subsequent development period was to end stagflation.

The third period of development is the period of fiscal consolidation and rebound (2014-2019). A dramatic deterioration of macroeconomic performance in 2013 was a "wake up call in the middle of the night". Fiscal balance was achieved by taking draconian measures such as cuts in pensions and public sectors wages. That was a prerequisite for credit rating improvement, increase in investors' expectations, and growth. In terms of growth, after the program of fiscal consolidation successfully ended in 2018, in months years happened.

The main operational vulnerability of Serbia's economy is industrial output (level and structure). Let us discuss data points about industrialization during sub-development periods (see Figure 5). Performance is explained by the number of industrial workers, the share of industrial production in GDP formation, and the index of industrial production.

The previous remarkable statistics point to rising concerns about the downfall of industrial production during the whole period, i.e. from the start of systemic transition to these days. Despite the fact that fiscal balance was achieved in 2018, industrial output rebound did not happen. Right now, the contribution of industrial output to GDP formation is below 20 percent. No doubt, the law of gravitation is functioning. Namely, the height of industrial output level can easily be lost, while it is extremely difficult to recover.

Structure of industrial production is also an operational vulnerability. Low-value added products dominate in the manufacturing portfolio. Mainly linear model of industrial production and carbon-intensive energy production, based primarily on coal use, are also operational vulnerabilities. FDI as an important driver of growth in the last period has served as a healthy ingredient to solve capital balance problem, but it has not contributed substantially to the sustainable growth trajectory. The structure of FDI indicates a lack of industrial policies as well as a lack of coordination in core economic policies regarding industrialization issue. By breaking the stalemate in industrialization from the previous period, industrial policies based on industry 4.0 solutions for tradable sectors of the economy could accelerate the recovery.

An economy poised for sustainable growth, capable of keeping alone inflation under control (CPI < 2 percent), should maintain fiscal balance. Both macro requirements create the ultimate advantage which opens up new opportunities for investments. But the foregoing is only

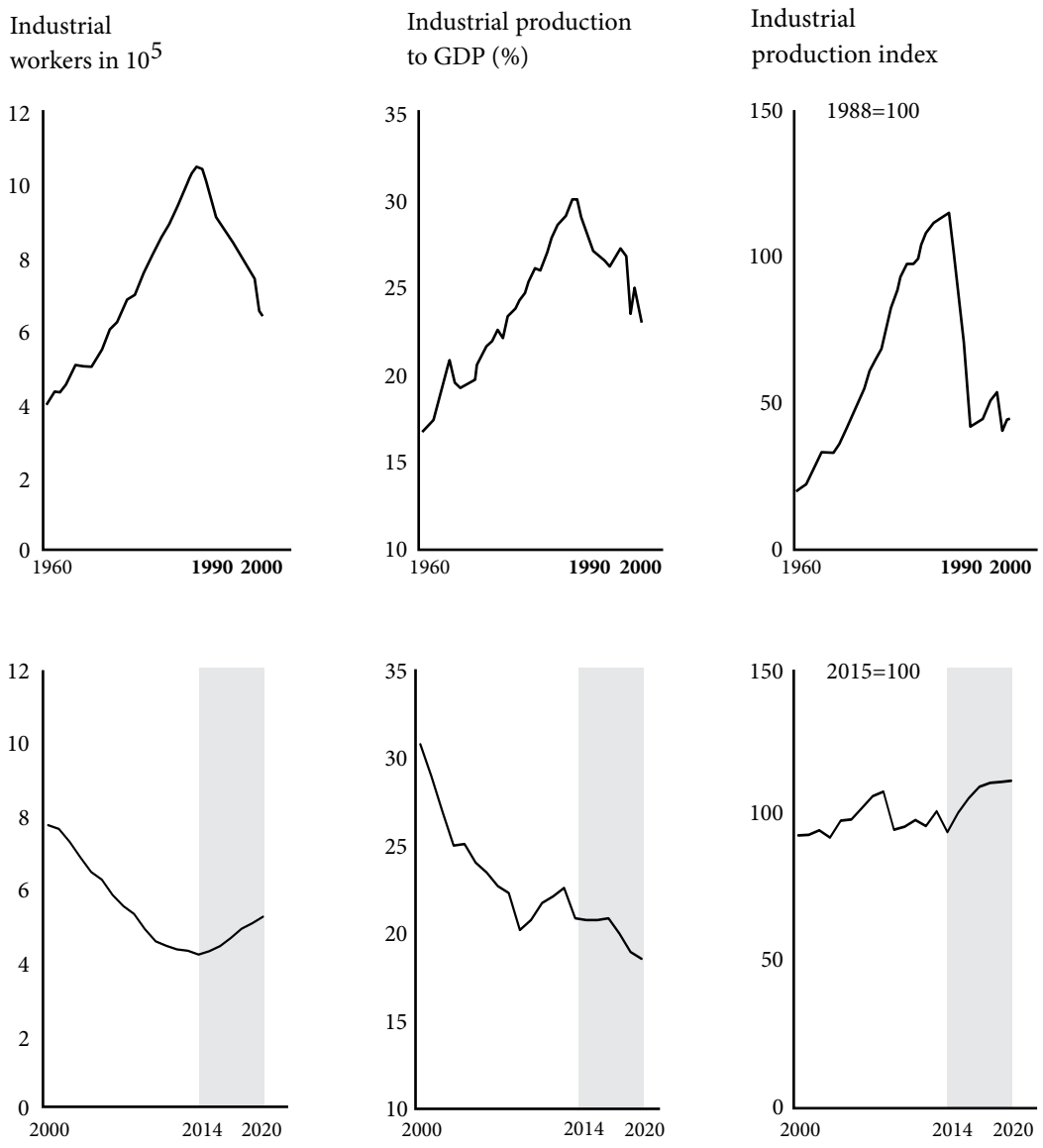
a necessary condition. A sufficient condition comes from the structural perspective, based on a consistent set of industrial policies, both horizontal and vertical.

Without structural responses or a set of vertical industrial policies for tradable sectors and essential products, along with horizontal (or support) industrial policies such as research and development, education and health care, Serbia cannot balance the increase in medical expenses and stimulus during the COVID-19 pandemic, mitigate climate crisis, and preserve energy and food security. Also, at least for geopolitical reasons, Serbia must embark on decarbonization path in the future energy production and new industrialization.

Where is Serbia's economy going in the middle of COVID-19 crisis?

With a delay of one quarter, the downfall amid the COVID-19 pandemic started in 2Q 2020. During the first year of the pandemic Serbia's economy performed better than expected and kept going based on the public sector as a stable core of economic activity as well as the private sector in infrastructure, construction, agriculture, energy, ICT, food processing, financial services, e-commerce and digital logistics. These sectors are doing well in contrast to the sectors largely dependent on stimulus, particularly micro, small and medium-sized companies.

Figure 5: Industrialization in Serbia: period 1960-2020



A dynamic window of opportunities became limited again after virus cases hit weekly record high in December 2020. The pandemic remains a systemic risk at a high level. Amid virus mutations, a full recovery will not take place in the immediate, but in the distant future (W-shape recovery). But a new radical economic downfall is highly unlikely after the serious lessons have been learned in the previous stage of crisis.

So far, the economy has been at a precarious point. An inflection point from downfall to recovery has not happened yet. Macroeconomic fundamentals are not so robust to indicate the start of recovery. The appearance of the inflection point requires the Great Reset or a radical change in economic system and way of its functioning.

The Great Reset means, first and foremost, shifting from shareholder capitalism to stakeholder capitalism (or managed capitalism or progressive capitalism or entrepreneurial capitalism). This shift does not require us to conceive of ourselves as typical representatives of homo economicus, but as humans. In a new approach the regenerative and circular model of growth and heterodox economic policy platform are required. Both changes are preconditions for recovery in the short term and for rebound in the longer term, which means following a sustainable and inclusive growth pattern in the post-crisis period. We discussed the related conceptual framework extensively in our previous work, for example in [2] and [4]. A core idea is the harmonization of industrial policies through impact investments and macroeconomic automatic stabilizers from core economic policies, both monetary and fiscal.

The new normal is marked by microbe mutations and hyper-infections as macroeconomic factors. So, decarbonization technologies and medical technologies will be the twin engines of recovery and rebound. Being brave in an economic downturn means being innovative. Artificial intelligence (AI) solutions play a catalytic role in both technologies. The new generation of vaccines was developed primarily by using AI solutions. The mRNA platform does not only go beyond conventional vaccines, but it also helps to develop combinatorial innovations that will transform health care.

In the new policy platform, industrial policies as leverage and the government's coordination skills as hedge play a critical role. Industrial policies are being used for the internalization of positive external effects of impact investments in infrastructure (physical and digital) and acceleration of technology change in tradable sectors with the aim of breaking the industrialization stalemate in the implementation of the Industry 4.0 solutions. The coordination role of the government in technology development is growing. Nobody can predict the future exactly because of a lateral character of frontier technologies, both physical and virtual. Horizontal industrial policies such as research and development and education should concentrate on keeping up with the pace of innovation in frontier technologies and implementation efforts.

The role of industrial policy has to be to encourage impact investment for sustainable and inclusive growth, along with the reduction of carbon footprint and medical security enhancement. A great opportunity for the new economy comes from the fourth industrial revolution. The Industry 4.0 has turned the world into a better-connected place. For the first time in the history of humanity universal connectivity is a free good. We are witnessing an extra rapid development of the Industry 4.0 solutions based on amalgams of virtual and physical innovations. It opens up endless possibilities for emergence of combinatorial innovations. Intelligent technologies (and products) offer more functionality and flexibility. They reflect in a reduction in the autonomy of economic players in an increasingly interconnected world. These days, humans can live simultaneously in physical reality and virtual reality. The Industry 4.0 solutions based on the amalgams of virtual and physical world have an important role to play in the transformation toward an economy committed to the SDGs implementation.

Technology, as an enabler, has an ambivalent character, acting as both opportunity and threat. Big tech is related to big social and economic challenges. These days, business leaders are extremely ambitious and agile. They are regularly trying to predict the prospects and future patterns of behavior of basic economic players (competitors, clients, regulators and workforce). By using the lateral technological opportunities of AI and robotics, sometimes they are trying to reinvent the behavior of human beings. So, technology change is being more

controversial than ever. The government's coordination role instead of the market coordination mechanisms is inescapable, again.

More than ever, the responsible use of new technological opportunities comes to the surface. There are three specific questions explaining how to use frontier technologies ethically. First, how do we use the Industry 4.0 solutions without further degradation of nature? Second, how do we use emerging business platforms as a new ecosystem of competition to avoid digital autocracy ("winners take all")? Third, how do we use the Industry 4.0 solutions without taking away the right to privacy and economic, medical and social status of people?

The new platform is based on the key assumption that the economic system is a man-made and highly non-linear system. Consequently, Economics is not a natural science like Physics. The explanatory power of heuristics, trial-and-error and feed-back loops in Economics is more than targeting based on *ceteris paribus* hypothesis from the optimization modelling.

Thanks to the fourth industrial revolution, there is the dominance of non-linear systems not only in Economics, but also in natural sciences and engineering. In a new context, the strategy of business leaders is based on combinatorial innovations, which are disruptive by nature. Business platform, instead of industry or value chain, is an ecosystem of new competitive dynamics. Each business within the business platform is, in principle, a non-linear system. In short, non-linear systems prevail in all economic levels.

Climate and medical crises are not the issues of tomorrow, they are the issues of today. The Great Reset in the post-COVID-19 era means to be "greener" and "more pro people". A greener economy means having the capability to mitigate negative external effects of the previous linear growth model by using core economic policies in a structural and transformative way. To be "pro people" means to impose the SDGs as limitations when defining growth pattern. To implement the regenerative and circular model of growth, each national economy must follow a set of the SDGs.

Accountability of the government in terms of the responsible social management toward the development of a new economic system could be treated as the 18th SDG. The concept runs following a simple logic of circular processes.

The establishment of the industry structure capable of delivering a rapid decarbonization process and sustainable and inclusive growth, as well as the medical system capable of mitigating microbe mutations, superinfections and new chronic diseases (e.g. "long COVID") will be a promising roadmap toward intelligent industrialization. The fulfilment of such targets is an opportunity for many conventional industries to rejuvenate.

In the new context, the introduction of intelligent production systems (and products) based on the Industry 4.0 solutions and zero-carbon emissions is a way to increase the share of industrial output in GDP formation. Serbia may be able to achieve the share of intelligent industrial production in GDP formation of 35-40 percent by 2030. Since new technologies are more conducive to social distancing and contingent operations, they are capable of bolstering structural changes, such as non-contact manufacturing, work-at-home, hybrid work, etc.

Serbia does not manufacture almost anything from the Industry 4.0. To make a big shift, there are at least three big ideas.

First, in-house development of ICT components of intelligent production systems and products as a priority of the industrial policy. In the new industrialization, ICT has a catalytic role to play. Intelligent technologies and products include physical (or hardware) and virtual (or software) parts.

Second, the implementation of technologies with zero carbon emissions, primarily based on hydrogen. The energy sector is a tradable sector and its reform is part of the climate credibility in the EU accession process. In this regard, the exploration for new materials (e.g. lithium) and components of battery could help.

The third big idea is related to the development of manufacturing hub for health care providers (bioengineering, pharmacy, vaccine development and production, health tech, medical diagnostic equipment, etc.)

All the previous big ideas will strongly contribute to the strengthening of the physical part of conventional production systems that constitute tradable sectors and

their shifting onto a sustainable and inclusive growth trajectory. When it comes to tradable sectors, each national economy has its own priority list. There is no automatic pilot. In the case of Serbia, besides the mentioned big priorities, the priority list may include the following industries: infrastructure, construction, decarbonization and regeneration technologies, confectionary and dairy based on organic agriculture, and auto.

Conventional manufacturing sectors cannot significantly contribute to economic rebound without a digital transformation. Before the digital transformation and technology revamp based on the Industry 4.0 solutions take place, these sectors desperately need rightsizing (capital, assets, and number of employees) and strategic partnerships with global leaders. FDI in the future should be based on such restructuring efforts, on the one hand, and digitalization, on the other. It is particularly important given that the massive stimulus from the previous period has changed the parameters of fiscal policy.

Service sectors of the economy (hospitality industry, air transport, retail, etc.), where it is more difficult to practice social distancing, have plunged into freefall. The only exception to this rule is health tourism. After a positive experience with the COVID-19 pandemic mitigation, Serbia has to become a regional hub of health tourism.

In the context in which microbe mutations, superinfections and new chronical diseases are explanatory elements of the new normal, a new economy will need a quantum leap in impact investments, exactly a shift from billion to trillion. Financing the green transformation is critical for recovery.

The ideal source of financing of impact investments is long-term bond issuance. The so-called "green bond", "digital bond", "blue bonds", "nature bond", or the like, are hybrid securities necessary for attracting a critical mass of savings to finance impact investments. It is a very attractive asset class. For example, in 2020 green bond issuance on global capital markets reached more than USD 500 billion. On the buy-side, pension funds and life-long insurance companies could be important players.

Another source of financing involves "green credits". It is a supplementary channel to finance impact investments aimed at digitalization, carbon-free industrialization as well as enhanced medical security. A better quantification of risk exposure for certain green credits requires matching some ecological standards with cost of capital and/or provisions. Also, stress-tests and criteria such as the contribution of investments to the climate and medical crisis mitigation could be of help in the selection process within credit institutions.

A soft variant of green credits is an intentional variation of quantitative easing toward carbon-neutral production or a "green QE" [1]. By making the monetary policy fairer, instead of stimulating speculative investments on capital markets, the green QE should reward value creation in sectors with high positive external effects. Simplifying to the extreme, it is "money printing" for the purpose of digitalization, reduction in carbon footprint and improvement in medical system. This big move could enable the switch from fossil fuel subsidies to clean energy production. This model of financing is available only in the economies with reserve currencies. For the economies in the EU accession process, there is a possibility of using the branches of credit institutions from the Eurozone to play a mediation role when impact investments contribute to the EU development priorities.

A good example of the change in way of thinking about core policies is a structural approach to tax policy. In the post pandemic world, a tax hike is imminent. Regressive taxation is a fault line of neoliberalism. High earners have the biggest responsibility for balanced budgets and recovery. In post Trump era, the narrative of minimum tax rates on a global level gains momentum. Along with carbon tax, in the tax policy of developed economies (G-20 at least), medical tax, corporate tax, digital tax and, maybe, value-added tax, all on a global and minimum level, will play the role of automatic stabilizers.

The answers to the previous questions will trace the reset of economic system during the pandemic and its reinvention in the post pandemic world in a sustainable and inclusive way by respecting the interests of both people and nature. Again, coordination role of the government is unavoidable. There are many domains and sub-domains of science. Somebody must coordinate progress in fertile research trajectories.

Nota Bene

Now let us come to the final remarks about the required trajectory of Serbia's economy "during" and "after" the COVID-19 pandemic. Or, to the answers about the current problems in the light of the future we want, and Serbia we need.

A dangerous divergence of neoliberal capitalism is unlikely to disappear without a change of the related model of growth and economic policy platform. The Great Reset to happen, an emphasis needs to be shifted towards a new model of capitalism and a more complex model of growth and heterodox economic policy platform.

The Great Reset cannot be based on the market fundamentalism mantra which for almost half a century has been producing, reproducing and deepening structural imbalances, both in developed and developing world. In the case of Serbia, a systemic demand squeeze due to the combined effects of transitional and current output gaps cannot be solved if the government stays out of the economy. Such a withdrawal is counterproductive, particularly when a "black swan" operates. A system characterized by the dominance of unconventional economic policies and their unintended consequences on economic value and nature disruptions, cannot recover by itself and make the planet Earth sustainable.

The old doctrine is particularly not relevant in the case of Serbia because "pro" or "counter" cyclical fiscal policies and expansionary monetary policies from the standard neoliberal package are not effective in case of output gap. In a system with structural imbalances, industrial output is in sliding mode despite the intention toward FDI and public investments. To close the output gap, solutions will come from the structural side of growth equation, not macroeconomic side. With paradigm change both in Economics and Business Economics [3], everything is possible because nothing is certain.

Another big challenge of our time is the complexity of the current crisis, a medical crisis within an economic crisis. The pandemic is single issue which cuts off many other issues. So, the effects of anti-crisis policy measures are mainly contraindicated. On the one side, virus rebound is cost of keeping the economy going. If the economy keeps going, the chances for the medical system survival and economic rebound are increasing. On the other side, lockdown, as the most effective way to slow down the spread of the pandemic, is actually a way of putting the economy into sleep mode. So, medical and economic anti-crisis measures must be taken in systematic and synchronized way to ensure that short-term solutions do not create long-lasting problems.

In 2020, the share of medical costs in Serbia's GDP formation was increased by 1.6 p.p. Also, massive stimuli participate with 14 percent in GDP formation. No doubt, the government needs to increase borrowing to escape transactional costs hit due to the mitigation of negative effects of the pandemic. Unfortunately, new borrowing is breaching the safety threshold of 60 percent of GDP, but under current circumstances short-term debt could be sustainable. But long-term debt is definitely unsustainable even for as-is scenario which, by the way, is not realistic. To made long-term debt sustainable, in the next five years Serbia will need the compound average growth rate (CAGR) of minimum 2.8 percent.[2]

In very unusual times, marked by enormous difficulties and opportunities, unlike paranoid optimists, cautious optimists are constantly questioning their optimism. The adverse consequences of not doing enough are more dangerous than agility followed by trials and errors. So, agility is a solution for changing problems.

In the middle of 2021, the reform momentum for the Great Reset is very strong. Being optimist about the reform momentum requires a systemic and synchronized approach combined with enormous agility and coordinated efforts. It is almost impossible to control cash outflows due to the pandemic mitigation and income lost due to the dangerous divergence of market fundamentalism without a radical change of the economic system and a way of its functioning. The first step is a paradigm change.

The new economy is not only responsible for shareholders, but also, and almost ultimately, for the great priorities of society such as prosperity (economic

2 $CAGR = \sqrt[N]{1 + M} - 1$, or
$0.028 = \sqrt[5]{1 + 0.156} - 1$, where
CAGR – compound average growth rate
N – number of years
M – COVID-19 mitigation costs as % of GDP in year zero

and social) and the mitigation of climate and medical crises. The regenerative and circular model of growth and heterodox economic policy platform are key pillars of a new way of thinking. Impact investments and automatic macroeconomic stabilizers (in monetary and fiscal spheres) have a critical role to play in the harmonization of core economic policies with structural policies. Both components of the new economy contribute to the inclusive and sustainable growth pattern as well as the prosperity of humankind, without harming nature. Policy makers at national economy level must build consensus on the path to recovery related to tradable sectors and different variants of core economic policies under the previously mentioned general framework.

Serbia is not going back to the pre-pandemic economy. "During" and "after" the pandemic, we are creating a different economy. These days, all industries from the real economy to services are impacted by the Industry 4.0 solutions, or universal connectivity and innovative amalgams from virtual and physical world. So, new economics rules should create, at least, an equitable access to universal connectivity and frontier technologies such as AI for all. Also, new economics rules have to give impetus to entrepreneurship and better health care, again for all.

The Great Reset means recovery and rebound. This does not come easily. Recovery is typical in times of crisis. Rebound dominates in the post-crisis period. Due to structural imbalances and unintended consequences of unconventional policies, there will be many bottlenecks during the recovery. Key question is: recovery of what? Our view is the recovery, along with rejuvenation, of industrial production, actually "new industrialization". The previous analysis pointed out that in the period of three decades the rebound of industrial production in Serbia actually did not happen. In the strategic audit of Serbia's economy deindustrialization is not only a hard piece of evidence and main legacy of the conceptual fault lines from the past, but also an input for "not-to-do" list.

The COVID-19 crisis has deepened structural imbalances and increased the public awareness toward the new economy. It is time to turn innovative ideas into economic impact and to transform threats into opportunities. Tough times call for substantial measures to do so. During the first COVID-19 year, Serbia did a lot on its own. But architects of the recovery program should not be guided exclusively by short-term achievements. They should be familiar with the rebound based on a longer-term vision of future development. It means that short-term solutions must not be in contradiction to the long-term vision. The time for detailed recovery programs is over. The vision for reinventing the economy we have described is a feasible way for recovery and rebound.

To stop using the linear model of growth is not easy when we know that our ecological footprint is greater than ever. Two-thirds of the world's GDP depend, highly or moderately, on natural resources and this share is greater in the case of less developed economies such as Serbia. For more than fifty years, which roughly coincided with the neoliberalism era, the world economy used up more than 1.75 times the natural resources than the planet Earth can replenish [19, p. 19]. So, to stop using fossil fuels is not just brainwashing for strategists and policymakers in Serbia when we know that only coal contributes with 66 percent to energy supply. Serbia must start reducing coal consumption and set up the target of carbon neutrality. Recently, the US has announced the cutting of greenhouse gas emissions in half by 2030, compared to their 2005 levels. The EU reached a provisional deal of 55 percent greenhouse gas emissions cut by 2030. The EU wants to create the first climate-neutral continent by 2050. To energize the EU accession process, Serbia should build its climate credibility. Last but not least, Serbia currently does not manufacture almost anything by using the Industry 4.0 solutions. To overcome economic, environmental and medical crisis, the Industry 4.0 solutions are the imperative of our time. The fights against climate crises and medical crisis, as key determinants of the future normal, will be the twin engines of recovery and rebound.

For the new economic model to prosper, leverage, on the one side, and hedge, on the other, must be transparent. Do we have leverage and hedge for the new economy? Probably, we do. The new model of growth and related economic policy platform play the role of leverage. The world is changing and we have to change Serbia's economy very quickly. Through industrial policies every late developer

defines the way to attract public investments and FDI in tradable sectors and, by doing this, rejuvenate conventional manufacturing. Industrial policies, both horizontal and vertical, could coordinate the development of digital components of intelligent production systems and products, carbon neutral technologies and products, and health care technologies and products. The Competence Center for Industry 4.0 under the jurisdiction of the Ministry of Digitalization and Green Transformation could be a key hedge factor for the Great Reset, maybe.

Transition is not easy, but we do not have alternative. First and foremost, we cannot solve the problem of industrial output gap, shift the economy onto sustainable growth trajectory and improve medical, economic, energy, food and social security of people, if we do not understand what new economics rules do for progress, people and nature. With industrial policies in the epicenter of the new policy platform harmonized with core policies by automatic macroeconomic stabilizers, we can effectively reject the prejudice that investing in Serbia is just gambling.

What we have talked about in this paper are actually two things, the "trends of tomorrow" defining the "future normal" and the role of new economics rules in the "Great Reset" in an economically productive way. Stakeholder capitalism, circular (and regenerative) model of growth, heterodox economic policy platform with industrial policies and automatic stabilizers from monetary and fiscal spheres at the center, as well as "green" financing instruments, should be considered not only as a reform narrative, but also as the seeds of the Great Reset.

References

1. Brunnhuber, S., & Jacobs, G. (2020). Innovative financial engineering to fund the SDGs: A WAAS initiative. *Cadmus*, *4*(2-II), 141-148.
2. Đuričin, D., & Lončar, D. (2020). Shaping the future of Serbia's economy: The new growth model and related economic policy platform. *Ekonomika preduzeća*, *68*(1-2), 1-21.
3. 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.
4. Đuricin, 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.
5. 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.
6. Đuričin, D. (2018). *Escape from Transitionism: What Serbia Has Learned From Past Failures and Recommendations for the Future.* Belgrade: Faculty of Economics, University of Belgrade, CID.
7. EEF The Manufacturers' Organisation & Oracle. (2018). *The 4th Industrial Revolution: A Primer for Manufacturers.* Retrieved from https://www.oracle.com/a/ocom/docs/industries/4ir-report.pdf
8. Friedman, M. (1963). *Capitalism and Freedom.* Chicago: University of Chicago.
9. International Monetary Fund. (2020). *Fiscal Monitor – April 2020* . Washington, DC: IMF. Retrieved from https://www.imf.org/en/Publications/FM/Issues/2020/04/06/fiscal-monitor-april-2020
10. International Monetary Fund. (2021). *World Economic Outlook 2020 - IMF Datamapper.* [Data file] Retrieved from https://www.imf.org/external/datamapper/profile/SRB
11. Kagermann, H., Wahlster, W., & Helbig, J. (2013). Recommendations for implementing the strategic initiative INDUSTRIE 4.0, Securing the future of German manufacturing industry. Final report of the Industrie 4.0 Working Group. Retreived from https://www.din.de/blob/76902/e8cac883f42bf28536e7 e8165993f1fd/recommendations-for-implementing-industry-4-0-data.pdf
12. Kahneman, D. (2011). *Thinking Fast and Slow.* London: Penguin Books.
13. Majstorović, V. D., Mitrović, R. M., & Mišković, Ž. Z. (2020). Assessing industry 4.0 readiness in manufacturing companies from Serbia. In *Proceedings of 5th International Conference on the Industry 4.0 Model for Advanced Manufacturing* (pp. 69-79). Springer International Publishing.
14. 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.
15. National Bank of Serbia. *Data and statistics.* Retrieved from https://nbs.rs/en/drugi-nivo-navigacije/statistika/
16. Our World in Data (2021). *Daily confirmed COVID-19 cases.* [Data file] Retrieved from https://ourworldindata.org/grapher/rate-of-daily-new-confirmed-cases-of-covid-19-positive-rate
17. Our World in Data (2021). *COVID-19 vaccine doses administered per 100 people.* [Data file] Retrieved from https://ourworldindata.org/grapher/covid-vaccination-doses-per-capita
18. Rajan, R. G. (2011). *Fault Lines: How Hidden Fractures Still Threaten the World Economy.* Princeton, NJ: Princeton University Press.
19. Schwab, K. (2021). *Stakeholder Capitalism: A Global Economy that Works for Progress, People and Planet.* New Jersey: John Wiley & Sons.
20. Statistical Office of the Republic of Serbia. *Data and statistics.* Retrieved from https://www.stat.gov.rs/
21. Stiglitz, J. E. (2019). *People, Power, and Profits: Progressive Capitalism for an Age of Discontent.* New York, NY: W. W. Norton & Company.

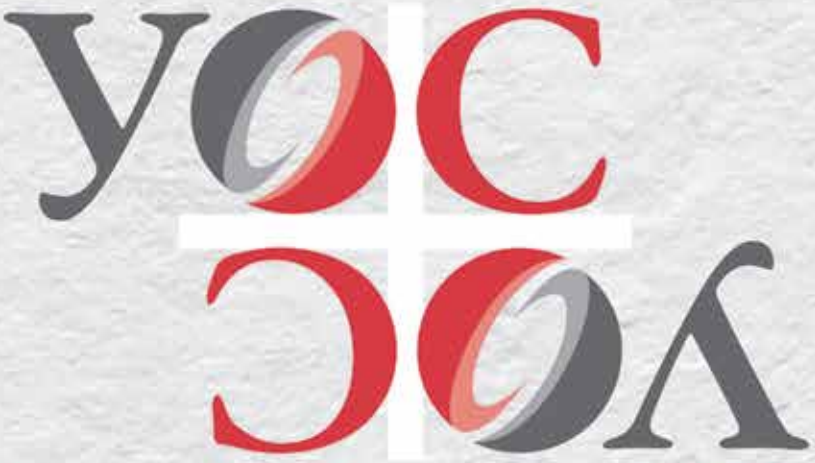
22. Technologie-Initiative SmartFactory KL e.V. (2018). *SmartFactory KL Pioneer of Industrie 4.0*. Retreived from https://smartfactory.de/wp-content/uploads/2018/04/SF_BR_WegbereiterVonIndustrie40_A5_EN_XS.pdf
23. Tiftik, E., & Mahmood, K. (2020). Sharp spike in debt ratios. In S. Gibbs (Ed.) *Global Debt Monitor*. Washington, DC: Institute of International finance. Retrieved from https://www.iif.com/Portals/0/Files/content/Research/Global%20Debt%20Monitor_July2020.pdf
24. United Nations. (2020). *The Sustainable Development Goals Report 2020*. New York, NY: United Nations Publications. Retrieved from https://unstats.un.org/sdgs/report/2020/The-Sustainable-Development-Goals-Report-2020.pdf

Dragan Đuričin

is a fellow of the World Academy of Art and Science as well as a founder and board member of the Serbian Chapter of the Club of Rome. He is a professor of Strategic Management, Project Management, Enterprise Risk Management, Economics of Strategy, and Strategic Financial Management at the University of Belgrade, Faculty of Economics. He is editor in chief of the Serbian scientific journal Ekonomika preduzeća – Journal of Business Economics and Management. He is president of the Serbian Association of Corporate Directors. He wrote dozens of books in the fields of strategic management, project management, systemic transition, and risk management. He was a visiting professor at the University of Venice as well as a fellow of the Fulbright Foundation. He was a member of corporate governance bodies in dozen multinationals and reputable Serbian corporations, including Tarkett, Molson Coors, Danube Foods Group, Addiko Bank. He worked at Deloitte for 24 years, occupying C-level positions, including the chairman of Deloitte Pannon Adria and chairman of Deloitte Serbia. He served as chairperson of the Supervisory board of Dedinje Cardiovascular Institute. Currently, he is a member of corporate governance bodies of Metalac, Messer Tehnogas and Komercijalna banka – NLB Group. He was a founder and executive chairman of Kopaonik Business Forum. He was president of the Serbian Association of Economists for fifteen years. He was a member of the Economic Council of the Government of the Republic of Serbia. He was engaged in the preparation of several transitional laws, particularly the privatization law as well as the fiscal consolidation program known as "Avramovich's Program". His constant preoccupation is economics of transition. His current interests include a paradigm shift in Economics and Industry 4.0 impact on financing of the "net-zero" transition and circular and regenerative economy.

Iva Vuksanović Herceg

is an Associate Professor at the Faculty of Economics, University of Belgrade. She teaches undergraduate courses Strategic Management and Risk management, graduate course Strategic Finance, and PhD course Economics of Strategy. She received her PhD degree from the Faculty of Economics, University of Belgrade. Her primary fields of interests refer to enterprise risk management, value-based management, Industry 4.0, industrial policy and economics of transition, in general. She wrote more than 60 papers related to the previous topics. Iva Vuksanović Herceg managed both domestic research project dealing with new economic policy platform and competitiveness of the real sector in Serbia funded by the Ministry of Education, Science and Technological Development as well as EU funded international research project on building capacity and skills for managing social and technological innovation project in the youth population. She is Visiting Scholar at the Faculty of Economics and Business University in Zagreb. She is a member of the Supervisory board of the Foundation of Young Talents of the City of Belgrade.



Удружење осигуравача Србије

Association of Serbian Insurers

антни фонд, биро зелене карте, информациони цен
und, green card bureau, information centre, guarantee
ентар, гарантни фонд, биро зелене карте, информа
rantee fund, green card bureau, information centre, gu
нформациони центар, гарантни фонд, биро зелене
nation centre, guarantee fund, green card bureau, infor
гарантни фонд, биро зелене карте, информациони
ard bureau, information centre, guarantee fund, green
д, зелене карте, информациони центар, гарантни ф
uarantee fund, green card bureau, information centre,
ни фонд, биро зелене карте, информациони центар,
reen card bureau, information centre, guarantee fund,
о зелене карте, информациони центар, гарантни фо

www.uos.rs

Гарантни фонд	Биро зелене карте	Информациони центар
011 2927 940	011 2927 950	011 2927 910

SHERATON

Novi Sad Hotel

Where the World Gathers

Hotel Sheraton Novi Sad • Polgar Andraša 1 • T+381 21 4878 000 • info@sheratonnovisad.com • sheraton.com

INTRODUCTORY PAPER
UDK: 616.98:578.834]:338.124.4
338.23:336.74(497.11)"2020/2021"
DOI: 10.5937/EKOPRE2103137T
Date of Receipt: January 16, 2021

Jorgovanka Tabaković
Governor
National Bank of Serbia

HOW WE ENTERED THE CRISIS CAUSED BY THE COVID-19 PANDEMIC

Kako smo dočekali krizu izazvanu pandemijom kovida 19

Abstract

The paper aims to point out the strength and effects of the shock of the crisis caused by the COVID-19 pandemic on the global and domestic economy. Effects differ depending on the characteristics of individual economies and the response of economic policy makers. The crisis called "the great lockdown" features: 1) suspension of activity in some sectors and huge declines in others, with pronounced asymmetry and 2) implementation of robust packages of monetary and fiscal policy measures.

The paper focuses on the measures adopted in Serbia to mitigate the negative effects of the pandemic on the domestic economy. It elaborates on the temporary measures adopted by the National Bank of Serbia (NBS), which helped preserve stability in the foreign exchange market, ensured efficient functioning of the money market, liquidity support to all sectors and more favourable financing conditions, sustained credit activity and supported the domestic real sector. According to our estimate, if the monetary and fiscal policy measures had not been adopted, the fall in Serbia's economic activity in 2020 would have exceeded 6%, while growth in 2021 would be modest, failing to reach the pre-pandemic growth dynamics even in the medium term. The adoption and implementation of the robust package of measures was possible because Serbia faced the crisis in a good macroeconomic and fiscal position owing to the strengthened economy and implementation of structural reforms in the past period. In fact, Serbia can serve as the example of a country confirming the importance of strengthening the economy on sustainable grounds in the past eight years, which created room for the adoption of comprehensive economic measures to support citizens and businesses, in order to preserve production capacities and jobs.

Keywords: *COVID-19, crisis, packages of measures, monetary policy, stability, confidence, recovery.*

Sažetak

Cilj rada je da se ukaže na jačinu i efekte šoka koje je na svetsku i domaću ekonomiju imala kriza izazvana pandemijom kovida 19, pri čemu se efekti razlikuju u zavisnosti od karakteristika ekonomija i odgovora nosilaca ekonomskih politika. Krizu nazvanu „veliko zaključavanje" karakteriše: 1) obustavljanje aktivnosti u pojedinim sektorima, a u nekim i ogroman pad aktivnosti uz izraženu asimetriju; 2) sprovođenje obimnih paketa mera monetarne i fiskalne politike.

Fokus rada je na merama donetim u Srbiji za ublažavanje negativnih efekata pandemije na domaću ekonomiju. Detaljno se razrađuju privremene mere donete od strane Narodne banke Srbije (NBS) koje su obezbedile očuvanje stabilnosti na deviznom tržištu, efikasno funkcionisanje tržišta novca, podršku likvidnosti svim sektorima, povoljnije uslove finansiranja, očuvanje kreditne aktivnosti i podršku domaćem realnom sektoru. Naša je procena da bi u Srbiji, bez donetih mera monetarne i fiskalne politike, pad ekonomske aktivnosti u 2020. godini iznosio preko 6%, dok bi rast u 2021. godini bio skroman, a ni u srednjem roku ne bi dostigao dinamiku rasta od pre pandemije. Donošenje i sprovođenje velikog paketa mera je bilo moguće jer je, jačanjem domaće ekonomije, kao i sprovođenjem strukturnih reformi u prethodnom periodu, Srbija ovu krizu dočekala u dobroj makroekonomskoj i fiskalnoj poziciji. Srbija zapravo može da posluži kao primer zemlje koji potvrđuje značaj toga što je u prethodnih osam godina ekonomija ojačana na održivim osnovama, što je stvorilo prostor za donošenje obimnih ekonomskih mera podrške građanima i privredi, kako bi se sačuvali proizvodni kapaciteti i radna mesta.

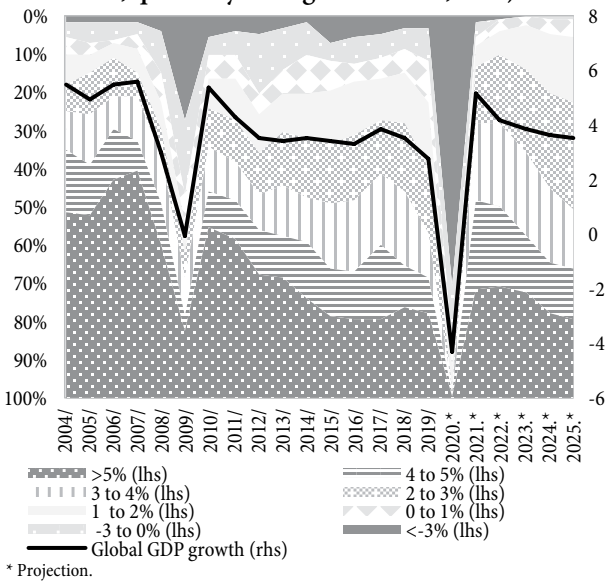
Ključne reči: *kovid 19, kriza, paketi mera, monetarna politika, stabilnost, poverenje, oporavak.*

Introduction

The COVID-19 pandemic broke out amid already elevated uncertainties in the global economy. The scope and pace of the economic downturn it triggered were unprecedented [15, pp. 1-2] and global stock exchanges saw sharpest one-week slumps since the global financial crisis of 2008. Still, there is an evident difference between these two global events. The 2008 crisis began as a financial crisis, spilled over to the real economy and grew into a global economic crisis. While the financial crisis set off a negative demand-side shock, primarily in the credit and real estate markets, the COVID-19 pandemic, with the introduction of containment and physical distancing measures, hit hard the real sector, triggering an exogenous shock both on the supply and demand side. Moreover, the COVID-19 crisis took a different course and produced a much stronger initial effect (Figure 1). What both crises have in common is the fact that central banks were an important pillar of defence against the negative effects of the crisis, and the guarantor of financial and price stability.

To indicate the potential effects at the global level and the importance of the packages of adopted measures for national economies, we shall present estimates of potential effects on different segments of the economy made by different organisations. In its Economic Outlook of September 2020, the OECD stated that monetary policy measures across the world contributed to the easing of financial conditions and higher loan supply and pre-empted a larger drop in consumer and investor confidence [14, p. 9]. In its Autumn 2020 Economic Forecast, the European Commission described numerous channels through which monetary and fiscal policies in Europe mitigated the negative effects of the lockdown on economies, and how they contributed to recovery. The measures adopted by the ECB included the provision of liquidity, collateral easing, further asset purchases, which, combined, led to even more favourable conditions of financing of the real economy. As stated in the Economic Forecast, government spending in the euro area, rising by 2% in 2020, would have a stabilising role by giving a countercyclical impulse to growth. In addition to exerting a direct impact on demand, fiscal and monetary policy measures helped improve investors' expectations concerning economic recovery. Based on the EC's Global Multi-Country Model, discretionary fiscal policy measures in the euro area will raise GDP by 1 pp in 2020, adding to the stabilisation effects of automatic stabilisers, as part of a regular tax system [6, p. 62]. According to the BIS analysis concerning emerging economies, compared to previous crisis periods when central banks of emerging economies responded to depreciation pressures by raising key rates, this time it

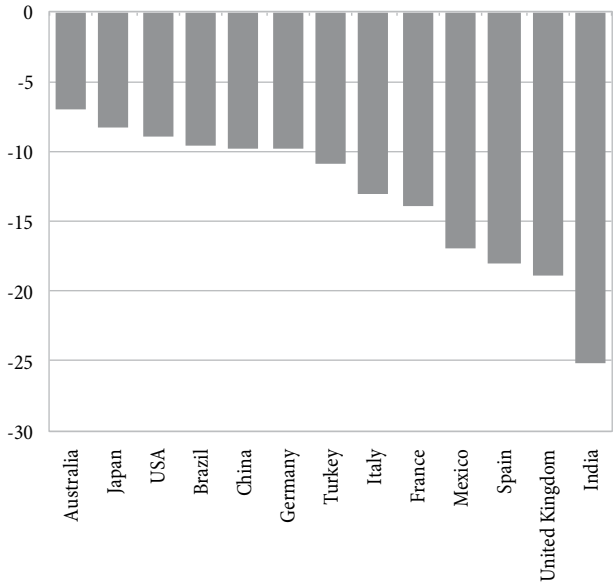
Figure 1: Comparison of the COVID-19 crisis and the global financial crisis (global growth rates in % – rhs; sa, quarterly GDP growth rates, in %)



* Projection.

Source: IMF WEO, October 2020.

Figure 2: Economic downturn in Q2 (countries by GDP growth rate – lhs)



Source: OECD, according to S&P.

was different. Owing to structural improvements, greater credibility of central banks and synchronised monetary and fiscal policies, introduction of measures of provision of additional liquidity and financial asset purchases, and interventions in the FX market – greater volatility of local currencies, the outflow of foreign portfolio investment and a negative impact on local government securities markets were prevented [1].

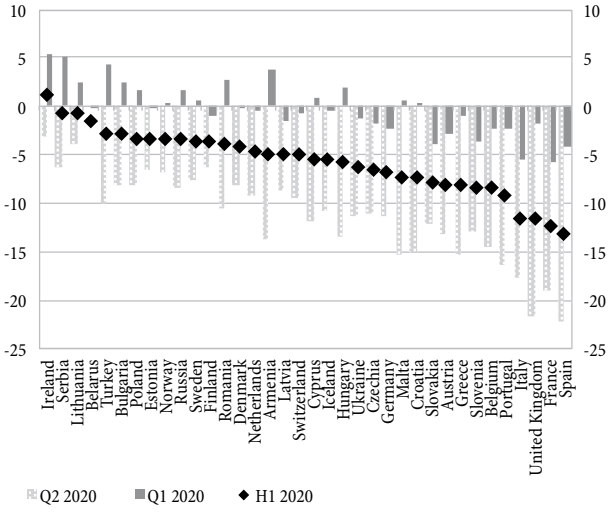
Global shock and outlook

The global economy faced the global shock triggered by the COVID-19 pandemic with already decelerated growth. After average 3.5% in the 2015–2018 period, the real global GDP growth slowed to 2.8% in 2019 (IMF data, WEO October 2020) [8]. In the same period, growth slowed from average 2.2% to 1.7% in advanced economies, and from average 2.1% to 1.3% in the euro area. In most economies, the strongest negative effects of the pandemic were manifested in Q2 (Figure 2), in terms of halts/disruptions to global production chains and disturbances in most commodity markets, primarily in the oil market. The economic effects of the pandemic during the so-called lockdown phase are illustrated by data on the annualised GDP decline in Q2 measuring 31% in the US, almost 50% in Europe, and between 30% and 70% in emerging economies.

The structure of the economy was also one of the factors determining the strength of negative effects of the COVID-19 pandemic, due to the specificity of the shock. The countries with a greater share of tourism, catering and transport in GDP suffered a greater real drop in GDP, which moved between 15% and 22% in Q2 (Figure 3). Furthermore, due to the twin supply-demand shock, the ensuing drop in oil prices caused the worsening of the current account in the countries that are net oil exporters. All this, together with persisting geopolitical risks, makes it considerably difficult to produce macroeconomic forecasts (Figure 4) and conduct policies.

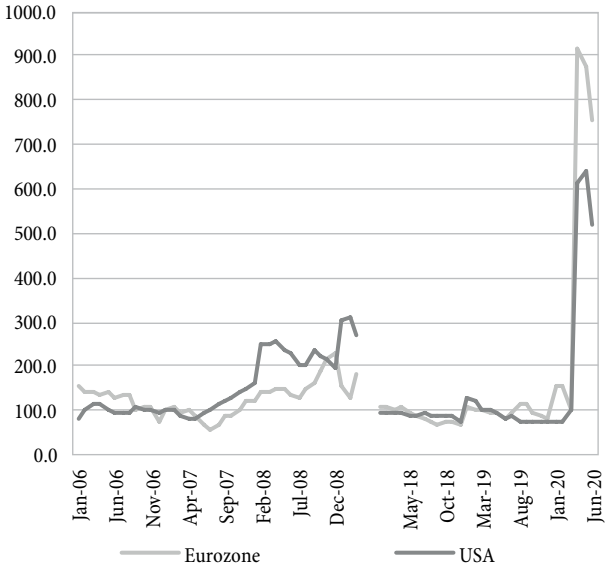
Furthermore, there are economic sectors where the economic effects of the coronavirus will have to be tackled over a longer period, such as the air transport and tourism. One of the hardest hit areas of manufacturing is certainly the automobile industry (for more information about the impact on the automobile industry see the November Inflation Report, Text box 2: Impact of the coronavirus pandemic on global automobile industry and the implications for Serbia). Also, due to the disruption of global value chains and changes in customer behaviour, many small and medium-sized enterprises in different sectors may face challenges in everyday business, including money and revenue flows. Supply- and demand-side shocks cause serious problems in short-term financing of numerous

Figure 3: GDP by country in H1 2020 (y-o-y growth rates, in %)



Source: Eurostat.

Figure 4: Standard deviation of GDP projections (Jan. 2007 = 100)



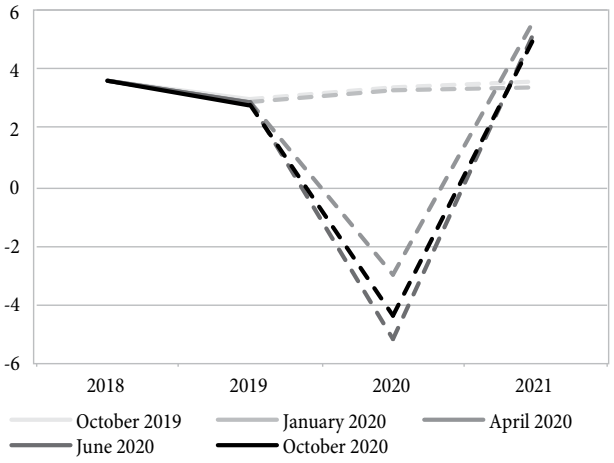
Source: Consensus Economics, IMF calculation, Fiscal Monitor, IMF, October 2020.

companies in need of significant external funds [7, p. 2]. And this is where the policy makers' response played an important role as well.

After the unlocking, most economies saw recovery which, consistent with the nature of the shock, is unevenly distributed across sectors. Owing to the implemented robust packages of measures (monetary, fiscal and financial), global recovery in Q3 was faster than expected in June, which also brought about upward GDP growth revisions for 2020. In line with this, in October, the IMF revised its global growth estimate for 2020 to -4.4%, from -5.2% in June, with a somewhat more optimistic outcome than expected in respect of global trade as well (Figures 5 and 6).

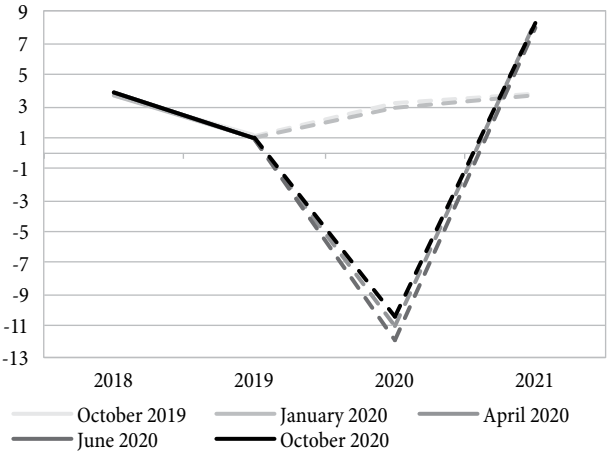
However, despite incipient recovery, the renewed spread of the virus in many countries and the stepping up of restrictive containment measures in October and November fuelled uncertainty as to the speed of the global economic recovery. The elevated uncertainty was also communicated during the ECB's press conference on 29 October, when it was assessed that the renewed spread of the coronavirus (COVID-19) implied new challenges for public health and the growth outlook of the euro area and globally. New data suggest that the euro area's economic recovery is slowing, after strong, although partial and uneven economic recovery was recorded during summer months [9]. Therefore, in December, the ECB revised the euro area growth to -7.3%, from -8% in September and -8.7% in June. In all these circumstances, policy makers demonstrated readiness to adjust measures based on the estimate of the current effects of COVID-19 on economies and growth outlook, which was particularly important for the preservation of business and consumer confidence.

Figure 5: IMF projections of global real economic growth for 2020 and 2021 (in %)



Source: IMF WEO and WEO Update.

Figure 6: IMF projections of the volume of global trade in goods and services for 2020 and 2021 (in %)



Source: IMF WEO and WEO Update.

Table 1: Several factors of the speed of global recovery

Slower recovery	Faster recovery
Spread of the virus and measures of social distancing and effects on supply and demand	Monetary policy measures - ensuring favourable financing conditions, various forms of liquidity support, credit support
Business and consumer confidence	Fiscal measures - support to businesses and citizens (to the extent possible)
Uncertainty in the international commodity and financial markets	Prudential measures
Long-term structural negative effects	

Source: Author's illustration.

How we entered the COVID-19 crisis in Serbia?

By pursuing adequate and responsible economic policy over the past eight years, Serbia laid the foundations for sustainable growth. Since 2014, inflation in Serbia has been continuously kept at a low level, at around 2% on average, and inflation expectations are anchored within the NBS target band (3±1.5%) [17, pp. 93-94]. This result also ensured additional room for the NBS to pursue a more expansionary monetary policy during the COVID-19 crisis than would have been possible had the NBS not been successful in achieving its primary objective – bringing inflation to a low level. An important role in ensuring and maintaining price stability and in anchoring inflation expectations was played by the achieved relative stability of the exchange rate of the dinar against the euro, which at the same time contributed to the strengthening of financial stability. The relative stability of the exchange rate of the dinar against the euro was also one of the pillars of stability of the investment environment, which is why investments were a significant contributor to GDP growth since 2015. In parallel, the strengthening of the domestic economy helped maintain the relative stability of the exchange rate, prevailing over the negative effects of turbulences in the international financial market. The NBS intervened in the FX market exclusively to mitigate excessive short-term volatility of the exchange rate, without the intention to influence its trend. Consistent with macroeconomic developments since 2017, appreciation pressures were stronger and more frequent, which is why from April 2017 until late 2019 the NBS bought in the FX market over EUR 5.3 bn net. This was accompanied by a rise in gross FX reserves to EUR 13.4 bn in late 2019, which is their highest level on record. Such level of FX reserves is an important guarantor of stability in the event of vigorous external shocks.

The achievement of stability objectives (price and financial stability), supported by stability in the FX market, at the same time opened room for successful fiscal consolidation, which in turn allowed for greater monetary policy accommodation. The result of the successful fiscal consolidation and full coordination of monetary and fiscal policy measures is also the eliminated fiscal imbalance, as confirmed by the consolidated surplus of 0.6% of GDP in 2018 and almost balanced public finances in 2019 (a deficit of 0.2% of GDP). At the same time, the monetary policy easing by the NBS since May 2013 fully translated into the interbank money market through a sharp drop in interest rates (for more information about the pass-through effect of the key policy rate see the November Inflation Report, Text box 1: How strong is the interest rate channel in Serbia?), including interest rates on dinar loans to the private sector, which declined by over 12 pp from mid-2013 until October 2020 [12, pp. 18-21]. Economic growth was further encouraged through a higher disposable income and greater availability of funds for new investment. This is also corroborated by the fact that almost the entire growth in corporate lending of over RSD 100 bn in 2019 concerned investment loans, which at year-level went up by over 25% and reached almost EUR 5 bn in late 2019. This growth continued into 2020.

Positive trends also reflected on Serbian exports. The country's exposure to disturbances in individual segments of external demand was reduced through higher geographic and production diversification of exports, which is a strategic commitment of our policy makers. Owing to new production capacities and new export destinations, and despite the slowdown in external demand since H2 2018, the growth in exports of goods and services from Serbia remained dynamic in 2018 (9.6%) and 2019 (10.3%). The rising diversification of production and export capacities was also helped by the FDI inflow which reached EUR 3,825 bn (8.3% of GDP). In line with rising production and investment, in import structure around 70% of growth refers to intermediate goods and equipment.

Owing to the implementation of structural reforms and improvement of the business and investment environment, rising investment in infrastructure projects, FDI inflows channelled mainly to tradable sectors, including increasingly favourable financing conditions in Serbia, investments became the pillar of economic growth. In the 2018–2019 period, fixed investments accounted for three quarters of economic growth, which equalled 4.4% on average.

In 2018 and 2019, Serbia's risk premium was among the lowest in the region (it stood at 19 bp in late 2019). The decline in the country risk premium was supported by

global and, even more so, by domestic factors - narrowed internal and external imbalances, reinforced financial stability and favourable macroeconomic prospects of the country. For these reasons, Fitch and Standard & Poor's upgraded Serbia's credit rating to one step to investment grade. Owing to all these results, Serbia was able to prudently manage its public debt by substituting some earlier expensive loans with much more favourable sources of financing (partly owing to more favourable conditions in the global market, and chiefly owing to the lower country risk premium and a better credit rating).

More information about the state of the economy and the scope for policy response is also contained in the August 2020 Inflation Report, Text box 1: A comparison of Serbia's macroeconomic position before the previous global economic crisis and the crisis caused by the coronavirus pandemic [13, pp. 9-13].

Macroeconomic and monetary measures in Serbia to fight the effects of the COVID-19 pandemic

Programmes of economic measures

The first programme of economic measures aimed at mitigating the negative effects caused by the COVID-19 pandemic and supporting the Serbian economy had two priorities: 1) helping economic entities with operating difficulties and 2) preserving jobs and wages. The package of economic support contained nine measures, divided into several groups – tax policy measures, direct support to the private sector, measures aimed at preserving corporate sector liquidity. Total value of package was around 11.0% of GDP, which is around a half of Serbia's annual budget.

The first group of measures relates to tax facilities for private sector enterprises, which include: deferred payment of tax on wages and contributions, with later repayment in instalments, deferred payment of advance profit tax in Q2 and suspended payment of VAT for donors. The second group concerns direct assistance to all enterprises during the state of emergency, primarily entrepreneurs, micro, small and medium-sized enterprises, which received 100% of net minimum wage for each employee. In case of large enterprises, the payment of 50% of net minimum wage was envisaged for employees who were on furlough because of the inability to work. Both sets of measures aimed to maintain an adequate level of business activity and employment, and to release additional funds primarily for the segment of micro, small and medium-sized enterprises. The third group of measures aimed at preserving corporate liquidity was implemented through: 1) loans to enterprises via banks, with government guarantee and 2) loans to enterprises through the Development Fund of the Republic of Serbia. These two programmes together were worth EUR 2.2 bn. Conditions concerning the eligibility of beneficiaries and loan approval were prescribed for both types of financial support to the corporate sector. The fourth group of measures aimed to support demand.

In late July 2020, the second package of fiscal policy measures was adopted, worth around RSD 66 bn, whereby the payment of subsidies for wages of employees in small and medium-sized enterprises was extended by two more months. In addition, the deferral of payment of taxes on wages and social insurance contributions for all private enterprises was lengthened by additional 30 days. In the

Table 2: Conditions in Serbia prior to the two crises

	Inflation, in % (average)	FX reserves, end-of-year (in EUR bn)		Savings (end-of-year)		% of NPLs (end-of-year)	Key policy rate (end-of-year)	Exports of goods and services (% of GDP)	Current account deficit (in % of GDP)	Serbia's risk premium (end-of-year)	Serbia's credit rating (end-of-year)	Fiscal result (% of GDP)
		Gross	Net	dinar (in RSD bn)	euro (in EUR bn)							
2007	6.0	9.6	6.1	10.7	4.8		10.00	25.7	17.3	304	BB-/stable	-1.8
2008	12.5	8.2	5.9	10.6	4.7	11.3	17.75	26.8	20.0	1224	BB-/negative	-2.5
2018	2.0	11.3	8.9	60.5	9.6	5.7	3.00	49.3	4.8	159	BB/stable	0.6
2019	1.9	13.4	11.4	79.0	10.5	4.1	2.25	50.8	6.9	19	BB/positive	-0.2

Source: Statistical Office of the Republic of Serbia (SORS), NBS, JP Morgan, Ministry of Finance.

remainder of the year, measures were adopted to provide additional support to health workers and pensioners, as well as hoteliers, hospitality workers, travel agencies and car rental offices, and total government support in 2020 thus reached 12.7% of GDP. The implementation of measures inevitably raised the general government fiscal deficit in the crisis year. We assess that the one-off deficit rise is fully justified, as the consequences of not doing anything would have been enormous and would imply a reduction in production capacities, jobs, wages, which would take years to compensate for.

NBS measures

The NBS was the first institution in the country and one of the first central banks in the region to respond to the pandemic by adopting concrete measures. We adopted measures almost on a monthly basis, making sure that they are limited in duration, in accordance with the shock caused by the pandemic.

In addition to the listed measures, the NBS maintained the relative stability of the EUR/RSD exchange rate throughout the whole 2020, as an important pillar of overall stability and confidence.

Below we will present the effects of the COVID-19 crisis on some market segments and the results of implemented measures.

Effects of the COVID-19 crisis on the domestic FX market

Heightened uncertainty created significant turbulence in global financial markets, measured by all indices. Currencies of emerging countries are particularly susceptible to the

Table 3: NBS's response to COVID-19

Measure	Goal
1. The key policy rate has been cut by 1.25 pp to 1.0%, its new lowest level in the inflation targeting regime.	Enabling more favourable financing conditions in the local currency and encouraging dinar lending, thus contributing to faster economic recovery.
2. The NBS's main interest rates corridor has been narrowed from ± 1.25 pp to ± 1 pp, and then to ± 0.9 pp relative to the key policy rate.	Enabling additional monetary policy efficiency via the interest rate channel.
3. Banks' dinar and FX liquidity was increased by way of direct repo operations, swap auctions and bilateral purchases of dinar government bonds from banks.	Efficient functioning of the banking system and more favourable lending conditions for corporates and households.
4. Inclusion of dinar corporate bonds of Serbian companies in monetary operations. Banks may sell corporate bonds to the NBS in the secondary market, and can also use them as a financial collateral for obtaining dinar liquidity from the NBS.	Additional support to the recovery of domestic companies through an alternative source of financing that relieves the burden from periodic money flows and initial stimulus to the development of the domestic capital market.
5. Signing of the moratorium on the repayment of obligations under loans and financial leasing for all debtors who opted for that, first for 90 and then for another 60 days. Extending the payment term for housing loans for five years at the most and other loans to households for up to eight years.	Helping citizens and corporates bear the burden of the crisis, increasing their disposable income and thereby reducing the negative effect of the pandemic on domestic demand and economic activity.
6. Lowering the mandatory down payment for first-time flat purchases from 20% to 10%. Lowering the minimum level of completion of an object whose purchase may be financed by housing loans from banks.	Enabling easier access to housing loans, thus supporting construction growth.
7. The Serbian Government's Guarantee Scheme introduced stimuli - banks approving loans to clients under the Guarantee Scheme, at rates lower than the ceiling rate (which equals one-month BELIBOR + 2.5 pp) by at least 50 bp, will have a higher remuneration rate on the amount of mandatory reserve requirements in dinars by 50 bp, on the amount of loans extended under more favourable conditions.	More favourable dinar lending conditions for micro, small and medium-sized enterprises and entrepreneurs, and in turn increase in the degree of dinarisation and an additional boost to financial stability.
8. A pre-emptive repo line was established with the ECB which could provide additional euro-liquidity to the domestic financial system, should the need arise.	Ensuring another form of safety in conditions of pronounced uncertainty in the international financial market.
9. Adoption of new measures to facilitate loan repayment for debtors stricken by the COVID-19 pandemic (in the form of rescheduling or refinancing existing obligations with a 'six-month grace period').	Facilitating the settlement of obligations of debtors who are faced with difficulties due to the COVID-19 pandemic and responsible management of credit risk of banks-financial lessors in the current circumstances.

Source: NBS.

impact of global developments and global capital flows, where the psychological factor often plays a very important role and adds to increased volatility.

It is this behavioural element, i.e., market psychology, that further heightens their sensitivity. A large number of parameters which dictate movements in the FX market makes them difficult to predict, with consequences spanning almost all economic spheres, which is why it has become particularly important in today's globalised world to carefully analyse and monitor these parameters, especially in countries with huge exposure to FX risk, such as emerging countries, including Serbia.

In practice and in newer theory it has been shown that in case of small and open economies, especially with emerging countries, the exchange rate and FX interventions play an important role in the attainment of the main objectives of monetary authorities. In countries with a high level of exposure to a foreign currency (euroisation or dollarisation), there is a very strong transmission effect of exchange rate oscillations onto prices. At the same time, a more pronounced accumulation of FX risk in these countries, stemming from the high level of euroisation (dollarisation), results in noticeable oscillations in the value of the local currency seriously impairing financial stability, which is particularly pronounced in crisis conditions.

In such conditions, active use of FX interventions aimed at preventing high fluctuations in the exchange rate is one of the pillars for the achievement of multiple objectives. Depending on the specific economy and the market's level of development, different forms of FX interventions can be a very efficient monetary policy tool for maintaining inflation at a target level, preserving financial stability, reducing the accumulation of market risks in the economy and increasing the resilience of the domestic economy to external shocks.

Efficiency, timeliness and adequacy of interventions in the FX market

The example of Serbia clearly shows the efficiency of timely and well-measured FX interventions for the achievement of various objectives. The relative stability of the exchange rate plays an important role in the Serbian economy, which is characterised by the still high degree of euroisation (though with a clear downward path). Besides providing a key contribution to the attainment of its main objectives – price and financial stability – the relative stability of the exchange rate, which the NBS has successfully maintained for the past eight years, has also contributed to the following:

- creation of the room for a successful fiscal consolidation (by mitigating the previous trend of high, almost two-digit annual weakening of the dinar and rise in the prices which constitute significant "living expenses"),
- reduction in the level of non-performing loans (NPLs),
- narrowing external and internal imbalances,
- increasing the certainty of business,
- making the domestic environment more attractive to domestic and international investors,
- lowering the country risk premium, and in turn,
- lowering the country's costs of borrowing in the local and international markets.

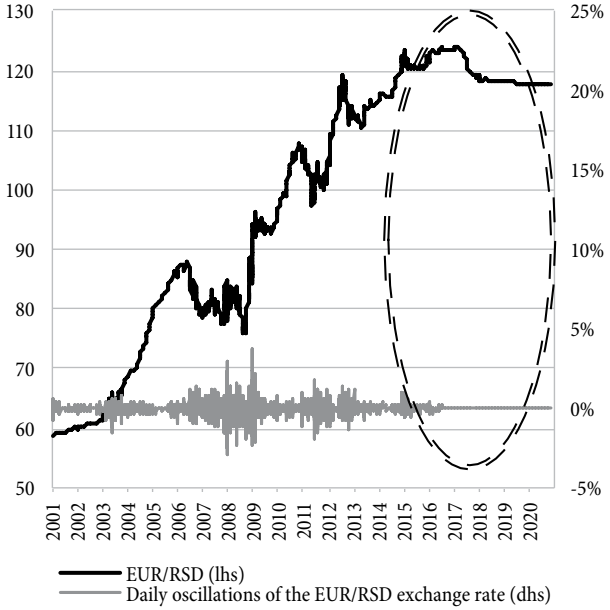
All of this together makes the relative stability of the exchange rate one of the main pillars of Serbia's monetary, financial and macroeconomic stability, i.e., a monetary anchor for the overall economic stability in the country, taking into account all the specificities of the local economy. Thus, it is no wonder that the relative exchange rate stability has become the "new normal" in Serbia (Figure 7). However, success did not come over night, or by accident, but is the result of hard work and investment in stability, which helped restore the credibility of the NBS to the high place where it belongs.

The credibility which the NBS built up over the past years has contributed significantly to the fact that investor confidence has not been shaken – the confidence in price stability, in financial system stability, as well as in the relative stability of the exchange rate. Timely measures taken immediately upon the outbreak of the COVID-19 crisis, transparency and credibility prevented a negative spiral that could have been caused by psychological and panic reactions of market players, involving a sudden capital outflow and a consequently significant depreciation of the local currency – a scenario experienced by many other emerging markets.

Prudent behaviour implies a certain degree of countercyclical activity in financial markets – for the forthcoming crises which take place at the global level every five to ten years. Thus, amplitudes are shortened, and oscillations distributed over a longer period; combined, this eases the negative impact on the domestic financial market and the economy. The NBS also acted prudently, and the high and adequate level of FX reserves, inter alia, is also a result of such approach. In times of dominant appreciation pressures (from April 2017 through 2019), which have been present over the past years due to the strengthening of Serbia's macroeconomic fundamentals, the NBS acted proactively – by buying foreign currency (in the net amount of more than EUR 5.3 bn), thus increasing the country's FX reserves and creating buffers for potential future shocks, which indeed materialised in March 2020.

In conditions which give rise to downward pressures on the domestic currency, such as the ongoing uncertainty in the international environment caused by the global pandemic, the NBS exercises caution in making use of the FX reserves which it had increased earlier. To preserve the stability of the FX market, the NBS's presence in this market during 2020 was mostly on the side of FX sale. In 2020, the NBS net sold EUR 1,450 mn via FX interventions, while the value of the dinar vis-à-vis the euro remained almost unchanged (Figures 8 and 9).

Figure 7: Relative stability of the EUR/RSD exchange rate is the new normal



Source: NBS.

If we compare the volume of interventions in 2020 with the previous year (2019), when the NBS net bought EUR 2,695 mn via FX interventions, we can see that it is not significantly high (i.e., that it is 46% lower y-o-y), especially taking into account the scope of the pandemic-induced effects on the global economy.

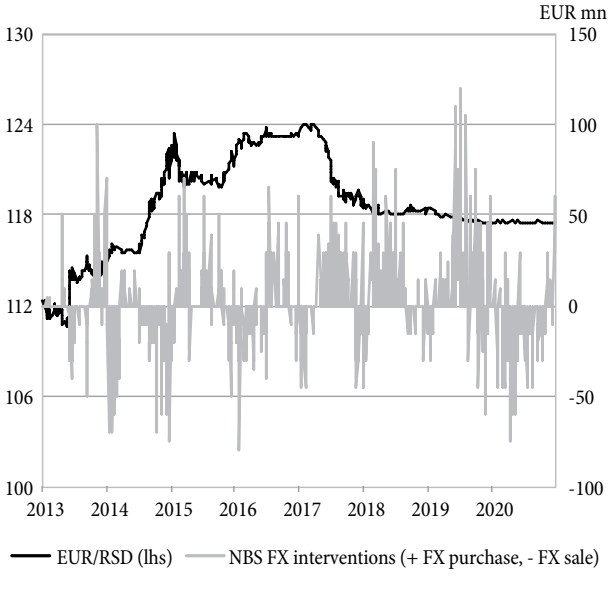
Assessment of the impact of the COVID-19 pandemic on Serbia's FX market

To make an accurate estimate of the effect of the coronavirus crisis on Serbia's FX market, a detailed analysis was conducted into the impact of the crisis on the key factors that affect movements in the domestic FX market, which explain it almost entirely. The analysis shows that all factors that had had an appreciation or a reduced depreciation effect in the previous years, had a stronger depreciation effect in 2020, particularly in Q2 2020, as a direct consequence of the COVID-19 crisis.

The factors explaining almost all of the developments in the Serbian FX market can be classified into five categories:

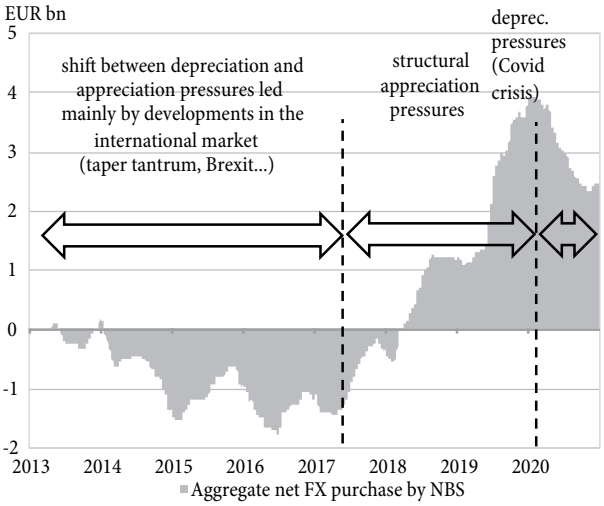
1) residents,
2) non-residents,
3) foreign cash (FC),
4) net indexed bank assets, and
5) non-resident payment cards.

Figure 8: EUR/RSD exchange rate and FX interventions



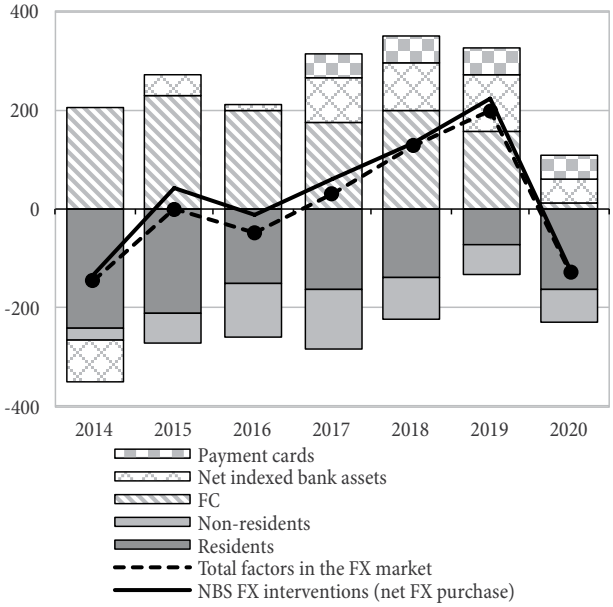
Source: NBS.

Figure 9: Aggregate amount of NBS's FX interventions – contribution to growth of FX reserves in the period of appreciation pressures and cautious spending in times of crisis



Source: NBS.

Figure 10: Factors affecting movements in Serbia's FX market – monthly averages by year (in EUR mn)



Sources: NBS and author's calculations.

The first factor pertains to bank transactions with local companies, that is, it describes the activities of local companies, mostly import-export ones. The second factor pertains to bank transactions with non-residents, mostly foreign investment banks and funds. This factor directly reflects foreign investments in domestic dinar securities and, in addition to portfolio investments, it also includes other non-resident activities in the local market (e.g., dividend payments). The third factor pertains to the transactions of banks and authorised exchange dealers in foreign cash. The fourth mostly indicates the disbursement or repayment of FX-indexed loans and deposits to residents, i.e., domestic companies. To align their FX positions and reduce exposure to FX risk on this account, the disbursement/repayment of FX-indexed loans often leads to the need for banks to sell/buy foreign currency in the interbank FX market. The fifth factor mostly pertains to the non-resident use of payment cards in Serbia with an almost identical effect on banks' FX positions as the disbursement of FX-indexed loans, which creates the need for banks to appear on the interbank FX market to close their open positions in their balance sheets due to the fact that when non-resident FX cards are used for dinar payments, the foreign currency must be converted to dinars, therefore this factor mostly creates an appreciation effect.

To obtain a relevant image of the impact of individual factors, monthly averages by year were analysed in the period from 2014 until 2020. In previous years, a certain trend was established with individual factors, and changes in the movements of all factors following the outbreak of the COVID-19 crisis (as of March 2020) are visible and can be directly attributed to the impact of the pandemic on the economy. An analysis of these factors in combination with data about the NBS's FX interventions shows that almost the entire gap between FX supply and demand was absorbed via FX interventions, i.e., that they were neither too high (they did not lead to a change in the established trend of the real exchange rate), nor too low, but sufficient and adequate in the amount so as to be efficient in alleviating pressure on the exchange rate (Figure 10).

Considerably higher FX demand relative to the supply created a gap generating depreciation pressures, which was mostly absorbed by the central bank's FX interventions. In 2019 we saw an entirely different situation, when the FX supply was higher than the demand, creating appreciation pressures on the dinar – which were again mostly absorbed by the central bank's FX interventions, though in the opposite direction. The major part of the change from net FX supply in 2019 to net FX demand in 2020 and the consequent creation of depreciation pressures in the FX

market in the wake of the COVID-19 crisis outbreak can be explained through the effect of two factors – the first and the third one – residents and the FC. This shows that the COVID-19 crisis had the greatest impact on these factors, notably in the second quarter of 2020, when the effects of the crisis on developments in the real sector and the FX market were the most pronounced. In Q2 2020, the NBS net sold EUR 845 mn in the interbank FX market, which is more than a half (58%) of the total amount of net FX sale in 2020. In the remainder of the year, the effect of the COVID-19 pandemic on the economy was weaker, therefore the need for the NBS's FX interventions also diminished. It was precisely the NBS's staunch determination to reaffirm its unambiguous intention to preserve the stability of the domestic financial market during the crisis that averted a stronger exit of non-resident investors from the Serbian market. During May, one of the major non-resident participants implemented a "hedging strategy" in a larger amount, instead of doing a classical exit (by selling in the secondary market) from dinar positions (long-term government securities). Having confirmed that stability in the domestic FX market has no alternative and that the NBS is firmly resolved to prevent the transmission of uncertainty from the global to the local market, after only around ten days we had transactions in the opposite direction, hedging positions were closed, and the NBS's FX purchases almost annulled the effect on FX reserves. In legal terms, a clear signal of stability created a *restitutio in integrum* (return to the original condition).

If we observe resident activity in the previous years, there is a noticeable growth trend in FX supply and demand of domestic companies, indicating rising economic activity in Serbia. FX supply recorded faster growth than FX demand (mostly due to the increase in exports and FDI), sending net FX demand down for the past several years, which indicates increasingly better-balanced FX supply and demand flows. However, in 2020 we saw a significantly higher net FX demand of domestic companies, notably due to the reduced FX supply by local corporates. In 2020, net FX demand of residents was 124% higher on average than the monthly average in 2019 (and the highest since 2015). Growth in net FX demand is primarily the result of the lockdown and enforcement of containment measures to protect the lives of people, which led to the expectedly much lower FX inflow under export and FDI, i.e., it opened the gap between FX supply and demand of domestic companies. On the other hand, the need to pay for the import of certain strategically important companies – energy importers, as well as the import of the necessary medical equipment, with stepped up activities of companies in the ICT industry, maintained a somewhat higher level of FX demand in an environment of dampened economic activity.

During the previous years, the FC has been a factor with a strong appreciation effect. Since the outbreak of the coronavirus crisis, specifically in Q2 and Q3 2020, the net supply of FC changed into net demand for foreign cash, which is largely a consequence of the reduced supply of and to a lesser degree of growing demand for foreign cash. This can be correlated with: 1) the spread of the COVID-19 epidemic, enforcement of the emergency state and subsequently much lower FC inflow from the local population, 2) subdued inflow of remittances, and 3) reduced inflow of foreign tourists to Serbia.

These two factors (residents and FC) explain three fourths (73%) of the change in the trend in the FX market in 2020 relative to 2019, i.e., the shift from an environment of excess FX supply (appreciation pressures) to an environment of excess FX demand (depreciation pressures). At the same time, the largest percentage of

Table 4: Contribution of individual factors in the local FX market to the explanation of the change in the trend in 2020 relative to 2019

	Factors affecting movements in the domestic FX market				
	Residents	Non-residents	FC	Net indexed bank assets	Payment cards
"% of explanation of the change in the trend in 2020 relative to 2019 (% of the explanation of the gap between FX supply and demand in 2020 relative to 2019)"	28%	3%	45%	20%	3%

Sources: NBS and author's calculations.

the explanation (45%) pertains to transactions with FC (Table 4). The biggest impact of the COVID-19 crisis on both factors was recorded at the very onset of the crisis, that is, in the first months after it broke out.

Observing the activity of non-residents over the past several years, we see that FX demand of banks' foreign clients was on the rise until 2017. However, in 2018 and 2019, the years in which all of the positive macroeconomic changes that had been implemented in Serbia began to be reflected, we also saw a much higher foreign capital inflow – non-residents increased their FX supply and their investment in long-term dinar government securities. FX supply in 2018 increased by almost 50%, and in 2019 it was even higher. Along with a constant FX demand, this subdued foreign companies' net FX purchase and lowered depreciation pressures, i.e., contributed to appreciation pressures. However, since the outbreak of the COVID-19 crisis, there was a slowdown in investment activities during the period of heightened global uncertainty, which resulted in an increase in net FX demand by non-residents. Simultaneously, the reduction in non-resident FX supply was much bigger that the cut in the demand (comparing monthly averages for 2020 and the prior year, non-resident net FX demand was 17% higher this year than the year before). Still, not even then did we record a major capital outflow from Serbia or an exit from dinar government securities. Stepped-up FX demand is largely attributable to hedging activities implemented at the very onset of the crisis, which were promptly relaxed, creating situations in which the NBS appeared on the FX purchase side in certain periods during the crisis.

Despite depreciation pressures caused by the impact of the COVID-19 crisis on economic and investment activity and citizen behaviour, the dinar remained stable relative to the euro as a benchmark foreign currency in Serbia. What contributed to the dinar remaining stable is the timely and well-measured reaction of monetary authorities – measures implemented to mitigate the negative effects of the pandemic on the domestic economy which had a soothing effect on market participants, economic entities and citizens, together with FX interventions.

In an environment of psychologically increased citizen demand for FC at the very start of the coronavirus crisis, one of the activities critical for maintaining the stability of the financial system's functioning in a state of emergency was associated with supplying foreign cash to banks. In a situation where the borders of all European countries were closed, i.e., when correspondent banks (which supply cash to banks in ordinary times) did not carry out their activities in terms of supplying this form of foreign money, the NBS was the only resort for banks. The NBS also responded by adopting appropriate regulations, which create a legal framework for banks to have enough foreign cash to meet household demand at any point.

To this end, the NBS adopted two instructions in mid-March:

1. Instruction about bank conduct in order to regulate the need for foreign currency in a state of emergency, and
2. Instruction about the highest daily deposit payment to natural persons in foreign currency in a state of emergency.

According to the first instruction, the bank shall settle up to 75% of the stock of FC as at 16 March 2020 (a day after the emergency state was declared) from its own assets, after which it shall reach out to the NBS to obtain additional assets, should a need arise. The adoption of this instruction ensured adequate conduct of banks in their requests for FC so as to realise all client applications without jeopardising financial system stability. This way, banks were directed to make a rational use of their own assets, knowing that they would be able to get the amount they needed from the NBS at any time. Accurate mechanisms were also developed to establish the stock of and the need for FC. This assuaged the negative psychology that initially emerged in the market. Even after the termination of the emergency state, the NBS continued to ensure the necessary amount of FC to banks in accordance with this instruction.

The second instruction prescribed that a natural person may draw a maximum of EUR 50,000 in FC in a single day, from a single bank. The aim of this instruction was to ensure adequate liquidity risk management by banks. At the same time, this alleviated the panic behaviour of households in the form of requests for high daily pay-outs of FC at the very start of the crisis, given that such inadequate behaviour of wealthier individuals could have

posed a threat to pay-outs to other citizens who queued in banks waiting to draw much smaller amounts. In July, as the situation relaxed, the average daily limit was raised to EUR 100,000.

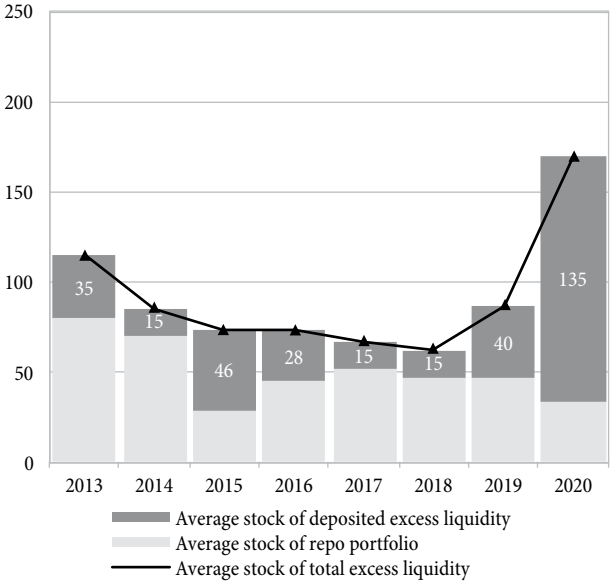
Effects of the COVID-19 crisis on liquidity

The NBS responded to the crisis not only in the FX market, but maintained stability in all segments of the financial system. This also meant providing liquidity to ensure continuous and unhindered functioning of all financial flows. Another indicator that the NBS and Serbia were well prepared to face the heightened uncertainty is the fact that the banking sector entered the crisis in an environment of high excess liquidity. Dinar surpluses (funds held by banks with the NBS in the form of repo portfolio or deposit facilities, which exceed the level of reserve requirements) averaged over RSD 100 bn in the pre-crisis period. In order to alleviate a potentially negative psychological effect (i.e., to prevent panic), and by applying a proactive approach, apart from the initial lowering of its main interest rates, the NBS also implemented a set of conventional and unconventional measures to boost the liquidity of the banking and, by extension, of the real sector.

Bank demand for liquid assets peaked at end-March 2020 as bank clients – companies facing financial turbulences, demanded an unusually high amount of dinar cash fearing potentially sharper reductions in cash flows. However, in contrast to 2008, banks managed to meet the elevated demand for liquid assets without financial constraints because bank liquidity and capital were much more robust on the eve of the COVID-19 crisis compared to the period preceding the 2008 crisis. An additional reason was that the total liquidity supply of central banks came at the right time – at the very start of the crisis, with central banks taking the role of lenders of first resort [10]. This is also confirmed by the example of the NBS, which at the very onset of the COVID-19 pandemic in Serbia responded by applying well-calibrated instruments, sending a clear soothing signal to the financial market, corporates and households that it would give full support to the domestic financial and overall economic system in order to minimise the consequences of the virus.

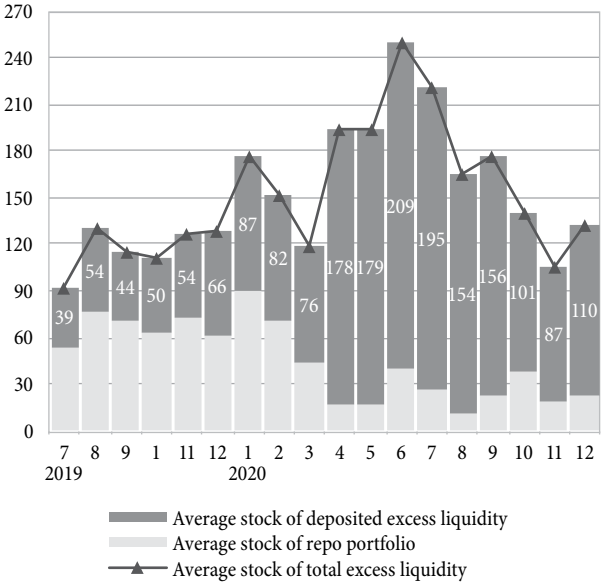
Comparing liquidity movements in the period before and during the COVID-19 crisis, it can be concluded that the Serbian banking sector enjoyed excess liquidity over a longer period and that bank liquidity was extremely high even before the crisis-motivated activities and operations of the NBS (Figures 11 and 12). Excess dinar liquidity observed as a sum of deposit surpluses and repo stock averaged around RSD 130 bn since mid-2019 until the state of emergency was declared (March 2020). After the

Figure 11: Average stock of repo securities sold and deposited excess liquidity (by year, in RSD bn)



Source: NBS.

Figure 12: Average stock of repo securities sold and deposited excess liquidity (by month, in RSD bn)



Source: NBS.

measures taken by the NBS, excess liquidity expanded further, averaging over RSD 170 bn from March until December 2020, and declining to around RSD 133 bn[1] in December.

The analysis of factors which determined liquidity movements in the prior period indicates a change in the direction and significance of individual factors which affected liquidity movements before and after the COVID-19 pandemic. While banking sector liquidity increased in the last two years, the direction and intensity of the most important factors which impacted liquidity creation and withdrawal was entirely inverse. Thus, in 2019, banking sector liquidity rose by RSD 71.8 bn, owing to monetary policy factors, i.e., NBS activities in the FX market which drove liquidity up by RSD 357.1 bn, while open market operations resulted in the withdrawal of RSD 53.5 bn worth of liquidity. Still, that volume is smaller than liquidity withdrawn through government activities – RSD 241.7 bn. On the other hand, a RSD 93.0 bn liquidity increase in 2020 was driven primarily by NBS open market operations (RSD 180.0 bn), and to a lesser extent by government activity (RSD 70.2 bn), while the major portion of liquidity created in this way was withdrawn through NBS activities in the FX market (-RSD 153.2 bn).

If the government and the NBS are observed as a single "state economic apparatus", i.e., two interconnected institutions working on the same task (which some modern economic theories advocate as one of the starting premises) – preserving stability and growth and ensuring favourable macroeconomic conditions for sustainable growth – their coordination and joint actions can also be confirmed on the example of liquidity movements. In 2019, same as throughout the period of fiscal consolidation initiated in late 2015, the government impacted liquidity withdrawal, which was more than compensated for by liquidity creation based on monetary policy factors, i.e., NBS activities – mainly FX purchases in the FX market, which was supported by the appreciation trend in place since mid-2017. Conversely, liquidity created through government activities in 2020, taken predominantly to overcome the consequences of the COVID-19 pandemic and support citizens and businesses, although significantly supplemented by liquidity created in NBS open market operations, was also largely withdrawn in NBS FX market operations (Figure 13). The NBS's presence in the FX market was characterised mainly by FX sale interventions, prompted by depreciation pressures present in a major part of 2020, which also determined the sterilisation effect of monetary policy measures.

Being one of the key factors channelling liquidity, the government impacted liquidity withdrawal mainly through higher collected revenue which exceeded expenditure, while in the major part of the period observed securities had a much weaker net effect of liquidity withdrawal and in 2016 and 2017 even worked towards liquidity creation (Table 5). However, in 2020 this trend was reversed and liquidity was created based on actual expenditure exceeding revenue, with 67% of liquidity created in this manner being withdrawn based on the net effect of sale exceeding the maturing/early redemption of government securities. The highest amount of liquidity in terms of expenditure exceeding revenue by RSD 225.3 bn was created in the period from March until end-June, primarily as a result of measures taken by the government within the Programme of Economic Measures to Mitigate the Negative Effects Caused by the COVID-19 Pandemic and Support the Serbian Economy in the areas of tax policy, direct support to the private sector, preserving corporate liquidity, a moratorium on dividend payment until the end of the year, one-off assistance to households, and corporate loans based on the Guarantee Scheme (although slightly higher liquidity in the amount of RSD 54.6 bn was created in December, which is usual for the end of the year).

From March until end-May, banking sector liquidity rose by RSD 137.6 bn, and in the period thereafter, concluding with October, it gradually declined by a total of RSD 83.3 bn. Already in November, there was a slight increase in liquidity in the amount of RSD 7.8 bn, to intensify its creation in December in the amount of as much as RSD 61.4 bn, which is, although usual for December, slightly higher than in previous years. Based on government activity only, banking sector liquidity in this period increased by RSD 70.2 bn (from March until June in the total amount of RSD 148.7 bn), while NBS activities since

1 On 10 June 2020 total dinar excess liquidity equalled as much as RSD 331.9 bn, the highest level on record.

the introduction of the state of emergency, until the end of the year, created RSD 50.3 bn worth of liquidity (more precisely, via its open market operations the NBS provided support to the banking sector supplying RSD 180.0 bn worth of liquidity, while its FX market operations resulted in the withdrawal of RSD 129.7 bn).

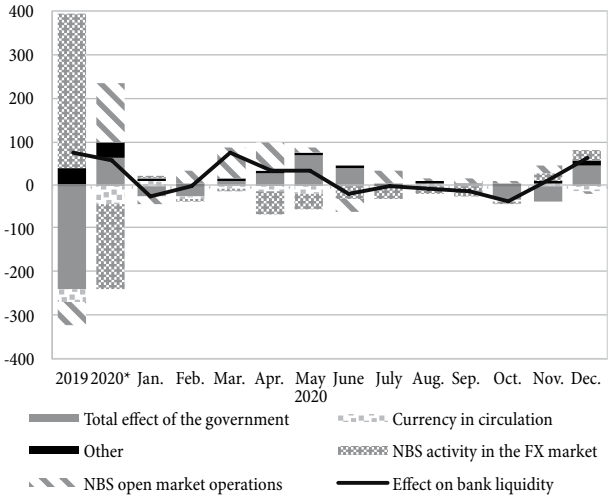
Although the banking sector had excess dinar liquidity at the start of the COVID-19 crisis, the NBS acted pre-emptively and proactively by providing banks with additional dinar and FX liquidity, in order to create conditions for unhindered lending activity. To this end, it implemented repo and swap operations already in March and continued to apply such changed method of FX swap auctions until end-June. After these initial measures, liquidity grew mainly as a result of transactions of bilateral purchases of government securities from banks (RSD 97.0 bn) in April and May and, to a certain extent, as a result of outright purchases of corporate bonds (RSD 25.2 bn) in September (Table 6). Along with the reduction of liquidity surpluses before the end of the year, the NBS met the needs of banks by reorganizing swap and repo purchases on a

Table 5: Government effect on liquidity (in RSD bn)

	Total effect of the government	Expenditures exceeding revenues	Net effect of securities
2015	-43.4	25.8	-69.2
2016	-39.8	-93.7	53.9
2017	-145.6	-200.4	54.8
2018	-226.5	-185.3	-41.1
2019	-241.7	-214.7	-27.0
2020	70.2	211.7	-141.5
Jan-20	-25.0	-27.4	2.4
Feb-20	-25.0	-12.8	-12.3
Mar-20	11.9	18.3	-6.4
Apr-20	28.8	34.3	-5.5
May-20	70.1	112.3	-42.2
Jun-20	37.9	60.4	-22.5
Jul-20	-3.2	3.1	-6.3
Aug-20	-2.9	3.5	-6.4
Sep-20	1.4	3.2	-1.8
Oct-20	-34.4	-19.8	-14.6
Nov-20	-35.7	-18.1	-17.7
Dec-20	46.3	54.6	-8.2

Source: Ministry of Finance and NBS.

Figure 13: Liquidity creation factors in 2019 and 2020 (in RSD bn)



Source: NBS.

Table 6: NBS activities in the FX market and open market in emergency situation (in RSD bn)

	NBS activities in the FX market				NBS open market operations						Total
	NBS interventions - net	Regular swaps	Additional swaps	Total FX market	Reverse repo - main operation	Repo purchase - longer maturity	Repo purchase - fine tuning	Outright purchase of gov. securities	Outright purchase of corporate bonds	Total open market	
March*	3.5	0.0	14.9	**18.4**	60.0	20.5	1.0	0.0	0.0	**81.5**	**99.9**
April	-46.4	-5.6	0.0	**-52.1**	-5.0	0.0	-1.0	70.1	0.0	**64.1**	**12.0**
May	-31.2	-2.1	0.0	**-33.3**	-5.0	-9.8	0.0	26.9	0.0	**12.1**	**-21.1**
June	-20.0	2.8	-15.0	**-32.1**	-20.0	-10.7	0.0	0.0	0.0	**-30.7**	**-62.8**
July	-34.7	6.5	0.0	**-28.2**	25.0	0.0	0.0	0.0	0.0	**25.0**	**-3.2**
August	-18.8	-1.5	0.0	**-20.3**	2.0	0.0	0.0	0.0	0.0	**2.0**	**-18.3**
September	-17.6	0.0	0.0	**-17.6**	-17.0	0.0	0.0	0.0	25.2	**8.2**	**-9.4**
October	-11.8	0.0	0.0	**-11.8**	5.0	0.0	0.0	0.0	0.0	**5.0**	**-6.8**
November	13.5	0.0	5.1	**18.6**	10.0	7.6	0.0	0.0	0.0	**17.6**	**36.2**
December	9.4	0.0	19.3	**28.7**	-15.0	7.8	0.0	0.0	2.3	**-4.8**	**23.8**
Total 18.3 - 31.12. * since 18 March	**-154.0**	**0.0**	**24.3**	**-129.7**	**40.0**	**15.4**	**0.0**	**97.0**	**27.5**	**180.0**	**50.3**

Source: NBS.

weekly basis. In this way, the NBS provided banks with additional liquidity in the amount of about RSD 40 bn in November and December.

All these activities ensuring additional liquidity in crisis conditions reflected also on the rise of money supply, which recorded higher growth rates since March 2020 (Table 7, Figure 14). Starting from March 2020 and concluding with November, the expansion of M1 (including currency in circulation and dinar transaction deposits of non-government sector) as an indicator of money demand, reached a two-digit rate of almost 30% (29.9%), while in the same period of 2019 money supply in the narrowest sense rose at much more moderate rate of 17.3% (according to operational data for December, M1 growth from March until December 2020 amounted to as much as 40.3%). Dinar money supply in a broader sense – M2 (which in addition to M1 includes dinar savings and term deposits) also recorded somewhat stronger growth in this period (25.0%), as opposed to 16.8% in the same period of 2019 (according to operational data for December, M2 growth from March to December 2020 equalled 34.1%). Money supply in the broadest sense – M3 (which apart from M2 also includes FX deposits) increased by 14.6%, compared to 6.3% in the same period of 2019 (according to operational data for December, M3 growth from March to December 2020 amounted to 18.7%).

Strong growth in dinar money supply in this period resulted largely from government activity, i.e., measures taken within the Programme of Economic Measures to Mitigate the Negative Effects Caused by the COVID-19

Table 7: Money supply growth rates (in %)

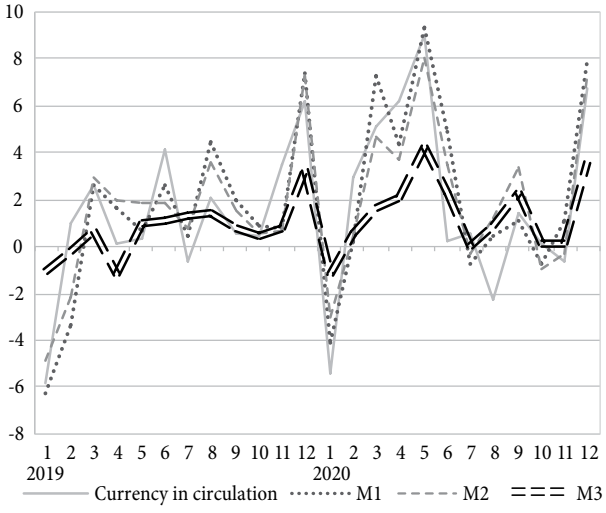
	Annual growth rates				Monthly growth rates				Y-o-Y growth rates			
	Currency in circulation	M1	M2	M3	Currency in circulation	M1	M2	M3	Currency in circulation	M1	M2	M3
2018												
Sep.	4.4	3.6	5.2	4.9	4.8	0.6	0.7	0.0	16.5	15.1	13.5	8.2
Oct.	0.6	5.6	6.0	6.5	-3.6	2.0	0.8	1.6	16.1	15.9	14.4	9.5
Nov.	2.1	7.3	7.5	6.8	1.5	1.5	1.5	0.2	16.2	15.9	14.3	8.4
Dec.	11.4	18.3	16.7	14.5	9.1	10.3	8.5	7.2	11.4	18.3	16.7	14.5
2019												
Jan.	-5.8	-6.3	-4.9	-1.1	-5.8	-6.3	-4.9	-1.1	19.9	16.2	16.0	14.9
Feb.	-4.9	-9.4	-6.9	-1.3	0.9	-3.4	-2.1	-0.2	19.4	15.7	15.3	15.0
Mar.	-2.4	-7.1	-4.2	-0.7	2.6	2.6	2.9	0.7	17.3	16.4	16.2	14.8
Apr.	-2.4	-5.5	-2.3	-1.9	0.1	1.7	2.0	-1.2	16.9	15.1	15.4	12.5
May	-2.1	-4.9	-0.6	-0.9	0.3	0.7	1.8	1.0	17.5	12.8	14.2	11.2
June	1.9	-2.4	1.3	0.1	4.1	2.6	1.9	1.1	17.0	15.5	15.4	11.2
July	1.3	-1.9	2.1	1.4	-0.6	0.5	0.8	1.3	15.8	15.2	15.9	12.2
Aug.	3.4	2.5	5.8	2.8	2.1	4.4	3.6	1.4	15.7	17.8	18.2	12.3
Sep.	4.0	4.5	7.4	3.6	0.5	2.0	1.5	0.8	11.0	19.3	19.2	13.1
Oct.	4.5	5.4	8.0	4.1	0.5	0.9	0.6	0.5	15.7	18.1	19.0	11.9
Nov.	8.1	6.2	8.7	4.9	3.5	0.7	0.6	0.8	18.0	17.2	18.0	12.5
Dec.	14.8	14.0	16.6	8.4	6.2	7.4	7.3	3.3	14.8	14.0	16.6	8.4
2020												
Jan.	-5.4	-4.1	-3.0	-1.2	-5.4	-4.1	-3.0	-1.2	15.3	16.7	18.9	8.2
Feb.	-2.6	-3.9	-2.6	-0.7	3.0	0.2	0.4	0.5	17.6	21.1	22.0	9.0
Mar.	2.4	3.2	2.0	1.0	5.1	7.3	4.7	1.7	20.4	26.6	24.1	10.1
Apr.	8.7	7.7	5.8	3.1	6.2	4.4	3.7	2.1	27.8	29.9	26.3	13.8
May	18.5	17.8	14.3	7.5	9.0	9.4	8.0	4.3	38.9	41.2	34.0	17.6
June	18.7	23.5	18.3	10.0	0.2	4.9	3.5	2.3	33.7	44.3	36.1	19.0
July	19.4	22.6	17.9	10.0	0.5	-0.7	-0.4	0.0	35.2	42.5	34.6	17.6
Aug.	16.7	23.1	19.3	11.0	-2.2	0.4	1.2	0.9	29.5	37.0	31.5	17.0
Sep.	18.3	24.5	23.3	13.6	1.4	1.1	3.4	2.3	30.6	35.9	33.9	18.8
Oct.	18.5	23.5	22.1	13.7	0.2	-0.8	-1.0	0.1	30.2	33.6	31.8	18.4
Nov.	17.8	24.9	21.7	13.9	-0.6	1.1	-0.3	0.2	25.0	34.1	30.6	17.6
Dec.	25.7	34.9	30.6	17.9	6.7	8.0	7.2	3.6	25.7	34.9	30.6	17.9

Source: NBS.

Pandemic and Support the Serbian Economy, as well as from credit activity which had been the major driver of money supply growth before the outbreak of the current crisis (and in September). In addition, the growth of foreign currency deposits was almost evenly driven by household deposits and corporate deposits.

In monthly terms, after a usual seasonal contraction in the first two months of 2020, only in the period from March to June, money supply M1 went up by 28.4% and M2 by 21.4%, with the strongest monthly growth recorded in May – 9.4% and 8.0%, respectively. In June, M1 growth was almost halved, at 4.9%, and M2 at 3.5%, while July even saw a contraction in M1 by 0.7% and in M2 by 0.4%. August witnessed a moderate growth in M1 of 0.4% and in M2 of 1.2%, with the slight acceleration in September – to 1.1% and 3.4%, respectively, mainly due to additional government payments in early September. However, in October there was a decline in M1 by 0.8% and M2 by 1.0%, to mitigate the downward trend in M2 (-0.3%) in November and reverse the downward trend in M1, when a slight increase of 1.1% was registered in the narrowest defined money supply. According to the operative data for December, the dinar money supply M1 and M2 recorded a higher growth of 8% and 7.2%, respectively, which is its usual movement at the end of the year, when the government realizes the largest part of its expenditures.

Figure 14: Monthly growth rates for currency in circulation, M1, M2, M3 (in %)



Source: NBS.

In structural terms, the major part of M1 growth, which was the most dynamic, in the period March–June originated from the rise in transaction deposits (81.5%), while a smaller part (18.5%) referred to currency in circulation. Due to the deferred payment of tax liabilities and moratorium on loan repayment, the funds remained in current accounts, while lower consumption due to uncertainty and greater caution of households resulted in somewhat higher growth of currency in circulation. That this is a temporary effect is confirmed also by the data on slower growth of currency in circulation already in June and its fall in August, which coincides with the evolution of the pandemic in our country. In September already, currency in circulation mildly increased, given the payment of 60% of the minimum wage. October saw stabilisation and there was a slight decline in November. Significant growth of cash in circulation in December is usual for the end of the year, both due to increased payments and due to the arrival of our citizens from abroad before the holidays, but due to the worsening epidemiological situation and consequent measures taken, there was no significant spending in 2020. After May and June, the effect of government activity was much softer, and lending took over the role that the government had played in money creation during the state of emergency and containment measures. A significant impetus to the accelerated growth of money supply in September came from the issuance of corporate bonds as a source of financing investment activities. The decline in money supply in October and November, and then its significant growth in December, was dominated by the government.

These and similar movements are typical for most economies that took comparable measures in order to contain the economic fallout from the pandemic (policy rate cuts, expanded asset purchase programme, introduction of new, extraordinary liquidity supply programmes, packages of measures to support corporate financing, additional repo auctions, etc.).

The increase in money supply always gives rise to concerns about inflation, especially when this increase is not accompanied with the same rates of production growth, given that according to the quantitative money theory, every monetary growth in the long run reflects on

inflation. However, the latest experiences with quantitative facilities showed that money supply increased in this way did not reflect on inflation after all, because price growth was also under the impact of a series of other factors. On the other hand, monetisation of the fiscal deficit may generate inflation, especially in less developed economies where stronger money supply growth, after a certain period, may trigger a rise in consumption and prices. In that case, the

Table 8: Money supply M1 by country (monthly growth rates, in %)

	USA	EU	UK	Serbia	Canada	Australia	Czech Republic	Poland	Romania	Bulgaria	North Macedonia	Croatia	BIH
February	-1.0	1.0	1.1	0.2	0.7	-0.2	1.4	2.2	0.6	0.2	1.6	0.9	0.9
March	8.8	3.0	6.8	7.3	3.1	8.7	3.2	6.3	4.7	1.4	4.0	5.2	1.2
April	13.1	1.8	1.3	4.4	5.4	3.7	1.5	4.1	1.7	1.5	1.3	0.3	0.9
May	3.4	1.3	2.5	9.4	3.9	0.7	2.4	4.9	2.0	1.5	1.9	2.3	0.4
June	4.0	0.8	1.3	4.9	3.7	2.6	1.5	4.3	0.5	0.6	2.7	1.9	1.0
July	2.2	1.1	0.7	-0.7	2.1	2.4	1.2	1.0	0.8	1.6	1.2	1.5	2.1
August	0.8	0.4	0.6	0.4	2.3	1.1	1.1	1.4	1.9	1.5	0.1	1.9	1.9
September	1.6	0.7	0.9	1.1	2.0	2.0	1.9	1.7	2.7	1.9	1.4	-0.2	0.3
October	2.0	1.0	1.7	-0.8	1.5	1.2	0.8	1.9	1.8	1.1	-0.9	0.4	1.3
November	8.6	1.4	1.3	1.1	1.3	1.2	0.6	1.5	2.4	1.3	1.0	2.0	0.8
Period February-November	52.1	13.3	19.5	30.2	29.1	25.7	16.6	33.2	20.8	12.1	15.2	17.6	11.3

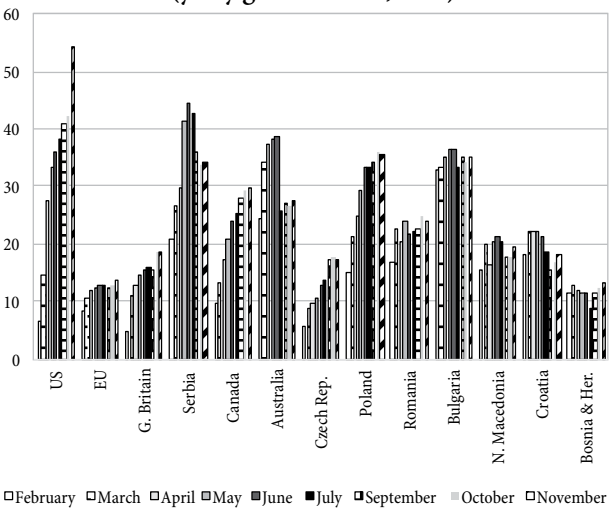
Source: Websites of selected central banks.

Table 9: Money supply M1 by country (y-o-y growth rates, in %)

	USA	EU	UK	Serbia	Canada	Australia	Czech Republic	Poland	Romania	Bulgaria	North Macedonia	Croatia	BIH
February	6.6	8.2	5.0	21.1	9.9	24.5	5.6	15.0	16.9	33.0	15.5	18.1	11.4
March	14.4	10.4	11.0	26.6	13.2	34.0	9.0	21.2	22.6	33.3	19.9	22.1	13.0
April	27.5	12.0	12.7	29.9	17.3	37.4	9.8	25.0	20.6	34.9	16.6	22.2	12.1
May	33.2	12.6	14.7	41.2	20.7	38.1	10.9	29.2	24.2	36.7	20.2	22.4	11.6
June	36.2	12.8	15.5	44.3	24.0	38.7	13.0	33.4	21.9	36.4	21.3	21.3	11.7
July	38.1	13.0	16.1	42.5	25.4	25.9	14.0	33.4	22.2	33.2	20.3	18.6	8.7
August	39.6	12.4	15.5	37.0	27.1	26.4	14.7	34.2	22.6	33.7	18.2	16.8	10.8
September	40.9	12.6	15.7	35.9	28.0	27.0	17.2	34.3	22.7	35.0	17.8	15.4	11.5
October	42.1	12.9	18.5	33.6	29.3	26.8	17.7	35.9	24.8	34.1	18.0	17.0	12.4
November	54.2	13.8	18.7	34.1	29.9	27.5	17.3	35.5	23.8	35.3	19.6	18.2	13.3

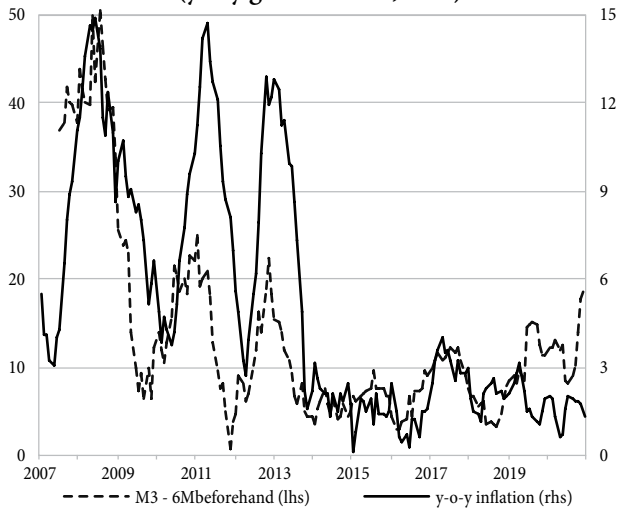
Source: Websites of selected central banks.

Figure 15: Money supply M1 by country (y-o-y growth rates, in %)



Source: Websites of selected central banks.

Figure 16: Money supply M3 and inflation (y-o-y growth rates, in %)



Source: NBS.

response of competent authorities may be a combination of interest rate rise and quantitative tightening, as well as cutting down government spending and raising taxes, which would lead to lower purchasing power. Since we are currently facing the risk of a cash crisis, some analyses of alternative fiscal policies [2], such as deferral of taxes and bridging loans, which governments could apply in order to reduce the risk of cash crisis, suggest that bridging loans are more economical in averting a large-scale cash crisis within six months after the shock.

In the case of Serbia, money supply aggregates M1 and M2 are not significant predictors of inflation, but this cannot be said of M3, which, in graphic terms, can predict inflation movements for several months ahead. By moving the money supply dynamic six months (two quarters) ahead, we get a significant dynamic overlap. There is a moderate positive correlation, with the correlation coefficient of 0.66, which is below 0.8, the value considered statistically significant. The results of these movements indicate that observing the money supply movement alone, the coming period (December) could see inflation accelerate – if the rise in money supply significantly boosts the demand and consumption of households and corporates.

Still, money demand cannot be reliably predicted over a longer term and no central bank can determine with certainty a money supply growth rate compatible with price stability. What a central bank can do is to daily monitor the movement of monetary aggregates and in case of any threats in terms of inflation acceleration, to take adequate measures in cooperation with the government, so as to respond preventatively and to ensure stability. We expect that, with the resumed repayment of credit and tax liabilities, the liquidity provided to households and corporates will gradually return to pre-crisis flows, as in fact indicated by trends in the last several months, although money supply growth is also spurred by the approval of Guarantee Scheme loans. The factors dragging down economic growth have a controlling impact on inflation not only in Serbia, but Europe-wide. It is therefore reasonable to assume that somewhat higher growth of money supply in 2020 is not alarming and requires no special measures for the time being.

NBS monetary policy and open market operations after the outbreak of the crisis

"There are decades where nothing happens; and there are weeks where decades happen" (Vladimir Ilyich Lenin). In a very short time, global financial market sentiment collapsed in response to the coronavirus pandemic. And whereas in mid-February, Wall Street stock exchange indices climbed to new record highs, the ensuing accelerated spread of the coronavirus led to increased sales of riskier assets and a slump in US and European benchmark stock exchange indices by over 30% in only four weeks (until 20 March). At the same time, the oil shock added to the fall in investor sentiment in early March, after failed negotiations of OPEC+ countries on oil output reduction triggered a sharp decline in the Brent oil price (which fell by as much as 31%[2] on 9 March alone).

Monetary policy makers worldwide were the first to respond to the effects of the crisis by taking accommodative measures. In the first three weeks of March alone, as many as 49 central banks worldwide trimmed their policy rates. There were some cases of "panic" reaction which involved large-scale packages of accommodative measures over a very short time period and a range of unconventional measures (many of which were introduced for the first time).

In deciding upon and implementing its measures, the NBS was not guided by the so-called bazooka approach, i.e., the principle of "aggressive" relaxation over a short time period. It implemented monetary policy measures in a gradual and measured manner, sending a clear soothing signal to the market that it intends to do everything to preserve smooth functioning of the financial system because there is no alternative to stability. Stability in the domestic money, FX and government bonds markets was maintained both at the peak of the crisis and in the remainder of the year.

The NBS responded to the crisis momentarily, already at the extraordinary meeting of the Executive Board on 11 March where the key policy rate was lowered by 50 basis points (the largest reduction in a single meeting since 2015). After the March cut, the NBS further trimmed its key policy rate at April, June and December meetings

2 The largest daily decrease in the Brent oil price since 1991.

by 25 basis points each, to 1.0% (its lowest level in the inflation targeting regime).

Though after the outbreak of the crisis the domestic system functioned in an environment of excess liquidity, the NBS took proactive and pre-emptive measures and, by end-March, provided additional dinar liquidity to the banking system at very low interest rates. The NBS conducted three repo purchases of dinar government securities (with 1W and 3M maturity), and an additional FX swap purchase auction. In repo purchase transactions, dinars were provided at an interest rate equal to the rate on deposit facilities as the lowest rate in the NBS interest rates corridor, while the interest rate on dinars in the additional swap transaction was equal to the rate on deposit facilities plus 10 bp (taking as the interest rate on foreign exchange – euro 0%).

Although these transactions were not necessary from the aspect of banking system liquidity, they helped avoid any disruptions in dinar liquidity in the domestic market. At the very start of the crisis, amid prevailing uncertainty, they were a source of security for market participants and a confirmation that the NBS will respond using all available instruments in order to preserve stability and provide support to the financial and economic system.

Additionally, the NBS downsized the stock in its repo sales of securities, purposefully leaving excess liquidity in the market. Namely, at the time when the shock of the crisis was at its peak globally (March – June), the NBS accepted only slightly less than a half of the banks' bids in regular repo sale auctions, leaving banks with additional funds for trading in the money market (Figure 17).

As the health situation deteriorated, the NBS decided to offer regular dinar liquidity lines to banks from mid-November – additional FX swap purchase auctions and auctions of repo purchase of dinar government and corporate bonds. In this way, banks were enabled to obtain dinar liquidity in case of need, for a period of three months, on the same favourable terms as at the start of the pandemic, using FX or securities as collateral. This measure too was pre-emptive in character – its aim was to maintain a sufficiently high level of liquidity to enable still more favourable terms of financing for households and businesses and spur the country's recovery from the pandemic-induced crisis.

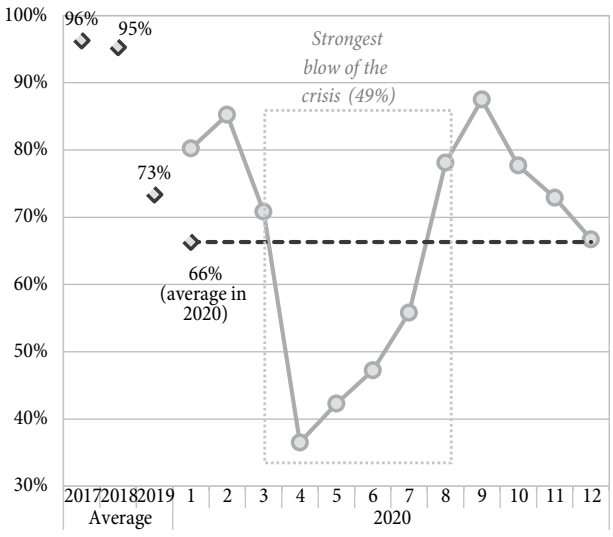
Since the key policy rate is the NBS's main monetary policy instrument[3] and key policy rate changes reflected directly on movement in short-term rates in the interbank market, the transmission of the NBS's decisions on the money market was efficient (Figures 18 and 19). Additionally, due to excess dinar liquidity in the system, interest rates in 2020 mostly hovered around the lower bound of the corridor of main interest rates of the NBS (close to the rate on deposit facilities).

Benchmark interest rates in the short-term segment of the dinar yield curve subsided notably after the crisis broke out, making financing conditions for businesses, households and government even more favourable. A comparison of average interest rates in December with their average in the pre-crisis period (January) reveals that interest rates decreased most notably in the most liquid segment of the interbank market (Figure 19). Mirroring the reduction in the weighted average repo rate in NBS auctions (by about 90 bp), BEONIA[4] and the rate on one-week loans dipped by 80 bp and 76 bp, respectively (Figure

3 The key policy rate is applied in the conduct of main open market operations (currently, one-week reverse repo transactions).

4 BEONIA (Belgrade Overnight Index Average) is the weighted average interest rate on overnight loans in the Serbian interbank money market.

Figure 17: Percentage of bids accepted in repo sale auctions



Source: NBS.

18). Also, a notable decline was recorded for BELIBOR[5] rates of all maturities – in the interval of 65 bp and 76 bp.

Preservation of stability in the market of local currency government bonds

Turbulences in the international market were the strongest in March, to which government bond markets of emerging economies were particularly sensitive. The VIX[6] index, also known as the "fear index" since it is used to quantify "fear" in financial markets, shot past 80 on 16 March 2020 (Figure 20), which is several times higher than its average in the prior decade (16.8). International investors adjusted their portfolios and shifted their focus to the safest assets, which affected local currency government bond markets of emerging economies particularly hard. In countries of the region, including Serbia, the activity in the secondary market of government bonds subsided promptly as the crisis broke out. Amid heightened external uncertainties, weaker liquidity in the secondary market and stepped up exit of investors from these markets, the yield on local currency government bonds rose sharply in the majority of emerging economies. At the same time, in addition to regular demands for financing of due liabilities, governments faced rising fiscal needs stemming from lockdown and the implementation of large-scale fiscal expansion packages. It was difficult to procure the necessary funds, as terms of financing became less favourable amid sudden tightening of financial conditions in the global financial market. In particular, this affected the countries which did not adequately manage their public finances and ran greater fiscal imbalances before the crisis.

In order to preserve the stability of the government bonds market and ease the terms of financing for the government, in accordance with applicable regulations the NBS conducted bilateral purchases of dinar government bonds in the secondary market from banks, in the total amount of RSD 97 bn. By contrast to some countries of the region which resorted to bulk auction purchases of government bonds, therefore facing substantial exit of foreign investors from these securities and increased depreciation pressures on the domestic currency, the NBS conducted these transactions bilaterally, in direct contact with domestic banks. In this way, no room was left for speculative activities in the secondary market which was, therefore, not "closed" but continued to function normally.

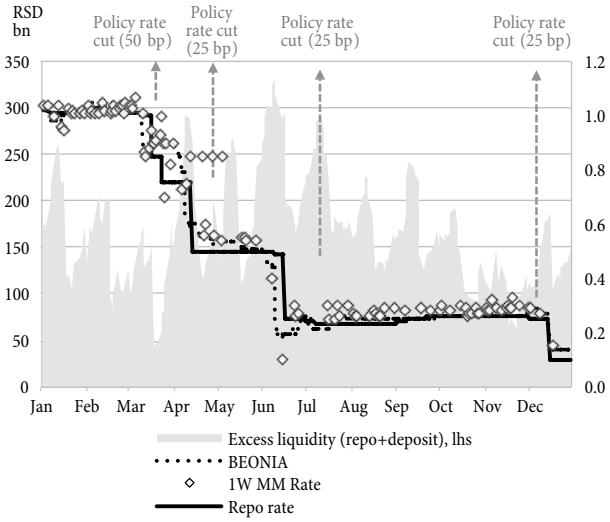
Figure 21 shows movement in average yield rates recorded in trade in the most liquid[7] dinar securities in

5 BELIBOR rates (Belgrade Interbank Offered Rate) are the benchmark interest rates on dinars in the money market, offered by domestic banks, members of the BELIBOR panel. BELIBOR rates are computed entirely on the basis of quotes.

6 The VIX index measures the volatility of the benchmark S&P500 stock exchange index based on the expectation of share prices in a 30-day period.

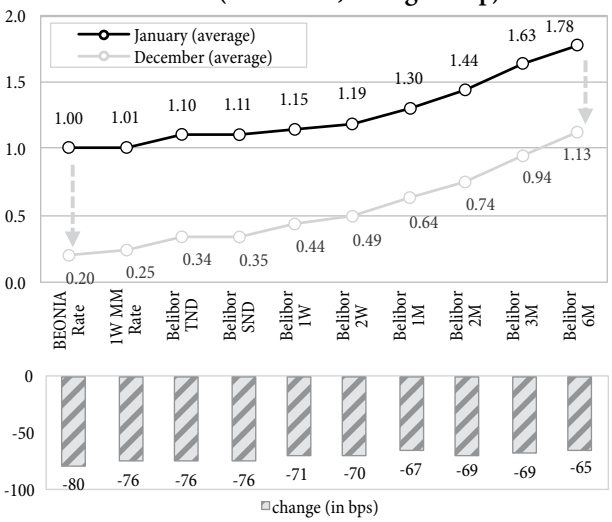
7 Seven-year dinar bonds which in 2020 made up 82% of secondary trade in dinar bonds.

Figure 18: Money market interest rates in Serbia in 2020



Source: NBS.

Figure 19: Impact of NBS measures on money market in Serbia (rates in %, change in bp)



Source: NBS and Refinitiv.

the secondary market in three sub-periods: I) Pre-crisis period (100 days before the crisis escalated), II) Peak of the crisis (starting from 16 March when the VIX reached its maximum), III) Period from the start of July (crisis still present).

The escalation of the crisis and the sharp rise in the VIX index too close to its historical high triggered a robust increase in yields on local currency government bonds of emerging economies. However, though the yield on dinar bonds also increased at the peak of the crisis (sub-period II in Figure 21), it was notably more moderate and averaged only around 0.2 pp. As expected, this sub-period also saw a widening of the range of yield to maturity rates at which investors traded in these bonds in the secondary market.

The third sub-period is represented in the Figure below (period after July). The VIX index remained high, persisting above its decade-long average (and often measuring two times that level), which signals sustained market uncertainty. The activity in the domestic government debt market was normalised relatively quickly, however, despite persisting volatility in global financial markets. As evident from the Figure below, the range of yield rates at which the most liquid dinar securities were traded in the secondary market narrowed significantly, though uncertainty in the markets continues. Also, the average yield to maturity at which most securities were traded fell to below its pre-crisis levels.

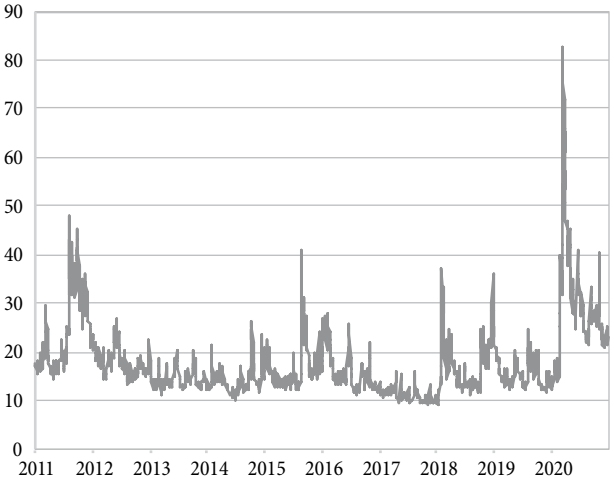
In addition to bilateral purchases of government bonds, which had a key part in stabilising movements in this market, a significant role was also played by the coordinated action of fiscal and monetary authorities in defining economic policies aimed at the recovery of the domestic economy and by the consistent stance of the NBS that there was no alternative to preserving the relative stability of the dinar exchange rate against the euro.

Providing an impulse to the development of the corporate bonds market

The current global pandemic and economic crisis opened the door for new monetary policy instruments and created new avenues for monetary authorities' action to support the domestic real sector. Immediately after the crisis broke out, already at the May meeting, the NBS decided to extend the list of securities eligible for monetary operations, by including dinar securities issued by domestic companies which have the appropriate solvency scoring. The acceptance of corporate bonds in monetary operations[8] gave an important impulse for banks to participate in the development of this market segment.

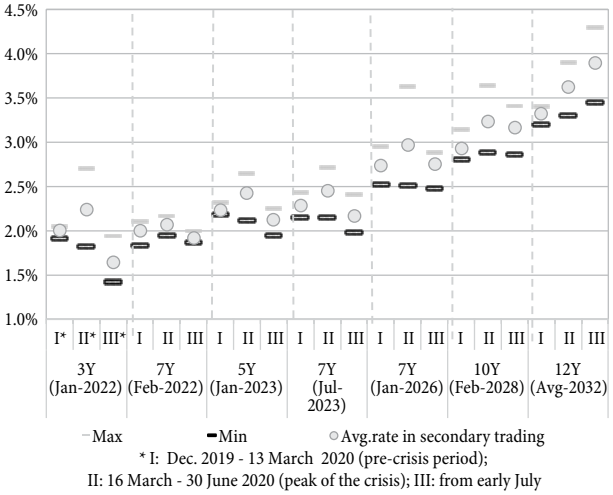
8 Eligibility in monetary operations as the subject of purchase by the NBS in the secondary market and/or as collateral for lending facilities, liquidity loans or provision of liquidity through repo operations.

Figure 20: VIX movements



Source: Bloomberg.

Figure 21: Yield rates in the secondary market of government securities in three sub-periods* (the most traded dinar bonds)



* I: Dec. 2019 - 13 March 2020 (pre-crisis period); II: 16 March - 30 June 2020 (peak of the crisis); III: from early July

Source: NBS, author's calculations.

In providing the initial impulse to the development of this market segment, the NBS was guided by a twofold objective – to step up corporate sector's recovery from the crisis by supporting the development of an additional financing channel and to upgrade the domestic capital market. Financing through the issue of corporate bonds gives companies substantial flexibility in the area of cash flow management, which is particularly important during times of crisis, as indicated by empirical data. Namely, the benefits of this type of financing coupled with central banks' support in this market segment encouraged companies to step up their activity in the world's corporate debt markets after the crisis broke out. A look at the moving 12-month sum of corporate bond issuance shows that the issuance of these instruments in the US alone by investment-grade companies soared by as much as 70% y-o-y (until and including August 2020) to a record high of USD 1.5 bn [11].

To make sure stability of the domestic monetary and financial system is not threatened at any point, the NBS also defined a set of restrictions to this programme. Qualitative criteria limit eligibility of corporate bonds in monetary operations to companies with solvency scoring of at least "acceptable solvency" and introduce a time limit (securities issued until end-2020). Several quantitative criteria were also defined: 1) the maximum nominal amount of corporate bonds eligible for monetary operations is set at RSD 55 bn; 2) the maximum total nominal amount of an individual issue or a tranche of corporate bonds eligible for monetary operations is set at 70% of the total nominal value of an issue of a single issuer; 3) the maximum total nominal amount of corporate bonds of a single issuer eligible for monetary operations is set at RSD 11 bn. By defining clear restrictions to the programme, the NBS displayed a high level of responsibility, sending a signal to the market that it is ready to support the development of this market segment, but that the preservation of stability of the domestic system has no alternative.

A number of companies quickly recognised the benefits of this type of financing. Already in September, there were four issues of corporate bonds with maturities of 5 and 7 years, in the total amount of RSD 47.0 bn. Corporate bonds were issued on very favourable terms, which was supported by the successful transmission of monetary policy easing on local financial conditions after the crisis broke out, but also by the fact that the NBS backed the project with its own credibility.

Other measures

After the Republic of Serbia issued the Decree Establishing a Guarantee Scheme as a Measure of Support to the Economy to Mitigate the Consequences of the COVID-19 Disease Caused by the SARS-CoV-2 Virus (RS Official Gazette, No. 57/20), the NBS adopted a measure to further encourage dinar lending under this Decree. Specifically, to banks approving dinar loans under the Guarantee Scheme at interest rates at least 50 bp lower than the maximum rate prescribed by the above Decree (1M BELIBOR+2.5 pp), the NBS pays a remuneration rate on dinar required reserves for the amount of these loans at a rate 50 bp higher than the standard remuneration rate. In this way also, the NBS supported the Government of the Republic of Serbia in its effort to ensure even more favourable terms of lending to corporates, in order to buttress continued growth in lending even during the pandemic and minimise the consequences of the crisis on the domestic economy. As in all of its measures and activities, this time too the NBS took due care of the dinarisation of the domestic financial system. As a result of this support, the interest rate on dinar loans came close to the rates on euro loans granted under the Guarantee Scheme, leading to higher dinarisation and reflecting positively on monetary policy efficiency and financial stability. From May to December, EUR 1.48 bn of necessary liquidity and working capital loans were approved under the Guarantee Scheme to micro, small and medium-sized enterprises and entrepreneurs, and the duration of the Scheme was subsequently extended, which will be combined with other options of corporate financing as well. Considering that 60% of the loans approved under the Guarantee Scheme were dinar loans and that interest rates on dinar loans and euro loans are for the first time equal in Serbia (the difference between them was 9 percentage points in May 2013, when the cycle of relaxation began), it can be concluded that this measure has achieved its objective.

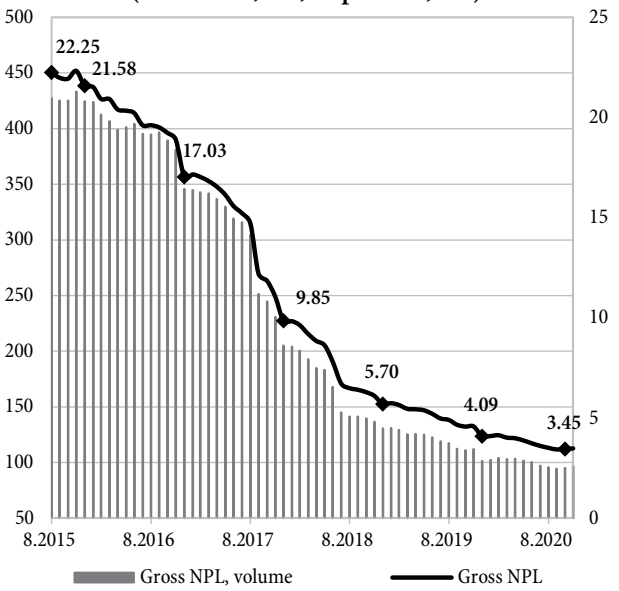
Debt repayment facilities and support to housing loans – Moratoria 1 and 2 and other measures

By contrast to the previous crisis, at the start of the crisis caused by the COVID-19 pandemic, Serbia's banking sector was financially stable and resilient to shocks from the external environment, with high capital buffers, reinforced liquidity and a relatively low share of NPLs, which decreased from very high levels. Namely, after the global financial crisis of 2008-2009, the banking sector faced a high volume and share of NPLs. The NPL ratio continued to rise, which was also due to a yearslong depreciation of the dinar at the time. Exceeding 22%, the high NPL ratio became a source of systemic risk and a factor containing the development of the banking and financial market. This called for an appropriate, decisive and coordinated response of the NBS and other relevant institutions, defined through the NPL Resolution Strategy [16]. Since the adoption of the Strategy in August 2015, the NPL ratio decreased from 22.25% in 2015, to 4.09% at end-2019. It was the result of the implemented measures and the macroeconomic stabilisation of the country. The substantial reduction in NPLs enabled a further strengthening of the banks' capital position, contributed to financial system stability and allowed for favourable terms of financing of the real economy (businesses and households), creating a feedback loop between the financial and the real sector. As a result, at end-Q1 2020, the banking sector capital adequacy was 22.66%, well above the regulatory minimum of 8%, liquidity indicators were two times higher than the regulatory minimums, and the NPL ratio was 4.02%.

The NBS responded to the pandemic already on 18 March 2020, three days after the emergency state was introduced, by adopting temporary prudential measures to preserve financial system stability and prevent negative short-term effects of COVID-19 on businesses and households, through provision of liquidity and cash flow facilities for each individual borrower and for the system at large during the crisis. For instance, the European Banking Authority (EBA) issued the first Guidelines on legislative and non-legislative moratoria on loan repayments applied in the light of the COVID-19 crisis on 2 April 2020, which were to be applied until 30 June 2020. Amendments of 25 June 2020 extended the application of these Guidelines until 30 September 2020, while the latest amendments of 2 December 2020 extended their application until 31 March 2021 [3].

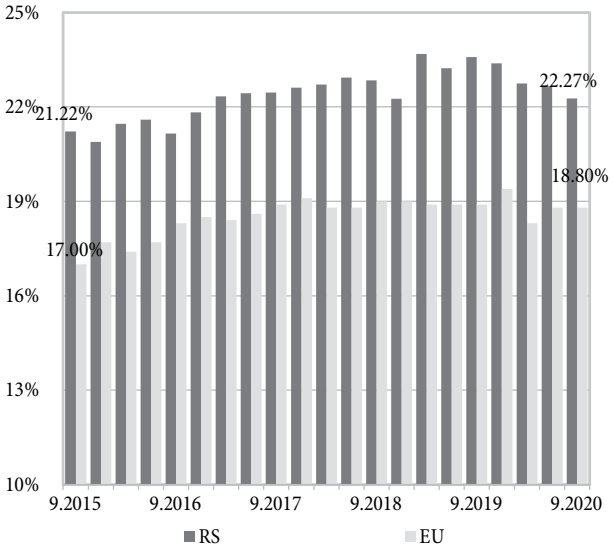
The NBS was among the first central banks and regulators in the region and Europe to introduce mandatory moratorium on debt repayment as one of the most efficient measures for overcoming temporary liquidity issues of businesses and households, and the promptness and

Figure 22: NPL indicators (in RSD bn, lhs; in percent, rhs)



Source: NBS.

Figure 23: Capital adequacy indicators



Source: NBS.

timeliness of its response was one of the key factors in avoiding long-term negative effects of the crisis on the real sector and on financial system stability (overview of prudential measures of the NBS is given in Table 10).

Through two moratoria on repayment of liabilities under loans and related products, the NBS helped households and businesses weather the crisis more easily – suspension of debt repayment was used by over 90% of borrowers during the first and over 80% of borrowers during the second moratorium (for a total of five to six months, depending on the time of use). As the crisis affected the entire economy, the two moratoria enabled equal treatment for all borrowers, offering the opt-out model as well, which meant that all borrowers were automatically included in the moratorium unless they chose not to participate in the scheme.

Very soon, with the onset of emergency circumstances, a measure was adopted reducing mandatory down payment for first-time home buyers from 20% to 10%.

Three sets of temporary measures were adopted in August to enable households' easier access to financing, particularly to housing loans. By facilitating access to new housing loans, support was also given to the economy, particularly the construction industry, through a faster turnover of assets and supporting activity in this branch of the economy. The measure was calibrated in such way that, in addition to fully completed apartments, housing loans and the newly introduced preferential treatment would also be approved for:

- residential buildings in construction regardless of the degree of completion, in case of project financing by a bank; residential buildings with the Building Directorate of Serbia as the holder of the construction permit; if they are part of the measures of government support to specific categories of natural persons;
- residential buildings in construction, with minimum 60% degree of completion, in case of project financing by another bank or project of a legal entity investor.

Before that, banks could approve housing loans for the purchase of minimum 80% completed buildings. The above measure encouraged banks to approve housing loans without having to wait for the residential building to be completed in full or for its major part. At the same time, there are clearly defined criteria that the financing, i.e., investor and building in construction, must meet in order for this treatment to be applied. To ensure funding for this type of lending, banks were allowed to use a part of assets in the form of capital, i.e., certain capital buffers they normally set aside. The August decision provided further support to previous first-time home buying programmes, by enabling preferential treatment also for newly approved loans in this category.

The second measure aims to ease terms of repayment of housing loans for citizens, particularly those that may potentially see reduced or uncertain income in the period ahead, as well as those wishing to extend the initially planned repayment deadline. During 2020 and 2021, banks were therefore allowed to offer facilities to borrowers which took out a loan before the decision entered into force by extending the repayment deadline for housing loans by five years at most, without any change in status regarding the assessment of the regularity of the borrower's loan repayment.

Also, a regulatory solution was introduced allowing a bank to grant a loan of up to RSD 90,000 dinars to a natural person who does not receive his/her wage or pension via an account with that bank, with the maturity of up to two years and subject to fewer administrative procedures.

As the epidemiological situation worsened in November, and particularly in early December, which led to renewal of some containment measures, a new set of measures was carefully calibrated and adopted in December to provide certainty and facilitate loan repayment for borrowers facing difficulties in repaying their liabilities due to the COVID-19 pandemic. The aim of the measures was also to support responsible credit risk management by banks and prevent NPLs.

The decisions adopted in December 2020 prescribe the measures and activities to be applied by banks and financial lessors in order to timely identify borrowers faced with potential difficulties and take appropriate steps. It was prescribed that banks and financial lessors were required to approve a facility for the repayment of liabilities under loans and similar products to borrowers (both citizens and businesses) affected by the pandemic

or likely to suffer the financial consequences of the pandemic, at their request. The facility involves a six-month grace period, during which the borrower is not required to settle its liabilities in respect of the principal. The borrower may decide whether it will settle liabilities in respect of the contractual interest during such grace period or after its expiry.

The measures were calibrated in such manner that households and businesses were provided certainty with regard to the amount of monthly liabilities they are to settle after the grace period. They were designed so as to avoid additional burdening of the borrower after the grace period which could negatively affect its ability to service liabilities. In both cases, it was envisaged that the loan repayment period (relative to the remaining maturity before the facility is applied) be extended so that monthly liabilities of the borrower are not higher than before the facility was applied.

The criteria for determining potential difficulties in settling loan liabilities in the conditions of the pandemic were measured and defined carefully. Focus was placed on approving the facilities to:

- unemployed persons,
- borrowers whose average net monthly income in the three months before submitting the application is lower than the average wage in the Republic of Serbia,
- borrowers with average income lower than 120,000 dinars whose debt-to-income ratio exceeds 50%, while their net monthly income decreased by at least 10% relative to the period before the pandemic.

When it comes to farmers, entrepreneurs and companies, it was assessed that facilities for the repayment of liabilities were particularly relevant for borrowers who in 2020 recorded a decrease in income and/or turnover by at least 15% relative to 2019 or whose operations were suspended for at least 30 successive days due to the COVID-19 pandemic.

The right to access the facilities was also reserved for borrowers who, as at the day of entry into force of the regulations (15 December 2020), were more than 30 days past due on any obligation to which regulations apply.

Banks and financial lessors were allowed flexibility in implementing these decisions, through the possibility to approve the facilities to other borrowers as well if they have assessed that the COVID-19 pandemic has led to a worsening in a borrower's financial position and its ability to regularly settle its liabilities to the bank. Households and corporates may apply for the facilities by 30 April 2021, which means that this measure is open as a form of support to all persons assessed as needing it most in the uncertain conditions of living and doing business.

As a result of all measures taken by the NBS, the banking system stability was preserved even in the crisis year of 2020. The NPL ratio continued to decline for the fifth year in a row, falling to 3.48% in November 2020.

Effects of the pandemic on the domestic economy and the contribution of adopted measures to a faster recovery

In late 2019 and early 2020, the NBS projected Serbia's real GDP growth rate for 2020 at 4% (February Inflation Report). At the same time, many indicators of economic activity and the sources of its financing in the first two months of 2020 were even better than the NBS had projected. The continuation of positive trends from 2019 was suggested also by construction indicators, with the number of issued construction permits rising by almost 30% y-o-y and the envisaged value of works to be performed under those permits displaying similar dynamics. Retail trade turnover increased by 14% y-o-y, while tourism indicators also recorded high growth rates. That the favourable sources of financing the economic activity were sustained was further suggested by the FDI inflow, double-digit credit growth, which gained additional momentum, and doubled the growth in government capital expenditure compared to the same period a year earlier (2019). Serbia's foreign trade was on the rise, with the growth in exports of goods and services outpacing that in imports (12.2% vs. 11.8% y-o-y), despite slackening external demand. All of this led to GDP growth of 5.2% y-o-y in Q1, which would have most probably reached 6% – and at the year level shot past the projected 4% – had it not been for the outbreak of the pandemic.

The Serbian economy started contracting in mid-March, after a large number of countries, Serbia included,

Table 10: Overview of prudential measures of the NBS in response to COVID-19

March 2020	• The NBS was among the first central banks in Europe **to adopt regulations enabling the first moratorium on debt repayment** for banks and financial leasing borrowers **in the duration of 90 days**; • The first moratorium was used by around 90% of clients.
Maj-July 2020	• Regulatory preconditions were created for reducing the downpayment required for first home buyers (the specific change actually means that mandatory downpayment can be reduced to 10% of the requested loan amount); • Impetus was given to banks to offer to borrowers the refinancing or change of due date of the final instalment of cash, consumer and other loans (other than housing loans and current account overdrafts) approved by 18 March 2020, by further two years relative to the current repayment period regime of these loans.
July 2020	• **A second moratorium was prescribed on repayment of liabilities to banks/financial lessors** falling due between 1 August 2020 and 30 September 2020, as well as suspension of repayment of outstanding liabilities which fell due in July 2020; • The second moratorium was used by around 80% of clients.

August 2020	• A decision was also adopted defining measures to ease access to financing for natural persons - **Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons**.
	• **This Decision prescribes three sets of measures which:**
	  • **facilitate access to housing loans for households,** thereby also supporting the economy, in particular the construction industry, through faster turnover of assets (banks are encouraged to approve housing loans without having to wait for the residential building to be completed in full or for its major part),
	  • **enable the extension of the repayment period for housing loans by five years at most,**
	  • **temporarily ease procedures for households' access to short-term dinar loans** up to RSD 90,000.

Decenber 2020	• **Obligation** is prescribed **for banks and financial lessors to offer repayment facilities to borrowers who are unable to settle their liabilities to a bank/financial lessor due to circumstances caused by the COVID-19 pandemic and/or who may have difficulties in settling these liabilities, at their request**; • These are additional measures aiming to facilitate settlement of liabilities for borrowers facing difficulties due to the COVID-19 pandemic and support responsible credit risk management by banks and financial lessors in current circumstances; • The facilities involve rescheduling and refinancing of loans, approval of a six-month grace period and an appropriate extension of the repayment period, so that the borrower's monthly liabilities are not higher than those set out in the repayment schedule before the facilities were approved.

introduced within a very short period of time numerous health protection measures that led to unprecedented lockdowns, disruption of supply chains and finally, economic downturn. The crisis affected nearly all service and production sectors, the most badly hit being transport, tourism and catering (contributing together around 6% to gross value added). Industrial production also declined, as many factories suspended their production for several weeks or scaled down the volume of their operations, due, among other things, to the sharp fall in external demand. Still, many companies organised work from home, which partly mitigated the effect of containment measures on economic activity and, at the same time, opened the prospect of more flexible work regimes in the future. The construction industry was less affected by the pandemic, because the work on infrastructure projects in the sectors of transport and energy was only slowed down and not halted after the state of emergency was declared. The drop in retail trade turnover of consumer goods was in part offset by the considerable rise in the turnover of food and other essential products. Through the slack in external demand, halts or disruptions to global supply chains and border shutdowns, the new crisis also took its toll on exports, which declined, and imports, which slowed down significantly in March.

Large in size and comprehensive in their objectives, the adopted packages of measures were instrumental in avoiding a slow recovery and a long-lasting effect on our economy. This assessment is supported by the movement in key economic indicators which have been recovering since

May. Industrial production has been rallying continuously since May, propped up mainly by the rise in manufacturing. In October, overall industrial production was higher by 2.3% sa relative to the pre-crisis level, i.e., average level in Q1, while manufacturing was higher by 1.4% sa. With the worsening of the epidemiological situation globally, and particularly in Europe, November saw a 2.0% sa fall in industrial production, led by the 2.2% sa contraction in manufacturing. Retail trade reached its pre-crisis level already in June, and in November it was by 1.1% higher compared to average level in Q1. This was the result of the lifting of containment measures already in early May and the rise in domestic demand spurred by fiscal and monetary stimuli. The number of arrivals and overnight stays of domestic tourists also perked up, growing in Q3 by 11.3% and 13% y-o-y, respectively, which partly offset fewer arrivals of foreign tourists, while in October and November, with the worsening of the epidemiological situation, these indicators recorded a fall, though much softer than in the first wave of pandemic. Catering turnover also picked up from May onwards, but its recovery slackened as of July reflecting a new surge in the number of coronavirus cases. Among indicators of construction activity, the implementation of infrastructure projects stands out in particular, as signalled by the performance of budget capital expenditure which gained 14.4% y-o-y in the eleven months of 2020.

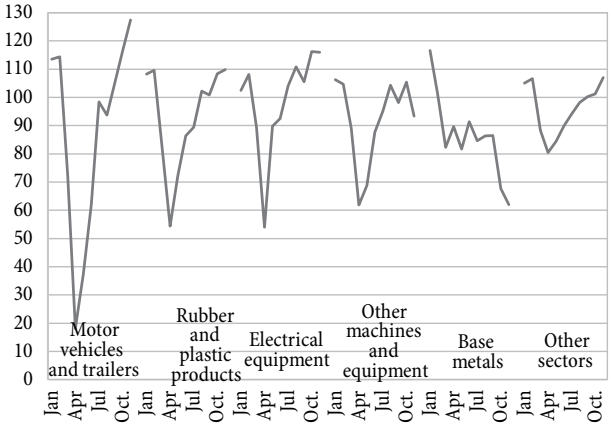
Manufacturing exports in November were higher by 5.8% sa relative to their pre-crisis level (average level in Q1) in y-o-y terms. After falling by close to 31% in April and 28% in May, they saw a much softer decline in the subsequent months (around 5% y-o-y in July and August), while rising by 2.2% y-o-y in September and edging slightly down in October and November amid renewed weakening of external demand. Observed by sector and in y-o-y terms, as expected, the recovery was not evenly distributed – exports of base metals and metal products were the slowest to recover, while, on the other hand, some branches of manufacturing, such as food, beverages and tobacco and the pharmaceutical industry, were almost unaffected by lower external demand.

For more information about the NBS's GDP growth projections, how they were changed over the year under the impact of the pandemic, and then revised up for 2020 reflecting the materialisation of upside risks from the domestic environment, take a look at the November Inflation Report, Text box 5 [13, pp. 70-73]: NBS's projection of domestic GDP growth, its revision during the year and comparison with projections of international financial institutions. GDP outcome in 2020 shows that the NBS projections released during the year were more accurate, despite significant uncertainties, than those of some international financial institutions.

Concluding remarks

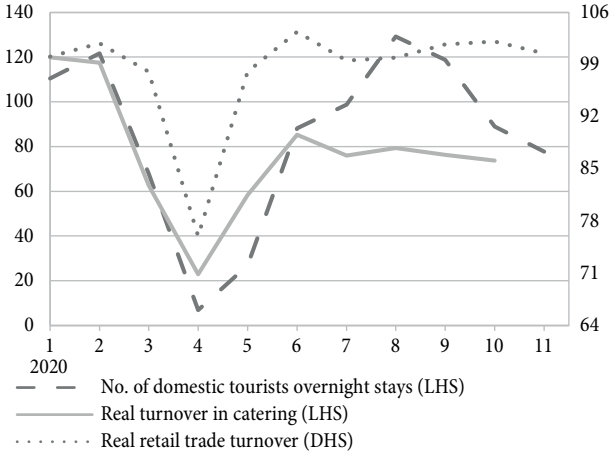
Most economies experienced extremely powerful effects of the COVID-19 pandemic in Q2 2020 in the form of halts/

Figure 24: Manufacturing exports in 2020 (Q1 2020 = 100, sa)



Source: SORS and NBS calculation.

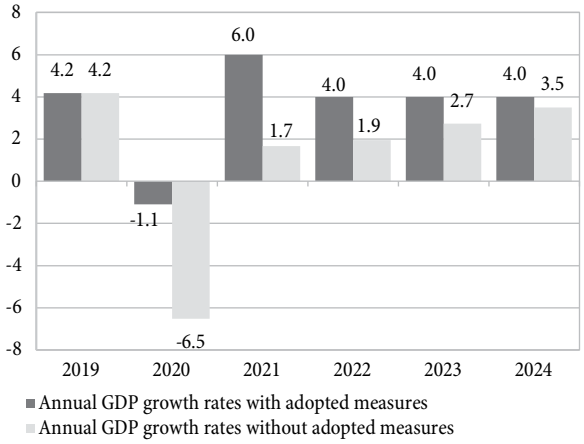
Figure 25: Indicators of service sectors (Q1 2020 = 100, sa)



Source: SORS and NBS calculation.

disruptions to global supply chains, turmoil in the majority of commodity markets, and especially the oil market. If we compare Q2 2020 with the last quarter of 2019, GDP was by 10% lower in the US and by 15% in Europe. A sharp fall in economic activity was accompanied with the negative labour market trends and a general rise in risk aversion. Still, after the powerful effect in Q2, already in Q3 the production began to recover under the significant impact of domestic demand. The new wave of the pandemic in late 2020 and the enforcement of containment measures affected developments in the real sector in Q4, which was also marked by economic policy measures. All studies indicate that the fall in global economic activity would have been much sharper had the majority of countries not responded with robust economic measures (monetary, fiscal and financial). Central banks responded by monetary policy relaxation, using conventional and nonconventional measures, and governments by large fiscal packages, with a view to supporting businesses and citizens during the crisis and contributing to a faster recovery. Central banks acted as lenders of first resort, applying a mix of accommodative monetary policy and appropriate macroprudential policy, which propped up economic activity and investor and consumer confidence and, thus, eased the fallout from the pandemic. Central banks were the pillars of stability during the pandemic as they ensured efficient functioning of the money market and supported the liquidity of all sectors and lending to the real economy. Of course, the volume of the permanently lost economic activity will depend on the ability of individual countries to safeguard labour force and production capacities, though there are other challenges as well. The question that arises is the available scope for additional accommodative measures worldwide in the case of new lockdowns, depending on the future course of the pandemic. On the table is also the pace of post-pandemic structural reforms, the likelihood and scope of future fiscal consolidation processes after the pandemic and the strength of the relationship between the financial and the real sector. Business needs certainty and trust in stability. According to the latest EU-wide EIB's survey, over 80% of respondent enterprises cited uncertainty as the key obstacle to business [5]. According to the ECB's Survey on the Access to Finance, enterprises are also concerned about potential tightening of financial conditions in the coming period [4]. One thing is certain – only coordinated activities at global level, as well as policy makers' commitment at national level, can minimise the effects of the pandemic.

Figure 26: GDP growth in 2019-2024 with and without measures (in %)



Source: SORS and NBS projection.

It was proved again this time that the role of the regulatory authority in the crisis conditions is critical in maintaining stability of the domestic financial system and preventing the deepening of the crisis, i.e., its spill-over from the financial to the real sector (and the other way round). The credibility of economic policy makers is essential, as it contributes to a more efficient implementation of different measures aimed at mitigating the negative impact of the crisis. A strong, clear and timely signal of stability equally important as a proactive approach and adequate measures which take into account both the intensity and the duration of the negative trends that need to be responded to (or prevented) – is more important in times of crisis than otherwise. If central monetary institutions do recognise this, they will be several steps ahead of the challenge.

The credibility built by the NBS over the previous years played a significant role in keeping investor trust unscathed – trust in the stability of prices, stability of the financial system and relative stability of the exchange rate. Timely measures taken immediately upon the outbreak of the COVID-19 crisis, transparency and credibility prevented a negative spiral that could have been caused by psychological and panic reactions of market players, involving

a sudden capital outflow and consequently significant depreciation of the local currency. The importance of the regulator's prudential action should not be disregarded either, as it entails a degree of countercyclical activity in financial markets – for global crises that occur every five to ten years. This shortens the amplitudes and distributes oscillations over a longer time period, which together eases the negative impact on the domestic financial market and economy. The NBS too acted prudently, and the high and adequate level of FX reserves is attributable, inter alia, to such an approach. In times of prevailing appreciation pressures (from April 2017 through 2019), which in recent years reflect the strengthening of Serbia's macroeconomic fundamentals, the NBS was buying foreign exchange (over EUR 5.3 bn net), thereby increasing the country's FX reserves and creating buffers for potential future shocks, which indeed materialised in March 2020.

The analysis of factors affecting movements in the Serbian FX market shows that the COVID-19 crisis was transmitted to the exchange rate primarily through its impact on economic activity and citizens' behaviour (which was expected given the declared state of emergency), and not through a capital outflow potentially triggered by the withdrawal of foreign investors. The analysis also shows that the impact of the COVID-19 crisis on non-residents' behaviour and portfolio investment was significantly smaller than in other comparable emerging markets, which only attests to the increased resilience of the Serbian economy to external shocks and the volatility of global capital flows.

In structural terms, most of the growth in M1, which was the most dynamic, in the period March–June relates to transaction deposits (81.5%), while a smaller part (18.5%) is attributable to currency in circulation. That this is a temporary effect is confirmed by data on the slower growth of currency in circulation already in June and its fall in August, which coincided with the evolution of the pandemic in our country. As early as in September currency in circulation rose slightly, reflecting the payment of 60% of the minimum wage. The situation stabilised during October and there was a slight decline in November. Significant growth of cash in circulation in December is usual for the end of the year, both due to increased payments and due to the arrival of our citizens from abroad before the holidays, but owing to the worsening epidemiological situation and consequent measures taken, there was no significant spending in 2020. After May and June, the effect of government activity was much softer, and lending took over the role that the government had played in money creation during the state of emergency and containment measures. A significant impetus to the accelerated growth of money supply in September came from the issuance of corporate bonds as a source of financing investment activities. The decline in money supply in October and November, and then its significant growth in December, was dominated by the government. These and similar movements are typical for most economies that took comparable measures in order to contain the economic fallout from the pandemic (policy rate cuts, expanded asset purchase programme, introduction of new, extraordinary liquidity supply programmes, packages of measures to support corporate financing, additional repo auctions, etc.).

One of the important contributions of the NBS's policy of acting as a lender of first and not last resort is that it has helped raise the "critical amount" of funds needed for the first package of fiscal assistance to businesses and citizens. By maintaining stability in the domestic bond market, the NBS enabled the government to proceed, despite the crisis, with financing in the local currency and at favourable conditions, which is vital for the continuity in the implementation of the strategy of public debt dinarisation.

The impetus given to the corporate debt market in Serbia could have a positive effect on the diversification of corporate financing, given that this is an alternative and a complement to bank loans, which could step up the competitive game and lower the costs of financing for our businesses. This could also help domestic companies to additionally reduce their exposure to the currency risk. Apart from numerous benefits for the corporate sector, the development of this market segment is important also for the further dinarisation of the domestic system, having in mind that only dinar securities are eligible for monetary operations. Finally, this will also increase the efficiency of monetary policy, by opening a new manoeuvring space for the central bank in the future, as a specific instrument in contemporary central banking.

Having analysed the conditions in which Serbia entered the crisis caused by the COVID-19 pandemic, we can say that all indicators of the pre-pandemic health of the domestic economy point to systematic efforts and work on strengthening the economy over the previous years. A responsible and adequate economic policy conducted over the past eight years, with fully coordinated fiscal and monetary policy measures, implementation of fiscal and structural reforms, as well as systemic diversification of projects, investors and markets for our goods and services, have laid the foundations for Serbia's sustainable growth. For all these reasons, Serbia entered the ongoing crisis in a much better macroeconomic and fiscal position compared to the state of our economy, public finances and financial sector a decade ago. Like in other countries, the effect of the pandemic on our economy was powerful in Q2, but with the implementation of monetary and fiscal policy measures, already in Q3 we saw a recovery and return to pre-crisis levels of activity in many production and service sectors, which was maintained during October and November. Our estimate is that without the adopted measures the fall in Serbia's economic activity in 2020 would have exceeded 6%, while growth in 2021 would be modest, failing to reach the pre-pandemic growth dynamics even in the medium term.

References

1. Aguilar, A., & Cantú, C. (2020). *Monetary policy response in emerging market economies: why was it different this time*? (No. 32). Bank for International Settlements.
2. De Vito, A., & Gómez, J.P. (2020). Estimating the COVID-19 cash crunch: Global evidence and policy. Retrieved from https://doi.org/10.1016/j.jaccpubpol.2020.106741.
3. EBA (December 2020). Guidelines on legislative and non-legislative moratoria on loan repayments applied in the light of the COVID-19 crisis. Retrieved from https://www.eba.europa.eu/eba-reactivates-its-guidelines-legislative-and-non-legislative-moratoria.
4. ECB (November 2020). Survey on the access to finance of enterprises in the euro area - April to September 2020.
5. EIB. EIB Investment Survey (EIBIS) December 2020.
6. European Economic Forecast, Autumn 2020, Institutional paper 136. Retrieved from https://ec.europa.eu/info/sites/info/files/economy-finance/ip136_en_2.pdf.
7. Ferrando, A., & Ganoulis, I. (2020). *Firms' expectations on access to finance at the early stages of the Covid-19 pandemic* (No. 2446). European Central Bank.
8. International Monetary Fund. World Economic Outlook, October 2020.
9. Lagarde, C. (2020). Introductory Statement to the ECB Press Conference, October 2020.
10. Li, L., Strahan, P. E., & Zhang, S. (2020). Banks as lenders of first resort: Evidence from the COVID-19 crisis. *The Review of Corporate Finance Studies*, 1–29.
11. Moody's analytics. *Capital Markets Research* (24 September 2020).
12. Narodna banka Srbije. Izveštaj o inflaciji – avgust 2020. Retrieved from https://nbs.rs/export/sites/NBS_site/documents-eng/publikacije/ioi/izvestaji/inflation_report_08_2020.pdf.
13. Narodna banka Srbije. Izveštaj o inflaciji – novembar 2020. Retrieved from https://nbs.rs/export/sites/NBS_site/documents/eng/publikacije/ioi/izvestaji/inflation_report_11_2020.pdf.
14. OECD Economic Outlook, Interim Report September 2020. Retrieved from https://www.aranagenzia.it/attachments/article/10774/34ffc900-en.pdf.
15. Song, L., & Zhou, Y. (2020). The COVID-19 pandemic and its impact on the global economy: What does it take to turn crisis into opportunity?. *China & World Economy, 28*(4), 1-25.
16. Tabaković, J. (2018). Resolution of non-performing loans in Serbia: Stability as an imperative. *Ekonomika preduzeća*, *66*(1-2), 91-105.
17. Tabaković, J. (2019). A decade of full-fledged inflation targeting in Serbia. *Ekonomika preduzeća*, *67*(1-2).

Jorgovanka Tabaković

has been serving as Governor of the National Bank of Serbia since August 2012. In early 1992, she was employed by Prištinska banka a.d., part of the Beogradska banka system, as Deputy General Manager and continued to work in the banking industry until 1999. From March 1998 until October 2000, she served as Minister of Economic and Ownership Transformation in the Serbian Government. Since 1999 until her appointment as Governor, she worked in the Telecommunications Company "Telekom Srbija", initially at the position of General Manager of the Logistics Department (March 2005-December 2008), after which she worked as an expert for economic operations.

She obtained an MA degree in 1999 from the Faculty of Economics of the University of Priština and earned her PhD in Economics from the same university in May 2011. She has authored a number of studies on privatisation and financial markets. In 2006 and 2007, she lectured at the Faculty of Management in Novi Sad.

Protection matters!

WIENER STÄDTISCHE
VIENNA INSURANCE GROUP

We are 18.

Over the many years of our responsible and dedicated work, we have demonstrated that we are a reliable company offering financial security through high-quality products and services tailored to our clients' needs.
Thank you for having confidence in us. We are looking forward to celebrating new birthdays and increasing our circle of friends.

wiener.co.rs

Call center: 011 220 9800, 0800 200 800 office@wiener.co.rs

ORIGINAL SCIENTIFIC PAPER
UDK: 616.98:578.834]:338.124.4
005.332:338.124.2]:334.7(497.11)
DOI: 10.5937/EKOPRE2103169P
Date of Receipt: January 3, 2021

Blagoje Paunović
University of Belgrade
Faculty of Economics
Department of Business Economics and Management

Zorica Aničić
University of Belgrade
Faculty of Economics
Department of Business Economics and Management

IMPACT OF THE COVID-19 CRISIS ON SMES AND POSSIBLE INNOVATION RESPONSES

Uticaj kovid 19 krize na MSP i mogući inovativni odgovori

Abstract

The aim of this paper is to analyze the impact of the COVID-19 crisis on the business operations of small and medium-sized enterprises (SMEs) in Serbia as well as to identify the best ways to overcome the crisis effects and stimulate further SME growth. On a sample of 689 SMEs in Serbia, in the present paper we study the impact of the COVID-19 crisis on both the overall business of firms and certain aspects of their business (demand, logistics, organization of business activities, collection of trade receivables, and access to financing). The results of our research suggest that the crisis effects vary across the SME sector depending on the business activity, size, region an SME operates in, and the extent of achieved business digitalization and networking during the pandemic. Lastly, based on the effects of the COVID-19 crisis on the business operations of SMEs in Serbia and taking into account the experiences of other economies with the COVID-19 crisis as well as the lessons learned from previous crises, in this paper we highlight the significance of innovation and possible innovation responses of SMEs to the crisis effects as the ways to overcome it.

Keywords: *COVID-19, SMEs, innovations, innovation responses of SMEs, Serbia*

Sažetak

Cilj rada je analiza uticaja kovid 19 krize na poslovanje sektora malih i srednjih preduzeća (MSP) u Srbiji, ali i identifikovanje načina za prevazilaženje efekata krize i podsticanje njihovog daljeg rasta. Na uzorku od 689 MSP u Srbiji u radu su posmatrani efekti kovid 19 krize na ukupno poslovanje preduzeća, ali i na njihove pojedinačne aspekte poslovanja (tražnja, logistika, organizacija, potraživanja i finansiranje). Rezultati istraživanja ukazuju da efekti krize variraju u sektoru MSP u zavisnosti od njihove delatnosti, veličine, regiona u kome posluju, kao i nivoa postignute digitalizacije i umrežavanja tokom pandemije. Konačno, polazeći od efekata koje je kovid 19 kriza izazvala u poslovanju MSP u Srbiji, zatim od iskustava drugih privreda u pogledu kovid 19 krize, ali i lekcija naučenih iz ranijih kriza, u radu se ukazuje na značaj inovacija i mogućih inovativnih odgovora MSP na efekte krize kao načina za njeno prevazilaženje.

Ključne reči: *kovid 19, MSP, inovacije, inovativni odgovori MSP, Srbija*

Impact of the COVID-19 crisis on firms' business operations

The research of the short-term COVID-19 pandemic impacts conducted by the World Bank Group [2] on over 100,000 businesses in 51 countries shows that the Coronavirus crisis has had a severe impact on business operations, manifested as a widespread sharp drop in sales (on the average by 49% year-on-year), employment decrease, rather through decreased hiring intensity (granted leaves, reduced working hours and reduced salaries) than through lay-offs, with various liquidity restrictions in some countries, but generally with intensified negative effects of financial restrictions on smaller businesses. The research reveals that the most significant response of the firms to the crisis is their increased use of the internet, social media and digital technologies (34% of the respondent firms), but that such increased use of digital platforms is significantly less among smaller businesses, as well as that in this respect there are notable differences among countries, and that 17% of the firms have made investments in new equipment, software or digital solutions in response to the pandemic. A quarter of the surveyed firms have made some product innovation by introducing a new product or service into their product and service mix, or by improving some of the existing products or services.

According to the research conducted in Serbia in May 2020 by the World Bank Group and Center for Advanced Economic Studies [39], it is estimated that during the lockdown SMEs experienced an average revenue decline of 18-44%, and the smaller the firm, the sharper the revenue drop. However, the surveyed firms showed extraordinary resilience given that only 1% of the respondents believe that they will need some form of debt forgiveness to maintain their business if the business should resume the normal course after the lockdown. The most severe revenue plummet was caused by falling demand, particularly in the lockdown sectors due to their shutdown or blocked operations. Outside of the lockdown sectors, the highest restrictions on the supply side were caused by reduced working hours as the curfew was introduced. The government measures to counteract COVID-19 compelled almost all firms to make some operating adjustments, but when those adjustments were implemented, the authors have concluded that those seem not to pose significant restrictions in the future business operations outside of the lockdown sectors.

The Supply Chain Digital Report (2020) shows that 94% from the Fortune 1,000 companies believe that COVID-19 has brought about a supply chain disruption, 75% of them have experienced a negative or a very negative impact on their business and 55% of the companies are planning, or have already done so, to downgrade their growth outlook. Supply chain disruptions in the COVID-19 crisis were caused by inefficient logistics operations which resulted in piling up of orders and extended deliveries, for several weeks at times, difficult procurement due to transport disruptions and shutdown of capacities for the production of raw materials and semi-finished products, and operational disruptions, particularly in labor-intensive industries due to the necessary compliance with the healthcare and safety measures, falling orders due to uncertainty, deferred payment of liabilities due to financial difficulties of the customers, etc. [34] A lack of transparency and resilience of supply chains and unsustainable just-in-time manufacturing are additional causes of supply chain disruptions [35]. In a case study of the face mask value chain in the United States, Gereffi shows that misalignments between the priorities of U.S. federal government officials and the strategies of leading U.S. multinational producers of face masks resulted in exceptionally costly delays in terms of health outcomes due to delays in the supply of that personal protective equipment product, and that such delays were more a policy failure than a market failure [15].

Beenee investigated the impact of the COVID-19 disaster on the resilience of local food systems in low and middle-income countries. The author highlights that the struggle against the pandemic led to the isolation and movement restrictions imposed by governments or local governance, which consequently caused a decline in income and purchasing power, thus affecting people's food security, particularly among the poor. The adverse COVID-19 impact reflects directly on the food security of various local food system participants, such as farmers and producers, transporters, wholesalers and retailers,

and consumers. The author suggests that in overcoming the negative COVID-19 crisis effects on local food system resilience, some principles considered in the literature on the climate change adaptability or value chains could be significant, such as diversification, substitution, entrepreneurship, cooperation, competition, etc. [3]

The Report of OECD demonstrates that COVID-19 has imposed shocks on all segments of food supply chains, simultaneously affecting farm production, food processing, transport and logistics, and final demand. Farm production has been affected by bottlenecks for inputs, most notably labor as well as seed, pesticides, fertilizers, and energy. On the other hand, food processing industries have been most affected by the rules on social distancing, labor shortages due to sickness, and lockdown measures to contain the spread of the virus. Bottlenecks in transport and logistics have generally made the movement of products along supply chains more difficult, but the disruptions varied depending on the mode of transport, with air freight most severely affected. There have not been major losses in bulk shipments, while disruptions to container and truck transport fall somewhere in-between. In consumer demand, there has been a drastic shift away from restaurants, food service and other types of "food away from home" towards food consumed at home, accompanied by an equally drastic soar in retail food demand, with particularly dramatic increase in sales of frozen and packaged foods [28].

Hao et al. examine the COVID-19 impact on the hotel industry in China and propose a conceptual COVID-19 management framework for counteracting the crisis in the post-COVID-19 period, comprised of phases (before, during and after the disaster), principles and strategies (leadership and communication strategies, HR strategies, service provision strategies, CSR strategies, financial strategies). The proposed framework involves all the hotel industry stakeholders (i.e. investors, property owners, customers, employees, communities, and the government). The study suggests that the pandemic will have significant and lasting effects on the following four major aspects of the Chinese hotel industry: multi-business and multi-channels, product design and investment preference, digital and intelligent transformation, and market reshuffle [18].

The evidence that the COVID-19 pandemic has had harmful effects not only on tourism and hotel industry, passenger transport and the service sector in general, but on manufacturing and logistics as well, is demonstrated in the study of Hilmola et al. The authors present the results of the research conducted in Northern Europe, particularly in Finland, based on the data obtained through surveys of large, medium and small enterprises involved in manufacturing, and secondary data on their imports-exports, revenues and the like. The surveys were conducted during the first wave of the pandemic. The data on foreign trade show that COVID-19 had a significant downward impact on Finland's exports and imports (a 20-30% decrease compared to December 2019), while the survey results reveal that most of the companies surveyed (75.4%) were able to successfully meet their customer demand requirements, that most of the companies did not have increased transportation costs due to the pandemic (although 44.3% respondents expected transport costs to rise), and that the pandemic might lead to higher inventory holdings, but in the longer term the respondents expected the inventories to return to the previous levels. This research shows that the pandemic has had asymmetric effects on manufacturing and logistics as some companies (particularly SMEs and some foreign markets) were more affected than the others [20].

Lutfi et al. demonstrate that social distancing as a measure to prevent the coronavirus spread, has affected SMEs in Indonesia, causing falling demand and revenue, increased costs of raw materials and production costs due to supply chain problems, but not resulting in reduced employment owing to stimulating economic policies [24]. According to Foss, social distancing due to COVID-19 has led to a number of changes in firms' organizational design. The author highlights two significant short-run organizational changes: one is manifest in the transformation of work from on-site work to mediated work via online platforms and the other means that companies were compelled to transfer decision competence to local managers [11].

Many researchers investigate the impact of the COVID-19 crisis on the financial position of companies, significance of asset management in times of crisis, financing in times of crisis, and importance of financial contingency planning

[4], [5], [8], [27], [36]. Zimon & Dankiewicz analyze the pandemic impact on the trade credit management strategy in Polish construction industry SMEs working together as part of group purchasing organizations during the period March and April 2020. Their analysis of the following financial indicators: receivables turnover ratio in days, the share of short-term receivables in current assets, credit position and the share of short-term investments in current assets, shows that during the first wave of the pandemic, compared to the pre-pandemic period, a shift occurred in trade credit management from moderately conservative and conservative to highly conservative policies. Changes in the ways these firms use trade credits are reflected in more prudent and reserved purchase of goods, stricter monitoring and control of all trade receivables, and a shift to cash sales or more limited long-term credit sales [36].

Based on the data on various types of businesses that were increasing their cash holdings in the pre-COVID-19 period, Cowling et al. estimate what types of SMEs will be most at risk of running out of cash if the crisis extends for a lengthy period of time. The significance of the precautionary saving practice for improved resilience of SMEs in times of crisis is heightened by the fact that, despite the implementation of several UK government-backed loan schemes designed to provide access to finance during the crisis, most SMEs typically respond to extreme uncertainty by avoiding additional borrowing in case they default on new loans. The analysis findings show that only 39% of the businesses were bolstering their cash balances leading up to COVID-19, which suggests that 61% of businesses may run out of cash. The authors estimate that there are potentially 118,639 UK businesses at immediate risk of a liquidity crisis if they cannot generate a revenue stream for a few months, and if the crisis should extend into the medium term (12 months or more), the number of businesses exposed to this risk may exceed 800,000. The majority in both these scenarios are micro businesses [8].

Analyzing database information on equity financing in the UK for Q1 and the first two months of Q2 2020, Brown et al. find that the volume of new equity transactions in the United Kingdom has declined markedly since the outbreak of the COVID-19 pandemic, with the sharpest drop in seed finance [4].

Carletti et al. forecast that a three-month lockdown in Italy in mid-COVID-19 pandemic will lead to an aggregate yearly drop in profits of about 10%, resulting in a 17% profit decrease for the sampled firms (80,972 firms), with more severe profit falls and financial distress for firms with high pre-COVID-19 leverage and those belonging to the manufacturing and wholesale trading sectors [5].

Impact of the COVID-19 crisis on business operations of SMEs in Serbia

Based on the results of the empirical research conducted in the wake of the first wave of the COVID-19 crisis (during July and August 2020), in this section of the paper, on a sample of 689 Serbian SMEs, we analyze the impact of the COVID-19 crisis on SMEs in Serbia.

In order to assess in what way the COVID-19 crisis has affected different aspects of business in SMEs in Serbia, in this section of our research we examine the nature, intensity and consequences of this impact. Our sample includes micro-sized entities (23%), small (58%) and medium-sized entities (19%). Manufacturing firms comprise about 29% of the sample and, in parallel to the country's economy structure, the service industry firms are more numerous (71%). Out of the total firms sampled, 42% of them operate in the domestic market only, while the remaining 58% operate in foreign markets irrespective of whether they do or do not operate in the domestic market as well. The sample also reflects the country's regional distribution of SMEs with the largest share of SMEs from the most developed region of Belgrade (33%) and the smallest share of SMEs from the poorest region of South and East Serbia (16%), while the firms from the remaining two regions have equal shares both in the country's economy and in our sample. The sample shares of SMEs involved in certain industries largely reflect the country's industry structure of the economy.

The sampled SMEs responded to the questions in the survey questionnaire, where they were asked to evaluate in what way the COVID-19 crisis affected their overall business as well as different individual aspects of their business such as logistics (procurement of materials, distribution of products, etc.), organization of business

activities (organization of processes, organization of the production process and work of employees, etc.), demand for their products/services (quantities of products/services sold, numbers of customers interested in their products/services), collection of trade receivables, and access to financing from external financial sources (banks, friends, etc.). As it is important to consider the type of SME when assessing the level of exogenous shock caused by the crisis [22, p. 501], we analyzed the overall impact of COVID-19 on SME business and its impact on the five aforesaid business segments along several significant features such as business activity, size, region, the extent of networking, and business digitalization (see Table 1 and Table 2 in Appendix).

Table 1 shows that, throughout the entire sample, the overall impact of COVID-19 on the business of SMEs and its impact on the five individual business segments were both perceived as negative, on the average. The most severe negative impact was on the product/service demand and customer acquisition segment, which is followed by the impact on the collection of receivables and then by equally negative impacts on logistics and the organization of business activities, while the least negative impact was recorded in the segment of obtaining financing. The last finding and the fact that, despite difficulties in the collection of receivables, few of the sampled firms applied for and used liquidity loans suggest that over the observed period the surveyed firms predominantly used a retrenchment strategy by reducing operating costs in the circumstances of falling demand and difficult receivable collection. This is consistent with the conclusion of Cowling et al. [8] that despite the implementation of several UK government-backed loan schemes designed to provide access to finance during the crisis, most SMEs typically respond to extreme uncertainty by avoiding additional borrowing in case they default on new loans. That additional borrowing was of little significance for SMEs is confirmed by the findings of the World Bank research where only 5% of micro-enterprises, and 7% of small and medium-sized ones that had financial difficulties applied for a loan during the lockdown, relying primarily on the their own reserves (62% of micro-enterprises, 64% of small, and 69% of medium-sized enterprises) [39].

When the pandemic impact is observed in manufacturing compared to the service sector, it is evident that the impact of the COVID-19 crisis was more severe on the firms belonging to the service sector than on manufacturing firms, in all three size categories (micro, small and medium-sized entities). Although in all business segments the observed impact was more intense in service than in manufacturing firms, this difference is particularly notable in the areas of logistics and financing. In the group of service sector SMEs, the most severe negative effects were recorded in the demand for services and logistics segments, whereas in the group of manufacturing firms, the demand for products and collection of receivables were most affected.

Regarding the firm size, it can be observed that there are certain differences in the intensity of the pandemic impact as well as in its nature. Table 1 shows that the larger the firm size, the less the intensity of adverse impact. In other words, most and worst affected were the smallest firms (sole entrepreneurs and micro-enterprises), slightly less adversely affected were small entities, and medium-sized firms recorded the least negative effects on their overall business. This is consistent with the view expressed in the research of the World Bank that medium-sized entities were less affected by the crisis in contrast to small and large enterprises probably due to their ability to combine their organizational and productive flexibility with greater ability to obtain resources, while micro-enterprises were more severely affected as they are predominant in the "lockdown sectors" [39]. Based on our detailed analysis of the COVID-19 impact on individual business segments, we may conclude that such an evaluation of the overall conditions is mostly a result of the pandemic impact on the demand for products and services, as in this case the aforedescribed inverse relationship is particularly notable. This could be explained by the fact that medium-sized firms already had long-term contracts executed with some other businesses (most commonly larger) as customers, which allowed them some certainty and production continuity at least for some time, even in a crisis. In addition, as a rule, medium-sized companies have a wider product and service portfolio than the small ones and are therefore less sensitive to the risk of changes in demand and more flexible in meeting new market requirements. The position

of small firms in a crisis is recognized as inferior to that of medium-sized ones by Neise & Diez as well [26]. Analyzing flood adaptation strategies applied by the manufacturing firms in Indonesia, the authors conclude that the adaptation of small firms to flood crisis is less effective compared to that of medium and large companies to their inferior routines and dynamic capabilities.

On the other hand, although all firms cited collection of receivables as a significant problem during the pandemic, Table 1 clearly shows that this problem is more manifest in medium-sized than in small and micro firms. This may be a consequence of the fact that, unlike sole entrepreneurs, which usually collect receivables for their products/services instantly, larger companies provide their customers with longer payment terms so that they had more serious problems to collect those receivables with the onset of the crisis. Shorter collection periods are significant according to the research of Zimon & Dankiewicz [36], who highlight that, due to the crisis, changes occurred in the use of trade credits, and that those changes entail, inter alia, a shift to cash sales or more limited long-term credit sales. Further, in the segment of business activities organization, a more adverse effect can be observed in medium than in micro-enterprises, which may be a direct consequence of the introduced government measures. A relatively significant COVID-19 impact on the organization of business activities is to a large extent dependent on the employees' commute problems due to the suspended intra-settlement and inter-settlement public transport during the observed period. This is consistent with the World Bank research where it is pointed out that smaller firms were able to organize employee transport to work and their shortened working hours more easily [39]. Moreover, the compulsory measure of restricting the number of people per square meter of workspace, i.e. the prescribed physical distance between the employees, and the switch from on-site work to remote work via online platforms posed additional difficulties in organizing daily business activities and allowed for more opportunistic behavior of employees. Associating these organizational changes resulting from the physical and social distancing due to the COVID-19 crisis with the economics-based organization design theory, Foss [11] explains that such changes will induce further changes in employee reward systems towards more performance-dependent salaries, as well as a higher degree of formalization as organizations seek to maintain control under conditions of distance and reduce the moral hazard problems caused by a higher level of informational asymmetry. Although the aforesaid measures had a negative impact on the organization of business activities in all sampled SMEs, it was much harder for companies with larger headcount (50 to 250 employees) to implement these activities.

The pandemic effects were far less pronounced in the segment of obtaining financing from external sources in all three size groups of companies, particularly in larger enterprises. This is a result of the predominant focus of all firms on internal sources of financing (by reducing assets, deferring liability settlement, etc.) on the one hand, and on the other, of the government measures to support companies, which were mostly financial in nature.

It is interesting that, although the COVID-19 crisis impact was designated as negative or extremely negative in all regions, the most severe adverse impact was recorded in the most developed (Belgrade) and most underdeveloped (South and East Serbia) parts of the country, while the remaining two regions (Vojvodina and Central and West Serbia) experienced more moderate adverse effects. The uneven pandemic impact is related to the regional economic structure of manufacturing and service companies[1].

The greatest differences in the pandemic impact are manifest among individual industries. Table 1 shows that the most severe adverse pandemic effects were experienced by the following industries: arts, entertainment and recreation, accommodation and food service activities, mining and quarrying, transportation and storage, and education. Analyzed by business segments, although the said industries were most affected in all the segments, the strongest negative impact was recorded in the demand for products and services. The lockdown introduced in the observed period and complete suspension of work in

1 Viewed by the region, the largest numbers of employees in the processing industry (the most significant portion of the manufacturing sector, which has suffered much less adverse COVID-19 impact than the service sector) have the Vojvodina Region (31.0%) and Šumadija and West Serbia Region (31.9%). Statistical Yearbook, Statistical Office of the Republic of Serbia (available at: https://publikacije.stat.gov.rs/G2019/Pdf/G20192052.pdf)

museums, cinemas and theaters account for the highest negative effects in the arts, entertainment and recreation industry. Significant negative effects were recorded in the accommodation and food service activities and in the transportation and storage industry. In addition to the effects of the lockdown, shortened working hours, and other internal safety and protection measures, the biggest losses incurred in these industries were due to the closing of international borders. The closing of international borders significantly affected the transportation and storage industry, which is evidenced by the fact that among larger companies, which suffered a much more severe impact than micro-enterprises in this industry, more numerous are those that operate in foreign markets. Moreover, the closing of international borders dealt a severe blow to the accommodation and food service activities, which reduced the number of foreign tourists, and led to extremely low occupancy rates. A huge blow was struck to the education industry, which was expected since in the first wave of the crisis educational institutions were forced to completely change their previous business model. The two industries that comprise most of the country's economy, wholesale and retail trade and manufacturing industry recorded negative effects as well, yet slightly less severe than average. Finally, the least affected industries include real estate activities, administrative and support service activities, human health and social work activities. In terms of impact on the individual business segments, some of these industries even recorded positive pandemic effects. Lim et al. [23] also suggest that the pandemic has had twofold effects, analyzing both positive and negative impacts of the COVID-19 pandemic on the growth of SMEs. In our sample, there were no negative effects on the organization of business activities in the education industry. Although suffering the most intensive stresses due to the business model change, this sector saw this change in the business model leading to digitalization and, consequently, more efficient organization of the work modes, as is found by Ebersberger & Kuckertz [10]. Although it is assumed that universities are inert in times of crisis, the authors conclude otherwise and demonstrate that universities and research institutions had the responses to the COVID-19 crisis that did not differ much from those of the established incumbent firms. Positive COVID-19 effects on the organization of business activities in medium-sized enterprises were seen in the electricity, gas, steam and air conditioning supply industry. Although the COVID-19 pandemic caused falling demand in most industries, it had a positive impact on the demand in the real estate micro firms.

The importance of networking and digitalization in crisis is highlighted by the finding that the firms most severely affected by the pandemic searched for help through networking and digitalization of their business. As the question about networking in our questionnaire is asked so that the response indicates whether the firms asked for assistance and advice from other entities after the onset of the COVID-19 pandemic, based on Table 2 we may conclude that, regardless of their size, the firms that suffered the most severe adverse pandemic impact on their overall business were most engaged in networking, exchanging experiences, and seeking advice and help form other companies. Another observation here is that an increase in the size of firms correlates with increased share of firms engaged in networks of other entities, on the one hand, and decreased severity of the COVID-19 impact, on the other. This suggests that networking and exchange of experiences with others were significant during the crisis, and that a greater extent of networking contributed to a decrease in the intensity of COVID-19 effects. A good example of the role collaboration had in overcoming the crisis are SMEs in Bogo Village, which, through collaboration at the individual, community and institutional levels, managed to turn their fall in sales of 70% at the onset of the pandemic (March 2020) into a growth in sales of 200% in July 2020 [33].

In parallel with the foregoing conclusion, the firms that experienced more severe COVID-19 impact on the overall business applied business digitalization to a greater extent (i.e. used at least one of the following three forms of digital business: digital sales, digital marketing and/or digital procurement of resources). Since the industries that suffered the most severe adverse effects in most cases were forced to apply at least one of the aforesaid forms of digital business (e.g. online theatre plays and gallery exhibitions, a shift from in-house to online food ordering and delivery in restaurants, a shift from traditional to online lectures

for schools and universities, etc.), it is reasonable that the firms with digital business made up the vast majority of all the sampled firms as well as the vast majority in each category of the firms sampled. Moreover, the increase in the size of the firms correlates with the increase in the extent of their business digitalization and lesser severity of the COVID-19 impact, which is evidence of the contribution of digitalization to counteracting the pandemic. This is consistent with the conclusions of Apedo-Amah et al. showing that the most significant response of firms to the crisis is increased use of the internet, social media and digital technologies, yet that such increased use of digital platforms is significantly less observed in smaller firms [2]. If we observe only those of our sampled firms that used digitalization to a great extent (i.e. used all three forms of digitalization), their number is still low (16%), which implies that in Serbian SMEs digital literacy is still low.

Innovation responses of SMEs to the Covid-19 crisis

In the struggle against the crisis effects, a prompt, yet at the same time a well-thought-out strategy is the first step in overcoming the crisis. Regardless of the varying crisis effects on different types of firms, business activities and segments, each of those firms must find an adequate response to the crisis in order to adapt to a new normal. Although crises in general restrain innovation activities, it is quite common that crises bear the potential for new entrants to cater to new needs [10, p. 126], yet they can trigger significant changes in incumbents facing the crisis.

Experiences of most countries and economies after the global financial crisis (GFC) show that investments in R&D contributed considerably to the mitigation of the crises effects and that it is innovation that moved the entire economic order forward. Given that there are similarities between the GFC and COVID-19 crisis (firstly, both are cases of a sharp exogenous shock and secondly, in both crises the most severe effect on firms is reflected in their reduced liquidity – in the case of the GFC in reduced availability of commercial financing, and in the case of the COVID-19 crisis in reduced turnover [31, p. 510]), experiences of firms from the GFC and other crises may provide a basis for the creation of strategies for overcoming the COVID-19 effects. For example, according to Roper & Turner, companies that were able to maintain adequate R&D investments during and after the GCF not only survived the crisis with less difficulty, but also achieved higher growth and profitability [31]. Further, relying on the data from the post-GFC period, Devece et al. conclude that innovation and opportunity recognition are more relevant as success factors during periods of recession than during periods of prosperity [9]. Hausman & Johnston [19] underline a significant impact of innovation on the economy and its critical role in pulling the economy out of a financial crisis. In addition, in their study, these authors recommend both the management and external stakeholders how to stimulate innovation and enable easier overcoming of exogenous disasters. Consequently, innovation will be the key factor of the firms' recovery in the case of COVID-19 crisis as well, and the hub of economic and social recovery of the entire country.

On the other hand, innovation activities are by their nature expensive for all companies, risky and always uncertain in terms of their outcomes. A limiting condition in instances of SMEs is a lack or difficult access to resources, which puts this group of companies into an even more disadvantageous position in terms of overcoming the effects of the COVID-19 crisis through innovation. Companies that entered the crisis with more financial slack have a greater ability to respond to the crisis effects by undertaking more risky and radical innovation than those with substantial financial constraints [31, p. 511]. Therefore, firms must search for new and cheaper ways of creating innovation.

One way to overcome this type of constraint and manage innovation in SMEs entails their greater openness. Analyzing how openness as a response to a crisis contributes to mitigation of the crisis adverse effects on the economy and the entire community, Chesbrough (2020) highlights an even greater significance of opening up in innovation management during the crisis recovery periods [6]. Opening up mobilized knowledge from many different places, brought major advances in our learning and accelerated our progress against the virus (e.g. the Gates Foundation, Chan-Zuckerberg Foundation and the

White House Office of Science and Technology Policy joined forces to publish all of the known medical literature on the coronavirus, in machine-readable form; GITHUB and the Humanitarian Data Exchange each have an accumulating series of datasets on the geography of the spread of the disease) [6, p. 410]. Openness and joint efforts of scientists, pharmaceutical companies, governments and foundations all over the world have led to the most valuable innovation of all – the discovery of a COVID-19 vaccine. Adoption of such behaviors by business firms can stimulate their innovativeness and add to their faster and easier recovery and overcoming of the crisis adverse consequences.

Chesbrough & Bogers [7, p. 12.] define open innovation as a "distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organization's business model". Openness may stimulate value creation, thus allowing SMEs access to a greater and more diverse pool of knowledge and abilities [13, p. 27]. SMEs involved in open innovation activities are much more innovation-productive and will consequently record more significant entrepreneurial growth than those with a closed strategy [38]. According to Gassmann & Enkel, there are three core open innovation processes [14]. Firstly, the knowledge flow across the company boundaries may refer to the external knowledge inflow, where, relying on the achievements of others, a company may enrich its innovation capacities. Although this most commonly entails the acquisition/purchase of knowledge and innovative solutions from other firms in the environment, the external knowledge inflow does not necessarily require the possession of financial resources. By deploying the search strategy, SMEs may explore external sources of knowledge and information in order to strengthen or, more importantly in this crisis, accelerate their internal R&D capacities [32]. Here firms scan their environment, communicate with their customers, suppliers, distributors and others in order to gain access to novel ideas, knowledge and expertise to innovate. The access to missing technical knowledge, equipment, premises, laboratories and the like may greatly stimulate innovative capabilities of SMEs. In addition, cooperation with universities and access to well-trained students represent another source of external knowledge, which may contribute to the identification and deployment of innovation capabilities [21, p. 5]. For instance, Parida et al. [29] demonstrate that different inbound open innovation strategies may result in different innovation outcomes (incremental and radical innovations), but what they have in common is the fact that any form of openness leads to increased innovativeness of SMEs. Analyzing the change in innovation activities of firms caused by the globalization effects, Narula points out that SMEs tend to have higher R&D productivity, and this is largely due to their ability to innovate by exploiting the knowledge created outside the firm. The author explains this by the fact that, unlike large firms which have material advantages in creating and undertaking innovation, SMEs have the so-called "behavioral advantage" [25, p. 154]. Secondly, openness is also reflected in leveraging internal knowledge through external commercialization processes via putting ideas to market, licensing intellectual property (IP) and/or multiplying technology by idea transfer to other companies or stakeholders in the ecosystem [21, p. 5]. This means that ideas that have not been realized within a firm needn't be left lying in the drawer, but the firm may find an adequate way for their commercialization externally. Internally developed innovation or an idea for which there are no sufficient financial resources, or which is simply not related to a firm's core business activity, may be used by other companies in the market. Although such openness is more dominant in large companies, primarily due to their more substantial R&D capabilities and hence a large number of unused innovative solutions, some SMEs may also benefit from their own unused innovations (technological solutions no longer in use, ideas that have never been commercialized, etc.). Those are SMEs that operate in highly innovative industries where human capital excellence is the key source of innovation. The third and for SMEs an equally important process of achieving greater openness and, as a result, increased innovation, is that of coupled innovations. It includes joint value creation through alliances, synergies, cooperation and joint ventures, realized through both internalizing external knowledge and externalizing internal knowledge [21, p. 5]. Cooperation is based on a deep and long-term

relationship with stakeholders (customers, suppliers, competitors, universities, state authorities, etc.), whereby give and take of knowledge is the key to success for both sides [14, p. 12]. Pustovrh et al. demonstrate that SMEs involved in various forms of open collaboration will achieve higher innovativeness and thus a greater ability to commercialize innovation [30]. SMEs may build such collaboration with both other SMEs and large enterprises. Large companies often seek to enter into alliances with SMEs in order to exploit their flexibility and innovativeness, but the caution that SMEs exercise when it comes to choosing alliance partners is a major barrier to collaboration [25, p.154]. Therefore, introducing SMEs to the benefits and savings that they may realize by creating innovations with others is a big step toward a more innovative ecosystem. It is important to note that the aforementioned different forms of openness of SMEs require the different ways of organizing innovative activities that are manifested as differences in resource commitments, managerial commitment, reciprocity and the importance of trust [13, p. 8], as well as that the significance of an individual form of openness to a particular firm will depend on the firm's characteristics [14]. Thus, for instance, Hinteregger et al. [21, p. 21] emphasize that although inbound open innovation is important for the creation of innovation in all SMEs, its effects for small-sized enterprises are higher than for medium-sized ones, while the effects of coupled open innovation are significantly higher for medium-sized enterprises than for smaller ones.

In assessing whether a firm should engage in creating innovation independently or in collaboration with a partner, it is necessary to consider the firm's currently available resources. If a firm has sufficient own resources and capabilities to undertake innovation independently, it should do so without collaborating with others. However, a lack of own resources compels firms to join their resources with complementary resources of other companies, i.e. to undertake co-innovation activities with their partners. On the other hand, when deciding whether an innovative activity (independent or in collaboration with others) should be focused on the improvement of the existing business or the development of new areas of business, a company ought to take into account the magnitude of the COVID-19 crisis impact on its business. If the crisis has had severe adverse effects on its business, a company will focus on addressing the current pressing issues and retaining the existing customers in order to restore its business to the pre-crisis condition. In contrast, companies less or not at all affected by the crisis will use their position and search for the new opportunities created by the crisis, through which they may expand their businesses, attract new customers and create a long-term competitive advantage. How critical it is to assess these two dimensions prior to the selection of the most adequate innovation strategy, is explained by Wang et al. [37] in their research of the COVID-19 crisis effects on Chinese companies. Using two dimensions: (a) motivation for innovation, which reflects the magnitude of the COVID-19 crisis on the business (where a problemistic search entails a severe adverse effect, while a slack search refers to a minor or no effect of the crisis on the firm's business) and (b) the level of collaborative innovation (which reflects the extent of the firm's resources available for innovation and, consequently, a selection between independent innovation and collaborative innovation), the authors identify four innovation-based strategies. The first responsive strategy is focused on problemistic search and independent innovation, and it is deployed when a company suffers severe adverse effects of the COVID-19 crisis but at the same time has sufficient resources and internal capabilities to create innovation and improve the currently existing business (e.g. transition from offline to online marketing channels). In other words, a company will be able to implement this type of innovation successfully if it is able to reconfigure its previous offline resources and train them to work in an altered environment (e.g. Peacebird [37, p. 216], clothing manufacturer and sales company embraced the advantages of fast-growing internet platforms and, having switched from traditional to online sales, even improved its contact with consumers through its virtual store). Other examples are those firms that, in the circumstances of insufficient demand for their current product mix, used their resources and introduced new products whose demand was growing due to the crisis (e.g. due to the closing of restaurants and hotels, a UK gin distillery [40] used its technology and commenced

the production of disinfectants; Airbnb [17, p. 4] offered its users a completely new service of introducing other cultures from around the world to them). The collective strategy is also useful for the firms that experienced severe adverse COVID-19 crisis effects (problemistic search), yet do not have sufficient capacities to respond to the crisis independently or their business is not suitable for the online environment (collaborative innovations). In such cases, based on their own and their partners' resources, companies enter new business ventures to counteract the crisis effects, but at the same time, by remaining in the market, they maintain and revive the current business activities that have become less attractive due to the crisis (e.g. Sinopec Corp. [37, p. 216] entered into collaboration with local fruit and vegetable farmers and offered its customers a contactless supply of fresh groceries in its wide network of gas stations). The proactive strategy is characterized by slack search and independent innovation, which means that it is suitable for the firms that suffered little or no impact of the crisis and could use their capabilities and resources to create new businesses, thus expanding their current customer/user base and ensuring a long-term competitive advantage. Numerous companies used their accumulated slack resources of internet technologies as well as their current user bases in order to develop new businesses to satisfy novel needs that the crisis gave rise to (e.g. technology and social media firm Tencent [37, p. 218] developed an additional application – Tencent Conference – which enabled its users to resolve the problem of holding meetings during the lockdown; Cargo used its current customer base and placed the CargoButler service). Finally, the partnership strategy may be deployed in cases of no major adverse effects of the crisis, when a firm can join resources with another firm and enter completely new partnerships, thus using the opportunities created by the crisis. In the event of the COVID-19 crisis, this strategy will be based on the use of the advantages of digital technologies of a firm and complementary resources of its external partners (e.g. internet platform TikTok [37, p. 217] used its capacities in the area of digital technologies and offered completely new services such as online exhibitions, theater plays etc. in collaboration with theaters and museums).

Innovative changes are also important for the companies that are part of a global value chain (GVC), i.e. companies that at least in one of their business segments (whether it be the purchase of raw materials, production, distribution and sales or another segment) depend on defined bilateral or multilateral relationships of the countries they operate in. Although over the last several decades GVCs have been the cornerstone of the global economy, driving the expansion of international cooperation [16, p. 17], numerous trade restrictions among countries and crises such as the one caused by the COVID-19 pandemic lead to their disruption. Some researchers even speak of a "new era of significant isolationism" [1, p. 43]. Companies therefore face the need to find new strategies to organize their GVCs. Based on the historical case studies of three classic GVCs facing different trade restrictions since the 1970s up to date, Gereffi et al. [16] emphasize the significance of two strategies for the firms within GVCs in overcoming the restriction effects. One strategy entails switching production locations, markets and/or suppliers. In other words, companies may adapt to major restrictions imposed on the cooperation with other countries by changing the locations of supply and demand, thus replacing their previous partners within the supply chain with new ones (e.g. U.S. trade ban against Huawei and its suppliers forced Huawei to turn to domestic suppliers [16, p. 18]). Given that the introduction of bilateral restriction leads to relocating certain firms' activities to other countries less or not at all affected by the defined constraints, the restrictions imposed due to the COVID-19 crisis have even more severe effects as they significantly reduce the number of countries for cooperation. Thus, in order to mitigate the crisis effects, the companies that in any segment of their business have relied on the partners from other countries can now turn to partners in the domestic market. This view is supported by Antras [1, p. 37], who highlights that, in contrast to bilateral trade wars, where production is relocated to third countries unaffected by the bilateral trade war rather than being reshored to domestic economies, in the event of multilateral restrictions, deglobalization becomes more significant and the return to domestic market much more likely. The other group of strategies

includes economic upgrading strategies, which entail capturing more value by product upgrading, process upgrading, channel upgrading, integration in supply chain or functional upgrading, e.g. moving into higher value-added segments in GVCs [12]. Companies may pursue switching or upgrading strategies either separately or simultaneously. Such changes often result in the reconfiguration of the geographic and organizational structure of GVCs and in turn can have significant implications for the economic and social upgrading of countries and firms [16, p. 4]. To summarize, restrictions and constraints brought about by the COVID-19 crisis need not necessarily cause a demise of GVCs. Rather, they lead to their reconfiguration, where a key part in such reshaping is played by firms' timely selection of an adequate and innovate strategy.

Conclusion

The aim of this paper is to analyze the impact of the COVID-19 crisis on the business operations of SMEs in Serbia as well as to highlight the significance of innovation for mitigating and/or eliminating the crisis effects.

The main conclusion of the analysis is that that the overall impact of COVID-19 on SMEs' business and its impact on the five individual business segments are both perceived as negative, on the average, throughout the entire sample, with the most negative impact associated with the market operations of firms (product/service demand and customer acquisition), less negative impact recorded in the segments of logistics and business activities organization, and the least negative impact on financing. The COVID-19 crisis had more severe negative impact on service sector firms (particularly those in arts, entertainment and recreation, accommodation and food service activities, transportation and storage, and education industries) than on manufacturing firms, where mining and quarrying, manufacturing and construction industries were most severely affected. The negative impact of the COVID-19 crisis on the overall SMEs' business is inversely related to their size, i.e. micro-enterprises suffered the most severe impact, small-sized entities experienced less severe and medium firms the least severe impact. Such an impact of the crisis on the overall business of the sampled firms according to their size predominantly reflects the negative crisis impact on demand (the most severe impact on micro, less on small and the least on medium enterprises) and, to a smaller extent, the impact on logistics (the most severe impact on small, less on micro and the least on medium enterprises). The negative impact of the crisis on financing is almost the same for all SMEs, while the negative impact on the organization of business activities was the most severe in medium and the least severe in micro-enterprises with a similar distribution of the impact on receivables.

It is important to underline that, despite the average evaluation of the COVID-19 crisis impact on the overall business and individual business aspects of all SMEs in our sample as negative, individual business aspects of SMEs in some industries saw no negative impact of the COVID-19 crisis or its impact was even positive. The positive impact of the COVID-19 crisis was the most notable on the segment of business activities organization of medium-sized firms in the electricity, gas, steam and air conditioning supply industry and on the segment of demand for products/services of micro-enterprises in the real estate activities. The COVID-19 crisis had no negative effects on the organization of business activities in the education industry, where it made digitalization of the teaching process a necessity. Generally, the firms that suffered the most severe negative impact of the COVID-19 crisis on the overall business applied digitalization to a greater extent, where the extent of digital business rises with the increase in size of the firms, while the severity of the pandemic effects decreases. Similarly, SMEs tendency to engage in networking increases with more intense severity of the negative COVID-19 impact on their overall business. This tendency is more noticeable the larger the firms are and, as a result, the negative impact of the crisis is becoming less and less severe.

Lastly, based on the predominantly adverse effects of the COVID-19 crisis on the business operations of SMEs in Serbia and taking into account the experiences of other economies with the COVID-19 crisis as well as the lessons learned from previous crises, in this paper we highlight the significance of innovation responses of SMEs to the crisis effects.

References

1. Antras, P. (2020). De-Globalisation? *Global value chains in the post-COVID-19 age* (NBER Working Paper No. 28115). Cambridge, MA: National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w28115
2. Apedo-Amah, M. C., Avdiu, B., Cirera, X. et al. (2020). *Unmasking the impact of COVID-19 on businesses: Firm level evidence from across the world* (Policy Research Working Paper No. 9434). Finance, Competitiveness and Innovation Global Practice - October 2020. Washington, DC: The World Bank Group, p. 59.
3. Beenee, C. (2020). Resilience of local food systems and links to food security – A review of some important concepts in the context of COVID-19 and other shocks. *Food Security*, *12*, 805–822.
4. Brown, R., Rocha, A., & Cowling, M. (2020). Financing entrepreneurship in times of crisis: Exploring the impact of COVID-19 on the market for entrepreneurial finance in the United Kingdom, *International Small Business Journal: Researching Entrepreneurship*, *38*(5), 380–390.
5. Carletti, E., Oliviero, T., Pagano, M., Pelizzon, L., & Subrahmanyam, M. G. (2020). The COVID-19 shock and equity shortfall: Firm-level evidence from Italy. *The Review of Corporate Finance Studies,* 9, 534–568.
6. Chesbrough, H. (2020). To recover faster from Covid-19, open up: Managerial implications from an open innovation perspective. *Industrial Marketing Management*, *88*, 410–413.
7. Chesbrough, H., & Bogers, M. (2014). Explicating open innovation: Clarifying an emerging paradigm for understanding innovation. In H. Chesbrough, W. Vanhaverbeke & Joel West (Eds.), *New Frontiers in Open Innovation* (pp. 3–28). Oxford: Oxford University Press.
8. Cowling, M., Brown, R., & Rocha, A. (2020). Did you save some cash for a rainy COVID-19 day? The crisis and SMEs. *International Small Business Journal: Researching Entrepreneurship*, *38*(7), 593–604.
9. Devece, C., Peris-Ortiz, M., & Rueda-Armengot, C. (2016). Entrepreneurship during economic crisis: Success factors and paths to failure. *Journal of Business Research*, *69*(11), 5366–5370.
10. Ebersberger, B., & Kuckertz, A. (2021). Hop to it! The impact of organization type on innovation response time to the COVID-19 crisis. *Journal of Business Research*, *124*, 126-135.
11. Foss, N. J. (2020). The impact of The Covid-19 pandemic on firms' organizational designs. *Journal of Management Studies, 58*(1), 270–274. Retrieved from https://onlinelibrary.wiley.com/doi/epdf/10.1111/joms.12643
12. Frederick, S., & Gereffi, G. (2011). Upgrading and restructuring in the global apparel value chain: why China and Asia are outperforming Mexico and Central America. *International Journal of Technological Learning, Innovation and Development, 4*(1-3), 67–95.
13. Freel, M., & Robson, P. J. (2017). Appropriation strategies and open innovation in SMEs. *International Small Business Journal*, 35(5), 1–38.
14. Gassmann, O., & Enkel, E. (2004). Towards a theory of open innovation: Three core process archetypes. *Proceedings of the R&D Management Conference* (RADMA), Lisbon. Retrieved from https://www.alexandria.unisg.ch/274/1/Gassmann_Enkel.pdf
15. Gereffi, G. (2020). What does the COVID-19 pandemic teach us about global value of medical supplies, *Journal of International Business Policy,* 3, 287–301.
16. Gereffi, G., Lim, H. C., & Lee, J. (2021). Trade policies, firm strategies, and adaptive reconfigurations of global value chains. *Journal of International Business Policy*, 1–17.
17. Guillen, M. F. (2020, July 7). How businesses have successfully pivoted during the pandemic. *Harvard Business Review*. Retrieved from https://hbr.org/2020/07/how-businesses-have-successfully-pivoted-during-the-pandemic
18. Hao, F., Xiao, Q., & Chon, K. (2020). COVID-19 and China's hotel industry: Impacts, a disaster management framework, and post-pandemic agenda. *International Journal of Hospitality Management*, *90*, 102636, 1–11.
19. Hausman, A., & Johnston, W. J. (2014). The role of innovation in driving the economy: Lessons from the global financial crisis. *Journal of Business Research*, *67*(1), 2720–2726.
20. Hilmola, O., Lä̈hdeaho, O., Henttu, V., & Hilletofth, P. (2020). Covid-19 pandemic: Early implications for North European manufacturing and logistics. *Sustainability*, *12*, 8315, 1–13.
21. Hinteregger, C., Durst, S., Temel, S., & Yesilay, R. B. (2019). The impact of openness on innovation in SMEs. *International Journal of Innovation Management*, *23*(01), 1–30.
22. Juergensen, J., Guimón, J., & Narula, R. (2020). European SMEs amidst the COVID-19 crisis: Assessing impact and policy responses. *Journal of Industrial and Business Economics*, *47*(3), 499–510.
23. Lim, D. SK, Morse, E. A., Yu, N. (2020). The impact of the global crisis on the growth of SMEs: A resource system perspective. *International Small Business Journal: Researching Entrepreneurship*, *38*(6), 492–503.
24. Lutfi, M., Buntuang, P. C. D., Kornelius, Y., Erdiyansyah, Bakri Hasanuddin, B. (2020). The impact of social distancing policy on small and medium-sized enterprises (SMEs) in Indonesia, *Problems and Perspectives in Management*, *18*(3), 492–503.
25. Narula, R. (2004). R&D collaboration by SMEs: new opportunities and limitations in the face of globalisation. *Technovation*, *24*(2), 153–161.
26. Neise, T., & Diez, J. R. (2019). Adapt, move or surrender? Manufacturing firms' routines and dynamic capabilities on flood risk reduction in coastal cities of Indonesia. *International Journal of Disaster Risk Reduction*, *10*(33), 332–342.
27. Obrenovic, B., Du, J., Godinic, D., Tsoy, D., Khan, M. A. S., & Jakhongirov, I. (2020). Sustaining Enterprise Operations and Productivity during the COVID-19 Pandemic: Enterprise Effectiveness and Sustainability Model. *Sustainability*, *12*, 59821, 1–27.
28. Organisation for Economic Co–operation and Development (OECD). (2020). *Food supply chains and covid-19: Impacts and policy lessons* (2020). Paris: OECD. Retrieved from https://read.oecd-ilibrary.org/view/?ref=134_134305-ybqvdf0kg9&title=Food-Supply-Chains-and-COVID-19-Impacts-and-policy-lessons
29. Parida, V., Westerberg, M., & Frishammar, J. (2012). Inbound open innovation activities in high-tech SMEs: the impact on innovation performance. *Journal of Small Business Management*, *50*(2), 283–309.
30. Pustovrh, A., Jaklič, M., Martin, S. A., & Rašković, M. (2017). Antecedents and determinants of high-tech SMEs' commercialisation enablers: opening the black box of open innovation

practices. *Economic research-Ekonomska istraživanja*, *30*(1), 1033–1056.

31. Roper, S., & Turner, J. (2020). R&D and innovation after COVID-19: What can we expect? A review of prior research and data trends after the great financial crisis. *International Small Business Journal*, *38*(6), 504–514.
32. Spithoven, A., Vanhaverbeke, W., & Roijakkers, N. (2013). Open innovation practices in SMEs and large enterprises. *Small business economics*, *41*(3), 537–562.
33. Tandelilin, E., Rani, K. C., Jayani, N. I., & Darmasetiawan, N. K. (2020). Collaborative entrepreneurship and group commitment as a strategy for survival in the pandemic Covid 19: A case study of SMEs in Bogo Village-Bojonegoro Regency-East Java. In *International Joint Conference on Arts and Humanities (IJCAH 2020)* (1161–1165). Atlantis Press.
34. Yu, K. (2020, July 2). Pandemic quickens diversification of supply chains beyond China. *Verisk Maplecroft*. Retrieved from https://www.maplecroft.com/insights/analysis/pandemic-quickens-diversification-of-supply-chains-beyond-china/
35. Zhu, G., Chou, M. C., & Tsai, C. W. (2020). Lessons learned from the COVID-19 pandemic exposing the shortcomings of current supply chain operations: A long-term prescriptive offering, *Sustainability, 12*, 5858, 1–19.
36. Zimon, G., & Dankiewicz, R. (2020). Trade credit management strategies in SMEs and the COVID-19 pandemic—A case of Poland. *Sustainability*, *12*, 6114, 1–16.
37. Wang, Y., Hong, A., Li, X., & Gao, J. (2020). Marketing innovations during a global crisis: A study of China firms' response to COVID-19. *Journal of business research*, *116*, 214–220. https://doi.org/10.1016/j.jbusres.2020.05.029
38. Wikhamn, B. R., Wikhamn, W., & Styhre, A. (2016). Open innovation in SMEs: A study of the Swedish bio-pharmaceutical industry. *Journal of Small Business & Entrepreneurship*, *28*(2), 169–185.
39. World Bank Group and Center for Advanced Economic Studies (2020). *The COVID-crisis and Serbia's SMEs: Assessment of impact and outline of future scenarios,* Belgrade: CEVES. Retrieved from https://ceves.org.rs/wp-content/uploads/2020/11/WB-Covid-19_-Report-final.pdf
40. 58 Gin (2021). *Hand "Gin"itizer.* Retrieved from https://58gin.com/product/hand-sanitizer/

Table 1: Impact of the COVID-19 crisis on different business segments of SMEs in Serbia (Part 1)

	Overall Impact				Impact on Logistics				Impact on Organization				Impact on Demand				Impact on Receivables				Impact on Financing			
	Micro	Small	Medium	Total	Micro	Small	Medium	Total	Micro	Small	Medium	Total	Micro	Small	Medium	Total	Micro	Small	Medium	Total	Micro	Small	Medium	Total
Services	2.11	2.05	2.07	2.07	2.33	2.22	2.35	2.28	2.44	2.27	2.22	2.31	2.13	2.10	2.11	2.11	2.39	2.19	2.08	2.23	2.72	2.57	2.56	2.61
Manufacturing	2.14	2.18	2.18	2.18	2.19	2.41	2.53	2.41	2.62	2.34	2.21	2.35	2.19	2.21	2.38	2.24	2.19	2.28	2.32	2.28	2.86	2.78	2.79	2.80
Belgrade	2.08	1.96	2.13	2.02	2.34	2.24	2.45	2.31	2.34	2.14	2.21	2.21	2.09	2.01	2.11	2.05	2.29	2.21	2.21	2.24	2.64	2.62	2.60	2.62
Central and West Serbia	2.00	2.20	2.18	2.17	2.14	2.33	2.26	2.28	2.43	2.28	2.24	2.29	2.00	2.25	2.38	2.24	2.43	2.18	2.09	2.19	2.48	2.62	2.65	2.60
South and East Serbia	1.70	2.07	1.95	1.99	2.20	2.32	2.24	2.28	2.30	2.46	2.19	2.36	1.80	2.27	2.00	2.13	2.10	2.15	1.90	2.07	2.30	2.73	2.62	2.64
North Serbia	2.14	2.16	2.24	2.16	2.34	2.28	2.48	2.32	2.57	2.39	2.48	2.45	2.16	2.13	2.36	2.17	2.32	2.20	2.52	2.27	2.82	2.67	2.80	2.73
Accommodation and Food Service Activities	1.00	1.22	1.14	1.16	1.67	2.00	1.86	1.89	1.00	1.78	1.71	1.63	1.00	1.11	1.29	1.16	1.67	1.78	1.29	1.58	1.67	1.89	1.71	1.79
Administrative and Support Service Activities	2.20	2.50	3.00	2.44	2.40	2.50	3.50	2.67	2.40	2.50	3.00	2.56	2.20	2.50	3.00	2.44	1.80	2.50	3.00	2.22	2.20	3.00	3.00	2.56
Agriculture, Forestry and Fishing	2.31	2.35	2.25	2.32	2.23	2.15	2.50	2.22	2.46	2.50	2.25	2.46	2.38	2.35	3.00	2.43	1.92	2.15	2.50	2.11	2.92	2.80	2.75	2.84
Arts, Entertainment and Recreation	-	1.00	1.00	1.00	-	1.25	2.00	1.40	-	1.25	1.00	1.20	-	1.25	1.00	1.20	-	1.50	1.00	1.40	-	1.25	3.00	1.60
Construction	2.21	2.25	2.32	2.26	2.43	2.39	2.41	2.40	2.64	2.32	2.36	2.38	2.21	2.32	2.18	2.27	2.57	2.30	2.09	2.29	3.07	2.61	2.50	2.65
Education	-	-	2.00	2.00	-	-	2.00	2.00	-	-	3.00	3.00	-	-	2.00	2.00	-	-	3.00	3.00	-	-	3.00	3.00
Electricity, Gas, Steam and Air Conditioning Supply	2.00	2.50	2.00	2.38	2.00	2.83	2.00	2.63	3.00	2.00	4.00	2.38	2.00	2.17	3.00	2.25	3.00	2.00	2.00	2.13	3.00	2.67	2.00	2.63
Financial and Insurance Activities	2.17	2.33	3.00	2.36	2.17	3.00	2.50	2.45	2.17	2.67	3.00	2.45	2.00	2.33	2.50	2.18	2.83	2.67	2.00	2.64	2.17	3.00	3.00	2.55
Human Health and Social Work Activities	2.50	2.00	-	2.40	3.00	2.00	-	2.80	2.75	2.00	-	2.60	2.50	2.00	-	2.40	3.25	1.00	-	2.80	2.50	3.00	-	2.60
Information and Communication	1.67	1.88	2.43	2.06	3.00	2.50	2.43	2.56	2.33	2.25	2.43	2.33	1.67	2.13	2.71	2.28	2.67	2.25	2.43	2.39	2.67	2.50	2.57	2.56
Manufacturing	1.86	2.13	2.18	2.12	2.14	2.44	2.57	2.46	2.86	2.33	2.14	2.32	1.86	2.17	2.25	2.17	2.57	2.38	2.32	2.38	2.71	2.81	2.86	2.82
Mining and Quarrying	-	1.67	2.00	1.75	-	2.67	2.00	2.50	-	2.00	2.00	2.00	-	2.00	3.00	2.25	-	1.67	2.00	1.75	-	2.33	2.00	2.25
Other Activities	1.83	2.03	2.26	2.03	2.30	2.27	2.26	2.27	2.17	2.22	2.44	2.25	1.83	2.09	2.26	2.07	2.10	2.12	2.30	2.15	2.20	2.68	2.74	2.60
Professional, Scientific and Technical Activities	2.00	2.07	1.75	2.00	2.13	2.00	2.75	2.15	1.88	2.21	2.50	2.15	1.75	2.36	1.75	2.08	1.88	1.86	3.00	2.04	2.50	2.36	3.00	2.50
Real Estate Activities	3.00	2.50	2.00	2.60	3.00	2.00	3.00	2.60	3.00	2.50	3.00	2.80	4.00	1.00	2.00	2.40	2.50	3.50	1.00	2.60	3.00	2.50	3.00	2.80
Transportation and Storage	1.89	1.85	1.63	1.81	2.44	2.12	2.25	2.21	2.22	2.12	1.88	2.09	2.11	1.73	1.88	1.84	2.22	2.19	2.00	2.16	2.67	2.46	2.63	2.53
Water Supply, Sewerage, Waste Management and Remediation Activities	-	2.50	2.00	2.33	-	3.00	2.00	2.67	-	2.50	3.00	2.67	-	3.00	3.00	3.00	-	2.50	2.00	2.33	-	2.00	3.00	2.33
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	2.15	2.10	2.13	2.12	2.25	2.18	2.25	2.21	2.58	2.37	2.00	2.41	2.16	2.16	2.19	2.16	2.40	2.19	2.06	2.25	2.85	2.75	2.63	2.77
Total	**2.06**	**2.08**	**2.14**	**2.09**	**2.31**	**2.28**	**2.38**	**2.30**	**2.41**	**2.28**	**2.26**	**2.30**	**2.08**	**2.12**	**2.21**	**2.13**	**2.31**	**2.19**	**2.19**	**2.22**	**2.64**	**2.65**	**2.65**	**2.65**

Note: Since the strength of COVID impact on the overall business of SMEs, but also on their specific business aspects (logistics, demand, financing, receivables, organization of production and work of employees) is rated on Likert-scale ranging from 1 (extremely negative impact) to 5 (extremely positive impact), lower values in the table indicate a stronger negative impact of COVID.

Table 2: Impact of the COVID-19 crisis on different business segments of SMEs in Serbia (Part 2)

	Overall Impact				Share in Column Total			
	Micro	Small	Medium	Total	Micro	Small	Medium	Total
No Digital	2.12	2.19	2.22	2.18	41%	40%	34%	39%
Yes Digital (at least one of marketing, procurement and sales)	2.02	2.00	2.09	2.02	59%	60%	66%	61%
Total	2.06	2.08	2.14	2.09	100%	100%	100%	100%
Serbia Only Scope	2.13	2.11	2.13	2.12	52%	42%	29%	42%
International Scope	1.99	2.06	2.14	2.06	48%	58%	71%	58%
Total	2.06	2.08	2.14	2.09	100%	100%	100%	100%
No Networking	2.09	2.11	2.16	2.11	86%	82%	74%	81%
Yes Networking	1.91	1.93	2.06	1.96	14%	18%	26%	19%
Total	2.06	2.08	2.14	2.09	100%	100%	100%	100%

Blagoje Paunović

is Full Professor at the Faculty of Economics, University of Belgrade, and Chairman of the Department for Business Economics and Management. Professor Paunović is author and co-author of twelve books and a large number of scientific articles. During his career, professor Paunović has worked in various types of teams, from government bodies to research teams. He was Assistant Minister at the Ministry of Economy and Privatization (2002-2004), Director of the Scientific Research Centre of the Faculty of Economics, NICEF (2004-2009), and has chaired Managing/Supervisory Boards of the Guarantee Fund, Tipoplastika, Privredna banka Beograd, Clinical Centre Bezanijska kosa, Institute of Economic Sciences, and was member of managing/supervisory boards of several other companies. He participated in international funded projects and provided consultancy services assisting more than 70 private enterprises in different fields, including: business plan development, financial management, accounting, research and economic surveys, policy analyses and recommendations, etc.

Zorica Aničić

is Assistant Professor at the Faculty of Economics, University of Belgrade. She received her PhD degree from the Faculty of Economics, University of Belgrade. She has participated in a number of research projects funded by the European Union, Serbian Government and Serbian private companies in the domain of entrepreneurship, corporate governance, financial analyses, etc. She has had several articles published in international and national journals.

AIK Banka

DDOR OSIGURANJE

Unipol

DDOR Osiguranje
Zvanično osiguranje
Olimpijskog tima Srbije

Krize se dešavaju,
ali krize i prolaze

Zorana Arunović
Evropska šampionka u streljaštvu

ZA SVE NOVE POBEDE!

ORIGINAL SCIENTIFIC PAPER
UDK: 616.98:578.834]:338.124.4
330.33.015(497.11)"2006/2020"
DOI: 10.5937/EKOPRE2103185L
Date of Receipt: January 29, 2021

Miroljub Labus
University of Belgrade
Faculty of Law
Department of Economics
Professor of Economics, retired

RESPOND TO COVID-19 CHALLENGES: UNCONSTRAINED GROWTH AND POLICY OPTIONS

Odgovor na izazove kovid 19 krize – neograničeni rast i moguće ekonomske politike

Abstract

In the first, empirical part of the paper, we have dealt with the previous recession episodes in Serbia in the 15-year interval from 2006 to 2020 and the direct impact of the Covid-19 crisis. We have compared the long-term and short-term trends and one-off Covid-19 impacts on the real and monetary economy, financial sector, and the rest of the world. Key lessons drawn from the previous crises are highly relevant today. The second part of the paper is analytical. For that purpose, we have updated our DSGE model with the data until the last quarter of 2020 and simulated nine alternative scenarios of fiscal, monetary, and industrial policies over the next five years. They showed remarkable results in some sectors, but created imbalances in others. Focusing on GDP growth in the post-Covid-19 period is misleading since the economy will never be the same. There is a need to choose an optimal mix of conventional policy measures and an industrial policy based on digitalisation and IT. The current Government policy of a huge fiscal deficit and rising public debt exposes the country to unbearable risk in the future.

Keywords: *recession, Covid-19, DSGE model, monetary, fiscal, and industrial policies.*

Sažetak

Prvi deo rada je empirijski. U njemu smo analizirali prethodne recesije u Srbiji u periodu od 15 godina između 2006. i 2020. i direktne posledice kovid 19 krize. Uporedili smo dugoročne i kratkoročne trendove i jednokratni uticaj kovida 19 na realni i monetarni sektor, finansijski sektor i odnose sa inostranstvom. Zaključili smo da su danas izuzetno relevantne ključne lekcije iz prethodnih kriza. Drugi deo je analitički. Radi toga smo ažurirali naš DSGE model opšte ravnoteže u Srbiji sve do poslednjeg kvartala u 2020. godini. Na njemu smo simulirali devet alternativnih scenarija fiskalne, monetarne i industrijske politike tokom narednih pet godina. Njihovi rezultati su se izvanredno pokazali u pojedinim sektorima, ali su stvarali neravnoteže u drugim. Zato fokusiranje samo na rast BDP u post-kovid 19 periodu, bez otklanjanja neravnoteža, obmanjuje. Ekonomija više nikada neće biti ista kao ranije. Potrebno je odabrati optimalnu kombinaciju konvencionalnih mera ekonomske politike i povezati ih sa industrijalizacijom zasnovanom na digitalizaciji i IT tehnologiji. Aktuelna vladina politika visokog fiskalnog deficita i rastućeg javnog duga izlaže zemlju nepodnošljivom riziku u budućnosti.

Ključne reči: *recesija, kovid 19, DSGE model, monetarna, fiskalna i industrijska politika.*

Introduction

The Covid-19 pandemic took many lives, but it also imposed a severe shock to the economy, both in Serbia and worldwide. The governments and central banks of many countries reacted immediately and vigorously. Fiscal and monetary stimulus has been widely used everywhere, with tax holiday and delay of repayment of credit instalments. Many jobs have been lost, and remote working has become the rule, as has online shopping. Digitisation, the Internet, and IT have gained exceptional momentum, as some social restrictions that previously hindered their application have been forced out. After the shock caused by Covid-19, the economy will never be the same. That worries us. We are concerned about what will happen to the Serbian economy in the long run. Will the existing fiscal and monetary policy calm the crisis or will it create a prolonged depression similar to the Great Recession of 2008?

All optimistic estimates of GDP growth are de facto estimates of unconstrained growth because they do not incorporate the imbalances that such growth creates. These imbalances are binding, and GDP growth must adjust to them. Besides, certain state interventions might further complicate the post-crisis recovery. In this paper, we will show how GDP growth creates imbalances in Serbia and how the Government and the NBS could react to them.

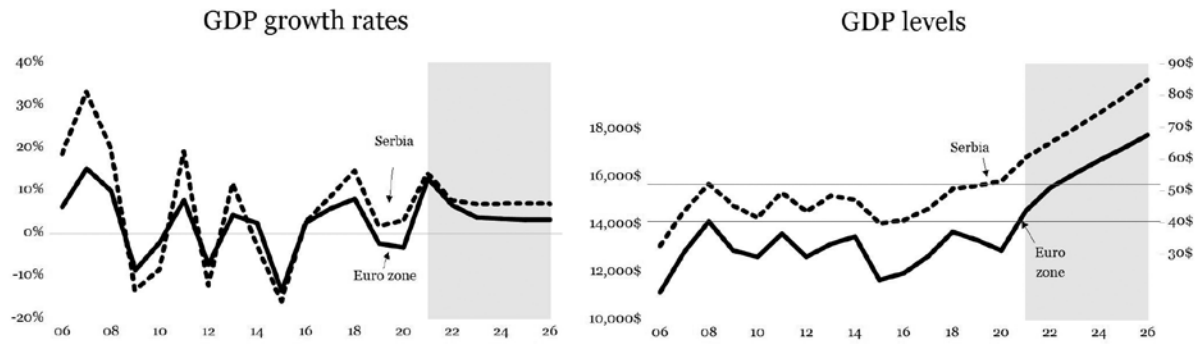
A year has passed, the economic climate has changed and many positive expectations have been formed. It is believed that this crisis is temporary and has the character of the previous occasional recessions. That is not only the assessment of our Government, but also of the IMF. "Thanks to unprecedented policy response, the Covid-19 recession is likely to leave smaller scars than the 2008 global financial crisis." [3, p. xvi] We do not share that view. As we have already said, we believe that the economy will never be the same after this crisis. Moreover, Serbia is already on its way to repeat all the mistakes it made during the Great Recession and re-enter the public debt crisis. Behind it creeps the current account crisis followed by the possible renewal of inflation.

We will illustrate our scepticism using the example of the formation of GDP in Serbia and the Eurozone. For the sake of comparability of data, we took the IMF data on GDP in USD for the period from 2006 to 2026, which includes the corresponding IMF forecast for the next six years. That covers two decades, which is a long enough time to notice certain regularities. In Figure 1, we shall show the growth rates and GDP levels with the shaded area covering the forecast period.

GDP growth rates in Serbia and the Eurozone are highly integrated. We notice that both economies periodically entered a recession – particularly in 2009, 2012 and 2015. The Eurozone was again in recession in 2019-20, while Serbia was not. More precisely, Serbia was in recession for at least four quarters (three quarters in 2020 and one quarter in 2021), but this cannot be recognised from the dollar data on GDP. The reason is that the dinar has appreciated in real terms, and Serbia had a positive dollar GDP growth in 2020. After that, in the next six years, both economies will achieve the growth rates forecasted by the IMF.

The GDP growth rates are math growth rates that hide misconceptions. Technically speaking, a country's economy enters a recession if it has two related quarters

Figure 1: GDP in Serbia and the Eurozone, USD billions



with a negative GDP growth rate. However, that says nothing about the depression of economic activity, which is measured by the level of GDP. The point of overcoming the depression occurs when the level of GDP is sustainably higher than in the year before the outbreak of the crisis. The right side of Figure 1 shows that after the Great Recession of 2008 the Serbian economy did not emerge from depression until 2020 (despite the recession).

On the other hand, the Eurozone economy does not emerge from depression until 2021. Furthermore, the recovery period after the Covid-19 crisis has two unusual features. GDP is propelled like a rubber bullet, while growth rates show no more cyclical oscillations. Hence, IMF's optimism is not well grounded.

This crisis is such that it mimics a shock similar to the one in the Great Recession due to the disruption of international capital flows. However, on this occasion, not only the flows of international trade, but also the supply chains within the countries were broken. On the other hand, policy measures taken to stimulate aggregate demand have been similar to those implemented after 2009. Therefore, similar adverse effects can be expected this time. In other words, expansive fiscal policy had brought many countries into a public debt crisis, after which forced rebalancing had to be implemented at a lower level of economic activity. It seems that Serbia will rejoin that group of countries, although the data on GDP currently cover it up.

At the end of 2020, Serbia's public debt was below 60% (with a decline in the last two quarters), while the envisaged fiscal deficit for 2021 was 3% (which is a reduction of over 5% compared to the previous year). However, such fiscal position of the country was not sustainable. According to the adopted budget revision for 2021 [9], [2], the fiscal deficit will increase to 7%, with an additional increase in public debt of at least 4% of GDP. Thus, Serbia is entering a growing spiral of public debt, which can be dramatic when the interest rate returns to a normal level.

The IMF recommends "… prioritising health care spending, providing well-targeted fiscal support, and maintaining accommodative monetary policy while monitoring financial stability risks. Then, as the recovery progresses, policymakers will need to… boosting productive capacity (public investment) and increasing incentives for an efficient allocation of productive resources… Effort should also be directed at creating space [for debt managing] through increased revenue collection (fewer breaks, better coverage of registries, and switching to well-designed value-added taxes), greater tax progressivity, and by reducing wasteful subsidies" [3, p. xvii].

In this paper, we will model fiscal support and accommodative monetary policy, as well as boosting productive capacity and efficient allocation of productive resources. We will use our DSGE model for that purpose [4], [5]. In our view, the necessary increase in health care expenditures must be accommodated within the existing fiscal expenditures. It should not be an excuse for a dramatic increase in the fiscal deficit. Additional health expenditures, as proposed by the Government, account for only 0.4% of GDP, which is negligible compared to the -7% of general government deficit. We do not think that the IMF recommendations for increased VAT proceeds and greater tax progressivity are acceptable for Serbia, which already has a high tax burden. We do not consider that the fiscal policy of keeping the fiscal deficit at -7% is a reasonable policy for the current economic crisis.

In this paper, we will analyse the fiscal, foreign exchange, monetary, foreign trade and industrial policies and their impact on other macroeconomic variables. In the first part, we will show how Covid-19 affected the Serbian economy. After that, we will briefly summarise the lessons from the two previous crises: the Great Depression and Fiscal Consolidation. These two parts of the paper are empirical. The following three parts are analytical and based on our DSGE model, which was calibrated on the data until the fourth quarter of 2020. In the third part of the paper, we will show our unconditional forecast for key macroeconomic variables for the next five years. It was assumed that the Government would refrain from any active policy to address macroeconomic disbalances. In the following two sections, we will show the possible effects of an active fiscal policy and the effects active monetary and industrial policies could have. Finally, in conclusion, we summarise a menu of policy options. It is up to the Government to make an optimal policy mix. The present one is neither optimal nor sustainable.

Covid-19 impact

To identify the impact of the Covid-19 crisis on the Serbian economy, we will do two things. First, we will not only look at GDP and its components, but give a much bigger picture of the economy. It is based on four interrelated areas of activity: the fiscal sector, the real economy, the monetary bloc and the rest of the world. In this sense, four blocks of macroeconomics explain how one of the key macroeconomic deficits is formed and financed – the savings-investments deficit. Sustainable economic growth depends on it. That has been the case for the past two decades. However, the Covid-19 crisis introduced many novelties. Supply chains have been broken. People are forced to work remotely, many professions have suddenly become redundant, the Internet has never been more used in production, and online sales of goods is switched on. That seems to be an irreversible change. New technology and new ways of communication will determine future economic growth.

Second, we will observe the long-term and short-term trends of each of the selected variables and compare them with the effects of the Covid-19 crisis in 2020. That way we will know precisely whether this crisis has contributed to some bad results or whether they would have occurred regardless. We determined the long-term trend based on the compound annual growth rate in the 2006-19 period. Analogous growth rates were compiled to determine the short-run trend in 2015-19. The last year of 2020 is exceptional as the product of the Covid-19 crisis. That is why we treated it differently. We have shown the changes in the trend as the difference between long-term and medium-term growth rates. Positive changes are marked with upward green arrows ▲ and changes with the opposite effect with downward red arrows ▼.

The first block of variables is the fiscal block. We monitored fiscal revenues and expenditures, fiscal deficit, public debt and the activity of the Development Fund (which is mainly financed from the budget). The fiscal block has all the green arrows until 2019, which means that the trend was generally improving. Fiscal revenue grew, while actual fiscal expenditures decreased, which narrowed the fiscal deficit. Also, the share of public debt in GDP declined. However, in the last year, all these indicators changed the sign and turned red. The fiscal revenue was declining, as opposed to the fiscal expenditures. That increased the fiscal deficit and public debt. Its growth is not as high as expected because certain foreign loans have not been activated yet. Only the Development Fund improved its activity because the state used it to provide companies with additional liquidity.

The second block refers to the GDP generated in the real economy. The data refer to GDP as an aggregate

Table 1: Four-sector trends in 2006-19 and Covid-19 impact in 2020

Related to GDP	Long-run	Short-run	Trend		Covid-19	
	(1)	(2)	(3)		(4)	
Fiscal block						
Fiscal revenue	0.1%	1.7%	1.6%	▲	-1.8%	▼
Fiscal expenditure	-0.1%	-0.3%	-0.1%	▼	16.9%	▲
Development Fund		55.2%		▲	56.8%	▲
Public debt share	3.3%	-7.2%	-10.5%	▼	9.3%	▲
Fiscal deficit	-13.8%	-50.6%	-36.8%	▼	353.0%	▲
Real economy						
GDP*	2.1%	3.3%	1.2%	▲	-1.0%	▼
GDP goods*	1.0%	1.9%	1.0%	▲	1.3%	▲
GDP services*	2.5%	3.8%	1.3%	▲	-1.8%	▼
Investment*	3.6%	10.7%	7.0%	▲	-2.8%	▼
Export*	6.7%	7.2%	0.5%	▲	-5.9%	▼
Import*	4.7%	8.9%	4.2%	▲	-3.5%	▼
Remittances	-3.4%	-1.4%	2.0%	▲	-17.9%	▼
Current account	-5.2%	8.5%	13.7%	▲	-17.9%	▼

Related to GDP	Long-run	Short-run	Trend		Covid-19	
	(1)	(2)	(3)		(4)	
The rest of the world						
Foreign debt	1.3%	-4.6%	-5.9%	▼	6.7%	▲
Capital inflow	-5.9%	25.2%	31.2%	▲	-25.7%	▼
International investment position	0.4%	-2.1%	-2.5%	▼	2.5%	▲
Foreign direct investment	7.5%	6.8%	-0.8%	▼	-54.2%	▼
Official reserve	-0.9%	-0.2%	0.7%	▲	-1.1%	▼
Credit rating EMBI	-22.8%	-30.4%	-7.6%	▼	53.1%	▲
Monetary economy						
Monetary Survey NFA	2.0%	-0.9%	-2.9%	▼	3.8%	▲
Monetary Survey NDA	5.8%	2.7%	-3.1%	▼	15.5%	▲
Commercial banks assets	3.0%	2.6%	-0.3%	▼	11.8%	▲
Loans to companies	2.3%	0.8%	-1.5%	▼	7.3%	▲
Loans to households	6.6%	5.3%	-1.3%	▼	11.0%	▲
Stock exchange turnover	-11.1%	-2.4%	8.7%	▲	-47.4%	▼
Money aggregate M3	6.2%	5.7%	-0.5%	▼	14.6%	▲
T-bills	-6.1%	-11.2%	-5.1%	▼	0.8%	▲
Investment funds	32.6%	19.4%	-13.2%	▼	15.6%	▲
Saving-investment Gap	-8.2%	-4.7%	3.6%	▲	-4.9%	▲

* In real absolute terms
Source: Author.

and to the production of commodities and provision of services within it. From the elements of final demand, we single out investments, export and import. Here we add the current account deficit and remittances from abroad which significantly reduce the current account deficit.

The real economy has similar results to the fiscal sector. All indicators show a positive trend with green arrows up to 2019. In 2020, however, they all turned red. The only exception took place in the production of goods, which in these difficult circumstances recorded a minimal growth of 1.3% due to a good harvest in agriculture. Investments record a strong positive trend in the short run, followed by import. Remittances are an essential source of financing of the current account deficit, but the pace of their growth is slowing down, particularly in 2020. The current account is also deteriorating.

The third block refers to the rest of the world and encompasses external debt, the international investment position of the country, inflow of capital from abroad and FDI. We also added the EMBI credit rating and the country's foreign exchange reserves. In this block, positive and negative trends match each other. Official reserves are declining, but at a slower pace, while FDI is reducing its share of GDP. On the other hand, capital inflows are rising, foreign debt is declining, and credit ratings are improving. Serbia is a debtor country in international investor relations, but its exposure is declining slightly. Furthermore, while the number of red and green arrows was almost equal up to 2019, they all turned red in 2020. The Covid-19 crisis aggravated all indicators of the global financial market's impact on Serbia.

The last block refers to the monetary economy. Here we analysed the following variables: NDA and NFA, financial depth, loans to the economy and households, T-bills, monetary aggregate M3, turnover on the Belgrade Stock Exchange, investment funds and the aggregate gap between savings and investments. The monetary and banking sectors have a completely different position. In terms of trends, red arrows predominate significantly. That means that the monetary situation had been deteriorating even before the outbreak of the Covid-19 crisis. The NFA and NDA were reducing their growth rates, just like the share of money in GDP, bank assets and loans to households and businesses. All investment funds showed poor performance. That also refers to the turnover on the Belgrade Stock Exchange. The savings-investments gap was also increasing. On the other hand, the value of almost all these indicators improved in 2020. That means that the injection of liquidity into the banking system by the NBS and the postponement of repayment of credit obligations yielded positive short-term results.

To conclude: the Covid-19 crisis has halted or reversed positive trends in three of the four macroeconomic blocks: the fiscal sector, the real economy, and the ROW. However, fiscal incentives in the fourth block were not sufficient to wipe out these impacts. On the other hand, monetary incentives were much more effective. The question is, however, how long will this monetary support be sustainable.

Lessons from the previous crises

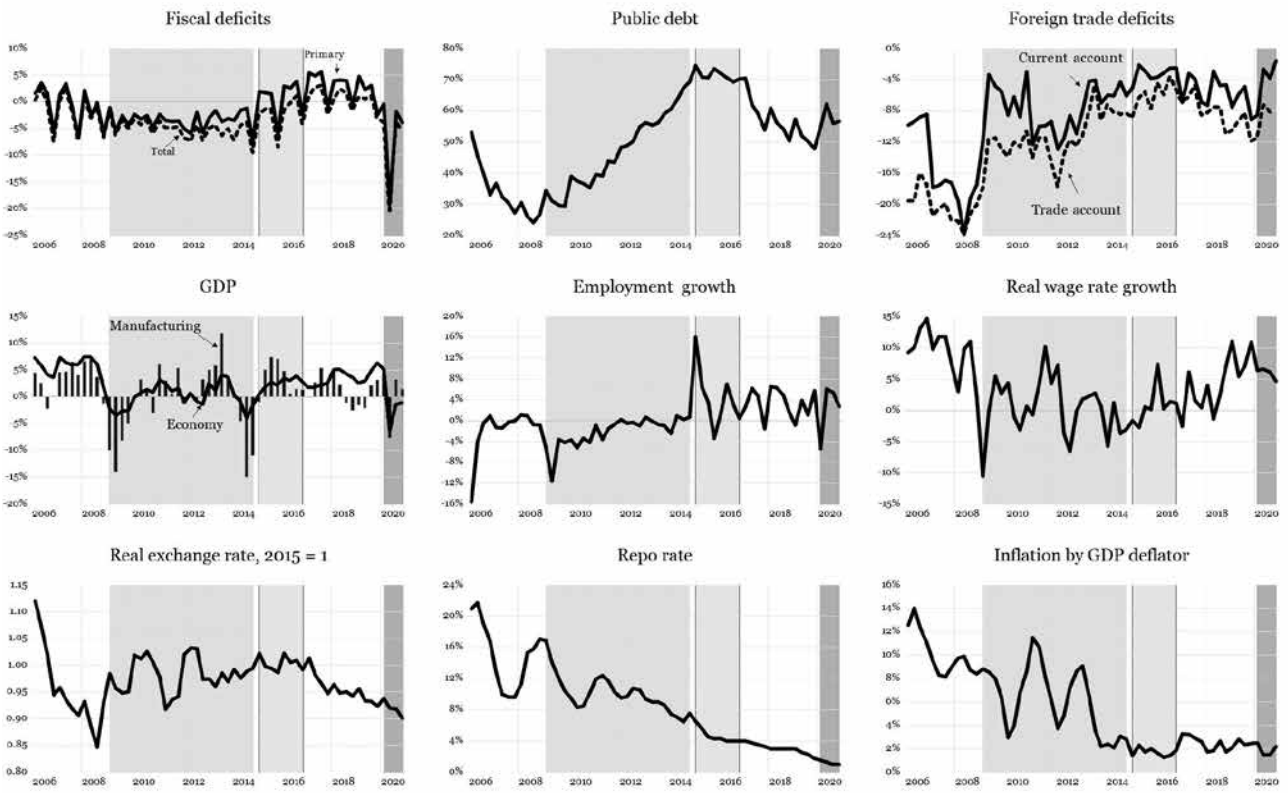
In the simulations of possible economic policies after the Covid-19 crisis, we will use nine variables. The first group of three variables relates to macroeconomic imbalances: fiscal deficit, public debt, and trade (and current account) deficits. The second group of indicators shows economic growth: GDP growth rate, employment and real wage rate growth. The third group of variables refers to the economic policy instruments: real exchange rate, repo interest rate and inflation. All these data are presented in Figure 2. The entire period of 15 years was divided into three parts. The first part refers to the period after the outbreak of the Great Recession, from Q1 2009 to Q4 2014 (the shaded area is yellow). The effects of this crisis extended beyond the stated limit, but the 2015 Fiscal Consolidation suppressed them. We marked that second period stretching two years from Q1 2015 to Q4 2016. Of course, some effects continued beyond this period, but we ignored them since the primary goal of fiscal consolidation was achieved. The last period is the Covid-19 period marked between Q1 2020 and Q4 2020 (and shaded with ochre). To understand how it is possible to maintain macroeconomic imbalances, we have prepared data on financing thereof and presented them in annex in Figure A.1.

The first period after the Great Recession can be called the crisis of industrial production and current account. It

is evident that GDP growth declined in 2009, but not to the extent that would indicate a major recession. However, the recession was huge in industrial production. The share of industry in the formation of GDP fell from 24 to 21 percent. For five years, this share remained at a similar level with significant cyclical changes and another deep recession in 2014. After that period, the industry share in GDP continued to fall and stopped at the level of 20% at the end of 2020. Although deindustrialisation in Serbia was present even before this period, now it is becoming a permanent feature of the Serbian economy. Fiscal support for foreign investment has not reversed this trend at all. Also, fiscal support from the anti-crisis Covid-19 policy in 2020 did not change the trend of deindustrialisation. It only made it possible to keep GDP growth in the industry at a "positive zero", which is not a bad result given what happened to the industry in other countries.

Lack of domestic investment is one of the causes of the relative decline in industrial production [see 6]. It is also the consequence of banks' commercial policies. As shown in Figure A.1, the corporate sector has received a decreasing number of loans from banks since 2012. When the Great Recession spread to Serbia, the banks reacted proactively. Since foreign companies owned most domestic banks, they recapitalised their Serbian subsidiaries. Although the depth of the financial sector did not increase significantly, the corporate sector received additional bank funds. That lasted until 2012. After that, deleveraging of domestic banks occurred. They repaid foreign loans to their parent banks and reduced domestic funds available for lending. They also changed their favourable clients – banks preferred to finance households and the state instead of the corporate sector. The crowding-out effect was becoming visible. As long as the share of loans to the public sector was below 8% of GDP, there was also a crowding-in effect: both the government and the corporate sector tend to increase their credit shares. After this point, the apparent increase in banks' lending activity to the government sector begins, at the cost of reducing the corporate sector share. That is one of the outcomes of the public debt rise, which fits into the banks' impression that the state is less risky than the corporate sector. At least the government never had any NPLs, which was not the case in the corporate sector.

Figure 2: Three recent development stages



During this period employment declined, while real wage growth rates fluctuated significantly, yet around zero. That implies that there was no sustainable growth of real wages in this period. Real wages grew significantly only after the completion of the Fiscal Consolidation programme.

Public debt increased from 30% to over 70% in this period. That led to a public debt crisis which posed a threat that the country would declare a default. That is why the Financial Consolidation programme was enforced. However, before we proceed to its analysis, we will show the costs of financing the public debt. As shown in Figure A.1, these costs exceeded 12% of GDP in 2014, only to be higher than 14% of GDP the following year. Those were mainly the costs of domestic debt service, i.e., the service of debt to domestic banks. Later, the costs of servicing foreign government loans rose.

Today there is a debate about the level of sustainability of public debt. According to our legislation, that is 45% of GDP, but in practice 60% is taken as standard under current circumstances. However, the amount of public debt is not a problem by itself, but the cost of servicing it is. Of course, the servicing costs depend on the amount of public debt and the level of interest rates. Interest rates are currently low, and the cost of interest is around 2% of GDP. Do notice that in 2014 it was 3% of GDP.

Public debt can be approximated as an accumulated fiscal deficit. The financing of the fiscal deficit is also visible in Figure A.1. When financing the fiscal deficit, the state must borrow not only for these purposes, but also for the repayment of the previously taken loans. In fiscal terminology, this is called treasury receipts and outlays. Receipts represent all domestic and foreign loans and payments from privatisation. Outlays are all repayments of domestic and foreign loans plus loan processing costs. The existence of a high public debt includes a permanent need for extensive government borrowing. As future borrowing conditions are uncertain, public debt is a source of permanent risk to Serbia's fiscal stability.

The current account deficit is equal to the savings-investments deficit. Financing the current account deficit shows how one country gets funds to finance the investments it cannot finance from its own savings and accumulation of profits. Figure A.1 shows the financing of the current account deficit in Serbia. In Q2 2008, the current account deficit and the trade balance equalled at 24% of GDP (usually, the trade deficit is higher by a few percent). It was a completely unsustainable situation. For the most part, this deficit was financed by the inflow of capital from abroad, but the Great Recession interrupted this tendency. Reduced capital inflows from abroad forcibly cut down the current account deficit. However, remittances from abroad did not decrease as much. They provided critical support for financing the domestic imbalance in this period and later on.

High current account deficit and the interruption of capital inflows from abroad in 2009 caused a forced adjustment in the economy. Due to a falling demand, the industry was plunged into recession, and the persistent fiscal deficit exploded on the public debt side. This debt soon proved unsustainable, which is why in 2015 the Fiscal Consolidation programme was adopted. The burden of adjustment mostly fell on pensions. In the 2015-16 period, real wage growth barely exceeded the zero limit (0.7%), while pensions dropped significantly. At the end of 2008, they amounted to 13.5% of GDP. At the beginning of the Fiscal Consolidation they fell to 12.3%, only to further decrease to 10% up to now.

The industry slowly started to switch to the production of goods for export, so that in the period of Fiscal Consolidation it achieved growth, if not the entire GDP. Employment also showed positive growth rates. The trade and wage deficits narrowed, although the cost of financing public debt remained high. The trend of public debt growth was stopped and brought down, declining until the Covid-19 crisis.

In the era of Fiscal Consolidation, the real exchange rate was on the verge of its equilibrium determined by the PPP standards. At the same time, the repo interest rate dropped significantly, pulling down all other interest rates. The cost of financing domestic public debt was starting to decline significantly. Inflation calmed down between 2% and 4%.

Even after the Fiscal Consolidation, the NBS continued to ease its monetary policy and reduce its repo rate. At the same time, by intervening in the foreign exchange market, the NBS was pushing the real exchange rate towards more

significant appreciation. Serbia faced Covid-19 with a repo rate of 2.25% in February 2020, which, through a series of reductions, fell to 1% in December 2020. The real exchange rate of the dinar appreciated at least 10%.

Is this situation sustainable? The situation at the end of 2008 was like the one we have today. Will Serbia enter the crisis again with a delay of one year or will it, perhaps, get out of the crisis this year? The answers to these questions depend on the general economic climate in the world and the renewal of economic activity in the EU, as well as on the macroeconomic policy in the country. Currently, the forecasts for the EU are pretty optimistic. After a decline of -6.6% in 2020, the IMF forecasts growth of 4.4% in 2021, 3.8% in 2022 and 1.9% in 2023. For Serbia, the IMF forecasts growth of 4.9%, 4.5% and 4.0% in 2021, 2022 and 2023, respectively. We have already expressed our doubts about these forecasts. In the next section, we will present our forecasts for the growth of key macroeconomic variables over the next five years based on our DSGE model [4], [8].

Forecast

We already used the GDSE model to assess what would happen to the Serbian economy if the policymaker consistently implemented the policy package of 2015 Fiscal Consolidation [7]. These results were compared with the model-based estimates of what would happen if the policymaker did nothing at all. The differences between these experiments were considered net effects of the Fiscal Consolidation package. Assessment of spontaneous development was based on an unconditional forecast from the model, while controlled development was built on a conditional forecast.

After that, we further modified the model in order to endogenise fiscal variables and include banks' commercial policies [5]. As for the fiscal part, the main idea was to link fiscal revenue to business cycle conditions. The expenditure side indeed responded to an output gap, while the revenue side was primarily modelled in a way to reflect government fiscal policy stances. We endogenised the revenue side as well and made it correspond to the business cycle path. The influence of banks' commercial policies on private investment was handled beyond the households' optimisation problem since it depends on bankers' decisions and is highly uncertain. It is assumed that there is some inertia in the investment expenditure while the remaining dynamics depends on the growth rate of loans extended by banks to the private sector.

The data for the model was updated from Q1 2003 to Q4 2020, while the model was calibrated and solved for a somewhat shorter period from Q1 2006 to Q4 2020. Generally, the DSGE model of rational expectations can be represented in general form by a set of first-order and equilibrium conditions [1]:

$$\begin{aligned} & E_t\{f(\boldsymbol{y}_{t+1}, \boldsymbol{y}_t, \boldsymbol{y}_{t-1}, \boldsymbol{u}_t)\} = 0 \\ & E(\boldsymbol{u}_t) = 0 \\ & E(\boldsymbol{u}_t \cdot \boldsymbol{u}_t') = \Sigma_u \end{aligned} \tag{1}$$

where E_t is an expectation operator, f are structural equations, $\boldsymbol{y}$ is a vector of endogenous variables, and $\boldsymbol{u}$ is a vector of stochastic shocks. The system of equations (1) comprises linear and non-linear first-order difference equations, with leads and lags, which have no explicit algebraic solution. The solution has to be numerically computed in the form of policy functions, which relate all endogenous variables in the current period to the endogenous variables of the previous period and current shocks. To be more precise, endogenous variables in the current period are to be expressed as a function of only state variables in the previous period and current shocks:

$$\boldsymbol{y}_t = g(\boldsymbol{y}_{t-1}, \boldsymbol{u}_t) \tag{2}$$

The policy function g is computed by linearising the system (1) around the steady state ($\boldsymbol{y}_{ss}$) using the first-order Taylor expansion and the certainty equivalence principle:

$$\boldsymbol{y}_t = \boldsymbol{y}_{ss} + \boldsymbol{g}_y \cdot (\boldsymbol{y}_{t-1} - \boldsymbol{y}_{ss}) + \boldsymbol{g}_u \cdot \boldsymbol{u}_t$$

or

$$\tilde{\boldsymbol{y}}_t = \boldsymbol{g}_y \cdot \tilde{\boldsymbol{y}}_{t-1} + \boldsymbol{g}_u \cdot \boldsymbol{u}_t \tag{3}$$

where $\tilde{\boldsymbol{y}}_t = \tilde{\boldsymbol{y}}_t - \tilde{\boldsymbol{y}}_{ss}$. Impulse response functions (IRFs) are directly calculated from the policy function (3). One must start from the initial value of variables given by the steady

state and the initial shock to one variable of interest and iterate on as many times as the number of future periods has been chosen. The results are IRFs. Running a forecast is remarkably similar to making an IRF after a Bayesian estimation, except that the forecast does not begin at a steady state but at the point corresponding to the last set of (historical and model-updated) observations.

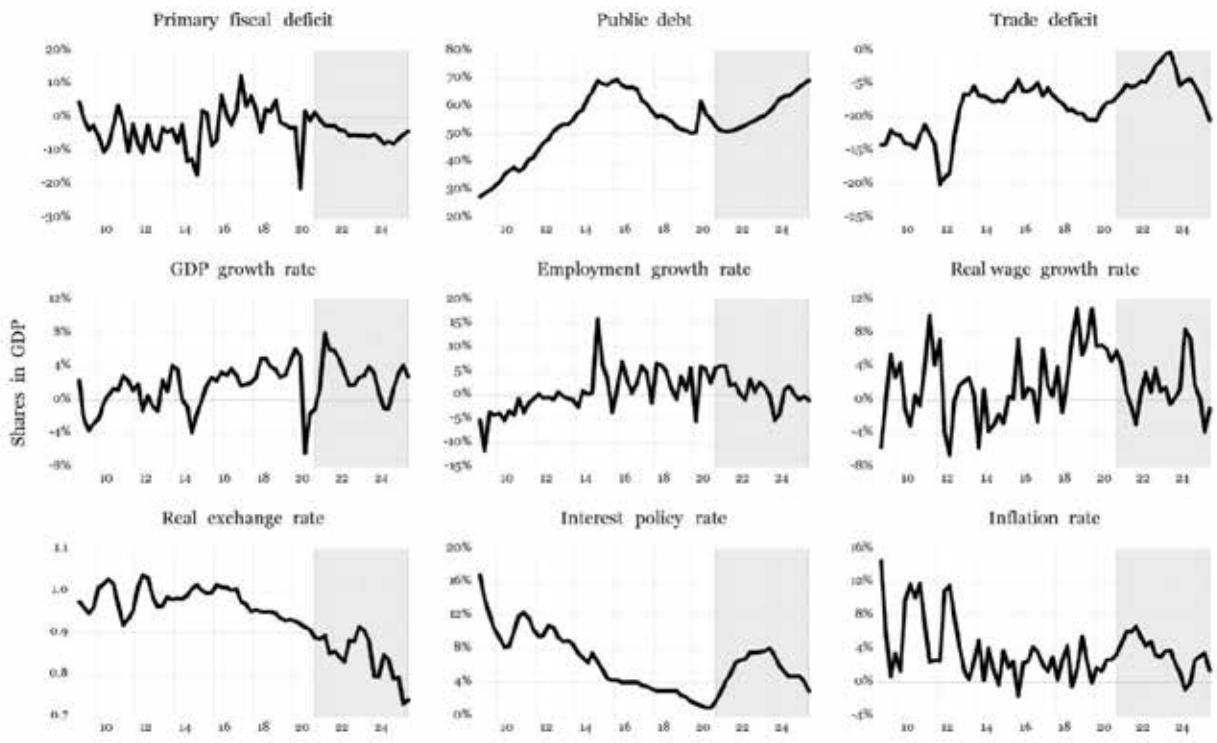
Figure 3 shows the DSGE model forecasts for all three blocks of our key variables (imbalances, growth, and economic policy instruments). The model, in principle, supports the IMF forecasts for the growth of the Serbian economy in 2021-22 with lower growth expectations for 2023-25. It also identifies the associated macroeconomic imbalances. Although a negative growth rate is forecasted for the first quarter of 2021, the following quarters compensate for that fall and the average annual growth rate surges to 5.9%. Next year it is 4.4%, followed by 2.8% in 2023. Then zero growth is projected in 2024 and 2.9% in 2025. Thus, according to our DSGE model, the Covid-19 crisis might be temporary and last only one year. The GDP estimates form a right-leaning inverted letter U with a slight increase in the first part, a maximum in 2021 and an accelerated decline towards 2025.

This trend was formed based on the current behaviour of the Serbian economy. Even in such conditions, the DSGE model predicts that macroeconomic imbalances will be maintained. As the primary deficit is expressed relative to GDP, GDP growth reduces its actual size. According to the forecast of the DSGE model, the primary deficit will be at the level of -1% this year, but in the following years, from 2022 to 2025, it will grow: -3.8%, -5.4%, -6.4% and -5.8%, each year respectively. The fiscal deficit will be higher by additional 2% to 3%.

The growth of the fiscal deficit is driving the growth of the public debt. It will still be below 60% of GDP this and the following year in order to reach the said level in the second part of 2023. After that, it will increase up to 70% at the end of our forecast period. If long-term relations are observed, the public debt grows almost in a straight line from 2006 to 2014. In the second period, from 2015 to 2025, it has the shape of the letter U. Such forecast gives a clear warning. Public debt in Serbia is the most significant long-term problem with which the country cannot deal if it does not change its economic policy.

Another long-term problem is the trade and current account deficit. The current account deficit is always lower

Figure 3: Hands-off policy forecast



than the trade deficit due to the significant inflow of income from abroad based on remittances. In our model, there are no variables to capture remittances, but the export and import of goods and services. Therefore, our forecast refers only to the trade deficit. From Figure 3, we see that its movement has the shape of an inverted letter U. It first decreases in 2021 and 2022 to -6% and -4.5% of GDP, respectively. In 2023 it falls to only -1% of GDP, but later returns to -8% in 2025. Therefore, the industrial policy must change in this area as well. The production of goods for export would have to increase in order to maintain a long-term sustainable trade deficit at, say, -4% per year.

In terms of employment and real wage rate forecasts, the DSGE model envisages a slow decline in employment growth rates and, on the other hand, a somewhat cyclical growth in real wages. In 2021, the decline in real wages will continue, but they will recover after that.

The three economic policy instruments are the real exchange rate, repo interest rate and inflation (relating to controlled prices). It is, of course, difficult to predict what kind of economic policy the Government and the NBS will pursue, which is why the forecasts for these variables are very uncertain. However, if the existing economic policy does not change, further real appreciation of the exchange rate should be expected, as well as inflation in the inflation target corridor + 3% +/- 1.5%. Interest rates will likely remain at the current low level. However, the DSGE model predicts pressure on interest rate growth over the next two years, followed by a decline, but still above the current levels. That is a warning that the relationship between macroeconomic disbalances and their structural linkages is such that low-interest rates are unsustainable in the long run. Due to the existence of high public debt, rising interest rates would significantly increase the cost of servicing it. The repo interest rate is used to manage inflation expectations. The repo rate growth forecast in Figure 3 indicates that there is a possibility of rising inflation and that a low repo rate cannot be guaranteed indefinitely.

Thus, if the economic policy does not change, the prospects for future growth show that Covid-19 will be a temporary crisis under the condition that macroeconomic imbalances are somehow under control. In that respect, the ongoing crisis depends on the country's public debt and its ability to borrow additional funds. However, that is not enough. The inflow of foreign capital and remittances from abroad should be sufficient to cover the excessive trade deficit.

Policy options

Forecasts of GDP growth rates are updated quarterly. Thus, for instance, in October 2020 the IMF forecasted a decline to -7.2% in the Eurozone that year, and in April 2021 it revised the projected decline to -6.6%. Therefore, it raised estimates for the Eurozone's growth in the coming period by 0.2% per year based on the final data for Q4 2020.

Our DSGE model has been calibrated to data up to Q4 2020, so that the forecasts for future developments start from Q1 2021. As we have already stated, these forecasts are shown in Figure 3 under the assumption that the Government's economic policy and the monetary policy of the NBS do not change and ignore macroeconomic imbalances. In this section, we will show how forecasts change if any of the time series are directly influenced by the economic or monetary policy change. In technical terms, the obtained forecasts represent conditional forecasts of the analysed variables.

The conditional forecast implies that variables are split into two subsets: predetermined (controlled) variables and non-predetermined (uncontrolled) ones. For predetermined variables, the future paths are given by the policymaker in accordance with the policy scenario which the policymaker aims to implement. The controlled variables are entirely under the control of the policymaker for all forecast periods and have the status of exogenous variables in the DSGE model. Uncontrolled variables are endogenous variables whose equilibrium values are the solution of the underlying non-linear DSGE model.

Not all endogenous variables have corresponding stochastic shocks. However, an empirical or measurement variable must have associated stochastic shocks in order to facilitate the Bayesian estimation of parameters. Each controlled variable must have an associated stochastic shock in order for the conditional forecast to be obtained. In a DSGE framework, shocks are stochastic variables with

a known probability density distribution, variance and stochastic path modelled by a first-order autoregressive equation. Solutions of the conditional forecast suppress these autoregressive equations and compute the corresponding shocks needed to match the restricted paths from the reduced form first-order state-space representation of the DSGE model (3). However, the state-space representation (3) should be augmented with both predetermined and non-predetermined variables. Vectors of variables and shocks ($\tilde{y}_t$, u_t) are split into controlled ($\bar{y}_t$, $\bar{u}_t$) and uncontrolled ones ($\hat{y}_t$, $\hat{u}_t$) to get:

$$\bar{y}_t = g_y \cdot \bar{y}_{t-1} + g_u^{\bar{y},\hat{u}} \cdot \hat{u}_t + g_u^{\bar{y},\bar{u}} \cdot \bar{u}_t \tag{4}$$

If the vector of the last model's observations y_0 is created and if $y_{ss} = y_0$, the system of equations (4) can be solved algebraically for controlled shocks ($\bar{u}_t$). Then, using the system (3), all uncontrolled variables can easily be obtained. Of course, this should be done recursively.

Figures 4 and 5 show what changes may occur in the areas of imbalance (first row), growth (second row) and policy instruments (third row) in nine different economic and monetary policy scenarios:

1. The first scenario directly affects the fiscal imbalance. We posed the question what would happen if the Government decided to change fiscal expenditures and revenues in such a way as to cancel the primary fiscal deficit. We called this scenario "Zero primary deficit".
2. The second scenario provides opportunities for the Government to influence growth through public investment. We fixed the share of public investment in GDP at 4%. In this case, of course, the primary fiscal deficit becomes a variable that adjusts to other variables in the DSGE model. That scenario is marked "Government investment".
3. The third scenario changes the monetary policy of the NBS. In this scenario, we assumed further reduction in the repo interest rate of 0.5% per annum. We called this scenario "Easing monetary policy".
4. In the fourth scenario, we modelled the changes in the exchange rate policy. The real exchange rate has appreciated, so we explored what would happen if the exchange rate policy was pursued without appreciation or depreciation. In that case, the exchange rate would correspond to the PPP (Purchasing Power Parity) standard. For such a policy, the NBS has at its disposal interventions in the foreign exchange market. We called this scenario "Exchange rate adjustment".
5. The following two scenarios do not depend directly on monetary or economic policy, but represent desirable changes in technology and efficiency in the use of factors of production. The fifth scenario models the introduction of new technology. The consequence of the Covid-19 crisis is that the economy and all communications are turning to the Internet and IT technologies. We named this scenario "New technology".
6. The sixth scenario models the increase in total factor productivity (TFP). We called it "TFP improvement".
7. The seventh scenario tests the IMF's proposal that it is necessary to increase VAT collection to cover the fiscal deficit. We called this scenario "VAT increase".
8. The eighth scenario tests the reduction of the fiscal burden. We assumed that it was possible to temporarily stimulate the corporate sector by abolishing the corporate income tax, which is not a significant source of fiscal revenue anyway, but is essential for companies. We call it the "No profit tax" scenario.
9. The last, ninth scenario refers to the expansionary fiscal policy of the Government. It proposed a rebalance of the budget for 2021 by raising the fiscal deficit from 3% to 6.9%. Such a rise includes additional funds for health care, salaries in the defence system and anti-crisis measures. This scenario is called the "Expansive fiscal policy".

The Government can use any combination of these scenarios. We avoided that because we wanted to identify individual effects of each of them. At the same time, we did not experiment with different durations. It is assumed that each of these policies should, for the medium term, cover the first 12 quarters. After that, the DSGE model was allowed to adjust spontaneously in the next eight quarters. The policies can also be one-off in the sense that some variables change at the beginning of the

period, over one to four quarters, while all other variables adjust spontaneously. The other extreme is that a policy is consistently pursued in the long run throughout all twenty quarters. Of course, all other combinations are possible, provided that economic policymakers have a clear idea of what they will do and when.

Active fiscal policy

Figure 4 shows simulations for five possible fiscal policies. The most intriguing policy is the current policy of maintaining a high fiscal deficit pursued by the Government. The results of such a policy are presented with ochre bars. Its effects are immediately noticeable: it makes dramatic differences in terms of fiscal deficit and public debt, while for other variables the differences exist at the level of fine-tuning.

The short-term trends influence the simulation results because quarterly data reveal the cyclical and short-term pattern of change. In the third and fourth quarters of the last year, public debt was relatively reduced. After that, it immediately grows, but it is not before the first quarter of 2022 that it reaches the limit of 60%. After that, it grows almost in a straight line and reaches 80% at the end of 2025.

Of course, no government, including our own, will persistently maintain a high fiscal deficit in the real economy at the cost of exploding the public debt. We have assumed that the Government has been doing that for three years, after which it has left the fiscal deficit and public debt to be freely formed based on market conditions. That, however, cannot stop the growth of public debt and fiscal policy would certainly have to change in the meantime. Our simulation is helpful because it shows that public debt continues to grow even after reducing the fiscal deficit. Note that our simulation considers the fiscal deficit, interest rates and GDP growth rates, and not foreign investment loans for infrastructure that additionally boost the public debt.

The first panel in Figure 4 further shows that the fiscal deficit can be formed based on an aggressive investment policy of the state. Moreover, an increase in public investment expenditures may create a larger fiscal deficit than the Government anticipated ex ante. The ochre line demonstrates that in Figure 4.

High fiscal deficit is not the only aggressive policy. The opposite aggressive policy is the scenario which includes forced reduction of the fiscal deficit to zero and holding it at that level for some time. That is shown by the blue line in Figure 4. After abandoning this policy, things would return to the beginning, and the fiscal deficit would be re-established at the initial level. On the other hand, the public debt would have the shape of the letter U, with its right tail ending at 55% of GDP. This policy sends an important message. The policy of suppressed fiscal deficit should be persistent, not temporary, in order to successfully manage the public debt. The cost of that policy is not in losing growth opportunity, but in getting public support.

The IMF envisions higher VAT collection to keep the fiscal deficit within the desired limits. That is simulated by the dotted green line. After the initial adjustment, which would take about a year, such a policy would begin to yield visible results. Not only would the fiscal deficit be reduced, but it would also turn into a fiscal surplus. That would have a favourable effect on public debt, which would fall below the 50% threshold at the end of the observed period.

The price of such an accommodating public debt is an increase in the tax burden. However, that is not the only price. With the increased tax burden, GDP falls, followed by the fall in employment growth rates and real wages. On the other hand, the process of appreciation of the exchange rate would continue, which would have a favourable effect on reducing the trade deficit. Inflation would initially rise to 5%, but would then return to the inflation target.

In another fiscal scenario, the aim of reducing the profit tax is to temporarily introduce more accumulation into the corporate sector. However, that does not necessarily mean higher investments because foreign companies can take increased profits out of the country (repatriate) and not reinvest them. Nevertheless, this would create a fiscal deficit during the implementation of this measure and after its abolition and lead to a return to the previous tax rates on profit. Such a measure would not solve the public debt problem, although it would help to somewhat reduce it. The appreciation of the real exchange rate would continue, but with a milder growth, which would partially improve the trade balance. Real wage growth would stabilise at a flat

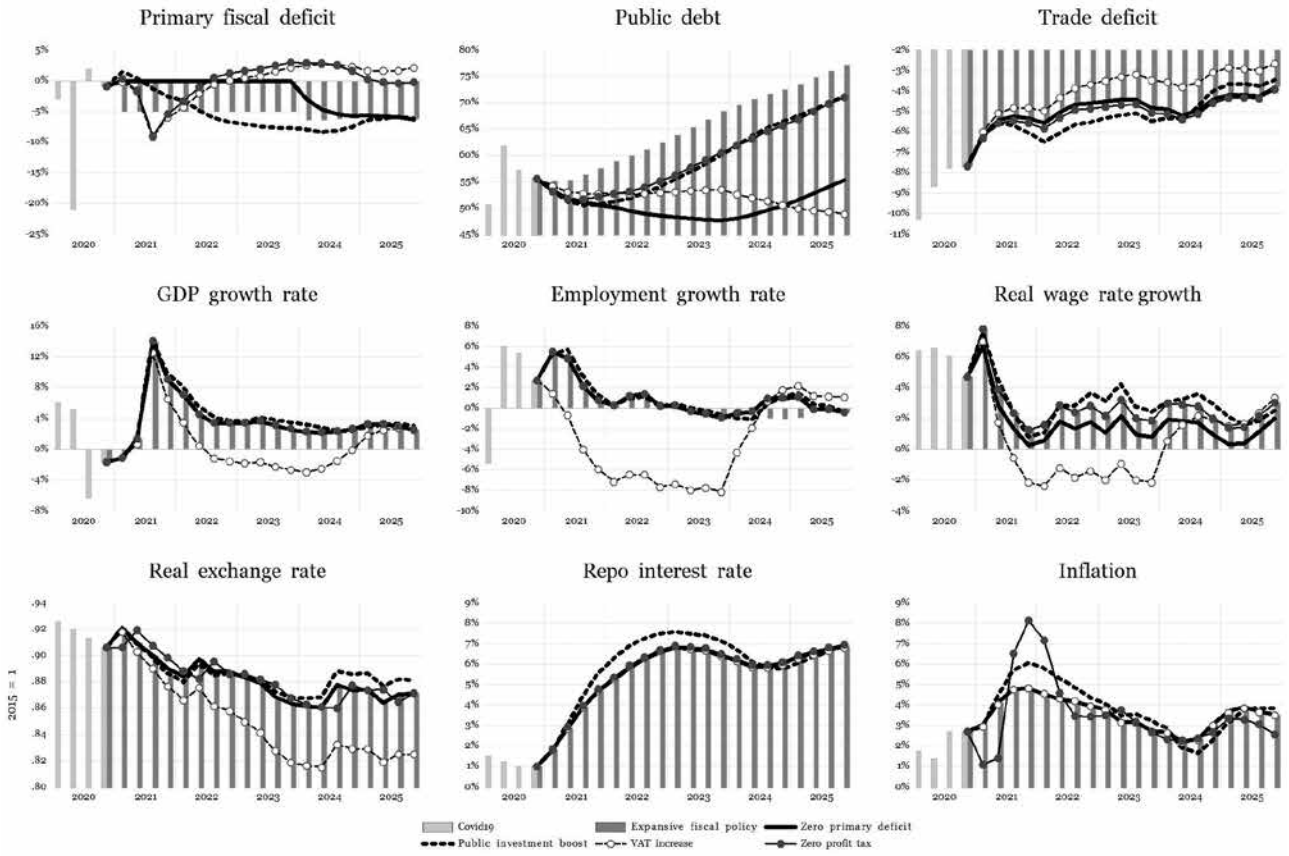
rate of 2% per year. Inflation would temporarily explode in 2022, but calm down afterwards.

Maintaining macroeconomic stability implies not only a sustainable fiscal deficit and public debt, but also low and stable inflation. The repo interest rate is used to manage inflation expectations. We saw in Figure 2 that the NBS kept the repo rate at a reasonably high level after the Great Depression, because inflation expectations were also high. After that, inflation calmed down; thus, monetary policy was eased. At the time of Covid-19, the NBS reduced the repo rate to support the economy and households to reduce the cost of high interest rates. The question is how long the repo rate can be maintained at 1% per year. Figure 4 shows that the application of various fiscal measures causes an increase in inflation. Therefore, the solution to the general equilibrium model automatically reacts and estimates what the repo rate should be in order to calm the inflation. The repo interest rate simulations in Figure 4 warn that there is a possibility of rising inflation and that a low repo rate cannot be guaranteed indefinitely. Thus, other methods of monetary support for overcoming the Covid-19 crisis might be temporary as well.

No fiscal measure prevents further appreciation of the real exchange rate. It would appreciate the most with the scenario based on the VAT increase. It is true that, after the intervention period, the real exchange rate would be partially depressed, but it would still be significantly below its equilibrium level.

To conclude: the Government's policy of maintaining a high fiscal deficit creates a risk of pushing the public debt out of control. On the other hand, the IMF's proposal to increase revenues by boosting VAT solves both those problems, but creates other risks – falling GDP and real wages, along with rising unemployment. No such side risks exist with suppressing the fiscal deficit, yet this policy should be persistent and supported by the public. Other fiscal policies provide intermediate solutions. The effects of different fiscal measures change over time, which calls for a policy mix that would be optimal over the mid-term cycle.

Figure 4: Active fiscal policy



Active monetary and industrial policy

We will assess the impact of monetary policy using two variables: the real exchange rate and the repo interest rate, which are its basic instruments. Let us start with the exchange rate. All simulations in the DSGE model appreciate the real exchange rate. Lowering the repo interest rate at one point brings the exchange rate closer to its equilibrium level. That is the period when the low interest rate prevailed. When we afterwards released the interest rate, it soared because inflation rose in the meantime. With a higher interest rate, the real exchange rate started to appreciate again.

The real exchange rate shows that some imbalances in the Serbian economy are related and that correcting one of them can aggravate others, emphasising the structural weaknesses In Figure 5, the path of the real exchange rate is presented with a blue line. One of the analysed scenarios is the forced correction of disparities in the real exchange rate. That would significantly improve the trade balance. However, at the same time, it would raise inflation and increase the pressure to raise the repo interest rate.

On the other hand, such a foreign exchange policy is very unfavourable for the public debt due to the significant component of foreign loans. Such negative effect on debt growth can be compared to the negative effect of Government policy of maintaining a high fiscal deficit (as shown in Figure 4). Even if the exchange rate was released to the level of its market appreciation after the 12th quarter, in the remaining 8-quarter period the public debt would continue to grow at a constant pace. The whole period would end with an 85% share of the public debt in GDP. At the same time, GDP growth rates would fall sharply and fluctuate around zero levels. That is why employment would fall and the rates of change in real wages would have a cyclical trajectory with a zero mean value. Thus, correcting the real exchange rate parity by itself seems like a bad economic policy scenario. The trouble is that maintaining such a course depends on the inflow of capital from abroad (including FDI) and the remittances of our citizens working abroad. In other words, an appreciated real exchange rate is a systemic characteristic of the Serbian economy that incorporates a permanent risk related to the inflow of capital from abroad.

The second scenario includes monetary policy based on the manipulation of the repo interest rate in order to enhance anti-crisis measures. We wondered what would happen if the NBS decided to further reduce the repo interest rate (for instance, by half). The dashed ochre line shows the simulated outcomes in Figure 5. Inflation would, of course, rise until the end of the controlled period, after which the repo rate would be adjusted upward and inflation would drop. In 2024, by definition, the easing of monetary policy will cease, which will cause its sudden adjustment. The temporary growth of repo interest will also cause a temporary decline in GDP and employment and real wages. Things will be returning to normal the next year: GDP will return to its long-term growth, as well as employment and real wages. Thus, the manipulation with further lowering of the repo interest did not yield many positive outcomes, but caused a rather dramatic adjustment after being abandoned.

To sum it up: monetary policy simulations show that it cannot help much in eliminating the fundamental risks of the economy, which are high public debt and long-term appreciation of the real exchange rate.

Let us now turn to the economic policy measures related to industrial policy. We simulated these measures according to two scenarios: introducing the new technology by modelling its risk on investment, on the one hand, and raising the overall productivity of factors of production, on the other hand, i.e. technology changes and efficiency of combining inputs in the production process.

From the point of view of economic growth, sustainability of the public debt, price stability and containing appreciation of the real exchange rate, both instruments of industrial policy offer much better prospects than fiscal and monetary policy measures. They may seem like a deus ex machina because their stochastic shocks have no counterparts in statistics and cannot be empirically verified. However, they are a part of the DSGE model and, as such, shape solutions of the general equilibrium model. As might be expected, new technologies and rising TFPs do not support significant employment growth, but raise real wages. In that sense, creating a practical industrial

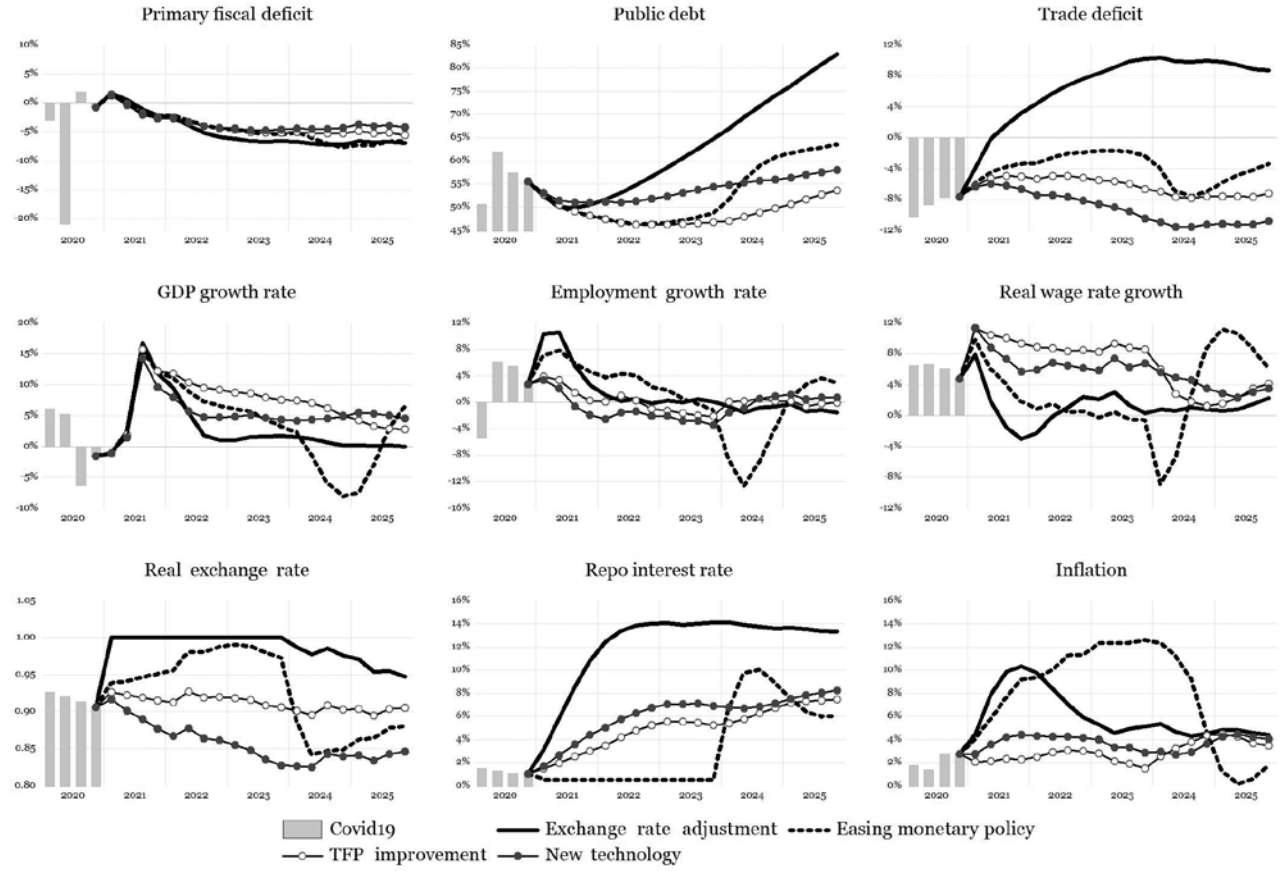
policy becomes an incredibly challenging task due to potential public resistance.

Practically speaking, the introduction of new technology can be realised only through new investments. So far, the Government has only aided foreign investment through a policy of subsidies. It is a notorious fact that these investments brought mostly dirty and outdated technology to the country. Their attraction lied in the creation of new jobs. These jobs are unsustainable in market competition with other economies, especially when they introduce new technology. It would be more than useful for the Government to change the criteria for promoting investments. Subsidies, if any, should equally apply both to domestic and foreign investments. At the same time, the key criterion would have to be the state of the technology being introduced. The second criterion should be overall economic productivity, measured by appropriate input-output multipliers in corresponding sectors [6]. All these must be viewed in the context of general digitalisation of business: remote work, online connection of producers and customers, expansion of online offers, cloud storage of information, investment in the security of Internet communications, the Internet of Things, significant changes in healthcare and pharma, financial services, professional services and so on.

Conclusion

In this text, we have empirically dealt with the previous recessions in Serbia in the interval of 15 years, from 2006 to 2020, and the direct impact of the Covid-19 crisis. We have compared the long-term and short-term trends and one-off Covid-19 impacts on the real and monetary economy, financial sector, and the rest of the world. Some lessons drawn from the previous crisis should not be ignored today. We simulated nine potential scenarios for fiscal, monetary, and industrial policies over the next five years. Current Government policy based on a huge fiscal deficit and rising public debt is unsustainable. Herein, we have given a menu of possible policy options. Each option in itself achieves some good results, but creates imbalances in other aspects. Therefore, there is a need to choose a mix

Figure 5: Active monetary and industrial policy



of economic policies that will not expose the country to immeasurable risk in the future.

Covid-19 seems to be a temporary shock, but we are worried about what will happen to the Serbian economy in the long run. All optimistic estimates of GDP growth are de facto estimates for an unconstrained growth because they do not integrate the imbalances that such growth creates. These imbalances are binding and GDP growth must adjust to them.

After this crisis, the economy will never be the same. We fear that Serbia is already on its way to repeat all the mistakes it made during the Great Recession and re-enter the public debt crisis. Behind it creeps the current account crisis and, after that, the possible renewal of inflation.

The model, in principle, supports the IMF's forecasts for the growth of the Serbian economy in 2021-22 (which corresponds to the Government's expectations) with lower growth prospects for 2023-25. It also identifies the associated macroeconomic imbalances. The public debt in Serbia is the most significant long-term problem with which the country cannot deal if it does not change its economic policy. Another long-term problem is the trade and current account deficit. To correct them, the inflow of foreign capital and remittances from abroad should be sufficiently high and persistent, which is not a certain outcome.

The Government's policy of maintaining a high fiscal deficit creates a risk of public debt rising out of control. On the other hand, the IMF's proposal to increase revenues based on boosting VAT solves both those problems, but creates other risks – falling GDP and real wages, along with rising unemployment. No such side risks exist with suppressing the fiscal deficit, but this policy should be persistent and supported by the public. Other fiscal policies provide intermediate solutions.

All simulations within the DSGE model appreciate the real exchange rate. Exceptionally, a very low repo interest rate at one point brings the exchange rate closer to its equilibrium level. When the pressure on the interest rate was eased afterwards, it soared because inflation rose in the meantime. With a higher interest rate, the real exchange rate returned to appreciation again.

The real exchange rate shows that some imbalances in the Serbian economy are related, and correcting ones can aggravate the others. That is typical of structural problems. Forced correction of the real exchange rate disparities would significantly improve the trade balance. However, it would raise inflation and increase the pressure to raise the repo interest rate and the public debt, which contents a significant foreign loan component. This negative effect on debt growth can be compared to the negative effect of Government policy of maintaining a high fiscal deficit. Thus, adjusting the real exchange rate without correction measures seems like a bad economic policy scenario.

The NBS might decide to further reduce the repo interest rate in order to enhance anti-crisis measures. That would not give many positive outcomes, but would cause a rather dramatic adjustment after abandoning such a policy. It seems the repo rate is not instrumental for avoiding high public debt or long-term appreciation of the real exchange rate.

As for the industrial policy scenarios, we follow the introduction of new technology and the raising of the overall productivity of factors of production. Their impact on economic growth, sustainability of public debt, price stability and fixing disparities of the real exchange rate is more constructive than other fiscal and monetary policy measures. However, creating and implementing a practical industrial policy becomes a difficult task due to potential public resistance in responding to the challenging labour market adjustments.

The effects of different policy measures change over time, which calls for a policy mix that would be optimal over the mid-term cycle. We present in this paper a menu with promising economic policy options. It is up to the Government to make an optimal policy mix. The present one is neither optimal nor sustainable.

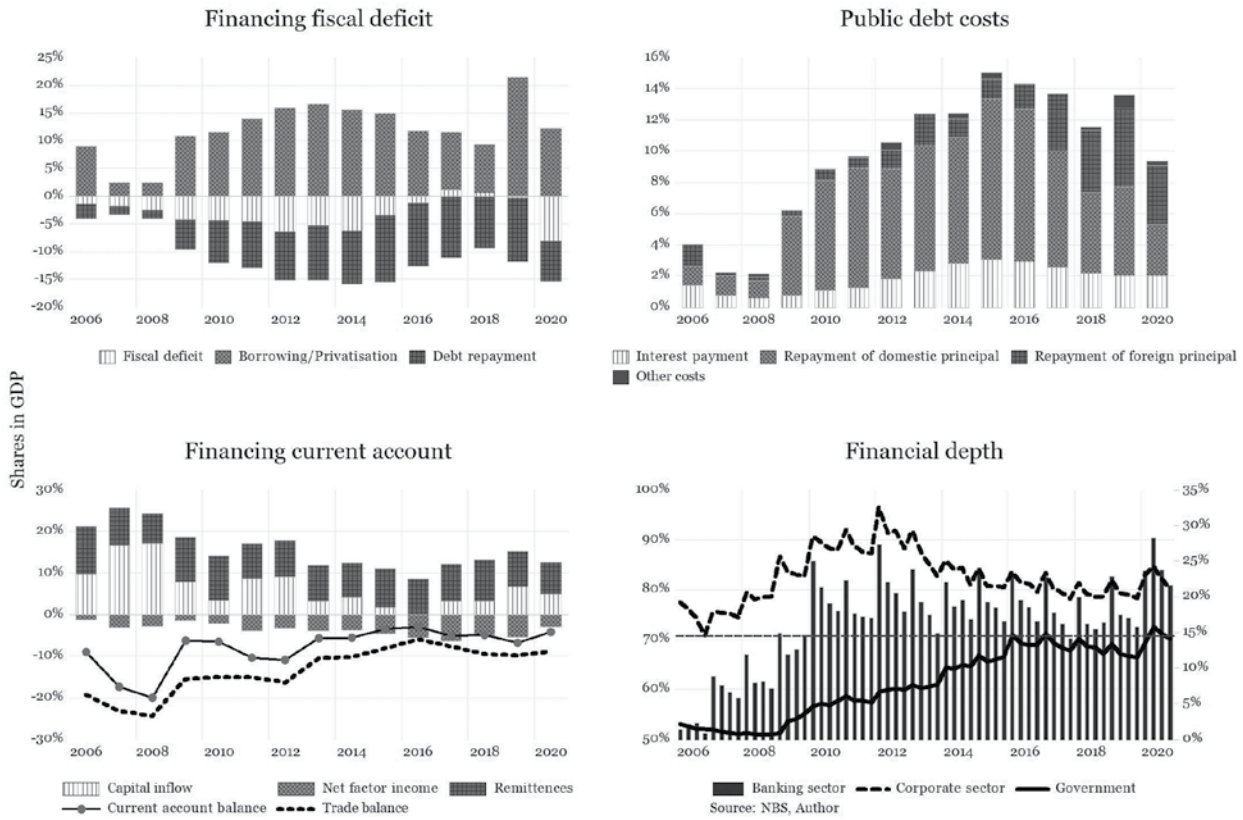
References

1. Adjemian, S., Bastani, H., Juillard, M., Karamé, F., Mihoubi, F., Perendia, G., Pfeifer, J., Ratto, M. & Villemot, S. (2011). "DYNARE: Reference Manual, Version 4," *DYNARE Working Papers*, 1, CEPREMAP.
2. Fiscal Council. (2021). *Ocena Predloga rebalansa budžeta Republike za 2021. godinu*. Beograd. Retrieved from http://www.fiskalnisavet.rs/.
3. IMF. (2021). World Economic *Outlook*. Retrieved from https://www.imf.org/en/Publications/WEO/Issues/2021/03/23/world-economic-outlook-april-2021.

4. Labus, M. (2014). QUEST_Serbia: DSGE Model with Practical Guide. *Belox Working Papers Series*, WP6/2014. Retrieved from *http://www.belox.rs/en/articles/publications/working-papers/wp6-2014-quest_serbia-dsge-model-with-practical-guide.html*.
5. Labus, M. (2015). Reaction of banks and monetary policy to fiscal consolidation in Serbia: Empirical evidence and DSGE simulations. *LIMES+*, *XII*(1), 11–29.
6. Labus, M.. (2019). Multipliers and foreign direct investment impact on growth. *Ekonomika preduzeća*, *67*(1-2), 35-49.
7. Labus, M., & Labus, M. (2015). Policy mix for fiscal consolidation in Serbia: Conditional forecast approach. *Ekonomika preduzeća*, *63*(1-2), 17-30.
8. Ratto, M., Werner, R., & Veld, J. (2009). QUEST III: An estimated open-economy DSGE model of the Euro area with fiscal and monetary policy. *Economic Modeling*, *26*(1), 222-233.
9. Vlada Republike Srbije. (2021). *Predlog Zakona o izmenama Zakona o budžetu Republike Srbije za 2021. godinu*. Retrieved from https://www.srbija.gov.rs/prikaz/537003.

ANNEX

Figure A.1: Financing macroeconomic deficits



Miroljub Labus

was Professor of Economics at the Faculty of Law, University of Belgrade, until he retired in October 2015, and former Deputy Prime Minister of Serbia. He has received BA in law and PhD in economics from the University of Belgrade. Miroljub Labus' current research is focused on dynamic macroeconomics, and economic analysis of anti-trust cases. He has valuable experience in statistics and applied general equilibrium modelling (CGE and DSGE). He set up statistical journal Economic trend, business survey Market barometer, and served as editor of the Annals of the Faculty of Law in Belgrade. As Deputy Prime Minister, Miroljub Labus was instrumental in negotiating Serbia's return to international financial institutions after a period of sanctions, settling the Country's huge foreign debts, and promoting the SAA with the EU. After resigning from politics, Miroljub Labus founded in 2007 consulting firm Belox Advisory Services.

ORIGINAL SCIENTIFIC PAPER
UDK: 331.5(497.11)"2014/2020"
339.727.22
DOI: 10.5937/EKOPRE2103203A
Date of Receipt: January 17, 2021

Mihail Arandarenko
University of Belgrade
Faculty of Economics
Department for Economic Theory and Analysis

Dragan Aleksić
University of Belgrade
Faculty of Economics
Department for Economic Theory and Analysis

Dragan Lončar
University of Belgrade
Faculty of Economics
Department of Business Economics and Management

EXPANSION OF DIRECT INVESTMENT AND RESILIENCE OF SERBIAN LABOUR MARKET: A REGIONAL AND SECTORAL PERSPECTIVE*

Ekspanzija direktnih investicija i otpornost srpskog tržišta rada sa regionalnog i sektorskog aspekta

Abstract

In recent years, Serbia has established itself as a leading destination for FDI thanks to its generous policy aimed at attracting direct investment. In this paper we look at the labour market effects of the policy of incentivised direct investment, first from a sectoral and regional perspective, and then by taking a holistic view at its impact on the overall labour market and economic development. We find that this policy has contributed to overall sectoral rebalancing of the labour market by increasing manufacturing jobs. It has also contributed to regional labour market rebalancing, most notably in improving the quality of employment in less developed regions and in stabilizing the shares of regional wage funds. Still, labour market, educational and infrastructure cleavages between regions remain very large. The transformational potential of Serbian labour market is far from being fully exploited, and Serbia still needs to sustain high level of investment in manufacturing jobs while at the same time supporting the gradual shift toward high-technology investment.

Keywords: *direct investment, FDI, labour market, regional differences, manufacturing, incentives*

Sažetak

Zahvaljujući politici velikodušnih podsticaja usmerenih ka privlačenju direktnih investicija, Srbija je poslednjih godina postala jedna od vodećih destinacija za SDI. U ovom radu bavimo se efektima koje je politika podsticaja direktnih investicija imala na tržište rada, najpre sa sektorskog i regionalnog aspekta, a zatim i sagledavanjem celine njenog uticaja na tržište rada i na ekonomski razvoj. Naši rezultati pokazuju da je politika podsticaja doprinela ukupnom sektorskom rebalansiranju tržišta rada povećanjem zaposlenosti u proizvodnji. Takođe, ova politika doprinela je rebalansiranju regionalnih tržišta rada, naročito poboljšanju kvaliteta zaposlenosti u manje razvijenim regionima i u stabilizaciji udela regionalnih platnih fondova. Ipak, međuregionalne obrazovne i infrastrukturne razlike, kao i razlike u tržištima rada, i dalje ostaju veoma velike. Transformacioni potencijal srpskog tržišta rada još uvek nije u potpunosti iskorišćen, zbog čega Srbija i dalje treba da zadrži visok nivo investicija u radna mesta u industriji, istovremeno podržavajući postepeno okretanje ka visokotehnološkim investicijama.

Ključne reči: *direktne investicije, SDI, tržište rada, regionalne razlike, industrija, podsticaji*

* This work was supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

Introduction and brief overview of trends

The half-decade period preceding the pandemic shock that hit Serbia in March 2020 was characterized by moderate rates of economic growth and by stable growth in employment and activity of the population. Between 2015 and 2019 the total employment of working age population as measured by Labour Force Survey increased from 2,574,000 to 2,900,000, or by some 325,000 persons. Over the same period, registered employment measured by Survey on registered employment (combining data from the Central Register of Compulsory Social Insurance and the Statistical Business Register) increased from 1,987,000 to 2,173,000 persons. The dynamics of average formal wage followed a somewhat different path – it was quite subdued during the period of fiscal consolidation 2015-2017, reflecting the reduction in public sector wages and freeze or slow adjustment in the minimum wage, and then picked up in 2018 and 2019, when both restrictions were removed. Despite being hard hit by the pandemic in 2020, as the rest of the region and indeed the world, Serbia's GDP decline of 1.1% was among the lowest in Europe. In 2020, Serbia even managed to increase its formal employment and average wage, while total employment declined only marginally, reflecting significant decrease in informal employment.

One of the factors believed to have contributed to these favourable labour market trends has certainly been the government policy of supporting direct investment, especially FDI. Introduced relatively early in 2000s, its latest major overhaul was in 2016 with the adoption of Law on Investment and Decree on Terms and Conditions for Attracting Direct Investment. These pieces of legislation provide enabling environment for investment and contain a set of generous regionally and sectorially differentiated incentives for direct investment.

In recent years, Serbia managed to establish itself as the leading destination for FDI in the Western Balkans and South Eastern Europe. Furthermore, some relevant global business observers identify Serbia as the leading European and global destination in terms of FDI-induced job creation (IBM Global Location Trends for 2016-2019) and amount of FDI per capita (fDi Intelligence in 2019). After strong expansion in the period 2015-2019, the amount of FDI held rather steady in 2020. While it is estimated that due to pandemic the global amount of FDI dropped sharply by 42% in 2020 according to UNCTAD Investment Trends Monitor, in Serbia the drop was more moderate, from 3.8 billion USD in 2019 to around 3 billion in 2020, which is still above the five-year average for the period 2015-2019.

While there is little controversy within expert circles about the positive gross short-term impact of the government policy of generous support for direct investment (often in analyses reduced to its FDI component which is indeed dominant both in value and job creation terms), its net and long term effects have been often questioned by the critics on various grounds. Most analyses focus on the evaluation of key aspects of impact of FDI (including those not directly subsidized) rather than of all, or only those subsidized, direct investment. This is also in accord with a widely shared notion that FDI are special for emerging and developing countries because they bring missing capital and new sources of financing, strengthen links with global value chains and help improve existing and create new skills of the labour force, ultimately leading to higher growth rates and living standard.

The inflow of foreign direct investment in Serbia can be divided into several periods. First, in the 1990s, political instability, international sanctions and hyperinflation deterred foreign capital from Serbia. As a result, FDI inflow was marginal with only a couple of major foreign investment deals, like the sale of Telekom in 1997 [13].

Second, in the first decade of the 2000s, annual FDI inflows rose sharply due to political stabilization and mass privatisation, to peak in 2006 at all-time high of about 5 billion US dollars. This episode was then followed by a reverse trend until the end of the decade, with the exception of 2008 when FDI growth was driven mainly by the large investments of Gazprom. Despite the negative trend in the years that preceded the economic crisis, the FDI inward stock increased from only 1 billion US dollars in 2000 to 20 billion US dollars in 2010 or as much as 20 times. Besides absolute growth, Serbia also increased its share in total inward foreign direct investment stock in Southeast Europe from 7% to 10% [7]. However, despite positive developments during the 2000s, Estrin and Uvalic found that FDI into Serbia, and the Western Balkans in

general, were lower than can be explained by the economic characteristics of the region. In other words, controlling for different factors they found that Western Balkans *per se*, with its unstable political heritage, had a negative effect on FDI.

When it comes to the structure of FDI Estrin & Uvalic [7] found out that almost three-quarters of inward FDI stock in 2010 were allocated in Services, while only 20% went to Manufacturing. The structure of FDI gradually changed according to Kastratović [8] who analysed the structure of cumulative foreign direct investment inflows by branches of activity in 2004-2013. The author found that FDI were mostly allocated in Financial and insurance activities (25%), Manufacturing (24%) and Wholesale and retail trade; repair of motor vehicles and motorcycles (16%). Looking at the aggregate level, Services declined from 75% to 69% while Manufacturing increased from 20% to 24%. The steady increase in the share of Manufacturing and more lately in Construction alongside with the overall rise in FDI and subsidized direct investment marked the period 2015-2020.

After the onset of the 2008 economic crisis, which underlined the weakness of growth strategy based on expansion of domestic demand and premature deindustrialization, one of the strategic goals of economic policy, including the policy of supporting direct investment and attracting FDI, was to change the economic structure in the direction of a greater share of employment in manufacturing and modern services at the expense of employment in agriculture. In 2011, approximately one in five workers aged 15-64 was employed in agriculture, one in four in industry, while about 54% of all workers were employed in services. During the ten-year period, changes in the structure of the Serbian economy have indeed taken place in the desired direction. Thus, employment in agriculture decreased to 13.4%, while the share of employment in industry (inclusive of construction) and services increased to 28.8% and 57.8%, respectively. Most importantly, the trend of rapid decline in manufacturing and industrial employment from the previous decade was stopped and slightly reversed.

World Bank [15] provides perhaps the most detailed account of the contribution of FDI to Serbia's growth and employment dynamics. While it finds that domestic private firms are the backbone of the Serbian economy, employing over half of the formal private labour force and exhibiting the highest recent productivity growth, a significant role is ascribed to FDI as well.

The World Bank's synthesis report [15] argues that while FDI firms have definitely created new jobs, many of them were in less productive and lower value-added firms, leading to a decrease in average productivity of these firms as a group. While the largest impact on jobs and growth materializes through long-term linkages between foreign firms and domestic suppliers or corporate clients that maximize knowledge spillovers, current schemes still primarily incentivize job creation. Overall conclusion is that after successfully addressing the problem of high unemployment Serbia now above all needs incentives aimed at productivity growth through fostering growth in higher value-added industries and creating spillovers [15].

In the rest of this paper we primarily attempt to describe and assess immediate impact of government-subsidized schemes supporting direct investment as well as of FDI in general on labour market outcomes in sectoral (Section 2) and regional (Section 3) perspective. In Section 4 we take a general look at the evolution of structural characteristics of the labour market in the past decade and discuss the overall impact of policy of attracting direct investment on these outcomes within the broader institutional and developmental context of Serbia. Section 5 concludes.

Overview of sectoral and regional distribution of subsidized direct investments in the period 2016-2020

The descriptive analysis of direct investments for which there is an incentive agreement covers the period after the establishment of the current regulation and administration mechanism, from the beginning of 2016 till October 5, 2020. The subject of the analysis is the data on total direct investments, related incentives funded by the state through its development agency, the number of contracts and jobs created as a result of these investments as well as their time, sectoral and regional distribution.

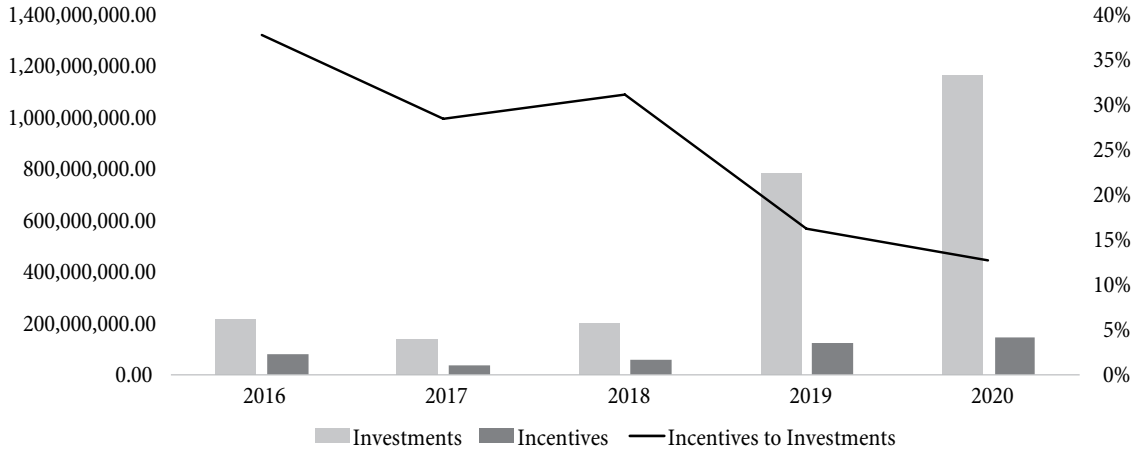
The total value of investments over the whole period amounts to a little over 2.5 billion euros, around a fifth of that amount being subsidized by the state through its flagship investment programme coordinated by the Development Agency of Serbia (abbreviated RAS in Serbian).

As shown in Figure 1, in the sub-period from 2016 to 2018, the amount of total direct investment stagnated, while the share of financial incentives held steady at above 30% of total investment. The following two years were marked by a spike in direct investment, and a much slower increase in incentives. Direct investments increased from 216 million euros a year to 1,163 million, which is an increase of 5.4 times, while incentive funds increased only 1.8 times. It is remarkable that the largest amount of investment was recorded in 2020, even though the records for that year were available only for the first 10 months. Although in all likelihood most of investment agreements were negotiated before the start of the pandemic, these investments certainly acted as an important counterbalance to the pandemic-induced recession and contributed to the resilience in the formal private-sector labour market in 2020.

The number of signed contracts during the observed period was approximately 20 per year, with the exception of 40 contracts during 2019, as can be seen in Figure 2.

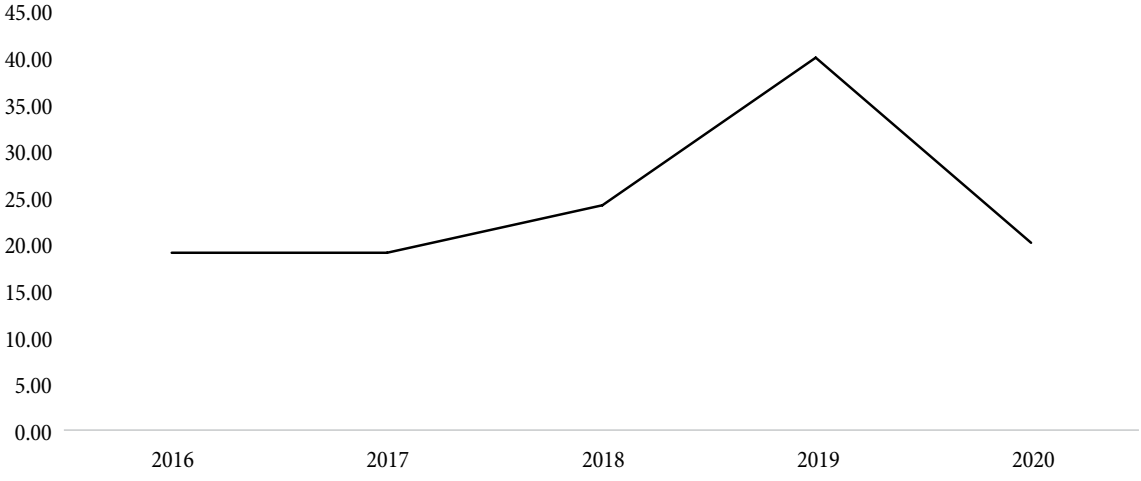
A significant percentage of direct investments with concluded incentive contracts are foreign direct investments, which account for 73% of total signed contracts, compared to 27% of contracts signed with domestic investors. Regarding the sectoral distribution, the largest five groups of sectors dominate with over 72% of shares

Figure 1: Total investment supported and incentives disbursed through the RAS direct investment programme, 2016-2020



Source: Own calculations based on Ministry of Economy data

Figure 2: Total number of contracts through the RAS direct investment programme, 2016-2020



Source: Own calculations based on Ministry of Economy data

in the number of concluded contract. Signed contracts are relatively evenly distributed by region, with most of them concluded in Šumadija and West Serbia (29%) and South and East Serbia (29%), a bit less in Vojvodina (25%) and Belgrade (22%).

With regard to sectoral and sub-sectoral structure of investment, all five most represented branches of activity belong to Manufacturing sector. According to the share of total investments, the first 2 activity branches make up 73% of all listed investments, while the first 5 areas represent a share of 86%.

In the case of allocated incentive funds, the distribution does not differ significantly from the distribution of the share of total investments. The first 5 areas cover more than 79% of the total incentives share. Contrary to the number of contracts signed, two less developed region – Šumadija and West Serbia and South and East Serbia, each received around 21% of total incentives, while most of the funds are allocated to Vojvodina (34%) and Belgrade (25%). An in-depth sectoral look at the cumulative distribution of investments by the number of contracts, total values and values of incentives is provided in Table 1. It should be noted that presented data consider only the top five sectors by three different categories.

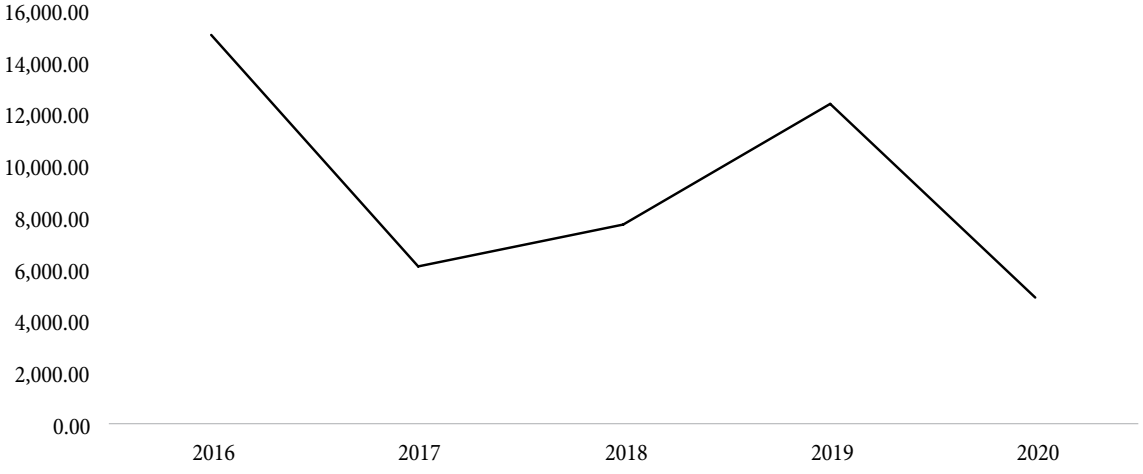
Under the new regulation for supporting direct investment, between 2016 and October 2020 about 46,000 new jobs have been created. The largest number of newly created jobs was achieved in 2016 (see Figure 3). Manufacture of electrical equipment, motor vehicles, trailers and semi-trailers, repair and installation of machinery and equipment, production of electronic components, bearings, gears, electrical and electronic equipment for motor vehicles and

Table 1: Cumulative shares of signed contracts, investment values and incentives by sectors

Sector	% of contracts	% of cumulative investments	% of cumulative incentives
Manufacture of electrical equipment, motor vehicles, trailers and semi-trailers, repair and installation of machinery and equipment, production of electronic components, bearings, gears, electrical and electronic equipment for motor vehicles and other parts and accessories for motor vehicles	36	37	43
Manufacture of textiles, clothing, other apparel, leather and leather goods	12	-	6
Production of food products, processing and canning of meat, cultivation of cereals, legumes and oilseeds, bread, fresh pastries and cakes, processing of tea and coffee, production of rusks, biscuits, permanent pastries and cakes, juices and fruits and vegetables	12	5	6
Hotels and similar accommodation	7	-	-
Production of rubber and plastic products, vehicle tires, retreading of vehicle tires	5	36	20
Repair and maintenance of aircraft	-	4	-
Manufacture of chemicals and chemical products, manufacture of detergents, soaps, cleaners and polishes	-	4	-
Production of lighting equipment	-	-	4

Source: Own calculations based on Ministry of Economy data

Figure 3: Newly created jobs through the RAS direct investment programme, 2016-2020



Source: Own calculations based on Ministry of Economy data

other parts and accessories for motor vehicles dominates in the number of added jobs with 59.63% of overall share, followed by the production of textiles, clothing, other clothing, leather and leather goods, whose share in the total added jobs is 10.97%. Important activity branches also include office-administrative and other auxiliary activities, followed by the production of rubber and plastic products, vehicle tires, retreading of tires for vehicles, which participate with 5.33% and 4.79%, respectively. Unlike incentives, the distribution of newly created jobs by regions offers a much more favourable picture from a regional perspective. The majority of jobs were created in two less developed regions – Šumadija and West Serbia and South and East Serbia (31% each), somewhat less in Vojvodina (21%) and only 18% in Belgrade.

From the above analysis, it can be concluded that the jobs created as a result of direct investments with concluded incentive contracts are unevenly distributed in favour of the two least developed regions - Šumadija and Western Serbia as well as Eastern and Southern Serbia.

Singling out the four most important activity branches from the standpoint of new employment creation as well as their cumulative value of investment, we have summarized in a somewhat different manner the four most important groups of activity branches in which subsidized direct investments are channelled (see Table 2). We decided on these groups based on their share in the cumulative value of investments (the first three groups of sectors) and the cumulative number of newly created jobs (group D).

In total, these 4 groups account for about 80% of total investments and the same percentage of newly created jobs. Therefore, it makes sense to look at the potential impact of these investments in terms of cumulative growth of sectoral gross value added and sectoral registered employment, having in mind that these effects are conjectural rather than direct. Table 3 shows the cumulative changes in employment in the period 2015-2020 and 2015-2019 when it comes to GVA.

When it comes to the increase in registered employment, the best result was recorded in group A where employment increased from some 70,000 to about 110,000. Within the group itself, the largest growth was recorded in the Manufacture of motor vehicles, trailers and semi-trailers, where the initial number of employees of about 25,000 was doubled at the end of the observed period. It is interesting to say that in the observed groups of sectors, the cumulative employment growth drastically (A and B) and significantly (D) exceeded the national average of about 13%. The exception was the Food production

Table 2: Cumulative shares of investment values, created jobs and incentives by sectors

		Cumulative structure 2016-2020 (in %)		
		Investments	Created jobs	Incentives
A	Manufacture of electrical equipment, Manufacture of motor vehicles, trailers and semi-trailers, Repair and installation of machinery and equipment, Manufacture of computer, electronic and optical products and Manufacture of machinery and equipment n.e.c.	37.0	59.6	42.9
B	Manufacture of rubber and plastic products	36.2	4.8	19.6
C	Manufacture of food products	5.3	2.6	6.2
D	Manufacture of textiles, Manufacture of wearing apparel and Manufacture of leather and related products	2.2	11.0	5.8

Source: Own calculations based on Ministry of Economy data

Table 3: Cumulative growth of registered employment and gross value added by sectors

		Cumulative growth from 2016 (in %)	
		Employment (until 2020)	GVA (until 2019)
A	Manufacture of electrical equipment, Manufacture of motor vehicles, trailers and semi-trailers, Repair and installation of machinery and equipment, Manufacture of computer, electronic and optical products and Manufacture of machinery and equipment n.e.c.	55.8	2.2
B	Manufacture of rubber and plastic products	34.1	29.8
C	Manufacture of food products	12.0	-7.6
D	Manufacture of textiles, Manufacture of wearing apparel and Manufacture of leather and related products	17.9	4.0

Source: Own calculations based on Ministry of Economy data

sector, where the change in employment corresponds to the national average.

The results are quite different if we look at the growth of gross value added in these sectors because the cumulative increase in GVA in the observed sectors, with the exception of the Rubber and Plastics Production sector, is significantly lower than the national average of about 14%. Group A stands out as an outlier – although the registered employment increased by more than 1.5 times, the newly created value increased by only about 2%. Within this group, the production of motor vehicles, trailers and semi-trailers appears to be the main culprit, because it is the area within sector A that was the only one to record a cumulative drop in GVA, in the amount of as much as 20%. Given its importance within sector A, it is clear why this sector is characterized by very low GVA. Thus, for example, with the exception of this area, the GVA within sector A would increase to about 17%.

There are several explanations for the decline in GVA within the Manufacture of motor vehicles, trailers and semi-trailers. Most importantly, after the arrival of FIAT, which is by far the largest company in this field and therefore has a large weight in the branch's total value added, this area recorded a sharp rise that lasted until 2013, followed by a constant decline, and its production in 2019 was about 40% lower than at the 2013 maximum, while the number of employees changed by much less. Thus, the drop in GVA per employed is in all likelihood unrelated or only weakly related to the investment projects subsidized in the period under consideration. True, a large part of this group consists of foreign companies that largely import their inputs while in the country the final products are only assembled. According to data for 2017, foreign investors within this sector imported about 91% of inputs from abroad. Consequently, this way of organizing production creates little added value.

More generally, channelling foreign investment into below-average productivity sectors may seem like a bad move at first glance. However, the findings of an influential cross-sectional global study [12] indicate that the Manufacturing industry exhibits strong unconditional convergence of labour productivity. This is especially important in the case of Serbia, where productivity in the Manufacturing industry is three times lower than the EU 28 average in 2017. On the other hand, in the Services sector, productivity is "only" twice lower than the EU average [15].

Assessment of potential impact of direct investment incentive programmes on regional labour market outcomes

Large regional differences are one of the long-term defining characteristics of Serbian economy and they are also reflected in key labour market indicators – employment and unemployment rates as well as average wages. Among the four NUTS-2 regions, the Belgrade region is far ahead according to all indicators, followed by the region of Vojvodina and the region of Šumadija and Western Serbia, while the worst outcomes are typically found in the region of Southern and Eastern Serbia. The key labour market indicators since 2014 are presented in Table 4.

Table 4: Key labour market indicators for the population 15-64 by regions, 2014-2019

Region	Employment rate (in %)					
	2014	2015	2016	2017	2018	2019
Belgrade region	52.8	53	56.9	60.3	62.9	64.9
Region of Vojvodina	50.5	51.7	54.4	57.2	59.1	60.7
Šumadija and Western Serbia	52	53	55.8	57.2	58.1	59.8
Southern and Eastern Serbia	47	49.7	53.3	54.2	54.6	56.9
	Unemployment rate (in %)					
	2014	2015	2016	2017	2018	2019
Belgrade region	17.4	18.9	15.9	13.5	11	8.4
Region of Vojvodina	20.3	16.9	15.5	12.4	10.7	9.3
Šumadija and Western Serbia	19.2	17.8	15.7	14.6	14.9	12.5
Southern and Eastern Serbia	23.3	19.7	16.8	16.2	17.3	14.1

Source: LFS, SORS

The labour market indicators presented in Table 4 provide summary information on quantitative aspects of regional labour market trends. The growth in employment rates was significant in all regions, with employment in the most developed region of Belgrade growing slightly faster than three others. Trend in employment rates suggests that the Belgrade region slightly widened the gap between other less developed regions, however they converged a bit among themselves according to this indicator. When it comes to unemployment rates, no clear trend can be observed. Although the Belgrade region kept its leading position, the relative position of remaining three regions was not unanimously worsened. For example, the Vojvodina region even improved its relative position, Southern and Eastern Serbia kept its position unchanged, while only Šumadija and Western Serbia experienced some worsening.

However, the strongest indication of the stabilization or potential reduction in quantitative regional labour market differences are the LFS data on vulnerable employment. Vulnerable employment is statistical concept encompassing categories of employed persons outside of dependent (wage, salaried) employment, which are (statistically) considered inferior to wage employment. They include self-employed persons and contributing unpaid family members. Reduction in the rate of vulnerable employment should in principle indicate improved quality of employment. Recent trends in vulnerable employment in 4 regions are presented in Table 5.

From the presented statistics in Table 5, it is visible that the rates of vulnerable employment were reduced by some 3-4 percentage points in three less developed regions, while this reduction for Belgrade was only 0.5 percent. It is also very important that the share of contributing family members whose employment is considered to be of the worst quality of all types of employment recorded a very strong decline. Thus, in recent years there has been clear inter-regional convergence in the quality of employment.

In addition to the number of employed, employment rates and quality of employment, it is important to take into account wages as the price aspect of the labour market. Instead of just looking at the average wage by region, however, better strategy is to take into account the number of wage earners in each region, that is, approximate the wage fund in each region over time. Thus it is instrumental to calculate wage fund as the product of the average net wage and the number of registered employees in each region. After calculating regional wage funds, these results are put in relation to the total national wage fund, which enables monitoring of trends in relative share of the wage fund for each of the four regions in the total wage fund. This simple procedure is presented step by step in Table 6.

Based on the data on the total wage fund per capita, reflecting employment and wage trends in formal regional labour markets, it can be concluded that regional labour market inequality has not changed significantly in the period under consideration; if anything there have been slight convergence, given that the two least developed regions of Central Serbia recorded some gains in their per capita wage fund shares (Šumadija and Western Serbia from 17.2% in 2014 to 17.9% in 2019, while the gain for Southern and Eastern Serbia was from 16.9% to 17.3%).

Table 5: Rates of vulnerable employment (VE) and share of contributing family members (CFM) as % of total employment in 4 regions, 2015-2020

		2015	2016	2017	2018	2019	2020
Serbia	CFM	8.1%	8.0%	5.8%	5.6%	4.7%	4.6%
	VE	30.2%	31.7%	30.6%	28.2%	27.7%	27.0%
Belgrade region	CFM	0.9%	1.6%	1.3%	1.3%	1.1%	1.1%
	VE	15.7%	17.8%	17.8%	17.2%	16.6%	15.2%
Region of Vojvodina	CFM	4.6%	4.6%	3.2%	3.5%	2.9%	2.7%
	VE	25.7%	26.0%	24.3%	23.3%	21.9%	21.6%
Šumadija and Western Serbia	CFM	14.7%	14.6%	12.0%	11.7%	10.0%	9.7%
	VE	42.5%	44.2%	43.8%	39.9%	39.3%	39.2%
South and Eastern Serbia	CFM	11.6%	10.6%	5.8%	5.0%	4.4%	4.4%
	VE	35.1%	37.5%	35.7%	32.5%	33.2%	31.8%

Source: LFS

However, this was achieved entirely at the expense of the second most developed region, Vojvodina (its per capita share dropped from 23.2% to 22.1%), while the share of Belgrade as the most developed region remained unchanged (from 42.7% in 2014 to 42.8% in 2019).

Still, one may consider this apparent stabilization or very mild reversal of regional labour market differentials as a success, taking into account rapid widening of regional differences in the previous decade (e.g. [2]). Furthermore, if the starting reference year is moved back to 2011, then regional convergence in labour market outcomes becomes more visible. Using the same wage fund per capita approach a recent analysis found that the two more developed region decreased their share in total wage fund p.c., while the two less developed region significantly increased their share in 2019 in contrast to 2011 [1].

Impact of the policy of attracting direct investment on evolution of structural characteristics of Serbian labour market

One of the long standing and defining features of Serbian labour market has been its pronounced duality, reflecting overall economic duality often found among emerging and middle-income economies. At that stage of development, the labour market consists of two main sectors, both of significant and often similar size – the primary sector of relatively high wages and 'good', secure formal jobs, and the secondary sector of low wages or self-employment income and 'bad', insecure and often informal jobs. In Serbia specifically, the possibility of transition from the secondary to the primary sector is significantly limited and does not necessarily depend on the qualifications and

Table 6: Wage fund by region, 2014-2019

Region	2014	2015	2016	2017	2018*	2019
Net wages by region (in RSD)						
Belgrade region	55429	55551	57717	60142	60689	68140
Region of Vojvodina	43092	43050	44646	46215	47095	51965
Šumadija and Western Serbia	37504	37066	38315	40024	42963	46826
Southern and Eastern Serbia	38270	38088	39959	41402	44130	48260
Registered employment by region (in thousands)						
Belgrade region	559.2	670.3	669.8	691.6	718	742.1
Region of Vojvodina	443.4	506.6	511.3	524.6	545.9	550.8
Šumadija and Western Serbia	396.1	470.6	475.4	486.2	500.5	508.1
Southern and Eastern Serbia	299	342.2	353.2	360.3	366.7	372.2
Wage fund (in millions)						
Belgrade region	30998	37236	38661	41592	43575	50568
Region of Vojvodina	19107	21809	22828	24244	25707	28623
Šumadija and Western Serbia	14856	17442	18215	19458	21504	23790
Southern and Eastern Serbia	11441	13032	14115	14916	16183	17960
Mid-year population estimates (average in thousands)						
Belgrade region	1675	1680	1684	1687	1690	1694
Region of Vojvodina	1902	1892	1881	1872	1862	1852
Šumadija and Western Serbia	1988	1972	1957	1941	1925	1909
Southern and Eastern Serbia	1567	1552	1536	1521	1506	1490
Wage fund per capita						
Belgrade region	18506	22165	22959	24652	25781	29850
Region of Vojvodina	10046	11529	12134	12954	13807	15454
Šumadija and Western Serbia	7473	8844	9309	10024	11172	12465
Southern and Eastern Serbia	7301	8399	9188	9806	10748	12050
The share of the regional in the total wage fund per capita (in %)						
Belgrade region	42.7	43.5	42.8	42.9	41.9	42.8
Region of Vojvodina	23.2	22.6	22.6	22.6	22.4	22.1
Šumadija and Western Serbia	17.2	17.4	17.4	17.5	18.2	17.9
Southern and Eastern Serbia	16.9	16.5	17.1	17.1	17.5	17.3

* Change in methodology in the calculation of wages (without affecting the results at this level of data aggregation)
Source: SORS.

potential productivity of those found (or 'stuck') in the secondary sector [3]. This is further aggravated by specific configuration of labour market institutions, privileging insiders at the expense of outsiders.

It is thus instrumental to take a view at the longer-term dynamics of key cleavages delineating primary from secondary labour market in Serbia. In Table 7, they are presented for years 2010 and 2020.

Looking at the structures of employment, a couple of them show stubborn stability over the past decade (public – private and secure – insecure jobs), however in most cases they have shifted in desirable directions. There is less informal, agricultural and vulnerable jobs, and within vulnerable jobs the share of unpaid family work declined the most. In the rest of this section we consider what has been the role of policy of attracting direct investment in rebalancing the above dual employment structures and then return to discuss the policy's role in addressing regional and sectoral labour market cleavages.

The jobs created thanks to supported direct investments and overall expansion of FDI in principle move the balance of labour market structures in all the right directions – in favour of formal, non-agricultural, waged, paid and secure jobs. It is straightforward in a situation when new workers come from the ranks of unemployed. As Madžar [10] put it, in a country with high unemployment, all newly created jobs due to FDI are in first approximation a pure macroeconomic gain. Actually, some of the gains are not visible in overall labour force statistics but are in a way even more transformational than those facilitating transition from unemployment to employment. If, for example, an unpaid contributing family worker in agriculture gets a job in manufacturing thanks to a subsidized direct investment, Labour Force Survey will not record any increase in employment. However, thanks to this job-to-job transition the four structures in the middle of Table 7 will all change in favour of (statistically) superior forms of employment, and odds are that this would be the case with the job security status as well – since there is a rule that subsidized employers have to employ certain minimum percentage of workers on indefinite contracts. On the other hand, statistics on registered employment will indeed record one more employed person; and the corresponding wage fund will increase as well.

The treatment of public sector employment as superior to employment in private sector deserves a separate explanation. It is derived from statistics on wages and job characteristics in two sectors and is connected to the fact that all jobs in public sector are salaried, while this is not the case with private sector. While public sector employment is uniformly salaried and formal, private sector employment is a mix of modern and traditional, including subsistence farming and other informal jobs. Furthermore, within the subset of dependent employment, wages are higher in public sector, even after accounting for higher educational attainment there [14].

Expansion of dependent employment in private sector due to subsidized direct investments has the tendency both to reduce the share of vulnerable employment and to drive wages in private sector up. Even if incentivised direct investments are concentrated in low-wage branches, their wages tend to be higher than specific branch average – often due to the in-built agreement with RAS to have base wages at least 20% above the minimum wage. As a systematic effect, entry of more firms in any sector drives within-sector competition for labour which tends to increase wages.

However, there is relatively widely shared criticism that FDI in Serbia do not actually diminish regional differences (e.g. [11]), and that their concentration in low-wage sectors is not what Serbia needs to successfully gets out of the

Table 7: Duality of Serbian labour market in 2010 and 2020

Employment structures	Share in total employment in % (population 15+)	
	2010	2020
Public – Private	25:75	25:75
Formal – Informal	80:20	84:16
Non-agricultural – Agricultural	78:22	85:15
Standard (waged) – Vulnerable	67:33	73:27
Paid – Unpaid work	92:8	95:5
Secure (permanent) – Insecure jobs	57:43	58:42

Source: KILM database of SORS for 2010, LFS for 2020 and own estimates

middle-income trap. The descriptive evidence related to labour market outcomes presented in two preceding sections does not confirm these two strands of criticism, but does not conclusively reject them either. Nevertheless, while the policy of subsidizing direct investment might not be of much help, it is clearly not the root cause of inter-regional and inter-sectoral labour market differentials, since in Serbia they were already large and further widening at the time the policy was introduced in 2005 (e.g. [2]).

One of the plausible root causes for expanding regional and sectoral labour market differences was suggested in the study on labour costs and labour taxes in the Western Balkans by Arandarenko and Vukojevic [5]. The reform of labour taxation system in 2001 burdened low-wage firms and sectors in Serbia (which also tend to be concentrated in less developed regions) with very high effective tax rates, rendering them less competitive in regional and global markets. The opposite was true for high-wage activities, such as financial sector, ITC or energy sector. This privileged position for the high-capital, high-wage sectors was fortified by Serbia's race to the bottom in the statutory corporate income tax rate which was reduced to 10%, one of the lowest in the world, until it was uniformly increased to 15% in 2015. This neoliberal-inspired reform of direct taxation was at least a contributory factor to the long and severe decline in employment recorded in the period 2001-2006, despite the high and uninterrupted GDP growth that Serbia recorded at that time. The further deep drop in employment in the period marked by the impact of economic crisis 2009-2012 could also be partially ascribed to the labour-unfriendly features of Serbian tax and benefit system which remain largely unreformed to this day.

The scheme for attracting direct investment through subsidies was meant to revert the socially and economically dangerous destruction of jobs and to address rising unemployment by prioritizing job creation and tying the subsidy amount practically exclusively to the number of new jobs created. Another key feature of the incentive system has been progressive scheme paying higher subsidies per worker to investments based in less developed regions. Thus, the entire direct investment incentive scheme appears to have been designed with the key purpose to correct for the labour market distortions caused by the inadequate system of direct taxation disfavouring labour-intensive and low-wage branches and firms, as well as the underdeveloped regions where they are naturally prevalent. It was, and we believe remains so to this day, the second best solution to promote employment creation and its structural transformation in the absence of comprehensive reform of the income (labour and corporate) taxation system and of active industrial policy.

Our perception of policy of attracting direct investment as correcting rather than aggravating labour market distortions gets its indirect confirmation in a relatively favourable assessments of its net effects [16] and of its maximum leakage potential [6]. The World Bank's impact evaluation found that between 2006 and 2015 the scheme "Attracting Direct Investment", the predecessor and close relative of the current incentive programme, created a total of 11,616 additional jobs that would probably not have been created without it. The gross effect is almost three times larger, standing at over 30,000 jobs. The wage subsidy per net additional job created was slightly above €2,000 annually for the duration of the program, or 30 percent of total employment costs to a firm for each additional job, which is comparable to the costs per job created by such programs in other countries. Bojović and Obradović [6], using stochastic frontier analysis, were interested in the efficiency of the subsidy programme as well as of its maximum potential for leakage. They estimated that during the same 10-year period (2006-2015) the Government overspent up to 21.1 % on subsidies for direct investment, which is some 9 million EUR per year (or around 0.0003% of average annual GDP).

In other words, although almost exclusive focus on job creation (Bojović and Obradović [6] find that the weight of the number of jobs as opposed to the value of investment in the implemented subsidy programmes was over 50:1) does not maximize growth and productivity enhancing effects of subsidized investment, their risk of deadweight – that is, supporting projects that would have been realized even without subsidies – is not high. This is precisely because the labour-intensive low-wage investment faces an uphill struggle if left solely to market forces, given the features of the tax system.

When it comes to regional distribution of investments, labour supply skill bottlenecks are another problem

worth discussing. Over the past two decades educational structure of the working age population has relatively rapidly improved, thanks both to inflow of smaller new, better educated cohorts and outflow of larger old, much less educated cohorts. Interestingly, a recent research found out that some relative skill gains come also from Serbian net negative external migration balance [9]. However, these on average higher skills are unevenly distributed across Serbian NUTS-2 regions and even more so across counties and municipalities. Table 8, depicting numbers of medium- and high-skilled employed persons across four NUTS-2 regions in 2015 and 2020, illustrates both points.

Rising overall educational level of employed labour force is evident from the fact that for Serbia as a whole, the ratio of high- to medium-skilled workers increased from 43.3:100 to 45.6:100 over the past 6 years. However, across regions the skill distribution remains very uneven, with 40% of all high-skilled workers located in the region of Belgrade which hardly comprises 25% of total population. While in 2020 in the Belgrade region the ratio of high-skill to medium-skill workers was above 4:5, in all three remaining regions that ratio was well below 2:5, indicating potential critical shortage of many high-skilled occupations. Of course, that shortage itself outside of the Belgrade region is largely a consequence of the vicious circle of lack of good-job opportunities and outmigration caused by it.

Even if not high-tech or high-wage, foreign direct investment has the power to stabilize and in some cases revert the outmigration tendencies. A recent study attempting to predict patterns of internal migration in Serbia [4] found out that some unexpected positive reversals in net migration can be explained as a consequence of inflow of direct investments, in municipalities such as Doljevac, Stara Pazova, Dimitrovgrad etc. In Doljevac, for example, following a direct investment, the share of registered employment in total population rose more than threefold between 2010 and 2016 while the average net salary rose over 38%, and population grew by 2%, after a long period of continuous decline.

Finally, with over 80% of supported projects in the past five or six years belonging to manufacturing, most of which tend to be labour-intensive, and with the unemployment rate recently sinking below double-digit levels, the World Bank advised that 'authorities should now consider realigning incentive programs to go beyond just job creation to take into account ways to facilitate domestic linkages and technology spillovers' [15]. While it is a worthy general advice, small and medium-scale labour-intensive manufacturing projects can still go a long way in improving economic fortunes and the lives of people in smaller underdeveloped and devastated municipalities, as long as they are located directly there or within a commuting distance. Skill and infrastructure bottlenecks there hardly allow for more ambitious approach.

Still, it would be very important for Serbia's labour market and overall economic development to keep the current momentum in direct investment, ideally gradually moving toward higher-end manufacturing and high technology industries. Returning to Rodrik's point on unconditional convergence as an empirical feature of manufacturing expansion, such industries are integrated into global production networks and facilitate technology transfer and absorption. Even when they produce for the home market, they operate under competitive threat from abroad, which forces them to remain efficient [12]. This is not the case with many activities belonging to agriculture, traditional nontradable services, and informal sector. These activities in Serbia still comprise around a third of total employed labour force, a far higher share than that found in high-income economies. The unemployment rate

Table 8: Medium- and high-skilled employed workers in Serbia (in 000's), 2015 and 2020

2015					
	Total	**Belgrade**	**Vojvodina**	**Šumadija and Western Serbia**	**South and Eastern Serbia**
Medium-skilled	1480,1	331,9	422,8	421,3	304,1
High-skilled	641,2	248,1	150,2	136,6	106,3
2020					
Medium-skilled	1674	381,8	476,6	479,7	336
High-skilled	761	312,8	180,2	147,8	120,2

Source: Labour Force Survey

might be relatively low, but the transformational potential of Serbian labour market is far from being exhausted.

Concluding remarks

In recent years, Serbia has established itself as the leading destination for FDI in the Western Balkans and South Eastern Europe. This can be ascribed to its generous policy of attracting direct investment with financial incentives as well as engaging individually with strategic investors in certain major projects. While evaluations show that the direct investment programmes have definitely created new jobs, many of them were in labour intensive but less productive and lower value-added firms, leading to a decrease in average productivity of these firms as a group. A related criticism is that foreign firms remain relatively dis-embedded from local value chains. It has been proposed that, with the unemployment rate falling recently to single-digit levels, the policy should be reformed to foster growth in higher value-added industries and create stronger spillovers [15].

In our analysis, we look in more detail at the labour market effects of the policy of incentivised direct investment, first from a sectoral and regional perspective, and then by taking a holistic view at the overall labour market and developmental impact. We find indications that this policy has contributed to overall sectoral rebalancing of Serbian labour market by increasing manufacturing jobs. This impact is strongest in activity branches with the largest inflow of subsidized direct investment. At the same time, the policy of attracting direct investment has contributed in some aspects to regional rebalancing of Serbian labour market, most notably in improving the quality of employment in less developed regions and in stabilizing the shares of regional wage funds. At the municipal level, in some cases it can be directly linked with the positive turnarounds in net migration patterns and other socio-economic indicators. We also draw our conclusions from a couple of recent relatively positive evaluations of net impact and financial efficiency of incentivized direct investment. We argue that the scheme for attracting direct investment was created as the second best solution to promote employment creation and its structural transformation in the absence of comprehensive reform of the income (labour and corporate) taxation system and of comprehensive industrial policy.

Still, secular cleavages between regions remain very large. While the overall educational structure of the working age population has been steadily improving in the past decade, the ratio of high-skilled to medium-skilled employed workers in the Belgrade region is still more than twice larger than in any of the three other regions. On the other hand, the reservoir of vulnerable employment in these three regions is still more than twice larger than in the Belgrade region and the unemployment rate remains well into double-digit territory in both regions of Central Serbia. These simple facts suggest that the transformational potential of Serbian labour market is far from being fully exploited, and that Serbia still needs both further investments in manufacturing jobs and a more ambitious shift toward high-technology investment. Sustaining a high level of private direct investment while gradually shifting the bulk of incentivised investment to sectors requiring high skills as these skills are being created should be the best recipe for unconditional convergence and Serbia's eventual exit from the middle-income trap.

References

1. Aleksić, D., Arandarenko, M., & Ognjanov, G. (2020). *Ex Post Analysis of the National Employment Strategy for the Period 2011-2020.* Belgrade: Foundation for the Advancement of Economics.
2. Arandarenko, M. ed. (2006). *Mapa tržišta rada Srbije*. Beograd: CEVES.
3. Arandarenko, M. (2018). Izazovi tržišta rada i zaposlenosti u Srbiji u XXI veku. In Kostić, A. (Ed.). *Ekonomija: Zaposlenost i rad u Srbiji u XXI veku* (pp. 17–42). Srpska akademija nauka i umetnosti i Ekonomski fakultet u Beogradu.
4. Arandarenko, M., Corrente, S., Jandrić, M., & Stamenković, M. (2020). Multiple criteria decision aiding as a prediction tool for migration potential of regions. *European Journal of Operational Research*, *284*(3), 1154–1166.
5. Arandarenko, M., & Vukojevic, V. (2008). Labor costs and labor taxes in the Western Balkans. In C. Bredenkamp, M. Gragnolati & V. Ramljak (Eds), *Enhancing Efficiency and Equity: Challenges and reform opportunities facing health and pension systems in the Western Balkans* (pp. 119–158). Washington, DC: World Bank.
6. Bojović, V., & Obradović, F. (2018). Efficiency analysis of subsidies for investments using stochastic frontier analysis: Case of Serbia. In E. Horská, Z. Kapsdorferová, & M. Hallová (Eds.), *International Scientific Days 2018, Towards Productive,*

Sustainable and Resilient Global Agriculture and Food Systems (pp. 2546–2566). Prague: Wolters Kluwer ČR.

7. Estrin, S., & Uvalic, M. (2014). FDI into transition economies: Are the Balkans different? *Economics of Transition*, *22*(2), 281–312.
8. Kastratović, R. (2016). Uticaj stranih direktnih investicija na privredni i društveni razvoj Srbije. *Bankarstvo*, *45*(4), 70–93.
9. Leitner, S. (2021). *Net Migration and its Skill Composition in the Western Balkan Countries between 2010 and 2019: Results from a Cohort Approach* (wiiw Policy Note/Policy Report No. 47). Vienna: The Vienna Institute for International Economic Studies.
10. Madžar, Lj. (2016). Strane investicije u ekonomskoj politici Srbije. In R. Kovačević, & G. Rikalović, (Eds), *Strane direktne investicije i privredni rast u Srbiji* (pp. 11–34). Beograd: Naučno društvo ekonomista Srbije sa Akademijom ekonomskih nauka i Ekonomski fakultet u Beogradu.
11. Rapaić, S. (2016). *Uloga stranih direktnih investicija u lokalnom ekonomskom razvoju u Republici Srbiji (2001–2013)* (PhD Thesis). Belgrade: Faculty of Political Sciences, University of Belgrade.
12. Rodrik, D. (2013). Unconditional convergence in manufacturing. *The Quarterly Journal of Economics*, *128*(1), 165–204.
13. Uvalic, M. (2010). *Serbia's Transition. Towards a Better Future*. Basingstoke: Palgrave Macmillan.
14. Vladisavljević, M. (2019). *Ekonometrijska analiza premije zarada javnog sektora u Srbiji u uslovima fiskalne konsolidacije* (PhD Thesis). Belgrade: Faculty of Economics, University of Belgrade.
15. World Bank. (2020a). Serbia's new growth agenda: Forging a new future. *The Serbia Country Economic Memorandum 2.0 (CEM)*. Washington, DC: World Bank.
16. World Bank. (2020b). Reforming state aid for growth: New growth agenda. *The Serbia Country Economic Memorandum 2.0 (CEM)*. Washington, DC: World Bank.

Mihail Arandarenko

is a Full Professor at the Faculty of Economics, University of Belgrade, and a Chairman of the Board of the Foundation for the Advancement of Economics (FREN). He is a national labour market expert for Serbia within the European Commission's European Centre of Expertise in the field of labour low, employment and labour market policy. He obtained his PhD degree in 1998 from the University of Belgrade. In 1999-2000 he was a postdoctoral Fellow at the Collegium Budapest – Institute for Advanced Study, in 2000-2001 Research Fellow at the Central European University and the Hungarian Academy of Science, in 2014-2015 Visiting Senior Fellow at the London School of Economics, and in 2019 Visiting Professor at the City University of New York. His research areas include labour markets, employment policy, industrial relations and social policy. He received various international grants for labour market research and has been a consultant throughout South Eastern Europe for leading international organisations and agencies, including the European Commission, the World Bank, the UNDP, the ILO, the OECD, the USAID, etc.

Dragan Aleksić

is a Assistant professor at the Faculty of Economics, University of Belgrade, where he teaches courses in Labour Economics and Principles of Economics. He graduated in 2008 from the Faculty of Economics, University of Belgrade, earned Master's degree in Economic Analysis and Policy in 2014 and PhD in Economics in 2020 at same institution. His primary fields of interest refer to the labour market, minimum wage, active labour market policies and vulnerable groups in the labour market. He authored many scientific papers published and presented in domestic and international journals and conferences.

Dragan Lončar

graduated from the Faculty of Economics in 2001, completing a Master course in Management Studies at the University of Cambridge in 2003 and acquiring a PhD title at the Faculty of Economics in 2007. He was awarded a Fulbright scholarship (2008/2009) for postdoctoral research in financial management at the University of Chicago (Booth Business School). He has been a CFA (Chartered Financial Analyst) charterholder since 2013. Currently, he works as a full-time professor at the Faculty of Economics and Business in Belgrade. He is the associate dean for finance and organisation at the Faculty of Economics in Belgrade. Furthermore, he is the director of the consulting firm Peterhof Consulting. He is also a member of the Cambridge Society and Fulbright Association in Serbia.He has rich consulting experience as the executive director of a growing consulting firm Peterhof Consulting, having had consulting assignments with leading Serbian and foreign companies. Additionally, he has experience of participating in World Bank, IFC, IRD, OSCE and EU funded projects in Serbia, concerning regional development, renewable energy sources, refugee solutions, corporate governance, and business ethics.

REVIEW PAPER
UDK: 616.98:578.834]:338.246.87
338.22(497.11)"2019/..."
DOI: 10.5937/EKOPRE2103217V
Date of Receipt: February 20, 2021

Dušan Vujović
Metropolitan University
Faculty of Economics, Finance and Administration
Belgrade

POLICY RESPONSE TO COVID-19 PANDEMIC AND RELATED FUTURE CHALLENGES

Odgovor ekonomske politike na pandemiju kovid 19 i povezane buduće izazove

Abstract

The paper reviews new standard policy response to global COVID-19 pandemic led by the IMF. It identifies new innovative approaches in the design of expansionary fiscal support measures and accommodating monetary policy. Particular attention is paid to the treatment of labor markets, job-retention measures, and worker-reallocation efforts deployed at appropriate stages of continued pandemic, initial post-COVID-19 economic recovery and longer-run investment for sustainable future growth. The paper detects inherent policy limitations in the treatment of local, national and global public goods, excessive globalization, and unregulated financial markets and capital mobility, as well as weak integration between prevailing economic policy paradigm and other social sciences. It seeks a solution in expanding economic policy framework beyond neoliberalism, by harnessing democracy and human well-being consistent with sustainable development goals through balanced conduct of economic policy, efficient and adequately regulated markets (as needed), and responsible and transparent state actions.

Keywords: *COVID-19 pandemic, crisis policy response, job-retention policies, job-reallocation efforts, inclusive prosperity, neoliberalism, great reset, economic policy paradigm*

Sažetak

Cilj ovog rada je pregled odgovora nove standardne ekonomske politike MMF na globalnu pandemiju kovida 19. Rad identifikuje elemente inovativnog pristupa definisanju ekspanzivne fiskalne podrške i prateće akomodirajuće monetarne politike. Posebna pažnja se poklanja tretmanu tržišta rada, merama očuvanja postojećih radnih mesta i podrške realokaciji radnika koji bi mogli biti primenjeni u odgovarajućim fazama krize: nastavku pandemije, inicijalnom ekonomskom oporavku posle pandemije kovida 19 i investicionoj pripremi osnove održivog budućeg rasta. Rad detektuje inherentna ograničenja ekonomske politike u tretmanu lokalnih, nacionalnih i globalnih javnih dobara, preterane globalizacije, neregulisanih finansijskih tržišta i mobilnosti kapitala, kao i slabu povezanost postojeće ekonomsko-političke paradigme i drugih društvenih nauka. Rad traži rešenje u proširenju okvira ekonomske politike van postojećih granica neoliberalizma, podržavajući demokratiju i ljudsko blagostanje konzistentno sa održivim ciljevima razvoja balansiranom primenom ekonomske politike, efikasnim i adekvatno regulisanim tržištima (u neophodnoj meri), i odgovornim i transparentnim intervencijama države.

Ključne reči: *pandemija kovida 19, politika odgovora na krizu, politika očuvanja radnih mesta, podrška realokaciji radnika, inkluzivni prosperitet, neoliberalizam, great reset, ekonomsko-politička paradigma*

Introduction

Due to COVID-19 pandemic, in 2020 alone, global economy GDP fell by 3.3 percent [15, p. 8]. Compared to October 2019 projections, this represented a reduction of GDP level by 6.4 percentage points or value added loss of US $ 5.4 trillion. Despite better growth performance in the second half of the year and more optimistic economic recovery projected for 2021-2022, this still represents the most severe economic contraction since the great depression of the 1930s.

Admittedly, the results would have been much worse in the absence of unprecedented policy support comprising broad based fiscal stimulus measures estimated at over US $16 trillion globally [16, p. 1] and highly accommodative monetary policy [17, p. 3]. This applies particularly to countries and regions with greater reliance on contact industries, limited (fiscal and monetary) policy space, inadequate administrative capacity, and insufficient fiscal/financial resources to respond. During 2020 the pandemic has reversed the decade long declining poverty levels and pushed additional 88 million more people into extreme poverty compared to pre-crisis levels [31]. Learning and education processes have been interrupted around the world with more severe consequences in countries with lower incomes and more limited ability to move to online education.

Global policy response to the pandemic crisis has been led by the IMF both in terms of empirical and analytic work, and conceptually, with a great deal of innovation and realism, albeit within mostly conventional policy framework. Given overwhelming presence of country specific features of the crisis and possible solutions, policy priorities will continue to demand a great deal of custom-tailoring policy responses to the stage of the pandemic, strength of the recovery and structural characteristics of the economy [15, p. xiv]. Until pandemic fully subsides, priority financing and enabling health sector functions will remain top priority, accompanied by increasingly better targeted fiscal and adequately accommodative monetary/financial support (targeted to most affected households and firms).

Once recovery takes stronger hold, both in terms of empirically confirmed performance indicators and positive expectations of all stakeholders, the emphasis should shift to limiting and ameliorating long-term economic scaring to the economy caused by the prolonged crisis and stimulating both consumer and investment demand. It is important to emphasize that widespread confidence that the pandemic is over and the virus has been defeated globally represents a critical ingredient of permanent demand recovery.

Finally, in the third stage of recovery, after the health crisis is clearly over, the IMF policy advice shifts "focus more on building resilient, inclusive, and greener economies, both to bolster the recovery and to raise potential output. The priorities should include investing in green infrastructure to help mitigate climate change, strengthening social assistance and social insurance to arrest rising inequality, introducing initiatives to boost productive capacity and adapt to a more digitalized economy, and resolving debt overhangs." [15, p. xiv].

The new standard policy framework underpinning the present IMF-led mainstream policy advice has had many welcome new features regarding the post-pandemic revival of the supply side, normalization of the labor market in the short run (through job-retention schemes) and the longer run (through worker reallocation and retraining schemes) with an eye on challenges posed by the ensuing Fourth Industrial Revolution (4IR) in general and automation in particular. It also envisages longer-term concerns regarding adverse impact on the environment and climate change, need for selectivity in supporting only economically viable firms (i.e. avoiding/phasing out extensive support to zombie firms), growing inequality issues and a dire need for international cooperation on vaccinations and public health issues in general.

Going beyond these enhanced and empirically enriched recommendations, IMF policy framework largely stays shy of explicitly addressing other critical issues that are linked to or go beyond the present conventional, still neoliberal dominated mantra in such areas as social assistance and social protection, unemployment benefits/insurance, health care (especially free health care and public health at the heart of future pandemic threats), education in general and especially early childhood development, etc.). Likewise, the new policy agenda recognizes the consequences of excessive financial sector deregulation,

overly easy movement of capital and profit shifting practices, the need for improved international taxation and tighter control of safe heavens and AML-CFT practices.

The main objective of this paper is to review the present standard policy response and policy innovations contained in the mainstream response to pandemic crisis thus far (section 1) and rate them against multiple calls for deeper theoretical and policy reform of economics. Hence, section 2, looks at the rise and fall of neoliberal policy paradigm, while section 3 reviews selected proposals seeking to understand the future and shape of underlying values and policy propositions of economics "beyond-neoliberalism", including the proposals advanced by leading economists (Harvard, MIT, Berkeley) towards "inclusive prosperity framework" seeking a new policy paradigm by balancing efficient markets and transparent active state. Section 4 reviews the Davos Economic Forum comprehensive "great reset proposal" towards reformed "inclusive stakeholder capitalism", and section 5 concludes.

New standard policy response to COVID-19 pandemic

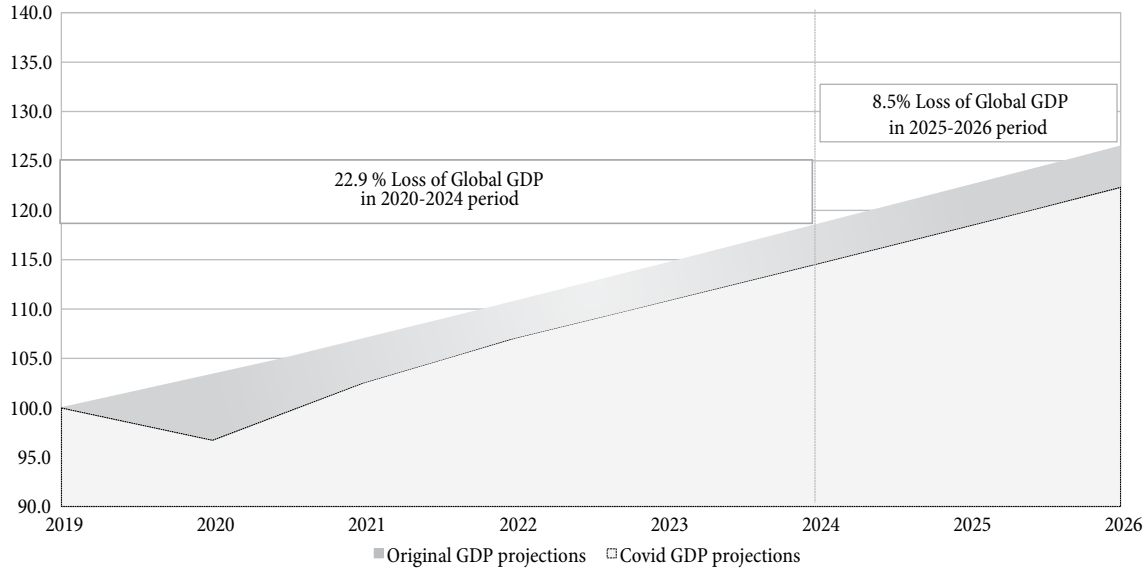
The COVID-19 pandemic reduced global GDP by 6.4 percentage points and pushed it down to a lower trajectory associated with a huge loss of global value added. Compared to latest GDP projections before the crisis (October 2019), GDP loss would amount to 22.9 percent over the five-year period. As indicated in Figure 1, after taking into account delayed slower growth effects in the 2025-2026 period, the combined 2020-2026 value added losses attributable to the pandemic are likely to reach almost one third (i.e. 31.4 percent) of the global 2019 GDP.

The lower trajectory is based on quite optimistic projected robust economic recovery in 2021 (6 percent growth), and more modest growth of 4.4 percent in 2022. It is also associated with multiple risks related to the duration and severity of the crisis, speed and stability of recovery, and ability to address future structural constraints to growth coming from the changes in the structure of production and challenges posed by the continuing fourth industrial revolution.

According to the IMF, the very first policy priority is related to escaping the pandemic crisis [15, p. 17] by:

- focusing on the priority spending in the health sector, focusing in particular on national and global vaccination effort;
- sustaining strong fiscal effort and transforming it from undifferentiated blanket interventions to increasingly targeted support for most affected households and businesses that will drive future quality employment and growth;
- providing continued ample monetary accommodation through central banks; and

Figure 1: Global GDP loss due to COVID-19 pandemic (in percent of 2019 global GDP)



Source: WEO April 2021 data base and author calculations

- supplementing this comprehensive effort with well-designed macro-prudential policies aimed at containing possible financial risks and securing financial stability.

The second policy priority is to enable, support and safeguard economic recovery once the health crisis has subsided [15, p. 18] by:

- identifying and addressing permanent economic consequences (scaring) caused by the crisis in terms of eroding or destroying firm-specific employment and value-chain matches;
- adjusting labor market policies and fiscal support that would enhance job-retention efforts and prevent longer-term unemployment;
- compensating for breaks in schooling, vocational training and learning during the crisis;
- maintaining reasonable efficiency of the fiscal support by focusing on viable companies and away from so called zombie companies; and
- adjusting sectoral allocation of resources in line with needs and economic cost caused by the crisis.

Finally, the IMF identifies the third policy priority to invest in the future and prepare for new challenges posed by the climate crisis, needed reforms of the policy framework and improved international cooperation [15, p. 19] by:

- securing continued access to liquidity, including financial facilities made available through official international sources (IFIs) for balance of payments support and debt relief;
- boosting domestic productivity growth which "… had been sluggish for several decades" due to insufficient investment in education and infrastructure, and ability to properly harness the emerging artificial intelligence (AI) and automation;
- improving policy frameworks and creating new policy space through
  - efficient debt restructuring (if and as needed) relying on low cost financing presently available,
  - enhancing fiscal space by sustaining revenue at the necessary level, including through greater progressivity and expanded taxation of affluent individuals based on "strong international cooperation to limit profit shifting and tax evasion and avoidance" [15, p. 20];
  - supportive monetary framework presently under exceptionally low interest rates, including through "continued unconventional policies, including asset purchases, forward guidance, and even negative interest rates" to provide scope to expand policy space;
- addressing climate change challenges which may hamper economic growth and income convergence in the absence of effective and transparent global cooperation on
  - carbon pricing;
  - green infrastructure investment;
  - subsidies for green research; and
  - targeted compensatory transfers to countries "… hit hardest by climate change mitigation policies" [15, p. 21].

Medium term policy response will depend on the size and nature of permanent output damages (scars) from the COVID-19 crisis. Based on data and research done as of March 2021, the IMF concludes that [15, p. 53]:

- expected medium-term losses from the pandemic are sizeable but typically much smaller (for advanced and emerging market economies) than from the Global Financial Crisis of 2008, with the exception of low income countries where output losses due to COVID-19 pandemic are expected to be greater;
- scaring (permanent economic damages) varies with economic structure (including the ability to efficiently move to new ways of online work from "home office") and size and scope of policy response to the crisis;
- uncertainty remains high and depends on pandemic path and characteristics following the large scale global vaccination effort; and
- best policy response to limit, reverse and ameliorate persistent economic damage from the pandemic is to:
  - reverse setback in human capital accumulation through healthcare, early childhood development, education and (re)training;
  - pursue policies that encourage employment and productivity growth, including in the areas of automation and AI application; and

- boost investment in infrastructure, focusing "… particularly (on) a green infrastructure push (which) can help crowd-in private investment" [15, p. 56].

A separate chapter of the April 2021 World Economic Outlook [15, pp. 63-78] is devoted to the analysis of labor markets based on a specialized model calibrated on past recessions and recoveries mostly from advanced economies. The purpose of the analysis is to better understand labor dislocations caused by recessions/crises and patterns followed during recoveries. The analysis recognizes "the asymmetric, sectoral, and occupational nature of the COVID-19 shock, with less-skill-intensive sectors tending to be hit harder" as well as the acceleration of "preexisting employment trends, hastening a shift away from sectors that are more vulnerable to automation" [15, p. 63]. It confirms that:

- job retention policies are effective in reducing permanent damage (scaring), mitigating unequal impact of the pandemic across workers, protecting real wages, and support subsequent job searches within larger companies; while
- job/worker reallocation policies aimed at supporting creation of new jobs can ease medium-term transition to more permanent and sustainable labor market structure can start as soon as the crisis abates, albeit with significant fiscal (re)training costs and an inevitable initial loss of real wages.

In practice, fiscal space permitting, job retention policies are best used during the crisis and followed by job/worker reallocation policies soon after crisis subsides, knowing that structural effects of the COVID-19 pandemic and continuing 4IR (especially Automation and use of AI) may cause [15, p. 66]:

- permanent job losses in some sectors and occupations, and creation of new jobs in others; and
- may require quite some time given the likely skill mismatches in moving workers to sectors/occupations less vulnerable to COVID-19-like shocks and the impact of Automation and AI.

In summary, the IMF proposed policy responses to COVID-19 pandemic considerably broaden the conventional policy agenda both in terms of the size and scope of fiscal interventions supplemented with monetary easing and the use of unconventional instruments (such as asset purchasing). The new standard IMF-led mainstream policy advice has many welcome new features regarding the post-pandemic revival of the supply side, normalization of the labor market in the short run (through job-retention schemes) and the longer run (through worker reallocation and retraining schemes), with an eye on challenges posed by the ensuing fourth industrial revolution (4IR) in general and automation in particular. It also envisages longer term concerns regarding adverse impact on the environment and climate change, need for selectivity in supporting only economically viable firms (i.e. avoiding/phasing out extensive support to zombie firms), growing inequality issues and a dire need for international cooperation on vaccinations and public health issues in general.

But it stops short of addressing the systemic consequences of financialization and excessive globalization and unregulated capital mobility globally, local national and global public goods, and linkages between economics and other social sciences in harnessing democracy and human well-being at the center of sustainable development goals concept and economics beyond-neoliberalism. These issues will be discussed in the remainder of the paper.

Economics beyond neoliberalism: Fundamental changes in policy paradigms

Policy paradigms in economics changed infrequently and, almost always, as a result of three factors:

- creation of a strong academic theoretical paradigm (often school of thought at leading universities) in response to gaps and/or weaknesses in existing theories;
- real life crisis that has not been predicted and could not be addressed within existing theoretical and policy paradigm or, simply, a need to address an apparent new and emerging economic problem (industrialization, urbanization, economic growth etc.); and, most importantly,
- political support embracing the new theoretical justification and, even more, its ability to mount a consistent and, at least seemingly aligned, policy intervention.

Liberal view of the World and associated Liberal economic policy paradigm dominated the design of policy in the period 1870-1930 pivoted on [see 10, pp. 14-15]:

- *laissez-faire* industrial policies at home;
- low (or no) barriers on international flows of goods, capital and labor;
- national and international macroeconomic stability based and guaranteed by the Gold Standard; and
- balanced general government budgets.

The period of claimed (and much less empirically proven) prosperity followed until the Great War (WWI) and the aftermath marked by political instability and the reintroduction of trade barriers and, possibly related, start of the Great Depression in the 1930s. Before that, the Liberal policy view was challenged from within neoclassical school by welfare economics. The final blow came from the realization that markets will not self-correct in response to the depression and opened the way for Keynes policy paradigm based on active role of the state in reaching full employment through (exclusively) macroeconomic aggregate demand management.

Keynesian policy paradigm shift gained further acceptance and support throughout the 1930s embraced by the New Deal policies, and came to dominate the economic policy making during WWII. It became the central ingredient of the post-WWII consensus on creating international financial institutions, rebuilding the world economy in the 1950s, and addressing the postcolonial economic development legacy in the 1960s and 1970s.

Brief history of paradigm shifts: The rise and near-fall of neoliberal paradigm

The dominance of Keynesian policy paradigm gradually ran out of steam after the 1972 collapse of the original Bretton Woods system of fixed exchange rates guaranteed by the Gold Standard, slower economic growth, and stagflation triggered, *inter alia*, by the US Vietnam war related budget deficits and increased protectionism in developing countries. More state intervention in the economy (and through redistribution) could not correct for external energy shocks or weakening markets.

This provided a unique opportunity for the return of liberal policies and market fundamentalism, first as a dormant theory and, yes, staunch ideology led by Hayek and the Pelerin society between 1947 and early 1960s when it became an increasingly influential academic school at Chicago, see [8], [18], [30].

The credibility of Keynesian policy advice based on "overly active state" weakened over time. As it started showing declining macroeconomic performance both in advanced economies and developing countries (i.e. slower economic growth, fiscal deficits and growing inflation pressures, high level of protectionism, trade deficits and balance of payments problems) during the 1970s, the Keynesian policy paradigm has become increasingly challenged both in academia and in turbulent real politics of the time. The conservative victories of M. Thatcher in the UK and R. Regan in the US opened the door for the new Neoliberal policy paradigm. Already deeply rooted in conservative academia, Neoliberalism was ready to be embraced and implemented to enter the economic policy arena.

This paradigm shift in economic theory and, even more so, economic policy followed a known pattern [see 19]. The trinity of (applied) policy paradigm shifts has three distinct ingredients:

- changed real economic circumstances (either crisis or ensuing problems demanding new solutions) – first necessary condition;
- body of alternative theoretical and policy knowledge (new paradigm) which can help address the problem, partially or fully – second necessary condition; and
- political and institutional support to legitimize the policy change *ex ante* and defend the results/outcomes *ex post* – sufficient condition.

The identifiable process usually starts with real life crisis which demands a solution or adequate response. It is followed by a set of "dominant group of ideas as a [new] politico-economic paradigm" seeking to "encompass political/economic goals, analytical/theoretical frameworks for understanding the functioning of economies and societies" under changed circumstances. In doing that, the new ideas can either adopt an already developed and academically well-established policy paradigm, such

as Neoliberalism. Or, if the need be, "exert a powerful influence over academic and media debates, as well as on policymaking institutions, both national and international" [19, p. 113].

Chang [10] defines neoliberalism as an academic attempt at reconstructing economic and policy conditions prevailing between 1870 and 1930. The idea of Golden age of capitalism was based on a stylized view of the world characterized by:

- Unlimited entrepreneurship;
- Completely unregulated and flexible labor market;
- Absolute macroeconomic stability anchored in Gold Standard;
- Completely free international trade (i.e. free flow of labor, goods and capital);
- Absence of significant state ownership;
- Absence of regulation (of markets, including financial markets); and
- Absence of economic and financial sector strategy, and of industrial policy.

Economic reality during the late 19-th and pre-Big Depression 20-th century was often very different.

- Foreign trade was not free for all countries. Many countries who could afford protection had high tariffs: US had tariffs of 45-55% from independence till modern times. A. Hamilton, one of the founding fathers and first minister of finance argued for high level of "infant industry protection" from more developed UK. Some countries in colonial position were not in a position to impose tariffs without the consent of their respective metropolis, or due to restrictive clauses in their trade contracts.
- Despite relatively low share of state ownership of commercial enterprises, the state often owned substantial land and natural resources, infrastructure, real and financial assets.
- The state actively used its ownership to advance education, health, and infrastructure, as well as create conditions for private sector commercial investment (crowd-in).

Prevailing social conditions were also very different. Widespread entrepreneurial drive and desire to participate in a unique march of the second industrial revolution suppressed all reservations and expectations in the realm of social safety or even labor protection. Predatory and monopolistic behavior of commercial enterprises was not effectively controlled by the laws or moral norms.

The dark side of the liberal world view that underpinned the march of the second industrial revolution, almost completely faded over time. Modern neoliberals have retained a highly selective memory of economic conditions that supported the second industrial revolution which recorded unprecedented global progress in industrialization, urbanization and modernization.

This explains why Neoliberal reform program strongly argues for massive and unselective privatization of commercial enterprises and banks, price liberalization, radical deregulation, total liberalization of foreign trade and capital flows, along with tight macro-monetary and fiscal policies as a basis of market based economic revival of advanced and developing countries alike.

Obviously, such academically pure and radical concept of policy reforms would not have been endorsed and accepted in leading G7 countries and IFIs had it not been forcefully pushed as a part of a political critique of strong state, protectionism, and anti-market bias. As already mentioned, the turning point came with the win of conservative parties in the UK, US and other major countries. In the span of few years there was a sweeping change in the professional staff in economic ministries and central banks, research institutes and think tanks, universities and international financial institutions. Neoliberalism hit the policy arena in the UK and the US with a vengeance. Washington Consensus summarized the new policy agenda that came to dominate economic policy in the coming two decades.

Between 1980 and mid-1990s, policy and reform programs inspired by Neoliberalism delivered on all their promises including:

- Price liberalizations (with few or no exceptions irrespective of prevailing market conditions and possible imperfections);
- Total liberalization of foreign exchange rate, foreign trade, and capital flows;
- Massive sweeping privatizations of state owned commercial enterprises and banks, with rarely

stated privatization rationale and often benefiting new owners;
- Deregulation of labor markets;
- Relaxation of environmental standards;
- Under-provision of public goods (health, education) and social services; and
- Radical deregulation of the banking and financial sector, relaxation of supervisory and fiduciary controls, and interest rate liberalization.

In terms of macro-policies, the Neoliberal approach replaced Keynesian commitment to achieving full employment through top-down aggregate demand management with strong emphasis on price stability. The relevance of Philips curve trade-off between unemployment and inflation vanished. Neoliberalism paid strong lip service to tight macro-monetary and fiscal policies, but in reality retained a typical conservative fiscal model based on lower taxes and relatively large (and rigid) government spending leading to fiscal deficits and public debt build-up.

Many achievements of Neoliberalism at the national and global level are commendable including: improved price stability; free trade and globalization of economic activities; and free movement of capital. But it also created:
- huge income and wealth inequalities within and across countries as shown by Acemoglu [1], Ostry [22] and Kramer [18]; and
- deep labor market disruptions caused by Automation [3] and real income stagnation [2].

It also caused the 2007 Global financial crisis due to a deliberate lack of policy, regulatory and supervisory effort to control open and hidden risks of the increasingly complex financial sector.

New policy paradigm: Balancing efficient markets and transparent state

With a relatively long delay after the Global financial crisis, the economic profession, as well as other social scientist have come to question and critique the failed performance of Neoliberal policy paradigm. A collection of papers presented at 2019 symposium "Beyond Neoliberalism: A New Economic Paradigm" makes a strong argument in favor of a major theoretical and policy paradigm shift in economics to better respond to the present needs and challenges through greater orientation to experimental data and reliance on behavioral economics [8] and use of empirical results in measuring inequality and other economic outcomes [22].

Economists' response: Inclusive prosperity framework

Three leading mid-career economists from top US universities (Naidu (Columbia University), Rodrik (Harvard University), and Zucman (UC Berkeley)) have recently expressed genuine concern with the status and ability of economics to address today's most relevant problems.

"We live in an age of astonishing inequality, together with volatile and oligarchic politics. We also confront seemingly intractable inefficiencies in key sectors like education, finance, health, and media, and a spectacular ongoing climate crisis." [21, p. 366]

They suggest a concept of "inclusive prosperity" to improve the quality of policy recommendations across a wide range of important economic issues (including labor markets, public finance, international trade and finance) and "provide an overall vision for economic policy that stands as a genuine alternative to the market fundamentalism that is often – and wrongly—identified with economics." [21, p. 366]

After decades of disappointing results it is now clear that Neoliberal policy framework has failed economists and all social scientists, and, more importantly, has failed the society. As an example, Neoliberal policies have forcefully pushed a view that there is a steep trade-off between efficiency and equality, i.e. the need to sacrifice equality for growth (efficiency). Another example is a claim that minimum wages reduce employment. And neither is supported by evidence. Moreover, many policy ideas generated over the past few decades were not based on good economics nor good empirical evidence [21, p. 367].

The inclusive prosperity concept is expected to generate a growing body of new theoretical and empirically tested proposals that would address real life policy problems without resorting to theoretical stereotypes with predictable recommendations which may or may not offer plausible and defendable solutions.

Good example of this type of research is Acemoglu analysis of labor markets, productivity growth, and wages (see [1], [2], [3]) that reveals true wage dynamics based on skill/education levels. It turns out that in the US, real wages for men at all skill levels followed the same trend during the 1963-1980 period and strongly diverged thereafter: employees with graduate degrees enjoyed strong real wage growth, those with bachelor's degree had modest real growth, while all others had negative real wage growth in the longer run (1981-2017). More importantly, his analysis showed that automation will not have a linear impact on jobs lost [1] and strongly advocates active government policy which can promote the creation of "good, well-paying jobs" [2].

Great Reset economic policy and social response: Stakeholder capitalism

Ever since the world economy stumbled into a global financial crisis there was a crescendo of voices from professional economists and concerned social scientists for thorough examination of market institutions and economic policy in terms of slower growth performance, declining real incomes, and increasing inequality. The COVID-19 pandemic triggered another crisis of monumental proportions manifested in widespread economic disruptions, concerns about environment, technology and common goods, and mounting risks and uncertainty for businesses and individuals [25]. It revealed underlying volatile social, political and geopolitical situation, and many fault-lines in international cooperation and coordination including social divides, lack of fairness and the absence of global governance and leadership.

Schwab and Malleret claim that return to pre-crisis "normal" is no longer possible. "Coronavirus pandemic marks a fundamental inflection point in our global trajectory." [25, p. 12] A new normal will eventually emerge but it may/will be very different from our past, and our expectations. They remind us that bacteria have been around for billions of years, viruses for 300 million years, and humans only 200,000 years. Pandemics were the rule during the last 2,000 years, not the exception. Pandemics often caused wars, clashes, chaos. But also triggered technological innovations and social change.

This pandemic will also accelerate many processes and bring about systemic changes including:

- Rising nationalism and fear of immigration;
- Partial retreat from commitment to globalization;
- Growing power of tech and accelerated automation;
- Stronger online presence of businesses;
- Growing appeal of well-being policies and reconsideration social priorities;
- Augmented search for common goods;
- Improved political appreciation of fairness;
- More radical welfare and taxation measures, including coordinated international taxation; and
- Visible geographical (and possibly geopolitical) realignments.

How will these complex changes play out is hard to predict. And it is impossible to tell will post-pandemic societies evolve to be more egalitarian (with more social welfare and solidarity), or more authoritarian, or individualistic.

The authors rather focus on five specific macro areas where the great reset is needed due to increasing risks and limited capacity of existing institutions and available policies to address them. These include:

- Economic risks including
  - Growth and employment: Structural long-run unemployment issues
  - Declining real incomes
  - Growing inequality and poverty
  - Fiscal crises
  - Monetary crisis
  - Illicit trade
  - Protectionism/trade wars
  - Energy price shocks
  - Price instability (inflation) and/or deflation
  - Asset bubbles
  - Excessive financialization/financial sector failure
  - Physical infrastructure failure
  - Social infrastructure failure
- Societal risks including
  - Social instability
  - Involuntary migration

    - Water crisis
    - Food crisis
    - Failure of urban planning (development)
    - Infectious diseases
- Technological risks including
    - Cyberattacks
    - Data fraud
    - Info infrastructure breakdown
    - Adverse tech advances
- Geopolitical risks including
    - Global governance failure
    - National governance failure
    - Interstate conflict / wars
    - State collapse
    - Terrorist attacks
    - Weapons of mass destruction
- Environmental risks including
    - Climate change
    - Extreme weather
    - Natural disasters
    - Human made natural / environmental disasters
    - Biodiversity loss

In treating economic risks the authors emphasize the following new points:

- Addressing the health sector needs during pandemic has no alternative. There is no trade-off between health and the economy. Deciding not to save lives because of the economy will not improve welfare.
- Critical change in expectations (and behavior – in consumer demand and investment) will happen when there is confidence that the pandemic is over and the virus is defeated globally.
- Impact on growth and employment will depend on
    - the duration and severity of the outbreak,
    - country success in containing the epidemic,
    - social cohesiveness in dealing with measures (during and post-crisis).
- The widespread decision to deliberately shut down the economy in 2020 caused
    - a fundamental shift in the way national and global economy operates,
    - promoted selective return to autarky and self-sufficiency (typical of past pandemics), and
    - caused a huge reduction in national and global output.
- Service industries suffered the greatest impact with lasting impact due to bankruptcies, lost trained labor force, lost and/or changed demand.
- Secondary impact is visible through collapse of investment in many sectors due to elevated risk perceptions.
- The economic impact of the crisis critically depends on the duration: based on a Dutch institute analysis, one month of lockdown reduced GDP by 2%.
- The pandemic caused a record job loss: EU used fiscal measures to support job-retention, while the US provided support to those who already lost jobs.
- The Great Reset book claims that unemployment can improve only with full, sustainable post-crisis economic recovery.
- Automation and AI are seen as a cause of concern:
    - unlike Acemoglu who appeals to government to moderate the impact of automation on jobs [1],
    - Schwab and Malleret [25] believe that despite short-run job losses, automation exerts positive economic effect in the longer run since it increases productivity and incomes, which in turn increase demand for goods and services and, eventually new jobs to supply them.

NB. In the absence of active government policies to direct and tame automation and link it to enhancing labor productivity rather than replacing labor, humans will likely be replaced by robots and intelligent machines which will produce lasting structural changes in the labor market. Polarization of jobs – between good high paid jobs and low paid dull jobs – is also seen as a danger.

- Quality of future growth matters a great deal: everyone agrees that investment must be directed to support smart, green investment for future sustainable growth.
- GDP as a measure of economic growth and prosperity (well-being) must be updated and refined to
    - better reflect the value added (VA) created in the digital economy,
    - recognize VA contribution of unpaid work, and
    - identify VA destroyed through some activities.

NB. Some financial sector activities have been captured by the national accounts as value creating activities although they only shift VA from one place to another (i.e. extract or even destroy value in the process).

- GDP measure of economic performance should be supplemented with income and wealth distribution measures to better capture the impact of growth on citizens.
- The Great Reset book recognizes the decisive, massive, and swift use of fiscal and monetary policies to respond to the crisis and notes that this will generate large fiscal deficits which will need to be addressed in the years to come.
- The joint use of fiscal and monetary policies has brought back the old question of central bank independence, especially in the light of massive asset purchases by central banks in advanced countries to support infrastructure projects and green investment.
- It has also revived the discussion of the economic role of the state: the new perception that governments can now intervene to
  - preserve jobs and incomes and
  - protect companies from going bankrupt

  may endure the present crisis and contribute to the discussion of policies "beyond neoliberalism" discussed above.

NB. Joint conduct of fiscal and monetary policy under conditions of near-zero or negative interest rates has limited the scope for expansionary monetary policy based on lowering policy rates. Alternatively, many countries have resorted to operations in which central banks buy government bonds but never sell them back. This is equivalent to directly monetizing deficits and governments can use money as they see fit (for investment, or fiscal stimulus). This raises issues of social expectations and political control once the crisis subsides and the "polity" finds out that free money can be found under this "new magic money tree". Inevitably, this will lead to demands for more free money followed by inflation.

NB. Another revelation from the conduct of expansionary fiscal policy under pandemic is the return of government intervention through fiscal stimulus programs to support the households and companies. Continuation of these policies beyond the crisis is likely to happen, but it should be based on rational health and unemployment insurance schemes and clear social contracts on the size and scope of government expenditures on health, unemployment benefits, education and other public goods.

Conclusion

The paper reviewed new standard policy response to global COVID-19 pandemic designed and led by the IMF. It identified new innovative approaches in the design of expansionary fiscal support measures and accommodating monetary policy, a joint and coordinated policy effort which clearly went outside the traditional policy framework demanding: a clear separation of fiscal and monetary policy, and full independence of the central bank. This was explicitly seen in the subordination of central bank monetary expansion to the fiscal support extended to households and companies, as well as the use of government asset (permanent) purchasing actions to provide free monetization of fiscal deficit.

Particular attention was paid to the novel treatment of labor markets: fiscally supported job-retention measures to be deployed during the stages of continued pandemic; worker(jobs)-reallocation efforts to be launched during initial post-COVID-19 economic recovery; and longer-run investment in sustainable future growth.

The paper detected inherent policy limitations of the mainstream policy responses in the treatment of: local, national and global public goods; excessive globalization; and unregulated financial markets and full (unconditional) capital mobility. It identifies weak integration between prevailing economic policy paradigm and other social sciences, especially in the coherent treatment of poverty, inequality and other consequences of proposed economic policy interventions.

The paper recognized the theoretical and empirical advances within the economic profession achieved under the Inclusive Prosperity Framework initiative and the comprehensive Great Reset proposals. It proposes a solution by substantively expanding economic policy framework beyond neoliberalism, by harnessing principles of democracy and human well-being fully consistent with sustainable

development goals through balanced conduct of economic policy, efficient and adequately regulated markets (as needed), and responsible and transparent state actions.

References

1. Acemoglu, D. (2021). *Remaking the Post-COVID World: To reverse widening inequality, keep a tight rein on automation*. Washington, DC: IMF, Finance and Development.
2. Acemoglu, D. (2019). *It's Good Jobs, Stupid* (Policy Brief 13). Economics for Inclusive Prosperity. Retrieved from https://econfip.org/wp-content/uploads/2019/06/Its-Good-Jobs-Stupid.pdf
3. Acemoglu, D., & Restrepo, P. (2019). Automation and new tasks: How technology changes labor demand. *Journal of Economic Perspectives, 33*(2), 3–30.
4. Acemoglu, D., & Robinson, J. A. (2019). *The Narrow Corridor: States, Societies, and the Fate of Liberty*. New York: Penguin.
5. Bianchi, P., & Labory, S. (2018). *Industrial Policy for the Manufacturing Revolution: Perspectives on Digital Globalization*. London: Edward Elgar.
6. Blanchard, O. et al. (Ed). (2012). *In the Wake of the Crisis: Leading Economists Reassess Economic Policy*. The International Monetary Fund and the MIT Press Cambridge.
7. Blanchard, O. et al. (Ed). (2016). *Progress and Confusion: The State of Macroeconomic Policy*. The International Monetary Fund and the MIT Press Cambridge.
8. Boushey, H. (2019). A New Economic Paradigm. Beyond Neoliberalism – Symposium. *Democracy Journal, 53*, Summer 2019.
9. Bowles, S., & Carlin, W. (2020). Shrinking capitalism. *AEA Papers and Proceedings 2020*, *110*, 1–6. Retrieved from https://doi.org/*10.1257/pandp.20201001*
10. Chang, H-J. (2003). *Kicking Away the Ladder: Development Strategy in Historical Perspective*. London: Anthem Press.
11. Chang, H-J. (ed). (2003). *Rethinking Development Economics*. London: Anthem Press.
12. Chernoff, A., & Warman, C. (2020). *COVID-19 and Implications for Automation* (NBER Working Paper 27249). Cambridge, MA: National Bureau of Economic Research.
13. Cohen, J. et al. (2019). *Economics after Neoliberalism*. Boston: Boston Review/Forum.
14. Gertz, G., & Kharas, H. (Ed). (2019). *Beyond Neoliberalism: Insights from Emerging Markets*. Washington, DC: Brookings.
15. International Monetary Fund. (2021, April). *World Economic Outlook: Managing Divergent Recoveries*. Washington, DC: IMF.
16. International Monetary Fund. (2021, April). *Fiscal Monitor: A Fair Shot*. Washington, DC: IMF.
17. International Monetary Fund. (2021, April). *Global Financial Stability Report: Preempting a Legacy of Vulnerabilities*. Washington, DC: IMF.
18. Kramer, L. (2018, April). *Beyond Neoliberalism: Rethinking Political Economy*. Hewlett Foundation. Retrieved from https://hewlett.org/library/beyond-neoliberalism-rethinking-political-economy/
19. Laybourn, L., & Jacobs, M. (2018). Paradigm shifts in economic theory and policy. *Intereconomics 53*(3), 113–118.
20. Mazzucato, M. (2018). *The Value of Everything: Making and Taking in the Global Economy*. New York: Public Affairs.
21. Naidu, S., Rodrik, D., & Zucman, G. (2020). Economics after neoliberalism: Introducing the economics for inclusive prosperity project. *AEA Papers and Proceedings*, *110*, 366–371. Retrieved from https://doi.org/10.1257/pandp.20201000
22. Ostry, J. D., Loungani, P., & Berg, A. (2018). *Confronting Inequality: How Societies Can Choose Inclusive Growth*. Columbia University Press.
23. Schwab, K. (2015, December 12). The Fourth Industrial Revolution: What It Means and How to Respond. *Foreign Affairs*. Retrieved from https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution
24. Schwab, K. (2017). *The Fourth Industrial Revolution*. World Economic Forum Publishing.
25. Schwab, K., & Malleret, T. (2020). *The Great Reset*. World Economic Forum Publishing.
26. Vujović, D. (2012). Serbia – Policies to enhance competitiveness. *Ekonomika preduzeća*, *60*(5-6), 261–274.
27. Vujović, D. (2018). Serbia beyond fiscal consolidation: A quest for dynamic, sustainable, inclusive growth. *Ekonomika preduzeća*, 66(1-2), 1–17.
28. Vujović, D. (2019). The challenges of income convergence at times of fourth industrial revolution. *Ekonomika preduzeća*, *67*(1-2), 73–82.
29. Vujović, D. (2020). Serbia: Continued quest for sustainable growth. *Ekonomika preduzeća 68*(1-2), 121–135.
30. Wong, F. (2019). Building Post-Neoliberal Institutions. Beyond Neoliberalism – Symposium. *Democracy Journal*, *53*, Summer 2019.
31. World Bank. (2021, March). *Global Poverty Monitoring: Updated estimates of the impact of COVID-19 on global poverty: Looking back at 2020 and the outlook for 2021*. Retrieved from http://iresearch.worldbank.org/PovcalNet/povOnDemand.aspx

Dušan Vujović

Professor of Economics at FEFA (Faculty of Economics, Finance and Administration), Belgrade, and a World Bank consultant in the areas of macroeconomic policy, fiscal and governance reform, and innovation for growth. Dr Vujović chairs NALED (National Alliance for Local Economic Development) Research Council and provides consulting services to various Serbian and international research and policy institutes. From April 27, 2014 – May 16, 2018 Dr. Vujović held three ministerial positions in the Government of Serbia: Economy April 2014 - September 2014, Finance August 2014 - May 2018, and Defence February - March 2016. He received the best Minister of Finance in Eastern and Central Europe award for 2017. He was a USAID consultant on budget and fiscal reform issues, and a research fellow at CASE Institute, Warsaw. Dr Vujovic past career includes various positions at the World Bank, such as Country Manager for Ukraine, and Co-Director of the Joint Vienna Comprehensive program for government officials from the transition economies, Lead Economist in the World Bank ECA region and in the Independent Evaluation Group. He authored and co-authored a number of publications on macroeconomic policy, development, and institutional reform and transition issues published as papers in domestic and international journals, and chapters in books published by The World Bank, Oxford University Press, North Holland, Edward Elgar, etc.

ORIGINAL SCIENTIFIC PAPER
UDK: 616.98:578.834]:338.121(4-672EU)
338.45(4-672EU)
DOI: 10.5937/EKOPRE2103231R
Date of Receipt: January 10, 2021

Saša Ranđelović
University of Belgrade
Faculty of Economics
Department of Economic Policy and Development

DETERMINANTS OF VOLATILITY OF ECONOMIC ACTIVITY IN EUROPE DURING THE COVID-19 PANDEMIC: STYLIZED FACTS

Determinante volatilnosti privredne aktivnosti u Evropi tokom pandemije kovida 19 – stilizovane činjenice

Abstract

In 2020, due to the COVID-19 pandemic, almost all European countries recorded negative rates of economic growth, with relatively large variations from one country to another in terms of the depth of the recession. From the expenditure side, the decline was most pronounced in the segment of personal consumption and investment. Observed by sectors, the largest decline was recorded in transport and tourism, manufacturing industry and construction. This paper analyzes three groups of factors that could have potentially influenced the variation in the depth of the recession in European countries in 2020 – the application of non-pharmacological epidemiological measures, the structure of the economy and the fiscal policy response. The data reveal a relatively strong negative correlation between the GDP growth rate and the share of the tourism sector, as well as a moderate negative correlation between the growth rate and the stringency of epidemiological measures and a moderate positive correlation between the size of direct fiscal stimuli and economic growth. The decline in Serbia's GDP in 2020 was significantly lower than the average decline in EU countries. During most of 2020, Serbia applied looser epidemiological measures, while the share of the tourism sector in Serbia's GDP is significantly smaller, and the contraction in this sector was lower than the European average. Direct fiscal stimuli in Serbia were significantly higher (by 48 percent) than the European average. This may indicate that these three groups of factors could potentially explain the lower decline of the Serbian economy compared to the European average in 2020. To draw final conclusions on this issue, econometric modeling would be required, taking into account the influence of other factors, as well.

Keywords: *COVID-19 pandemic, economic growth, non-pharmacological epidemiological measures, sectoral structure of economy, fiscal policy.*

Sažetak

Gotovo sve evropske države su u 2020. godini, usled pandemije kovida 19 zabeležile negativne stope privrednog rasta, uz relativno veliku varijaciju po državama u pogledu dubine recesije. Sa rashodne strane posmatrano, pad je bio najizraženiji u segmentu lične potrošnje i investicija, a posmatrano po sektorima, najveći pad zabeležen je u sektoru saobraćaja i turizma, industrije i građevinarstva. U ovom radu se analiziraju tri grupe faktora koje su potencijalno mogle da utiču na varijaciju u dubini recesije u evropskim državama u 2020. godini – primena nefarmakoloških epidemioloških mera, struktura privrede i odgovor fiskalne politike. Podaci ukazuju na postojanje relativno snažne negativne korelacije između stope rasta BDP-a i udela sektora turizma, kao i umerene negativne korelacije između stope rasta i striktnosti epidemioloških mera, te umerene pozitivne korelacije između veličine direktnih fiskalnih stimulansa i stope privrednog rasta. Pad BDP-a Srbije u 2020. godini bio je znatno blaži u odnosu na prosečan pad u zemljama EU. Srbija je tokom većeg dela 2020. godine primenjivala blaže epidemiološke mere, dok je udeo sektora turizma u BDP-u Srbije znatno manji, a pad u ovom sektoru blaži u odnosu na evropski prosek. Istovremeno, direktni fiskalni stimulansi u Srbiji su bili znatno veći od evropskog proseka, što može ukazivati na to da ove tri grupe faktora mogu potencijalno objašnjavati blaži pad privrede Srbije u odnosu na evropski prosek u 2020. godini. Za izvođenje konačnih zaključaka po ovom pitanju, neophodno bi bilo izvršiti ekonometrijsko modeliranje, uzimanjem u obzir i uticaja drugih faktora.

Ključne reči: *pandemija kovida 19, privredni rast, nefarmakološke epidemiološke mere, sektorska struktura privrede, fiskalna politika.*

Introduction

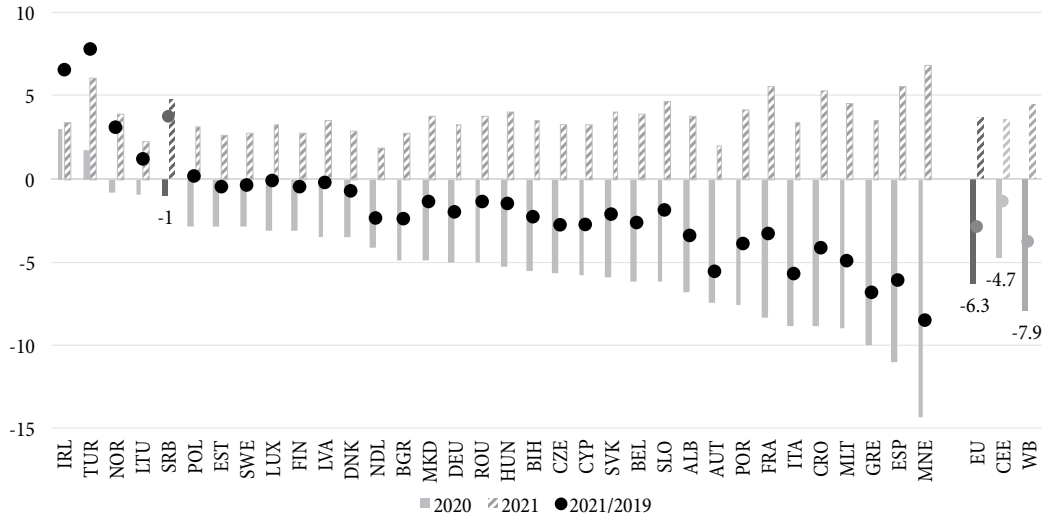
Outbreak of the COVID-19 pandemic at the beginning of 2020 has had an adverse effect on economic activity throughout Europe (and the world) via various channels, both on the supply and the demand side [12]. On the supply side, the COVID-19 pandemic has disrupted global supply chains, with lockdown measures triggering disruption of regular business operations. On the demand side, the rising unemployment and high uncertainty regarding the depth and duration of the pandemic crisis has also had a negative impact on consumption and investment decisions of companies and households. In response to these shocks, European governments have implemented massive fiscal and monetary stimuli aimed to bridge the liquidity gaps and combat recessionary trends. After a very steep decline in the second quarter, gradual lifting of containment measures and adaptation of businesses and households to the pandemic environment led to the recovery of economic activity in the third quarter of 2020. However, deterioration of epidemiological situation in the last quarter has decelerated the recovery trends, which is why the real economic activity at the end of 2020 still fell short of the precrisis level in most of the European countries. According to the Eurostat data, economic activity (GDP) in the EU-27 dropped by 6.3 percent in real terms in 2020. Although recession in 2020 was less deep than it had been forecasted at the beginning of the pandemic (initial forecasts saw EU-27 to decline by 7.4 percent), it is still an unprecedented downturn in the post-World War II era. Data on GDP growth in 2020 (Figure 1) signal high variation across Europe – from real growth of 3 percent (in Ireland) to -14.3 percent (in Montenegro). On average, Central and Eastern European (CEE) countries[1] faced a somewhat milder recession than the other EU Member States, while the recession in the Western Balkan countries[2] was more severe.

Adaptation to the new *modus operandi*, extension of government support programs and launch of massive vaccination rollouts shape more positive forecasts on economic activity in 2021. According to the latest forecasts of the European Commission [4], [5], EU economies are expected to reach a real (average) GDP growth of 3.7 percent in 2021, with the growth rates ranging from 2 percent in Austria to 6.3 percent in Montenegro. Despite that, in all but six European countries (Ireland, Turkey, Norway, Lithuania, Poland and Serbia), the real GDP in 2021 is expected to be lower than in 2019. On average, real GDP of EU-27 countries in 2021 is expected to fall short by 2.8 percent in comparison with 2019, while the gap in the Western Balkan countries is projected at 3.8 percent.

1 For the purposes of this paper, the CEE region includes the following countries: Bulgaria, Czechia, Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

2 For the purposes of this paper, the Western Balkans include the following countries: Albania, Bosnia and Herzegovina, Montenegro, North Macedonia and Serbia. However, when calculating Western Balkans average indicators, we exclude Serbia in order to provide appropriate benchmark for the data for Serbia.

Figure 1: GDP growth rates in Europe, 2020-2021 (in %)



Source: Author's calculations based on the Eurostat data.

Due to similar reasons and in a rather similar way, the COVID-19 pandemic has also affected the Serbian economy. After a deep recession in the second quarter, the Serbian economy started recovering in the mid-2020. According to the latest projections [5], GDP of Serbia decreased in real terms by 1 percent in 2020, which places Serbia among the first five countries (ranking behind Ireland, Turkey, Norway and Lithuania) in terms of economic growth outcome in the respective year. Furthermore, according to the latest forecasts of the International Monetary Fund and the European Commission, the economy of Serbia in 2021 is expected to achieve real growth of 4.8-5 percent. In that case, the real output of the Serbian economy would be higher by 3.8 percent than it was in 2019.

Data presented in Figure 1 show a high variation of output trends in the first year of the pandemic, which raises the question of drivers of economic outcomes during the pandemic. To be able to provide robust and methodologically well-grounded answers to this question, a comprehensive econometric analysis which includes a wide set of economic and non-economic parameters would be required, which is beyond the scope of this paper. Instead, this paper is aimed to provide key stylized facts on the three particular sets of drivers of economic outcomes during the pandemic which are often argued as relevant in shaping economic outcomes during the COVID-19 pandemic [11] – stringency of containment measures, sectoral structure of the economy and the size of fiscal stimulus programs.

In that respect, the rest of the paper is structured as follows. The second section provides disaggregation and mapping of economic activity outcomes in 2020 both from the expenditure and the production side. The third section discusses three sets of drivers of economic outcomes, while the fourth section provides concluding remarks, with the discussion and policy recommendations.

Disaggregation of economic growth performances in 2020

Output can be disaggregated and observed from the expenditure and income side, as well as from the sectoral perspective. From the expenditure side, GDP consists of personal consumption (C), government consumption (G), investment in fixed capital (I), exports (X) and imports (M). In all European countries, including Serbia, all expenditure components of GDP, except government consumption, underwent a considerable decline in 2020. The EU-27 data suggest that the largest negative contribution to the recession in 2020 came from the decline in personal consumption and investment, which is explained by the implementation of lockdown policies and high level of uncertainty that motivates people and companies to postpone their investment and consumption. On the other hand, impact of net exports on European economies was close to neutral (both exports and imports underwent a similar relative decrease), while the rise in government spending in response to the COVID-19 crisis had a positive impact on overall economic activity (Figure 2).

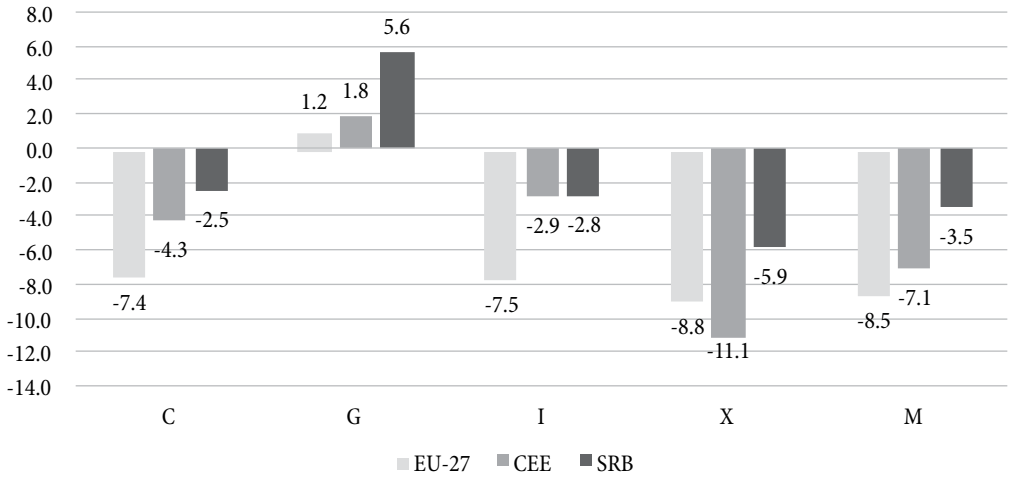
Similar trends in expenditure components of GDP have been observed in Serbia in the first year of the pandemic. The data presented in Figure 2 show that personal consumption, investment and net exports recorded a considerable annual decline, while government consumption expanded sharply in order to offset a part of the negative trends in other components of GDP. In comparison with the EU-27 average and the CEE average, consumption and investment in Serbia underwent a slighter decline. On the other hand, net exports from Serbia have had a greater negative impact on output than it was on average the case in the EU-27, while increase in government spending in Serbia significantly outweighed the trends in the EU and CEE countries, due to high growth of public wages (legislated before the pandemic) and high spending on goods and services during the pandemic.

Impact of the pandemic also differs significantly across the sectors, which is why it is relevant to evaluate the trends in economic activity per main sectors, using the gross value added (GVA) data. According to the Eurostat data (Figure 3), all sectors in the EU, except information and telecommunication (ICT), reported negative growth rates of GVA in 2020, transportation and tourism being the most heavily affected. Thus, in the EU-27, GVA of trade, transportation and tourism dropped by 12.4 percent in 2020, with actual decline in transportation and tourism being even more pronounced, as the trade has not been

that severely affected. Significant decline was also observed in the manufacturing and construction sectors.

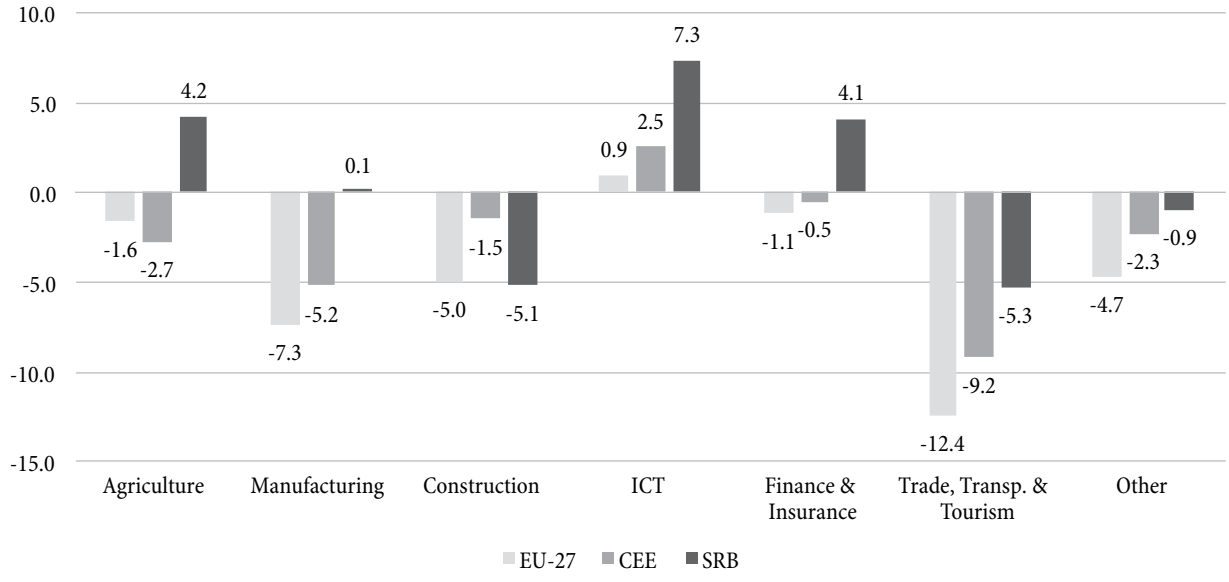
Data for Serbia show that negative growth of GVA has been observed in trade, transportation and tourism, as well as in construction and other sectors, while ICT, finance and insurance and agriculture recorded a significant rise in their GVA. At the same time, GVA in manufacturing stagnated. Decline of activity in tourism and transportation in Serbia was less pronounced than in many other European countries, due to the lower share of international travelers in the total GVA of the respective sector. Deterioration in construction is a consequence of the pandemic and a strong basis of comparison, since the official data of the Statistical Office of Serbia have reported a very high growth in the construction industry at the end of 2019, which was explained by the development of the "Turkish Stream" pipeline system. Growth in ICT services observed in 2020 is a continuation of positive trends of the emerging IT sector in Serbia, prevalent for several consecutive years, now being further fostered by the switch of many activities to online platforms. Growth of GVA in agriculture, on the other hand, is mostly a result of favorable weather conditions in 2020. Better performance in terms of GVA trends in manufacturing in Serbia, in comparison with the other European countries, may be the result of a larger share of food processing and utilities and a smaller share of car industry in the total manufacturing output.

Figure 2: GDP growth rate in 2020, expenditure side (in %)



Source: Author's calculations based on the Eurostat data.

Figure 3: Gross value added, growth rate in 2020 per main sectors (in %)



Source: Author's calculations based on the Eurostat data.

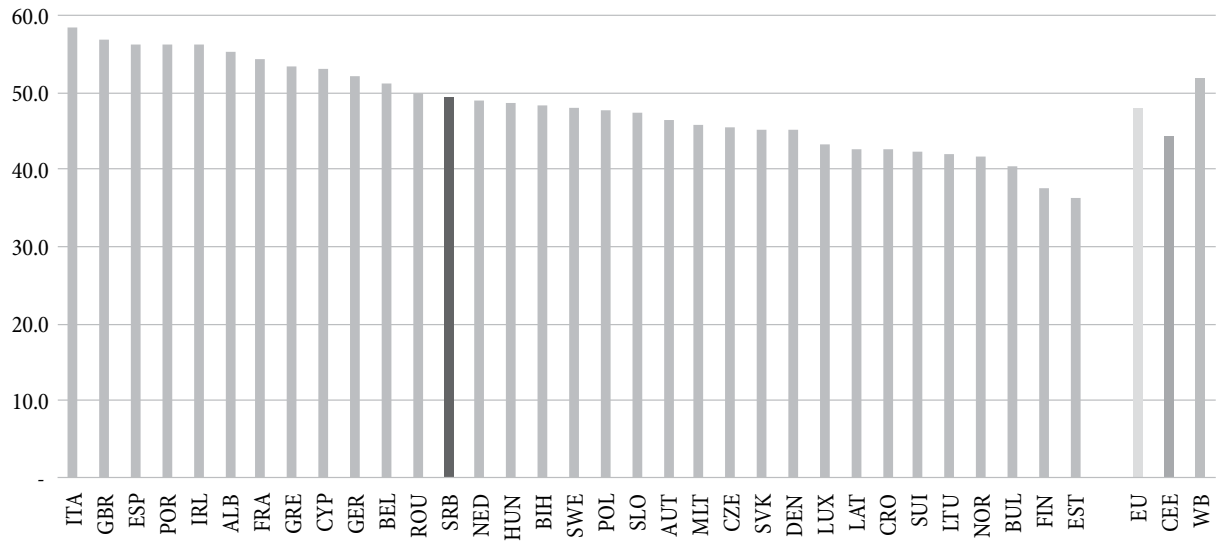
Determinants of economic outcomes in the first year of the pandemic

Stringency of containment policy

In response to the surging number of COVID-19 cases that may pose a threat to the public health system, most of the European countries have been implementing some form of non-pharmaceutical epidemiological measures from March 2020, aimed to reduce mobility and social contacts of individuals. The World Economic Outlook (2020) report suggests that containment policies significantly shape economic outcomes, including GDP growth, consumption and investment trends, retail sale, manufacturing, services dynamics and unemployment. Containment policies may have had an adverse impact on economic activity both from the supply side, as they may harm performances of supply chains, as well as from the demand side, since lower mobility and social interactions lead to deterioration in consumption. While the negative supply shock may have stagflationary effects, a drop in demand exhibits deflationary pressure. Thus, Baqaee and Farhi [1] employ the Keynesian model by using the US data and conclude that negative supply and demand shocks, triggered by lockdown, account for one half of the reduction in real GDP in the US in the February-May 2020 period. Similarly, Deb, Furceri, Ostry and Tawk [3] use daily global data on real-time containment measures and a set of indicators of economic activity (e.g., nitrogen dioxide emissions, number of flights, energy consumption, maritime trade and mobility indices) to conclude that containment measures have had, on average, a very large impact on economic activity – equivalent to a loss of about 15 percent in industrial production over a 30-day period following their implementation. On the other hand, König and Winkler [9] use the data on the first three quarters of 2020 for 42 countries and conclude that lockdown stringency is a more important driver of economic growth than the fatality rate is. They also show that more restrictive containment measures are associated with a greater drop in real GDP, but also being associated with positive effects, in terms of stronger recovery in the following quarter.

Measuring the impact of containment policy is associated with methodological challenges, as it is difficult to differentiate the impact of enforced mobility limitations imposed through lockdown from the voluntary compliance with the requirements to reduce social mobility and contacts during the pandemic (see [7]). Empirical studies on evaluating the impact of COVID-19 containment policies often rely on the COVID-19 Government Response Stringency Index, created by the University of Oxford. Stringency Index is a composite measure, i.e., a simple average of nine subindicators derived from an ordinal scale (school closures, workplace closures, cancellations of public events, gathering restrictions, public transportation

Figure 4: COVID-19 Government Response Stringency Index (2020 average)



Source: Author's calculations based on the data sourced from Our World in Data database.

closures, stay-at-home requirements, restrictions on internal movement, controls on international traveling and public information campaigns), which can take value from 0 to 100, the higher value of the index indicating more stringent regulations.

Data presented in Figure 4 show the average value of the Stringency Index during 2020 in Europe and indicate a considerable variation of stringency of containment policies in Europe (from 36.4 in Estonia to 59.5 in Italy). On average, stringency of containment policy in EU-27 was higher than in the CEE region, but lower than in the Western Balkans.

The data on GDP growth and Stringency Index in 2020 show that there was a rather strong negative relationship between stringency of containment measures and the GDP growth in 2020 (Figure 5), which is in line with the general findings of other studies based on partial datasets for 2020 (e.g., [3] and [9]).

Serbia ranks 13th (among 33 European countries) in terms of average stringency of containment policy in 2020, which is why it is expected that, over the whole year, containment policy may have had a more negative impact on economic outcomes in Serbia than in the EU and the CEE, but less negative than in the other Western Balkan countries. However, the impact of lockdown on economic activity depends not only on their stringency, but also on the duration of strict measures. Data presented in Table 1 suggest that over the 53 days (mid-March to early May 2020) Serbia implemented a much stricter containment policy, while over the remaining 239 days of 2020, the containment policy in Serbia was on average looser than in the EU and the CEE. Therefore, the fact that for the most part of the year Serbia implemented a looser containment policy may have contributed positively to output dynamics, relative to other countries.

Table 1: Average value of the Stringency Index per subperiods

Period	15.03-06.05.2020	07.05.-31.12.2020
Number of days	53	239
	Mean	Mean
EU	76.9	54.1
CEE	76.1	49.1
WB[3]	87.0	57.7
SRB	95.4	52.8

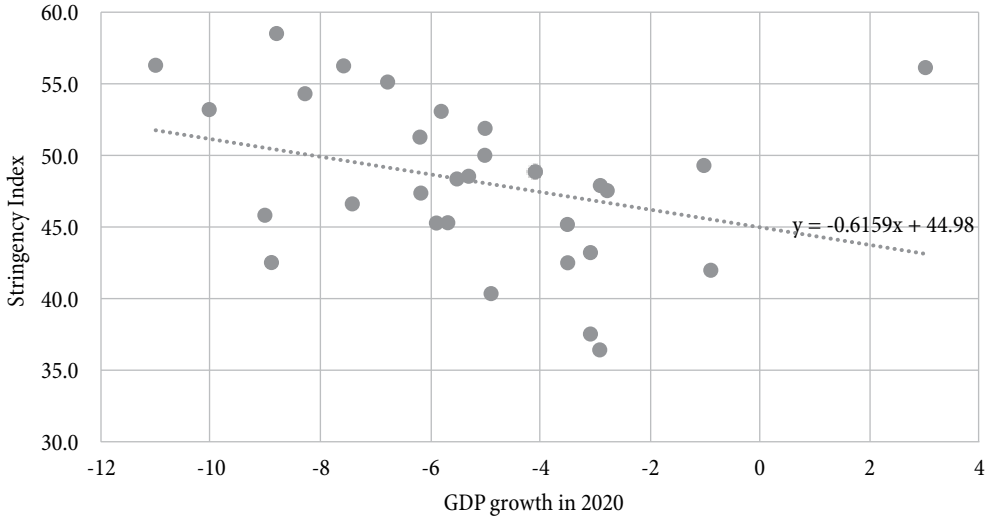
Source: Author's calculations.

Structure of the economy

Data presented in Figure 3 indicate a high variation of the impact of the COVID-19 pandemic across industrial sectors in the EU – trade, travel and tourism being the most heavily affected, with negative impact on manufacturing and construction also being pronounced. This may suggest that sectoral structure of the economy and the intensity of decline in the most heavily affected sectors are expected to have a significant impact on the overall outcomes, in terms of the total output during 2020.

3 Albania and Bosnia and Herzegovina only. The data on North Macedonia and Montenegro are not available.

Figure 5: Relationship between GDP growth and the Stringency Index in 2020

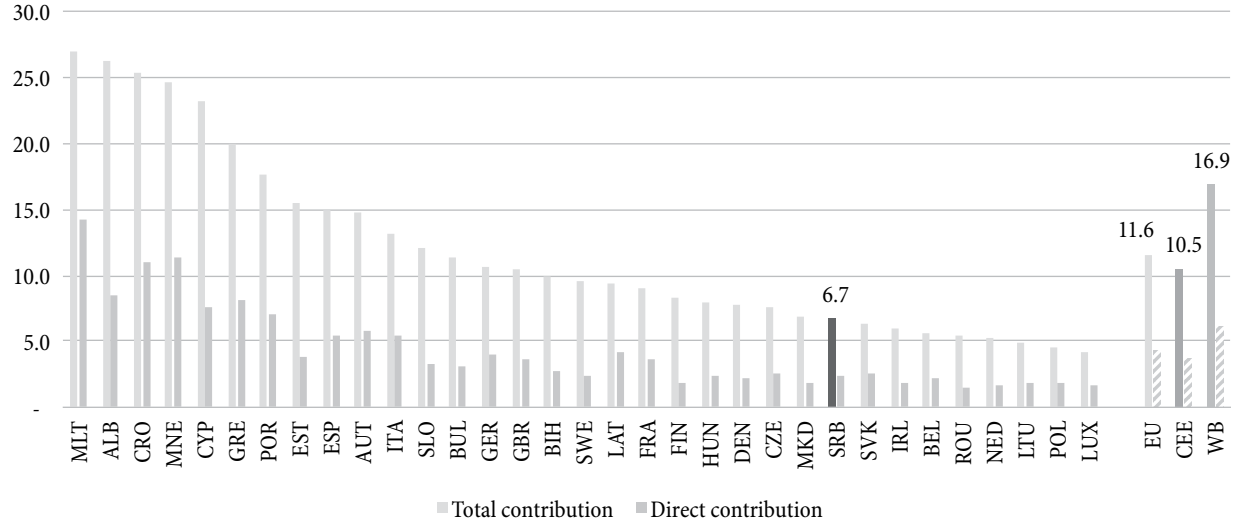


Source: Author's calculations.

According to the World Bank data, direct contribution of tourism and travel to GDP in Europe is ranging from less than 2 percent in Romania, Finland, Poland, Lithuania and the Netherlands to 10-14 percent of GDP in Malta, Montenegro and Croatia, the EU average being 4.3 percent of GDP (Figure 6). It should also be noted that direct contribution of tourism and travel to GDP in the Western Balkan countries is more pronounced (6.1 percent of GDP on average), mostly due to high contributions in Albania and Montenegro. However, when the spillover effects on other industries are added, the total contribution of the tourism and travel sector to GDP rises by the factor of 2.7 on average. Thus, the total contribution of this sector to the EU countries' GDP is estimated to be 11.6 percent of GDP, while in the Western Balkan countries it reaches almost 17 percent of GDP.

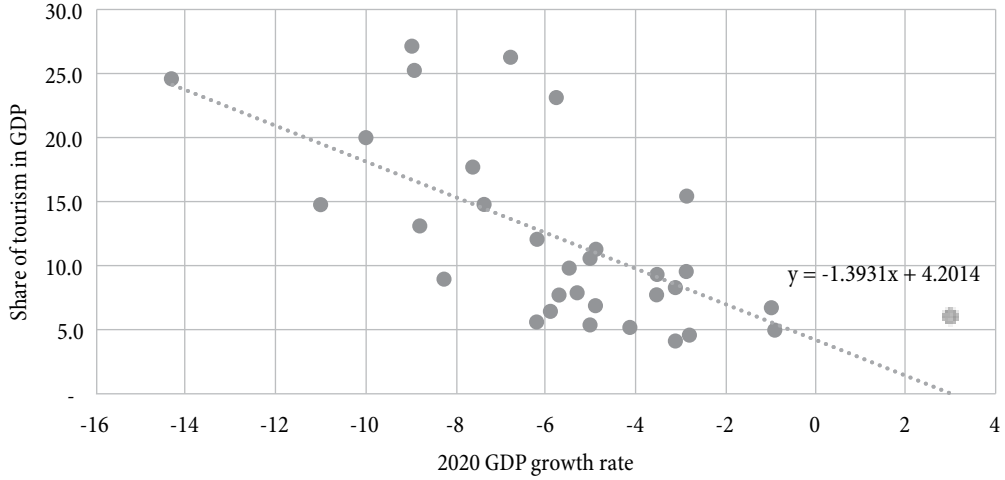
The data presented in Figure 7 provide a stylized insight into the strong negative relationship between the share of tourism in GDP and the 2020 GDP growth rate in Europe, which may be the consequence not only of the large share of tourism and travel in GDP, but also of the size of recession of this sector in 2020. Estimates of the impact of the pandemic on travel and tourism in Europe, based on a real-time big dataset of 45 million AirBnB customer reviews, indicate that the number of total nights spent in tourist accommodations in 2020 was halved, the largest decline (of 55-73%) being observed in Greece, Malta, Ireland, Spain, Cyprus and Croatia [5]. Data

Figure 6: Contribution of tourism and travel to GDP (2017-2019 average)



Source: Author's calculations based on the World Bank data*.
*Available at https://tcdata360.worldbank.org/indicators/tot.direct.gdp?country=BRA&indicator=24648&viz=line_chart&years=1995,2028#table-link.

Figure 7: Relationship between the share of tourism in GDP and 2020 GDP growth rate



Source: Author's calculations based on the World Bank data.

on the share of tourism and travel in GDP and estimates of 2020 results of this sector indicate that the decline in tourism and travel was especially high in the countries that generate a rather large share of their GDP from this sector (Greece, Malta, Spain, Croatia, Cyprus, Italy and so forth), which resulted in a deep drop in real GDP in these countries in 2020.

According to the World Bank data, travel and tourism make a direct contribution to Serbia's GDP of 2.3 percent, while the total contribution reaches 6.7 percent of GDP, which is 2.5 times less than the Western Balkans average and 1.7 times less than the EU average. In addition to that, data presented in Figure 3 show that the real decrease in GVA of the trade, travel and tourism sector in Serbia in 2020 was lower by 58% than the decrease observed in the EU-27, which may be due to the fact that the Serbian tourism sector relies less on foreign tourists, unlike many other European countries. Therefore, the lower decline of Serbia's GDP in 2020 in comparison with the EU, CEE and Western Balkans average may also be explained by the favorable sectoral structure of the economy, i.e., by the lower share of travel and tourism in the economy and a slighter decline of this sector in Serbia. In addition to that, the share of sectors that have been more insulated from the impact of the pandemic (e.g., agriculture, utilities, food processing and so forth) in Serbia is well above the European average, which suggests that the sectoral structure of the economy may have played a significant role in shaping overall output results of Serbia in 2020.

Fiscal policy

Fiscal expansion is employed in bust periods in order to flatten out the recession line and speed up the recovery. This is why ever since the onset of the COVID-19 crisis, most of the European governments have implemented massive fiscal stimuli in order to prevent large-scale bankruptcies and spikes in unemployment. Empirical studies [5] show that fiscal and monetary stimuli have been effective in mitigating some of the economic costs of the COVID-19 crisis. Fiscal stimuli programs implemented by the governments during the COVID-19 pandemic can be divided into two groups: direct support – additional spending and foregone revenue (wage subsidies, additional healthcare spending, investment, deferral of tax payments and so forth) and indirect support – equity, loans and guarantees (aimed to support liquidity of businesses).

The IMF Fiscal Monitor Data (Table 2) indicate that the total amount of fiscal stimulus packages is positively related to the level of development, which is explained by the stronger fiscal capacity of more developed countries to provide additional funds in the crisis periods. A similar finding is suggested by the data on Europe (Figure 8). To estimate the size of 2020 fiscal stimulus (FS) per country, we relied on the Eurostat data on GDP growth (Y) and fiscal balance (FB). The drop in economic activity had an automatic negative effect on fiscal balance, mostly through decline in tax revenues, which depends on the elasticity of tax revenues to GDP that may be proxied with the share of tax revenues in GDP (t). Therefore, direct fiscal stimulus is calculated by insulating the automatic rise in fiscal deficit in 2020 (compared to 2019) from the increase in fiscal deficit linked to discretionary policy actions:

Data presented in Figure 8 show that direct fiscal stimuli in Europe in 2020 were also varying significantly across the countries, with the EU-27 average being close to 3.6 percent of GDP, which is higher than the CEE and Western Balkans average.

Table 2: Discretionary fiscal policy response to COVID-19

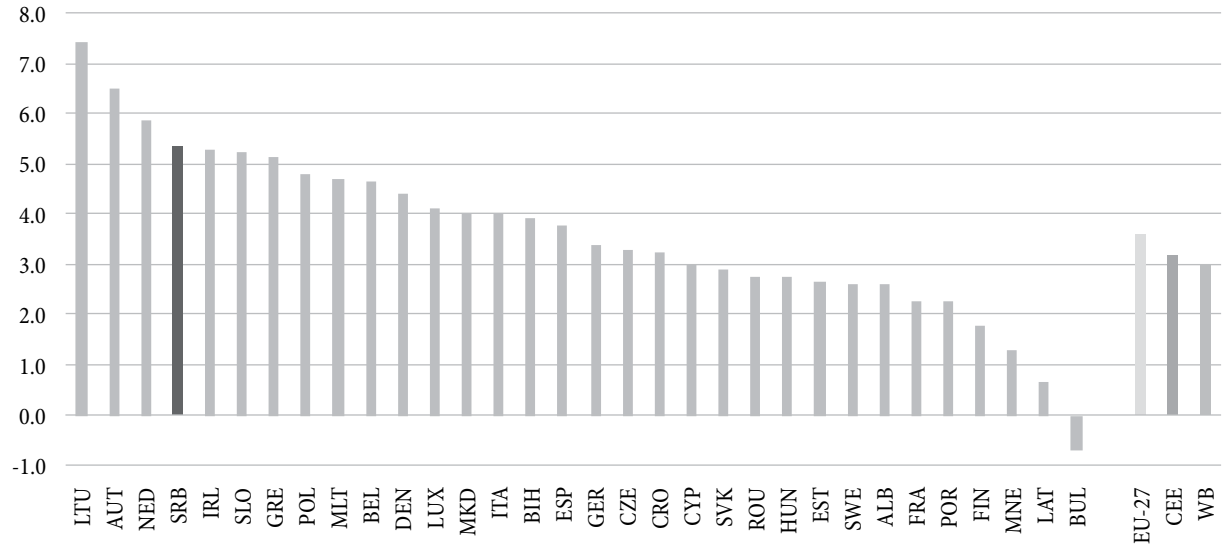
	Advanced economies	Emerging economies	Low-income economies	Serbia
	Percentage of GDP			
Additional spending and forgone revenue	12.7	3.6	1.6	5.6
Equity, loans, and guarantees	11.3	2.5	0.2	1.4
	24.0	6.1	1.8	7.0
	Share in discretionary fiscal response			
Additional spending and forgone revenue	53%	59%	88%	80%
Equity, loans, and guarantees	47%	41%	12%	20%

Source: Author's calculations based on the IMF Fiscal Monitor Dataset.

According to the Keynesian approach, efficiency of fiscal expansion in promoting economic growth in open economy depends on the size of fiscal stimulus, as well as on marginal propensity to save and marginal propensity to buy importable goods – larger fiscal stimulus and lower marginal propensity to save and to import imply stronger positive effects of fiscal expansion on economic growth (see [2]). Empirical studies suggest that the size of fiscal multipliers is larger in the advanced rather than in the developing countries, as well as in economies that operate fixed exchange rates [6]. The same study indicates that fiscal multipliers are positively linked with the degree of openness of the economy, while the link with the level of public debt is negative. Empirical literature on the CEE region also indicate that fiscal multipliers depend on the structural features of fiscal policy, multipliers with public investment being particularly high [5]. Data presented in Figure 9 indicate a positive relationship between the size of direct stimuli and the GDP growth observed in 2020, which may suggest that fiscal policy response to the crisis has also played an important role in shaping output outcomes.

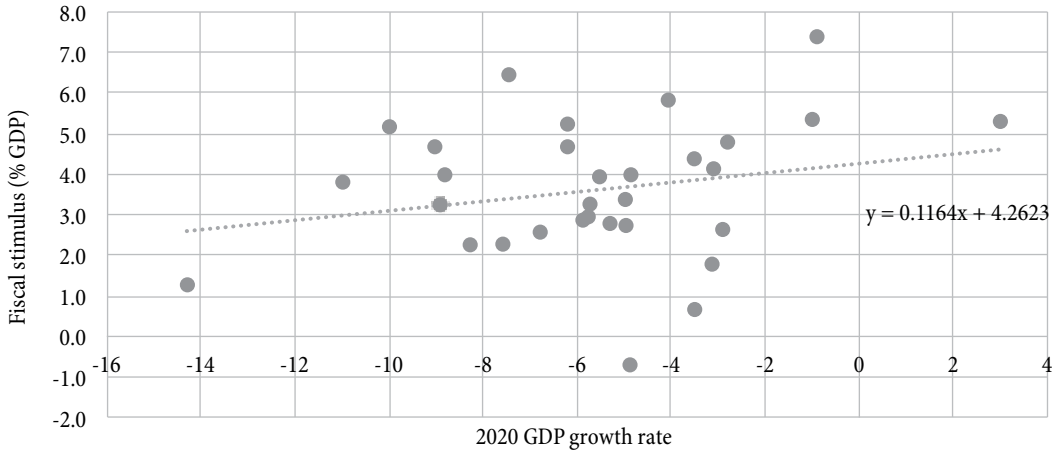
In 2020, Serbia has implemented two programs of fiscal stimuli, which have included wage subsidies, deferral of tax payments, unconditional flat transfers to all adult citizens, loans, guarantees and equity contributions [5]. Wage subsidies, which accounted for a large chunk of total fiscal stimuli in Serbia, were mostly nonselective, which was also the case with (100 Euro) transfers to citizens. The total fiscal stimulus of Serbia in

Figure 8: Direct fiscal stimulus in 2020 (% GDP)



Source: Author's calculations.

Figure 9: Relationship between GDP growth and direct fiscal stimulus



Source: Author's calculations.

2020 is estimated at around 7 percent of GDP, which is above the average size of the fiscal stimulus in emerging economies comparable with Serbia in terms of their level of development (Table 1). However, the structure of the fiscal stimulus package in Serbia, with 80% being provided through direct support, is more similar to the structure found in low-income countries. Due to the large total fiscal stimulus and a large share of direct support programs, the direct fiscal stimulus (relative to GDP) in Serbia in 2020 was well above the EU-27, CEE and Western Balkans average (Figure 8). These data suggest that only three European countries (Lithuania, Austria and the Netherlands) have implemented more buoyant direct fiscal stimuli in 2020 than Serbia. This may suggest that a strong fiscal policy response may also be seen as an important explanation for above-the-average output performance of Serbia in 2020.

Strong fiscal policy response was needed in unprecedented times, and Serbia's fiscal policy response in that respect was to a large extent comparable with policy interventions in other European countries. However, considering the available theoretical and empirical facts, a more targeted fiscal support (focused on the most affected sectors, unemployed individuals and socially vulnerable groups) may have had a greater positive impact on the growth perspective and general social welfare.

Conclusion

The outbreak of the COVID-19 pandemic triggered unprecedented challenges to daily life, public health and economy globally. In order to curb the pandemic, countries have been implementing different containment strategies. These policies have been helpful in preventing the collapse of healthcare systems, but at the same time causing disruption in business operations, thus generating economic costs. In parallel to containment policies, most of the countries have implemented economic support programs in order to mitigate or at least to partially offset economic costs of the pandemic. Variation in structural features of European countries (population age and density, geographical location, properties of the healthcare systems, openness to international travelers and so forth), differences in containment strategies and characteristics of the economic response to the crisis resulted in a significant variation in GDP growth rates in 2020 across Europe. This paper provides an overview and critical evaluation of the three groups of factors which may explain the variation in output volatility during the pandemic.

Table 3: Correlation matrix

Correlation between GDP growth in 2020 and…	
…stringency of containment policy	-0.32
…share of travel and tourism in GDP	-0.66
…size of the fiscal stimulus	0.23

Source: Author's calculations.

The results have shown that GDP growth rates in 2020 in Europe were strongly negatively associated with the share of travel and tourism in GDP and moderately negatively linked with the stringency of containment policy, while the correlation with the size of direct fiscal stimulus programs was positive, albeit modest (Table 3). This means that the stringency of containment policy, sectoral structure of the economy and fiscal response to the crisis may have played a role in shaping the output dynamics in 2020. The results should be interpreted with caution, since there are also other factors that may have influenced output dynamics in Europe and Serbia, including the size and structure of monetary stimuli, precrisis growth trends and so forth. In order to provide robust conclusions on the absolute and relative significance of these three groups of factors, their impact should be estimated econometrically by controlling for the influence of other factors.

The data presented in this paper also indicate that Serbia performed relatively well in terms of output dynamics in 2020. At the same time, Serbia was implementing relatively loose containment measures for the most part of the year and a highly expansionary fiscal policy, at the same time having favorable sectoral structure of the economy (in terms of insulation against the pandemic shocks). Critical assessment of Serbia's fiscal policy response leads to the conclusion that a large part of the fiscal intervention was in line with good international practice. However, fiscal interventions could have been more targeted in certain aspects (aimed at the affected sectors and households) in order to attain better results with the same size of the

fiscal intervention or to achieve similar economic effects with lower fiscal costs.

Acknowledgement

This research is part of the *MICEPRE_EEEM* – **Macroeconomic** *implications of COVID-19 and effectiveness of policy response in Europe: Empirical evidence and econometric modelling* project, funded by the Fund for Science of the Republic of Serbia.

References

1. Baqaee, D., & Farhi, E. (2020). *Supply and demand in disaggregated Keynesian economies with an application to the Covid-19 crisis*. National Bureau of Economic Research Working Paper No. w27152.
2. Caves, J., Frankel, J., & Jones, W. (2007). *World trade and payments – An introduction* (10th ed). London: Pearson.
3. Deb, P., Furceri, D., Ostry, J. D., & Tawk, N. (2020). *The economic effects of Covid-19 containment measures*. CEPR Discussion Paper No. DP15087.
4. European Commission. (2020). *EU candidate countries' & Potential candidates' economic quarterly*. Technical Paper No. 044.
5. European Commission. (2021). *European economic forecast, winter 2021*. Institutional Paper No. 144.
6. Ilzetzki, E., Mendoza, E. G., & Végh, C. A. (2013). How big (small?) are fiscal multipliers?. *Journal of Monetary Economics*, *60*(2), 239-254.
7. IMF. (2020). *World economic outlook, April 2020: The great lockdown*. World Economic Outlook Reports. Washington DC: IMF.
8. IMF. (2021). *Fiscal monitor database of country fiscal measures in response to the COVID-19 pandemic*. Washington DC: IMF.
9. König, M., & Winkler, A. (2021). COVID-19: Lockdowns, fatality rates and GDP growth. *Intereconomics*, *56*(1), 32-39.
10. Petrović, P., Arsić, M., & Nojković, A. (2021). Increasing public investment can be an effective policy in bad times: Evidence from emerging EU economies. *Economic Modelling*, *94*, 580-597.
11. FREN, & University of Belgrade – Faculty of Economics. (2020). *Quarterly Monitor of Economic Trends and Policies in Serbia, No. 63*. Retreived from: https://fren.org.rs/vesti/kvartalni-monitor-br-63/
12. Surico, P., & Galeotti, A. (2020). *The economics of a pandemic: The Case of Covid-19*. Retrieved from https://icsb.org/theeconomicsofapandemic/.

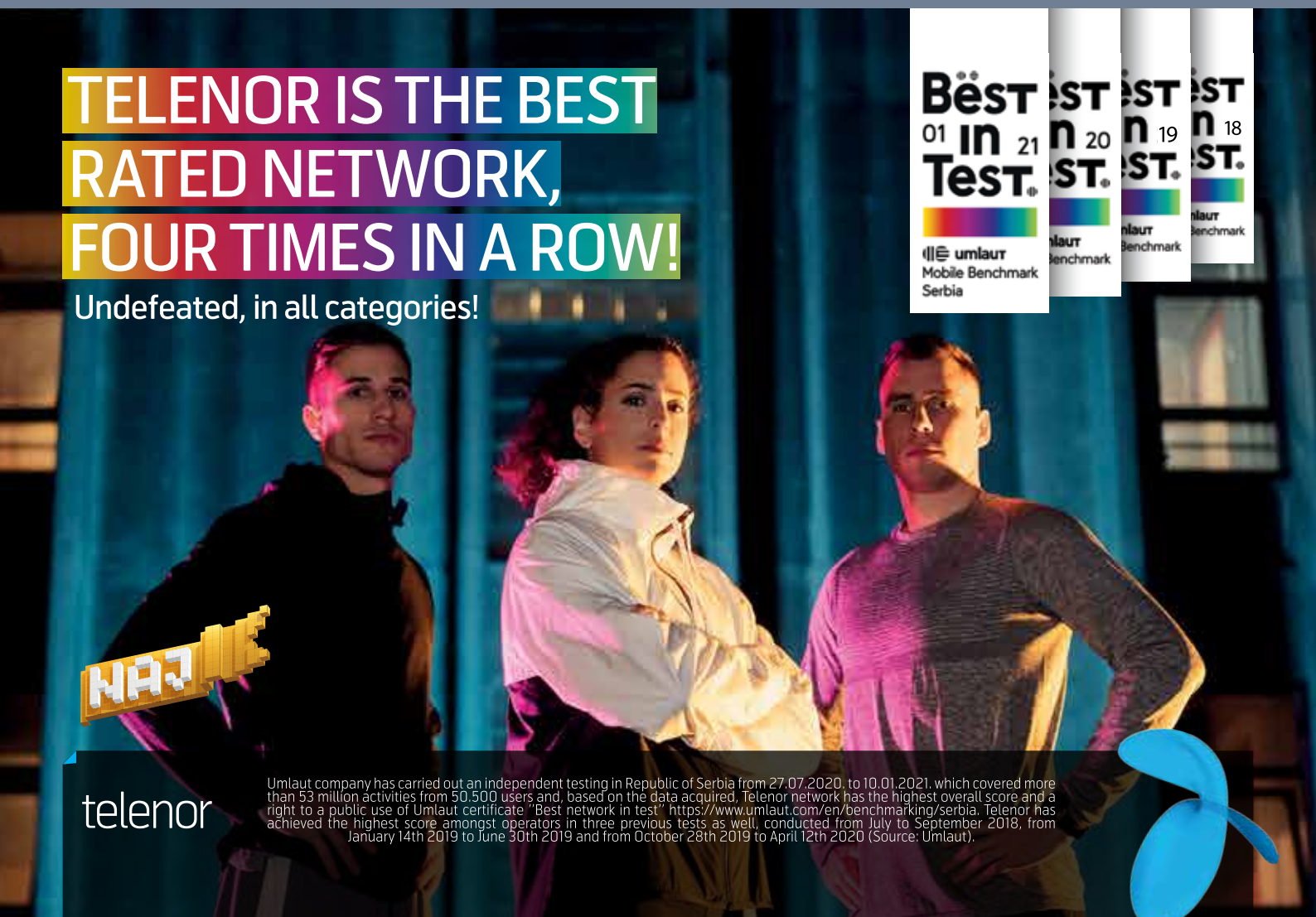
Saša Ranđelović

is Associate Professor, teaching Public Finance, and Vice Dean for Finance and International Cooperation at the University of Belgrade – Faculty of Economics. He obtained his PhD degree in 2012 from the University of Belgrade, earning the award for the best doctoral dissertation in economics in Serbia in 2011-2012, presented by the Serbian Scientific Society of Economists. He authored three books, numerous articles published in international journals and chapters in international and domestic monographs. His field of research includes taxation, fiscal policy, inequality, shadow economy, microsimulation modelling, etc. Mr. Ranđelović participated in many national and international research and policy projects (Horizon 2020, IPA, World Bank, GIZ, USAID, etc.).

For us, time is the most valuable currency.

Addiko Bank

Where 2+2=4



ORIGINAL SCIENTIFIC PAPER
UDK: 616.98:578.834]:338.12.021(497.11)
DOI: 10.5937/EKOPRE2103243S
Date of Receipt: January 27, 2021

Nebojša Savić
Metropolitan University
FEFA
Belgrade

Jelisaveta Lazarević
Metropolitan University
FEFA
Belgrade

Ana Vjetrov
Metropolitan University
FEFA
Belgrade

Ema Marinković
Metropolitan University
FEFA
Belgrade

SERBIAN ECONOMY RECOVERY IN THE POST COVID-19 ERA: CLUSTER APPROACH

Oporavak srpske privrede nakon ere kovida 19 – pristup preko klastera

Abstract

The COVID-19 crisis differs from previous ones. It disrupts global value chains, redirects business toward regional cooperation in a highly globalized world, and forces new business model development toward digitalization. This crisis affected both supply- and demand-side and all countries worldwide, regardless of their economic strength. To support economic recovery, while at the same time fighting for health system endurance through lockdowns and prevention measures, economic decision-makers all around the globe have been using expansive macroeconomic policies. One of the first measures was loosening monetary policy. Such measure was taken in 80% of the countries globally and in all emerging markets. Fiscal policy was significant in supporting demand in the short-term, simultaneously resulting in higher public debt, which is becoming one of the constraints for future development. While economists of today are discussing which letter visualizes the best the character of this crisis – V, U, L, W, we got the letter K, which indicates that recovery among countries will differ in growth rates and duration. Accordingly, we are going to live in a world where change is the only constant. To survive within these conditions, digitalization and key clusters' development are crucial for long-term competitiveness. In this paper, we analyzed the competitiveness of the Serbian economy by using the Country Competitiveness Index, emphasizing the importance of microeconomic indicators that represent a powerful tool in analyzing crucial segments for the economy's recovery. We also focused on three clusters' potential: tech, agribusiness and organic food, and tourism.

Keywords: *COVID-19 crisis, cluster, tech cluster, tourism, agribusiness, organic food, competitiveness, Serbia.*

Sažetak

Kriza izazvana virusom kovida 19 se razlikuje od prethodnih, imajući u vidu da je prekinula globalne lance vrednosti, preusmerila poslovanje ka regionalnoj saradnji u visokoglobalizovanom svetu i u fokus stavila razvoj novih poslovnih modela zasnovanih na digitalizaciji. Ova kriza je uticala i na ponudu i na tražnju, ali i na sve zemlje širom sveta bez obzira na njihovu ekonomsku snagu. Da bi podržali ekonomski oporavak, istovremeno se boreći za održivost zdravstvenog sistema zaključavanjem i merama prevencije, donosioci ekonomskih odluka širom sveta koriste ekspanzivne makroekonomske politike. Jedna od prvih mera je bila popuštanje monetarne politike. Takva mera je preduzeta u 80% zemalja širom sveta i u svim privredama u usponu. Fiskalna politika bila je značajna u kratkom roku kako bi doprinela rastu tražnje, dok je istovremeno rezultirala većim javnim dugom koji postaje jedno od ograničenja za budući razvoj. I dok današnji ekonomisti raspravljaju koje slovo najbolje vizualizuje karakter ove krize –- V, U, L, W, dobili smo slovo K, koje ukazuje na to da će se oporavak među zemljama razlikovati u stopama rasta i trajanju tog oporavka. Shodno tome, živećemo u svetu u kome su promene jedina konstanta. Da bi opstali u takvom svetu, digitalizacija i razvoj ključnih klastera su presudni za dugoročnu konkurentnost. U ovom radu analizirali smo konkurentnost srpske privrede kroz indeks konkurentnosti zemlje i posebno istakli značaj mikroekonomskih determinanti koji predstavljaju moćno sredstvo u analizi ključnih segmenata za oporavak privrede. Fokus je bio na potencijalu tri klastera: tehnološkom, agrobiznisu i organskoj hrani i turizmu.

Ključne reči: *kriza izazvana kovidom 19, klaster, tehnološki klaster, turizam, proizvodnja hrane, organska hrana, konkurentnost, Srbija.*

Introduction

The economic cost of the COVID-19 pandemic (C-19) is incalculable; the global GDP decline in 2020 was 3.3% and is comparable to the Great Depression of the 1930s and two world wars. However, this figure underestimates costs – it measures the decline of the world economy from the point where it was before the pandemic and not from the point where it would have been if the virus had not existed. At the beginning of 2020, the world economy was expected to grow by 2.5%, to USD 86,000 billion. Thus, the loss of global GDP in 2020 was probably 6.6%, which is equivalent to USD 5,500 billion (at market rates and prices in 2010). In 2021, the world economy should achieve growth, but even with that, the level of production will remain 5.3% below the forecast, which is a cost of USD 4,700 billion. So, in two years, the total cost of the C-19 crisis related to GDP will be approximately USD 10.3 trillion (of that loss, USD 2,000 billion is tied to the Eurozone, and USD 1,700 billion to the United States of America (USA), USD 950 billion to India and USD 680 billion to China).

For example, let us recall, e.g., recovery under The Marshall Plan, a 1948 American initiative (April 3rd) to help 16 Western European countries. Over four years, the USA donated USD 17 billion (USD 202 billion from 2019) in economic and technical assistance (6.6% of the U.S. GDP of USD 258 billion from 1948). It was replaced in late 1951 by the Mutual Security Plan with about USD 7.5 billion in annual assistance until 1961, when it was replaced by another program. This plan aimed to remove trade barriers, modernize industry, promote European prosperity and prevent the spread of the influence of communism, resulting in increased productivity and the introduction of modern business procedures. Most funds were received by the UK (26%), France (18%) and West Germany (11%), and GDP of these countries was 35% higher in 1951 compared to 1938, which corresponds to an average growth rate of 2.4% per year beginning with 1939. With this Plan, the world economy, especially the European one, entered a period of prosperity. Until 1975, no global recession was recorded, and since 1975, there has been one global recession in every decade.

Table 1: Pandemic historical perspective

Event	Start	End	Deaths
1. Black Death	1331	1353	75,000,000
2. Italian Plague	1623	1632	280,000
3. Great Plague of Seville	1647	1652	2,000,000
4. Great Plague of London	1665	1666	100,000
5. Great Plague of Marseille	1720	1722	100,000
6. First Cholera Pandemic	1816	1826	100,000
7. Second Cholera Pandemic	1829	1851	100,000
8. Russia Cholera Pandemic	1852	1860	1,000,000
9. Global Flu Pandemic	1889	1890	1,000,000
10. Sixth Cholera Pandemic	1899	1923	800,000
11. Encephalitis Lethargica Pand.	1915	1926	1,500,000
12. Spanish Flue	1918	1920	100,000,000
13. Asian Flu	1957	1958	2,000,000
14. Hong-Kong Flue	1968	1969	1,000,000
15. H1N1 Pandemic	2009	2010	203,000
16. COVID-19 (as of April 2021)	2019	?	3,000,000*

*As of April 12th, 2021
Source: [1].

The C-19 crisis is significantly different from the Great Recession (GR) of 2008. The current crisis is a public health crisis with severe economic consequences. Economic recovery will only be possible when the health crisis is under control and when economies can open up. Additionally, it is quite certain that it will not be a return to the former economy. It will be a step toward a new world, encouraging the development of key clusters such as tech, agribusiness with organic food[1], food processing, tourism, health and pharma, retail, energy, fintech.

It is pretty realistic that the supply chain structure will change, and that regional cooperation and geographically closer suppliers and markets will become more important. In these processes, Serbia can find its place, but it requires several very essential activities such as encouraging innovation, strengthening the health system, infrastructure development, especially digital, digitalization, and development of the green economy. Consequently, the aim of this paper is to emphasize the importance of microeconomic indicators that represent a powerful tool in analyzing key segments for the economy's recovery, with a strong focus on clusters' potential within C-19 conditions.

Empirical analysis of the crucial medium- and long-term effects of the 14th-century pandemics pointed out that

1 In this paper we focus on agribusiness since it is very sensitive to global market trends and spill-over effects from global commodity market, especially in the period of crisis. Since the agribusiness is a precursor in the value chain of food production, this cluster analysis should be a baseline for further researching within food production cluster.

pandemics differ from other types of economic disasters (see Table 1) [6], [13], [1]. Jordà, Singh and Taylor [13] found that macroeconomic after-effects in pandemic cases sometimes lasted for decades, which is in stark contrast to what happened after the wars. During the wars, capital is destroyed, but pandemics may induce relative labor scarcity and/or a shift to greater precautionary savings.

In the last 50 years, global economic growth has been extremely fast – the world economy has quadrupled, a billion people have been lifted out of poverty. This growth has been based on both increasing the number of employees (growth of 1.7% on average per year) and raising productivity (1.8%). Consequently, the production growth per employee was 2.4% on average per year, with global employment growth slowing for more than two decades. Within the following sections, the focus will be on the importance of microeconomic determinants for competitiveness upgrading within the C-19 crisis, with emphasis on clusters' potential.

The overall framework of the C-19 crisis

The global character of the C-19 crisis, which is a medical and economic crisis, indicates that it must be viewed from the broadest perspective. In that context, we will refer to the attitudes and warnings of several of our contemporaries from other fields – politics, history, philosophy, literature, music, etc.

Kissinger [17] in the *Wall Street Journal*, at the beginning of the crisis, points out that scientists have the greatest responsibility for the development of vaccines and control of the pandemic, and politicians and elites are responsible for protecting citizens from the pandemic. The next step is to rebuild the global economy within conditions that are much more complex than in 2008. We need programs to help those who have been hit hardest by this crisis and whose losses have been the greatest.

Harari [9], the world's leading historian and philosopher, disputes at *The Time* at the beginning of the crisis the views that globalization is to blame for the C-19 crisis and the lack of true leaders. He also emphasized that general trust has to be regained in order to defeat pandemics.

Harari [10] has recently pointed out in the *Financial Times*, that in 2020, science turned epidemics into challenges it can overcome, where the world received several mass-produced vaccines in less than a year.

Kovačević [18], our most respected playwright, said at the beginning of the pandemic that the C-19 virus is a yellow card that the planet sent to humanity because we have been destroying it for a long time.

Vox [44], the U2's frontman, gifted us the first new music since 2017, Let Your Love Be Known, on St. Patrick's Day March 17th, 2020, devoted to quarantined Italians singing to each other from balconies. And The Rolling Stones [32] have dedicated their song Living In A Ghost Town to the current crisis.

Economic policy in the C-19 era – Unlike natural disasters, the C-19 crisis does not harm physical capital but disrupts value chains and supply chains – these are deep disruptions that redirect business toward regional cooperation and the development of new business models based on digitalization. The C-19 crisis differs from the previous ones because it has affected both supply and demand and acts globally.

Baldwin and Freeman [4] point out that there are two shocks in the C-19 crisis: the first, which results from measures to suppress the pandemic in the form of a lockdown, which leads to a reduction in supply, and the second, related to demand regarding manufacturing goods, because consumers and companies are very cautious.

Due to the fall in production, the negative supply shock directly affects the reduction of supply, because supply chains have been interrupted, resulting in shortages and liquidity problems. In order to understand the complexity of modern business, we should keep in mind that e.g., Pfizer-BioNTech vaccine has 280 components made in 19 countries.

A negative demand shock increases uncertainty that leads to declining revenues and declining consumption and borrowing. Simultaneously, the C-19 crisis came when both inflation and interest rates were at low levels, which enabled the implementation of extensive macroeconomic stimulus.

Monetary policy was the first line of defense. In the initial phase of the crisis, monetary policy measures

accounted for 60% of incentives, primarily in the form of liquidity injections, and later reduced to 15%. That is why the central banks worldwide and above all the Fed and the NBS, reacted quickly by loosening monetary policy. The latter was done in 80% of the countries in the world and in all emerging markets.

On the other hand, fiscal policy has been significant because it can combat long-term economic damage by maintaining investment levels at a high level, strengthening health, education, ecology, energy efficiency, etc., together with fiscal sustainability.

The strong and targeted macroeconomic policies are essential, since the current macroeconomic environment is defined by the estimated global fiscal deficit of USD 10,000 billion in 2020 (of which USD 2,000 billion in the US, 10% of GDP), and the cumulative one from 2020 to 2023 will be 30,000 billion or about 30% of GDP. To support demand, the global fiscal stimulus to households and firms reached USD 16,000 billion, followed by interest rate reduction measures and other central bank measures that reached USD 9,000 billion. Consequently, the total volume of incentives and interventions at the global economy level is estimated at USD 25,000 billion.

Expectedly, all of this had spill-over effects on global public debt, which increased from 84% in 2019 to 98% of global GDP. Global trade fell by 9.6% in 2020 and is expected to grow by 8.5% in 2021 and by 6.5% in 2022. The IMF estimates that these measures have led to an increase in the fiscal deficit and public debt relative to GDP in 2020 (compared to 2019) to 13.3% and 123% in developing countries and 10.3% and 63% in emerging markets [12]. On this occasion, the world's leading authors in the field of debt Bulow, Reinhart, Rogoff, and Trebesch [5], analyzing the problems of debt growth, emphasize the necessity for new activities.

There were a lot of discussions about which letter of the alphabet best visualizes the character of the C-19 crisis - V, U, L, W, etc. The best variant was for the crisis to have the character of the letter V, which would mean a rapid, deep fall and a quick recovery with a relatively short-lived crisis.

Instead, within the C-19 crisis, we got a two-track recovery shaped crisis like the letter K. Today, it is increasingly obvious that this crisis will have the shape of the letter K, which means that some countries, some sectors, some parts of society will recover faster compared to others and there will be differences in growth rates and duration of recovery. This indicates that crucial global changes are taking place, that the structures of all economies are changing, that catching up with digitalization is important for survival, that the rich are becoming even more affluent, and some of the poor are returning to the circle of those who are highly endangered.

Importance of microeconomic determinants for competitiveness upgrading in the C-19 crisis – Explaining the growth projections of the IMF for 2021 and 2022, Gopinath [11] says that better prospects for global growth in the world economy stem from the fact that two processes have begun: vaccination and recovery of developed economies, especially the USA (6.4%), but still, most countries will reach the level of economic activity from 2019 only in 2022 or even 2023. Recovery is also expected in the Eurozone (4.4%). If we analyze the most important economic partners of Serbia – Germany and Italy, the projected growth is 3.6% in Germany and 4.2% in Italy in 2021.

Serbia's growth is projected at 5.0% in 2021, at 4.5% in 2022, and at 4% in 2023.

For full recovery of the economy from the C-19 cycle, along with measures related to public health and macroeconomic measures, which dominate the current debate, it is necessary to activate the microeconomic determinants of competitiveness as well.

Table 2: The annual growth rate of GDP in %

	2020	2021	2022
World	-3.3	6.0	4.4
Advanced economies	-4.7	5.1	3.6
• USA	-3.5	6.4	3.5
• Euro Area	-6.6	4.4	3.8
◦ Germany	-4.9	3.6	3.4
◦ Italy	-8.9	4.2	3.6
Emerging market and middle-income economies	-2.4	6.9	5.0
• China	2.3	8.4	5.6
• Russia	-3.1	3.8	3.8
• India	-8.0	12.5	6.9
• Brazil	-4.1	3.7	2.6
Serbia	-1.1	5.0	4.5

Source: [12].

Ketels and Clinch [16] point out that a medium- and long-term sustainable recovery requires a whole set of policies that include both health and social policies. However, microeconomic improvements are also needed. Macroeconomic policies should provide liquidity and financial stability, while the microeconomic determinants of competitiveness should give the following three things: (i) improving the national business environment, (ii) developing clusters, and (iii) encouraging firms to improve their operations. In that sense, the microeconomic determinants of competitiveness will create preconditions for the smooth functioning of value chains and their restructuring to strengthen clusters and regional cooperation.

Economic policies in Serbia during the C-19 crisis – A detailed analysis of the measures implemented in Serbia during the C-19 crisis can be found in the National Bank of Serbia Inflation Reports [26], [27], as well as in the presentation of Jorgovanka Tabaković, NBS Governor at Money Fair 21 [37]. During the C-19 crisis, Serbia managed to preserve macroeconomic and financial stability by stimulating economic policy measures, with a small decline in GDP (-1.1%) and a slight increase in the number of employees. Monetary policy ensured: (i) maintaining low and stable inflation, (ii) high liquidity, and (iii) stability of the financial system, and fiscal policy measures in the form of a temporary increase in the fiscal deficit to increase public expenditures acted to raise demand.

The total volume of incentive measures for the firms and the households in Serbia amounted to EUR 5.8 billion (RSD 704 billion) or 12.5% of GDP. The policy rate was reduced by a total of 125 bp, two moratoriums on loans were introduced, and dinar and foreign currency liquidity was provided to commercial banks in a timely manner. For the third year in a row, the bank's lending activity is growing, now at a rate of 10% per year.

The consolidated fiscal deficit amounted to 8% of GDP and stemmed from strong stimuli introduced during the C-19 crisis in 2020. This level of deficit was acceptable, bearing in mind that the level of public debt has been on a downward path (reduced by 18.3 pp) since 2016. During 2020, central government public debt increased from 52.0% of GDP in 2019 to 56.8% of GDP, and general government public debt from 52.9% to 57.7% of GDP.

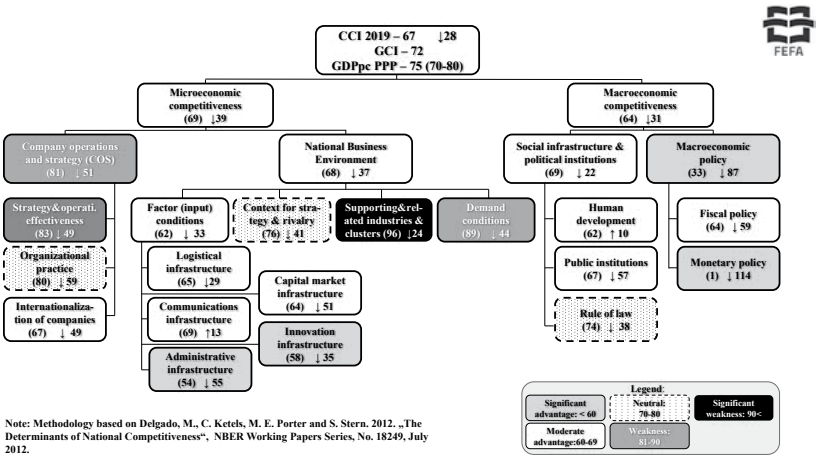
Despite the decline in external demand and the disruption of global value chains, exports remained relatively resilient thanks to the greater production and geographical diversification and the activation of export-oriented investments. There was a slight decline in exports of goods and services to EUR 20 billion, but it is still above the level of 2018 and resulted from a decline in exports of manufacturing and services. The decline in imports was greater than the decline in exports, and its recovery is slower due to the combined effect of reducing domestic demand and energy prices. The current account deficit is -4.2% of GDP. Since 2015, the current account deficit has been fully covered by net FDI inflows.

The net inflow of FDI in 2020 amounted to EUR 2.9 billion. Out of a total of EUR 7.3 billion in FDI in the period from 2018 to 2019, EUR 4.1 billion (56%) was directed to the tradable sectors, out of which EUR 1.9 billion (26%) was directed to manufacturing (metal processing, automotive, food-processing, car tires, etc.) with solid growth in employment, production, and exports.

The fall of GDP in Serbia in 2020 (-1.1%) was one of the smallest in Europe. This decline did not result from tradable sectors (agriculture, industry) but from the service sector (tourism, catering, transport, and a modest decline in construction). The projected GDP growth in 2021 of approximately 5% is based on growing domestic demand and exports. The risks of this projection are symmetrical – positive risks arise from the domestic market and negative from the international environment (pandemic development and GDP recovery in the region and Europe, especially Germany and Italy). On the expenditure side in 2021, the following is expected: recovery of private consumption, increase in consumption due to vaccination, increase in government consumption, and growth of fixed investments. On the production side, the recovery of service activities is expected, realizing the average level of agricultural production, the growth of manufacturing (with the activation of new capacities), and construction.

Competitiveness in Serbia based on Porter's diamond

Figure 1: ISC Competitiveness Index for Serbia, 2019 v. 2013



Note: Methodology based on Delgado, M., C. Ketels, M. E. Porter and S. Stern. 2012. „The Determinants of National Competitiveness", NBER Working Papers Series, No. 18249, July 2012.

In this paper, we analyzed the competitiveness of the Serbian economy using the Country Competitive Index (CCI) developed by Porter, Delgado, Ketels and Stern [31] and which is methodologically detailed in Delgado, Ketels, Porter and Stern [7]. We presented the first analysis of this type on the example of Serbia in Savić (2012), comparing the competitiveness of Serbia in 2012 with 2008 [34]. In this paper, we will compare the competitiveness of Serbia in 2019 compared to 2013 and define recommendations for improving it. Serbia recorded in 2019, in comparison to 2013, an increase in Global Competitiveness Index (GCI) rank from 101 to 72, which represents an increase in Country Competitiveness Index (CCI) rank from 98 to 67.

According to the level of GDPpc adjusted by purchasing power parity, Serbia holds 75th place within the group of 140 countries included within the Global Competitiveness Report. So, the GDPpc PPP (75) level in 2019 is similar to GCI (72). But since the CCI achieved a rank of 67, which is higher than the rank of GDPpc PPP, there is certainly a need for further improvement of Serbian competitiveness.

We have defined as competitive disadvantages or advantages all ranks that deviate up to 10 places upward or downward from the GDPpc PPP rank (according to which Serbia ranked 75th). All ranks from 1st to 69th are treated as competitive advantages, while all ranks from 81st to 144th as competitive disadvantages.

We started our empirical analysis of the business environment in Serbia using Porter's diamond which gives us a comprehensive review of productivity through four elements of the national business environment – factor conditions, the context for firm strategy and rivalry, demand conditions, and related and supported industries [31].

Three prospective clusters in Serbia

In the following sections, we will focus on analyzing three clusters of the Serbian economy which we consider important for the country's further development. Those clusters are: tech cluster, agribusiness with organic food, and tourism. Although there are various important clusters in Serbia such as energy, health and pharma, retail, fintech, and food processing, we will focus on these three clusters since they have a high potential for collaboration, contributing to other clusters development.

Tech cluster in Serbia

Kerr and Robert-Nicoud [14, p. 3] define "tech" clusters to be: "locations where new products (be they goods or services) and production processes are created that impact multiple parts of the economy." They also pointed out that a tech cluster "must have a frontier edge to it, and it must extend beyond refinements to a single industry" [14, p. 3]. Therefore, we define the tech cluster in Serbia as the cluster of ICT industry and companies operating within the traditional sector of the economy, implementing new and emerging technologies in its products and services development, consequently creating competitive advantage.

Although the tech cluster history in the Serbian economy is not so long, the tradition of such cluster

Table 3: Relative position of Serbia in competitiveness indexes in 2019

Competitive advantages		Competitive disadvantages	
Factor Conditions			
Vocational enrollment	12	Brain retention	123/140
Quality of math and science education	26/55	Brain gain	120/140
Time to start business	27/57	Quality of roads	98/119
		Burden of government regulation	95/142
		Quality of vocational training	84/111
		Electric power transmission and distribution losses	84
Context for strategy and rivalry			
Redundancy cost	16	Extent of market dominance	110/142
Import	34	Cooperation in labor-employer relations	107/144
Migrant stocks	42	Attitudes toward entrepreneurial risk	107
Rate of wage and salaried female workers to male workers	44	Intellectual property protection	104/115
		Strength of auditing and reporting standards	102/117
		Labor tax rate	92
Demand conditions			
		Buyer sophistication	124
Supporting and related industries			
		State of cluster development	104/140
Company operation and strategy			
		Reliance on professional management	114/135
		Extent of staff training	104/140
		Strategy and operational effectiveness	83/132

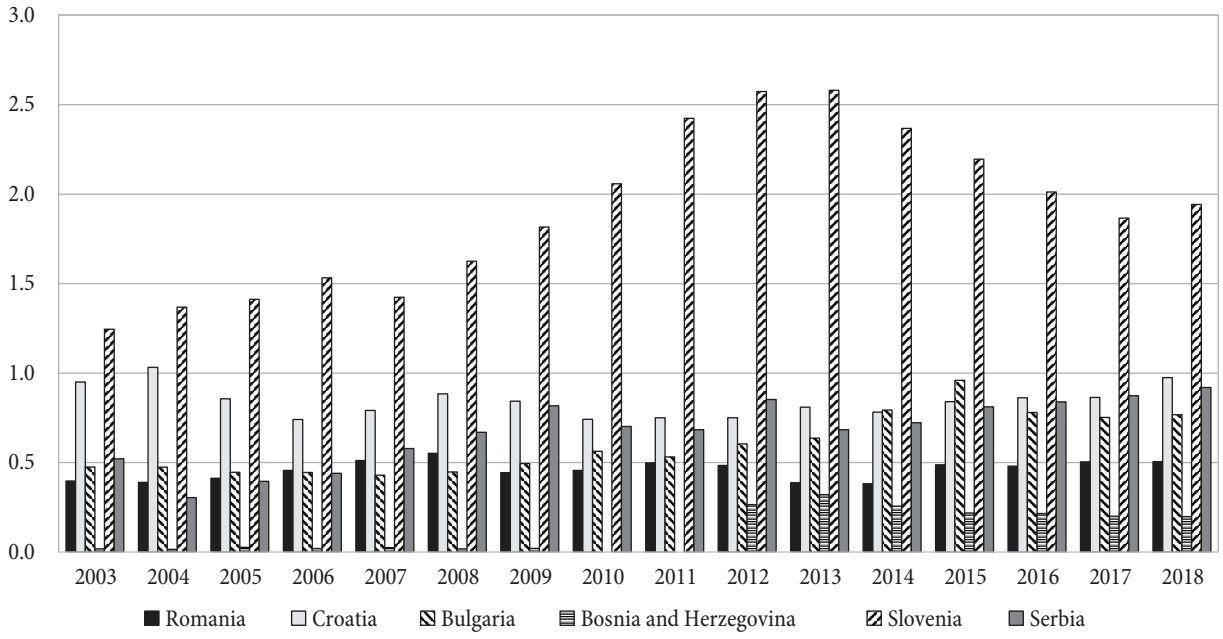
Note: Author's recalculations (GDPpc PPP=75). Rank versus 141 countries; overall, Serbia ranks 75th in 2019 PPP adjusted GDPpc and 72nd in the Global Competitiveness Report combined with data available in the Global Talent Competitiveness Index 2019, Future of Production 2018, and World Bank Doing Business 2019.
Source: Global Competitiveness Report 2013 & 2019.

development is. Even as a part of the Yugoslav economy, there were companies in Serbia that managed to develop the quality of engineering talents. Additionally, the quality development of engineering talent has its roots in traditionally strong technical faculties in the three largest cities: Belgrade, Novi Sad, and Niš. In the last two decades, this development has been supported by the establishment of foreign development tech centers and both foreign and local companies. Gained knowledge and experience in productive working places and educational institutions had a bulk knowledge spill-over effect leveraged in developing new firms that were creating high-quality products and services based on knowledge and the latest technologies.

Currently, data are showing that the tech cluster in Serbia has an emerging development trend. ICT production value contributes to 7.5% of GDP and has a rising trend of services export accounting for 22% of total services export (Eurostat and NBS data). Shining a light on product manufacturing with high R&D intensity, we can see that the high-technology export amounts to 1.7% of total export, which is below the EU average (where it accounts for 10% of total export) (Eurostat data). Although the R&D, as the most knowledge and capital-intensive process of value creation in one tech cluster, has had a rising trend since 2013, Serbia still lags behind the EU, and R&D expenditures account for 0.9% compared to 2.2% of GDP, respectively.

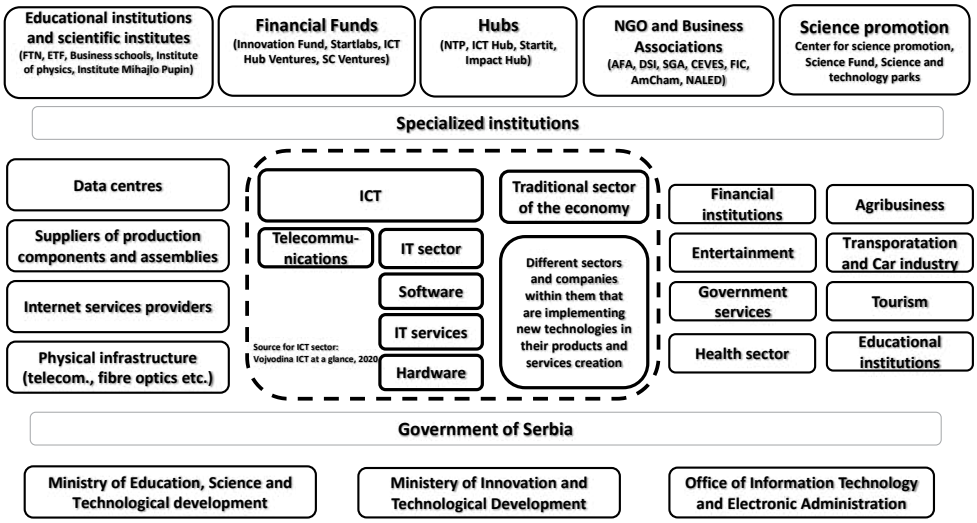
Tech cluster map – The tech cluster map is very complex, and it includes a number of important stakeholders in the process of creating unique and global competitive value. Down-stream actors on the left provide components and infrastructure for value creation in the center. The fundamental value and success of the cluster are given by ICT and companies from the traditional sector within the economy, which are implementing the latest technologies in its products and services development. Together, they produce a range of specialized and unique products and services for different sectors of the economy on the right. This is aligned with Kerr and Robert-Nicoud's tech cluster characteristics that: "lead to spill-overs across technological and industrial boundaries in the real economy" [14, p. 18]. Significant support to companies is provided by hubs, NGOs, and business associations, which are focal points for gathering tech community, creating programs to

Graph 1: R&D as a % of GDP in Serbia and countries in the region



Source: World Bank Data.

Figure 2: Tech cluster map

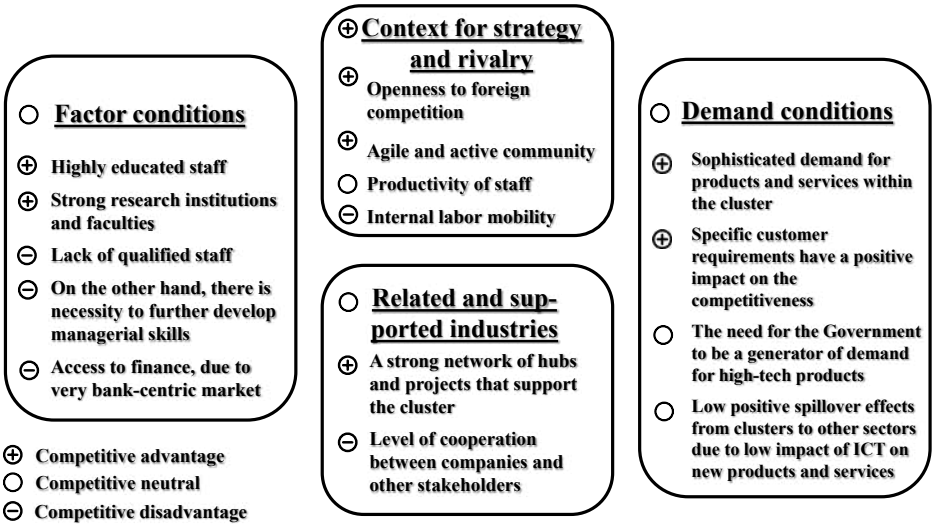


support ecosystem development, providing analytical and marketing support to the cluster, and raising awareness about important topics. Government institutions and ministries provide the regulatory framework for doing business within the cluster. Educational institutions and institutes are devoted to talent development, while institutions for science promotion support science and research and contribute to the collaboration of the scientific and private sectors. Available financial funds are supporting investments in innovative activities that should support high cluster potential.

Porter's diamond of the tech cluster – One of the main strengths in factor conditions has its roots in highly qualified staff. Serbia ranks in 26th place among 140 countries regarding the quality of math and science education (FOP data). That is why the most competitive companies in the cluster have emerged around three big cities and universities centers.

However, due to the very poor results of brain retention, companies in the cluster still face the deficit of needed talents, which unite cluster participants to create educational programs in collaboration with educational institutions.

Figure 3: Porter's diamond of the tech cluster



Higher participation of females should be further supported in STEAM occupations (science, technology, engineering, art, and math), since now we are far from their equal participation in those fields (for instance, 21% of all ICT specialists in Serbia are female – Eurostat data). Access to finance is one additional obstacle due to an underdeveloped financial market where domestic credit to the private sector accounts for only 42% of GDP, which is far below the EU average of 86%. Additionally, the fact that start-ups are vital participants in the tech cluster, it becomes even worse if we shine the light on seed investments. According to start-up scanner, Belgrade and Novi Sad have a 90% lower seed round than the global average, which results in EUR 20,000 of an average seed round [20, p. 10].

Openness to foreign competitors and strong relations to clients on foreign markets are the main strengths within the context for strategy and rivalry. One of the constraints in this segment is ICT sector productivity, reflected in gross value added per employee, which is 2.14 times lower than the EU average (Eurostat data). One of the main reasons relates to difficulties attracting high-qualified staff in companies with lower brand recognition (mainly B2B). A low level of internal labor mobility represents another issue, creating a barrier for the companies operating outside three big city centers that face the obstacles to attract and retain engineers and related staff. Additionally, the productivity gap could relate to the gap in R&D investments, which underline the need for higher spending on R&D-related activities.

Firms in the tech cluster can be divided into two groups, those that perform outsourcing activities and those that produce high-quality products and services. Since the outsourcing companies often create tailor-made solutions for the clients which operate in highly regulated industries (such as finance, media, health, etc.), companies in Serbia receive sophisticated requirements, which create positive pressure on its competitiveness development. On the other hand, companies with their own products and services are mainly part of the global competitive arena. They benefit from locally available knowledge and experience to meet specific global demand. However, the local demand is still not sophisticated enough, and this could be boosted through higher demand for tech-based products by the Government (that is well known as a best practice example in the cases of Finland, Estonia, etc.).

One additional source of cluster development could be low demand of the local private sector. Although most of the companies in Serbia are implementing at least one project related to digital transformation [33, p. 101], a comparative analysis which shows that ICT still does not sufficiently influence new products and services may indicate that other economies are transforming faster and more dynamically than the local ones. Vojvodina's ICT cluster also perceives a lack of cooperation between companies and other stakeholders as one of the weaknesses [22, p. 86]. Even though initiatives are contributing to higher cooperation, the latter is essential for cluster further development, especially for the newly established

firms. The importance of collaboration is confirmed by the start-up scanner as well, indicating that "start-ups with higher local connectedness manage to grow their revenue two times faster and have greater potential for bigger exits" [20, p. 54].

Tourism cluster in Serbia

Within the period from 2015-2019, the tourism sector in Serbia has been gaining growing importance for the economy. In 2019, the total contribution to GDP was 10.3% (direct, indirect and induced effects) according to the World Travel Tourism Council (WTTC) Report [45]. In 2019, foreign currency inflow was USD 1.7 billion in comparison to USD 1 billion in 2015. However, these pandemic conditions influenced the current growth, and a slowdown is evident. According to the 2020 Tourism Turnover report, the overall number of arrivals reached 1.82 million (a decrease by 50.7% compared to 2019), and the overnights were reduced by 38.4% to 6.2 million in 2020 [36, p. 1].

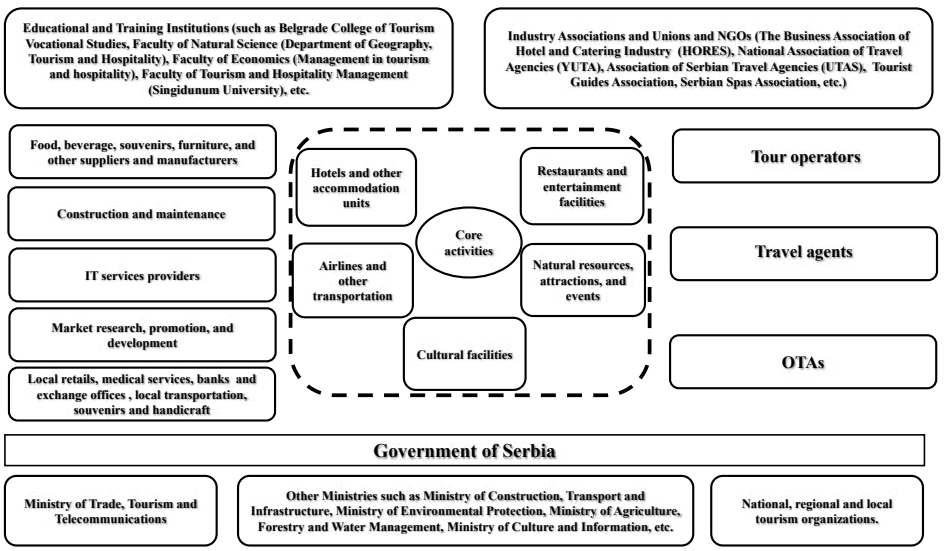
Bearing in mind that tourism is heavily hit by the C-19, some measures were introduced by the Government, including a decree related to the possibility for replacement trip, for the trips paid till March 2020, that should be realized by the end of 2021, or refunded by January 2022; 560,000 vouchers were issued for the trips in Serbia aiming to boost domestic demand within Serbia; subsidies for hotels, tour operators, travel agencies; liquidity guarantee schemes, etc. [24, p. 17]. Most of the tourism experts do not expect international tourism to return to pre-C-19 levels before 2023. The main reasons for this projection are travel restrictions, slow virus containment, economic environment, and the lack of coordinated response among countries [43, p. 13].

Tourism cluster map – Within this context, tourism clusters are gaining growing importance and the stronger cooperation within interconnected firms and local institutions, i.e., all the relevant stakeholders represent an essential precondition for sector recovery.

Ferreira and Estevao state that the tourism cluster represents a geographic concentration of companies and institutions that are interconnected within activities related to tourism [8, p. 40]. Consequently, tourism clusters focus on creating a bundle of complementary attributes in order to satisfy consumer needs, generating an increasing number of opportunities for the companies that are part of this cooperation.

According to the Tourism Development Strategy of the Republic of Serbia 2016-2025 [25, p. 35], tourism products that are relevant for tourism development are the following: 1) city breaks; 2) festivals/events (cultural, sporting, etc.); 3) mountain tourism; 4) spa and wellness/ health tourism; 5) thematic routes; 6) rural tourism; 7) nautical tourism; 8) meetings, incentives, conferences and exhibitions/events (MICE); 9) cultural heritage; 10)

Figure 4: Tourism cluster map



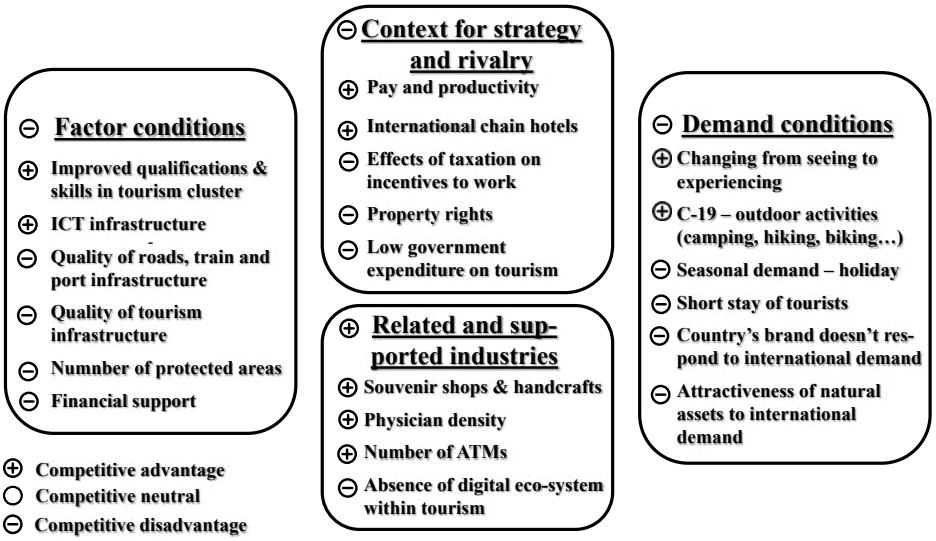
special interests; 11) transit tourism. Foreign tourists emphasize hospitality as one of the main reasons for visiting Serbia, while domestic tourists stress cultural-historical heritage [24, p. 62]. Generally, foreign tourists are more interested in city breaks, while domestic ones prefer mountain tourism.

The varieties in demand imply that more diversified tourism offer is the goal per se in the following period, and more efficient brand positioning is needed. Moreover, the importance of cluster is seen in expanding stays of tourist at the destinations, which is currently on average 3 days (domestic tourists) and 2 days (foreign tourists), [24, p. 50]. Also, in order to reduce the seasonality of visits, future products should be promoted to the elderly population too, boosting senior tourism, consequently reducing the seasonality of visits. Apart from core activities within the cluster, which involve close cooperation among stakeholders in order to create a diversified tourism offer that will satisfy both foreign and domestic demand, further support is essential to comply with the final demand. Core activities that create tourism product need suppliers and providers of necessary inputs (food, IT, construction, maintenance, promotion, local transportation, etc.). Also, close cooperation with supporting institutions is essential, such as educational institutions that will provide skilled labor force and business representatives. Also, government representatives and relevant ministries are important stakeholders as well and tourism organizations that will actively promote destinations through various channels. Finally, tourism products will be sold through tour operators, travel agents, and OTAs (online travel agency-booking.com, EXPEDIA, etc.), depending on the tourist's preference.

Porter's diamond of the tourism cluster – In the following paragraph, we will present Porter's diamond related to the tourism cluster combining Global Competitiveness Index and Travel and Tourism Competitiveness Index for 2019, both initiated by the World Economic Forum (WEF). The national business environment in Serbia for the tourism cluster has shortcomings, and needs further improvement.

Within factor conditions labor force made some improvements related to their skills. Regarding the fact that there is a lot of supporting educational institutions related to tourism, this progress is not unexpected. Also, there was some improvement in ICT readiness, which is important within these COVID conditions, where lockdowns and travel restrictions shifted destination promotion to more frequent usage of technology and digitalization such as QR codes, VR (virtual reality), AR (augmented reality), 360 videos, etc. However, there is an underdeveloped road, railroad, and port infrastructure in many parts of Serbia that may prevent arrivals of tourists and reduce the chances for future investments in tourism infrastructure, especially in spas. Also, the number of 'low carriers' should be increased as well. Even though Serbia is rich in landscape and natural resources, the percentage of

Figure 5: Porter's diamond of tourism cluster



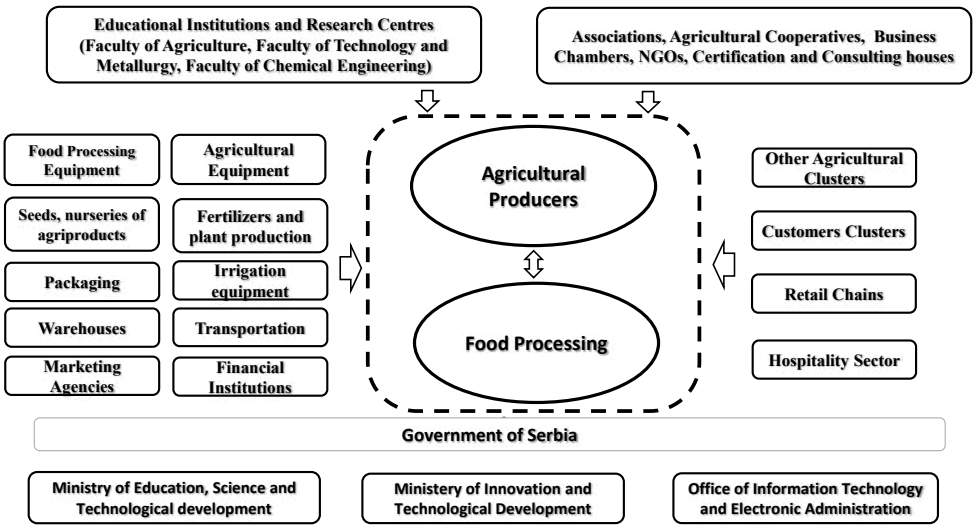
protected areas should be increased from the current 6% [42, p. 3]. Finally, there are restricted financial resources available to the companies operating within the tourism sector, bringing them to insolvency within these current pandemic conditions.

Regarding context for strategy and rivalry, there is improvement in pay and productivity, and competition induced by a growing number of international chain hotels (Hyatt, Crowne Plaza, Holiday Inn, Radisson Blu, Falkensteiner, etc.). However, reforms need improvement, especially regarding taxation and property rights. Within Travel and Tourism Competitiveness Report, according to the indicator Tourism and Travel government expenditure, Serbia is ranked in 137th place out of 140 countries, indicating the problem related to small and insufficient investments [42, p. 3]. Within supporting industries, there has been progress related to additional services that are available to the final consumer when staying at the destination. However, there is a necessity for creating one integrated digital ecosystem that includes a unified digital platform among all relevant stakeholders within the tourism industry (from National Tourism Organization to accommodation facilities, air carriers, tour operators, etc.). Generally, trends are changing regarding tourists' expectations related to the destination. There is a shift from 'seeing' to 'experiencing', that involves personalization within marketing trends. There are some changes in preferences of tourists within COVID-19 conditions that relate to individual traveling in comparison to the group one. Also, there is a focus on local and regional tourism offer compared to foreign destinations and more frequent usage of technology and digitalization such as QR codes, VR (virtual reality), AR (augmented reality). The emphasis is on health and hygienic safety as well and on outdoor activities. Further, demand is still very seasonal, and the stays are very short at the destination. Foreign tourists still prefer city breaks in comparison to other tourism products of Serbia, which indicates that further efforts have to be made related to country brand strategy on the international market, primarily through digital channels.

Agribusiness and organic food cluster in Serbia

Food security is a crucial issue globally, and it is especially important for developing low-income and middle-income countries. This was even more emphasized in the current circumstance when the ongoing pandemic negatively influenced the global supply chains. The COVID-19 pandemic especially hit MSMEs on a worldwide scale, but in Serbia as well. The latter also relates to food security, bearing in mind that agricultural production and processing are usually coming from small and medium-sized firms, and in most cases, they are seen as a primary source of survival in the rural areas of the developing countries, including Serbia. Our primary agricultural production is susceptible to commodity movements globally, where all the adverse spillover effects are immediately felt.

Figure 6: Agribusiness and organic food cluster map



The agricultural value chain remains the priority sector for Serbia. It is widely recognized that agriculture continues to hold the key for broad-based economic growth, poverty reduction, and food security in Serbia and other transition economies.

Agribusiness and organic food cluster map of Serbia has 5.06 million hectares of agricultural land, of which 71% is used intensively (in the form of arable land, orchards, and vineyards), while 29% of agricultural land is natural grassland (meadows and pastures) [23, p. 12]. Due to the high share of arable land in the total agricultural land, Serbia can develop agribusiness. However, technological underdevelopment and low investment in agriculture are limiting factors for development.

Food products and processed products have a high share in exports. The main advantages of Serbian agriculture are natural resources and labor. However, the sector's development needs to be based on innovations, technology absorption, marketing activities, and brand development. Therefore, it is important to unite small agricultural producers in clusters because only by joint action micro, small and medium-sized enterprises can provide resources for investments in branding and innovation.

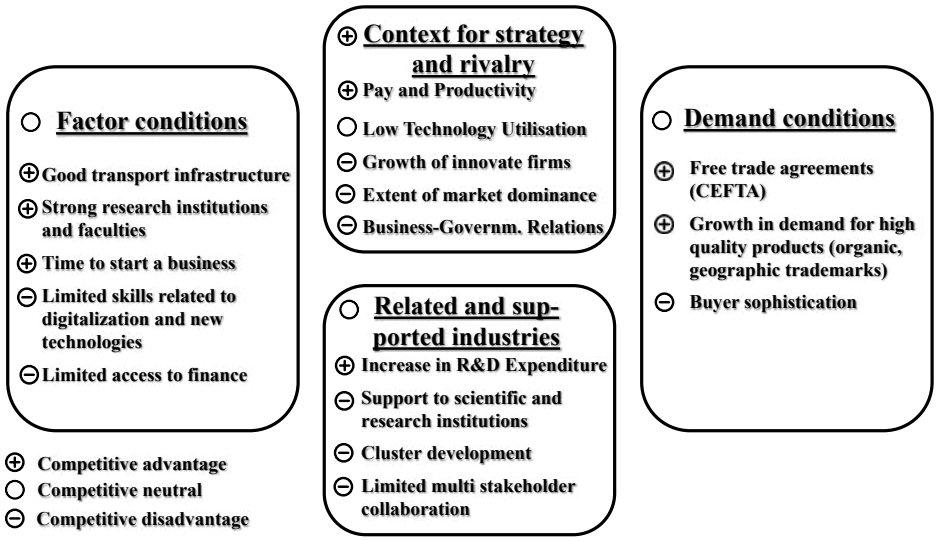
Porter's diamond of agribusiness and organic food – There is a significant number of agribusiness clusters in Serbia. However, they have not been successful in achieving benefits from cluster collaboration and a more substantial presence on foreign markets due to underdeveloped technologies and the inability to meet quality standards. Also, other reasons are inexperience and lack of financial resources, mistrust between cluster members, unsatisfactory cooperation with other clusters, and an underdeveloped business environment.

For the clusters to be successful, intensive cooperation between members, the concentration of many producers in a particular region, and strong partnership with educational, scientific research, and public institutions are needed [23, p. 42].

Within factor conditions, the quality of transportation infrastructure is satisfactory, although there are issues with underdeveloped road infrastructure in rural parts of Serbia. Also, the financial system represents a significant barrier for the agriculture cluster since there are low levels of investments in the sector, unsatisfactory financing of small and medium-sized enterprises, and unavailability of entrepreneurial capital. Chronic long-term underinvestment in agricultural markets and value chains has resulted in an agricultural industry that has been unable to play a role in transforming the Serbian economy, either by ensuring food security, creating jobs, or reducing poverty.

However, the Government is pursuing measures to support the sector through different granting schemes, including establishing a guarantee scheme to measure economic support for mitigating the consequences of the C-19 pandemic. Serbia has strong research institutions and faculties related to agriculture, but the wider workforce is still dealing with limited digitalization skills and new technologies.

Figure 7: Porter's diamond of agribusiness and organic food



Regarding strategy and rivalry, agriculture deals with low productivity because production is done traditionally and mainly not using innovative technologies. One of the reasons for the low productivity of Serbia concerning the region is precisely due to extremely unproductive agriculture. Upgrading the agricultural value chain includes introducing agricultural technology such as precision agriculture applications, digital advisory services, drip irrigation combined with soluble fertilizers, solar-powered pumps, soil and crop monitoring by humans or drones, and farm machinery guidance using positioning and mapping technology. By focusing on upgrading agricultural value chains, such as increasing yields through technology (precision farming, irrigation systems), productivity across the value chain can be improved.

In terms of agrotechnology and information and communication technologies, many promising startups in Serbia are on the frontline of agriculture development with a strong emphasis on using new technologies and digital solutions, which are of crucial importance for boosting agricultural productivity, which in turn could increase the competitiveness of the Serbian agricultural products. These companies are developing the newest technology and software solutions that are helping farmers to collect and analyze important data, which in turn supports them in better allocating available resources, reducing cost, and improving the management of agricultural holdings.

Although total employment in agriculture recorded high rates of decline, the share of agriculture in total employment in Serbia is still very high, among the highest in Europe, and amounts to over 20%. It can be explained by the high share of employees in seasonal and occasional jobs in agriculture, who are very sensitive to fluctuations in the labor market during the crisis. Bearing in mind that a significant proportion of these workers are not in the legal labor market, their rights are not guaranteed, which also calls for better regulation in this field.

There has been progress related to the increase in overall expenditure for research and development within supporting industries. However, the overall development of the agribusiness clusters is relatively low, with limited stakeholder collaboration. Further, in terms of demand conditions, bearing in mind that Serbia is a net exporter of agriculture goods, the existence of a significant number of trade agreements creates improved market conditions for Serbian products in the regional markets. However, this also creates considerable pressure for the domestic producers to increase productivity to boost the competitiveness of Serbian products and their inclusion in global supply chains. The latter is also related to the growing demand for high-quality products on both domestic and international markets. Also, there is a low sophistication of buyers on the domestic market, which indicates the importance of prices of products and services.

Conclusion

The conclusion of this paper is based on reviewing the current literature, together with analyzing Serbia's economy competitiveness by using the Country Competitiveness Index, as well as analyzing the obstacles and opportunities for three clusters' further development: tech, agribusiness and organic food, and tourism. Analyzing the current literature, we find consensus regarding the fact that the COVID-19 crisis differs from previous ones: it impacts both supply- and demand-side; declines world GDP to the extent which is comparable to the Great Depression of the 1930s and two world wars; disrupts global value chains; changes direction from global to regional cooperation; and forces changes in business models toward digitalization. We also emphasized that global governance institutions predict better prospects for global growth due to the beginning of two processes: vaccination and recovery of developed economies, supported by expansive macroeconomic policies. Central banks were first to act by loosening monetary policy, and the fiscal policy supported demand in the short-term while simultaneously raising public debt as one of the constraints for future development. In Serbia, the macroeconomic policy measures were properly and timely implemented; and to support the full recovery of the economy, in addition to measures related to public health and macroeconomic measures, it is necessary to strengthen the microeconomic determinants of competitiveness further. The fall of GDP in Serbia in 2020 (-1.1%) was one of the smallest in Europe. This

decline did not result from tradable sectors (agriculture, industry), but from the service sector (tourism, catering, transport, and a modest decline in construction). We analyzed the competitiveness of the Serbian economy, and we emphasized the importance of microeconomic determinants that represent a powerful tool in analyzing key segments for the economy's recovery, with a strong focus on three clusters' potential. We also pointed out that there is enough space for further research regarding other important clusters such as: energy, health and pharma, retail, fintech, and food processing. In this analysis, we stressed the tech cluster's role as a frontier that impacts multiple sectors of the economy. Even though the national business environment is vital for this cluster's development, there are still obstacles for boosting further growth and they refer to: the necessity to strengthen policies and actions toward brain retention, make local demand more sophisticated, increase tech cluster influence on new products and services development, and strengthening R&D activities as a step toward cluster's higher productivity. Analyzing the tourism cluster, we stressed the COVID-19 impact on disrupting this sector globally by almost halving the key indicators. The national business environment in Serbia for the tourism cluster has shortcomings related to: the necessity for improving infrastructure, low usage and utilization of new and emerging technologies in tourism offer, improving conditions for access to finance, and taxation and property rights. In order to improve, the tourism cluster should be strengthened and offer new experiences to the customer who changes their preferences during this crisis (focus on outdoor activities, smaller groups, digitalization such as QR codes, etc.). In this paper, we also focused on agribusiness and organic food cluster, to create a more digitalized value chain of food processing. Therefore, we underlined the importance of actions toward higher productivity in the value chain by the usage of new and emerging digital technologies and supporting digital literacy, which is still at a low level among the related fields. Considering all the above, we see the tech cluster as a frontier of the multiple parts of the economy's long-term competitiveness that has the strong potential to support other sectors of the economy toward knowledge-based development.

References

1. Alfani, G., & Murphy, T. E. (2017). Plague and lethal epidemics in the pre-industrial world. Published online by Cambridge University Press: 21 February 2017. Retrieved from https://www.cambridge.org/core/journals/journal-of-economic-history/article/plague-and-lethal-epidemics-in-the-preindustrial-world/1D2D564AD8560ABACAF9D81A65F27CED).
2. Baldwin, R. (2020). The greater trade collapse of 2020: Learnings from the 2008-09 great trade collapse. CEPR. Retrieved April 7, 2020 from https://voxeu.org/article/greater-trade-collapse-2020.
3. Baldwin, R. (2020). In Economics in the Time of COVID-19, edited by Richard Baldwin and Beatrice Weder di Mauro. London: CERP Press.
4. Baldwin, R., & Freeman, R. (2020). Supply chain contagion waves: Thinking ahead on manufacturing 'contagion and reinfection' from the COVID concussion. Retrieved April 01, 2020 from https://voxeu.org/article/covid-concussion-and-supply-chain-contagion-waves.
5. Bulow, J., Reinhart, C., Rogoff, K., & Trebesch, C. (2020). The debt pandemic. *Finance & Development*, 12-16.
6. Cirillo, P., & Taleb, N., N. (2020). Tail risk of contagious diseases. *Nature Physics, 16*(6), 606–613. Retrieved from https://doi.org/10.1038/s41567-020-0921-. https://www.nature.com/articles/s41567-020-0921-x.pdf.
7. Delgado, M., Ketels, C., Porter, M. E., & Stern, S. (2012). The determinants of national competitiveness (No. w18249). National Bureau of Economic Research.
8. Ferreira J., & Estevao, C. (2009). Regional competitiveness of a tourism cluster: A conceptual model proposal. *Encontros Científicos - Tourism & Management Studies,* 37-51.
9. Harari, Y. N. (2020). In the Battle Against Coronavirus, Humanity Lacks Leadership. *Time,* March 15, 2020. Retrieved from https://time.com/5803225/yuval-noah-harari-coronavirus-humanity-leadership/.
10. Harari, Y. N. (2020). The world after coronavirus. *Financial Times*, *20*(03), 2020.
11. Gopinath, G. (2021). Managing divergent recoveries. IMF. Retrieved April 6, 2021 from https://blogs.imf.org/2021/04/06/managing-divergent-recoveries/?utm_medium=email&utm_source=govdelivery.
12. IMF. (2021). World Economic Outlook.
13. Jordà, Ò., Singh, S. R., & Taylor, A. M. (2020). Longer-run economic consequences of pandemics. Federal Reserve Bank of San Francisco Working Paper 2020-09. Retrieved from https://doi.org/10.24148/wp2020-09.
14. Kerr, W. R., & Robert-Nicoud. F. (2020). Tech Clusters. HBS Working Paper 20-063. Harvard Business School.
15. Kerr, S. P., & Kerr, W. (2020). Immigrant entrepreneurship in America: Evidence from the survey of business owners 2007 & 2012. *Research Policy*, *49*(3), 103918.
16. Ketels, C., & Clinch, J.P. (2020). *Acting now while preparing for tomorrow: Competitiveness upgrading under the shadow of COVID-19*. ISC Working Paper, Institute for Strategy and Competitiveness, Harvard Business School. Retrieved April 29, 2020 from https://www.isc.hbs.edu/Documents/pdf/Preparing%20for%20Tomorrow_Country%20Level_ISC%20WP%20version_04-29-20.pdf.

17. Kissinger, H. (2020). The coronavirus pandemic will forever alter the world order. *Wall Street Journal*, *3*(4), 2020. Retrieved from https://www.wsj.com/articles/the-coronavirus-pandemic-will-forever-alter-the-world-order-11585953005.
18. Kovačević, D. (2020). TV interview on National Broadcasting Service – RTS, April 4, 2020: https://youtu.be/k-vP3HMpAr0
19. Kovačević, D. (2020a). *Ja to tamo pevam.* Beograd: Laguna.
20. Kukić, Z., Kuzman, T., & Kovač, A. (2019). Start-up scanner: How are start-ups doing in Serbia. Retrieved from https://www.dsi.rs/wp-content/uploads/2020/01/Startup-skener_2019_ENG.pdf.
21. Marshall, A. (1890). *Principles of Economics*. London: Macmillan.
22. Matijević, M., & Šolaja, M. (2020). ICT in Serbia at a glance. Vojvodina ICT Cluster. Retrieved from https://www.ict-cs.org/fileadmin/user_upload/ICT-in-Serbia-At-a-Glance-2020.pdf
23. Ministry of Agriculture, Forestry and Water Management (2014). Retrieved from http://www.minpolj.gov.rs/download/strategija-poljoprivrede-i-ruralnog-razvoja-republike-srbije-
24. Ministry of Trade, Tourism and Telecommunications of Serbia (2021). Strategic marketing plan till 2025. Retrieved from https://mtt.gov.rs/strategije1/.
25. Ministry of Trade, Tourism and Telecommunications of Serbia (2016). Tourism development strategy of the Republic of Serbia 2016-2025.
26. National Bank of Serbia. (2020). Inflation Report - November 2020. Retrieved from https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/ioi/izvestaji/inflation_report_11_2020.pdf.
27. National Bank of Serbia. (2021). Inflation Report - February 2021. Retrieved from https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/ioi/izvestaji/inflation_report_02_2021.pdf.
28. Porter, M. E. (1998). *Clusters and the new economics of competition.* Boston: Harvard Business Review.
29. Porter, M. E. (2008). Clusters and competition: New agenda for companies, governments, and institutions. In M.E. Porter (Ed.), *On Competition* (pp. 213-304). MA: Harvard Business Press.
30. Porter, M. E. (2008a). The competitive advantage of nations. In M.E. Porter (Ed.), *On Competition* (pp. 171-211). MA: Harvard Business Press.
31. Porter, M. E., Delgado, M., Ketels, C., & Stern, S. (2008b). Moving to a new global competitiveness index. In M.E. Porter & K. Schwab (Eds.), *The Global Competitiveness Report 2008-2009* (pp. 43-63). Geneva: World Economic Forum.
32. Rolling Stones. (2020). Living in a ghost town. Premiered April 23, 2020: https://www.youtube.com/watch?v=ctF5aMV05kM.
33. Savić, N., Lazarević, J., Kukić, Z., & Marinković, E. (2019). Digital transformation: Challenges for companies in Serbia. Retrieved from https://scindeks-clanci.ceon.rs/data/pdf/0353-443X/2019/0353-443X1902101S.pdf.
34. Savić, N. (2012). Comparative analysis based on new competitiveness index. *Panoeconomicus*, *59*(1), 105-115.
35. Savić, N., Džunić, M., Brkić, I., Subotić, J., & Djenić, M. (2011). The role of clusters in improvement of regional cooperation and development. In *Recent Economic Crisis and Future Development Tendencies: Proceedings of the 7th International Conference of Association of Economic Universities of South and Eastern Europe and the Black Sea Region (ASECU). Rostov-on-Don, Russia.*
36. Statistical Office of the Republic of Serbia (2020). Tourist turnover. Retrieved from https://www.stat.gov.rs/sr-latn/oblasti/ugostiteljstvo-i-turizam/.
37. Tabaković, J. (2021). Speech delivered at Money Fair 21 Conference, March 2021: https://www.nbs.rs/sr/scripts/showcontent/index.html?id=16703.
38. The World Bank. 2009. Doing Business 2009. Washington, DC: The World Bank.
39. The World Bank. 2010. Doing Business 2011. Washington, DC: The World Bank.
40. The World Economic Forum. 2008. The global competitiveness report 2008-2009. Geneva.
41. The World Economic Forum. 2011. The global competitiveness report 2011-2012. Geneva.
42. The World Economic Forum. 2019. The travel and tourism competitiveness report. Retrieved from https://reports.weforum.org/travel-and-tourism-competitiveness-report-2019/country-profiles/#economy=SRB.
43. UNWTO Report (2021). COVID 19 and tourism. Retrieved from https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2020-12/2020_Year_in_Review_0.pdf.
44. Vox, B. (2020). Let your love be known. Premiered on March 17, 2020 by U2: https://youtu.be/ZRjaUjJb3Z8.
45. World Travel Tourism Council Report (2019). Economic Impact Report. Retrieved from https://wttc.org/Research/Economic-Impact.

Nebojša Savić

PhD, teaches Economics and Competitiveness and is a MOC affiliate faculty member of the Harvard Business School Institute for Strategy and Competitiveness. He is President of the Council of the Governor of the National Bank of Serbia. He has more than thirty years of experience in company restructuring and institution building toward a market economy. Dr. Savić was a member of top expert teams advising on economic reform policies in Serbia. He was a member of the Serbian National Competitiveness Council (2008-2012) and previously served as President of the Yugoslav Economists Association and Editor-in-Chief of Economic Barometer, leading monthly business cycle publication on Yugoslav economy. He was a member of the Board of Directors of Alpha Bank Serbia (2006-2012) and President of the Board of Directors of Komercijalna banka, Serbia (2003-2005). He holds a PhD and MA degree from the Faculty of Economics, University of Belgrade. Dr. Savić has authored seven books (including Savić, N. and Pitić, G., Eurotransition – Challenges and Opportunities, 1999) and more than fifty articles.

Jelisaveta Lazarević

is Teaching Assistant at FEFA, Belgrade, Serbia, teaching courses in Competitiveness and Capital Market since 2017. She was part of the team which worked on the book chapter titled "Hidden Champions of Serbia", a part of the book "Hidden Champions in Dynamically Changing Societies – Critical Success Factors for Market Leadership". The book chapter was submitted for publishing on August 28, 2020, and is planned to be published by Springer in 2021. As a Teaching Assistant for Strategy and Microeconomics of Competitiveness, she had the opportunity to participate in the 2020 Virtual MOC Faculty Workshop at the Institute for Strategy and Competitiveness – Harvard Business School. Jelisaveta is currently Head of Corporate Partnerships at AFA. She participated in researches as Research Assistant at the Center for Advanced Economic Studies (CEVES) from 2016 to 2018. She worked on a World Bank project for the needs of the Serbian Ministry of Economy aimed at raising the competitiveness of the economy, internationalizing the companies' operations, and increasing employment. Ms. Lazarević obtained her bachelor's degree and master's degree from FEFA, where she is now PhD candidate

Ana Vjetrov

is Assistant Professor at FEFA Faculty in Belgrade, teaching courses in Business Banking (from 2009 to 2017), Investments Management Modules since 2009, and Corporate Finance since 2014. As of February 2016, Ms. Vjetrov has been employed as Marketing and Sales Manager at the German National Tourist Board. Ms. Vjetrov holds a bachelor's degree in English Language and Literature from the Faculty of Philology, University of Belgrade. She obtained a bachelor's degree in Applied Economics at FEFA Faculty, a master's degree in Finance and Banking, FEFA Faculty, and holds a PhD in Finance and Banking, Faculty of Business, Singidunum University Belgrade. During her career, she was involved in various projects. She was a member of the LSE (London School of Economics) research team working on the project Regional Support to Inclusive Education in South East Europe focusing on VET schools. She participated in various international and local conferences and was co-author of various papers and studies in the fields of banking, corporate finance, investment management, microeconomics, inclusive economic growth and sustainable tourism management.

Ema Marinković

is Teaching Assistant for Microeconomics, Monetary Economics and International Economics courses at FEFA, Belgrade. Ema is also engaged as a Research Analyst and Technical Drafter at DAI, where she is working under the EU Business Development Unit on supporting the bid management process of a selected number of tender opportunities. She attended Saint Clair High School in the United States of America, where she was one of the top students in her class. She graduated from FEFA in 2007, obtaining a bachelor's degree in Economics. Ema holds a master's degree in Finance and Banking from the University of Sheffield. In February 2013, she started her PhD studies in finance at Singidunum University. She was engaged as a consultant on several projects. Also, Ema authored and co-authored a certain number of academic papers and participated in several international conferences.

REVIEW PAPER
UDK: 336.225.3(497.11)
347.77/.78(497.11)
005.336.4
DOI: 10.5937/EKOPRE2103261K
Date of Receipt: December 28, 2020

Svetislav V. Kostić
University of Belgrade
Faculty of Law
Department of Law and Economics

THE SERBIAN TAX POLICY FOR A NEW DIGITAL AGE: SOME PROPOSALS WHILE WE WAIT FOR A GENARAL TAX REFORM

Srpska poreska politika za novo digitalno doba – predlozi dok čekamo veliku poresku reformu

Abstract

This paper addresses the topic of how to help Serbian employers fight for our domestic talent with foreign competition, as due to modern technologies, in the better part of our service sector the Serbian workforce has entered the global market. The author adds to this concern the need to transform the Serbian economy from a service provision one to a model centred around high value creation of domestically owned IP. The Serbian creative industry or, to be more precise, its IT sector, is used as the primary field of research, and its own and fiscal policy makers attempts to align the aforementioned two interests are outlined starting from 2018. Based on the developments so far the author proposes a set of tax measures aimed at facilitating the transition of the current Serbian economy into a 4.0 format, wherein the fight to maintain Serbian talent in Serbia and within Serbian employers plays a crucial role.

Keywords: *IT, research and development, human capital, intellectual property, tax*

Sažetak

Ovaj rad se bavi pitanjem na koji način pomoći srpskim poslodavcima u borbi za našu domaću radnu snagu sa stranom konkurencijom, imajući u vidu to da je, usled primene modernih tehnologija, ona u većem delu našeg uslužnog sektora privrede postala deo globalnog tržišta rada. Autor dodaje navedenom izazovu i potrebu da se srpska privreda transformiše iz modela koji je prevashodno sadržan u pružanju usluga, na onaj zasnovan na stvaranju veće vrednosti kroz razvoj intelektualne svojine u domaćem vlasništvu. Srpska kreativna industrija ili, preciznije, njen IT sektor, uzeti su kao primarno polje istraživanja, gde su napori da se usklade prethodno navedena dva interesa uočeni još od 2018. godine. Na osnovu postojećeg stanja autor predlaže set poreskih mera koje imaju za cilj da pomognu prelazak sadašnje srpske privrede na model 4.0, pri čemu borba da se zadrži srpski talenat u Srbiji i to kod srpskih poslodavaca igra ključnu ulogu.

Ključne reči: *IT, istraživanje i razvoj, ljudski kapital, intelektualna svojina, porez*

Introduction – the growing pains of the Serbian economy and the emergence of a new crucial issue: the lack of human capital

The Serbian tax policy until 2018 rested on the premise that it was desirable to reduce the employers' labour costs by virtue of tax incentives, where the intention of the legislator was, almost without exception, to have the entire amount of the incentive benefit the employer and not affect the amount of net earnings of the employees [13]. Namely, comparative research shows that employees bear between 66% [14, pp. 364-367] and 80% of the costs of taxes and social security contributions on their wages [11]. Thus, increasing taxes and mandatory social security contributions will inevitably lead to a drop in the net income of employees. On the other hand, the lowering of the fiscal burden on employment income does not have to have the opposite effect as the employer may be in the position to keep all of the benefits of such a measure, without passing even a portion of them to the employees, particularly if legal provisions are tailored in such a way as to ensure the described result.

Such a conclusion can be derived by looking at the explanatory memoranda for the proposed measures that led to the decrease of the fiscal burden on wages in Serbia.

However, in one particular sector of the Serbian economy, namely its creative sector or, to be more precise, its IT sector, a problem emerged that could not be resolved by a simple reduction of the labour costs for the employer. Namely, people employed in the creative sector of the economy expect to be highly paid for their work, particularly considering that there is a high global demand for them, that is, that these persons can easily and quickly find employment and income anywhere in the world. Unlike the generally accepted notion of our legislators that the key issue in Serbia is unemployment and the lack of investment, and that these two need to be resolved first, while employee wage levels can be taken care of at a later stage, the Serbian IT sector was faced with the problem of securing the workforce it needs to survive and continue to grow. The above problem was further augmented by the fact that the Serbian IT sector competed for the *Serbian workforce* with competitors from all over the world, where this was not linked only to migratory flows (people leaving the country), but increasingly with foreign competitors managing to find their place in the Serbian labour market itself without establishing any business presence in its territory (the so called *remote work* which will be discussed in more detail later).

Explanation for the amendments to the Law on Personal Income Tax		
2014	**2015**	**2017**
"The reasons for enacting this law are the need to create the setting for investment inflow, employment, and economic growth, and provide more favourable conditions for doing business by reducing the burden on businesses, as a necessary part of implementing a comprehensive reform of the business environment. In this regard, a new tax relief for hiring staff is aimed at eliminating the grey zone in employment and transferring it to the legal sphere. This measure is a part of the ongoing process of encouraging lawful employment and, thus, improving the status of unemployed persons and those who work but are not registered for mandatory social insurance. This measure is a continuation of the business environment improvement measures aimed at reducing the risk and cost of doing business in the Republic of Serbia."[5, p. 3]	"The reasons for enacting this law are the need to create the setting for investment inflow, employment, and economic growth, and provide more favourable conditions for doing business by reducing the burden on businesses, as a necessary part of implementing a comprehensive reform of the business environment. In this regard, a new tax relief for hiring staff is aimed at eliminating the grey zone in employment and transferring it to the legal sphere. This measure is part of the ongoing process of encouraging lawful employment and, thus, improving the status of unemployed persons and those who work but are not registered for mandatory social insurance. This measure is a continuation of the business environment improvement measures aimed at reducing the risk and cost of doing business in the Republic of Serbia." [6, p. 16]	"The reasons for enacting this law are the need to create the setting for investment inflow, employment, and economic growth, and provide more favourable conditions for doing business by reducing the burden on businesses, as a necessary part of implementing a comprehensive reform of the business environment. In this regard, the extension of the present tax relief for hiring new staff that expires on 31 December 2017 is proposed together with a new tax relief for youth employment through starting own business … These measures are part of the ongoing process of encouraging lawful employment and, thus, improving the status of unemployed persons and those who work but are not registered for mandatory social insurance. The aim of the new proposed measure is to boost entrepreneurship and remove one of the key obstacles to starting and running a business through tax exemption … This measure is a continuation of the business environment improvement measures aimed at reducing the risk and cost of doing business in the Republic of Serbia." [7, p. 16]

That is why the Serbian IT sector had to find a solution for providing their staff with the highest possible wages under the most favourable conditions for employers. In other words, in the case of the IT sector, the primary issue that emerged was ensuring adequate earnings for the workforce, while the issue of employer s' costs was secondary (but not irrelevant). After initially being most prevalent in the Serbian IT sector, it should be noted that the problem described above is nowadays also increasingly present in an ever growing number of segments of the Serbian economy. In other words, in addition to investments and reducing unemployment, the Serbian economy, and thus Serbian policy makers have to add to the equation a new element – how to ensure that the Serbian workforce is compensated in the amount which will at the very least slow down the outflow of human capital from the country, or to be more precise, from the Serbian employers. To be cynical to a point by caring almost exclusively about the interests of the Serbian *employers* our policy (although the blame is not exclusive) has resulted in the situation where they are losing their capability to maintain their status of *employers* and they are increasingly in the position that they have no one to *employ*.

From bogus self-employment to realizing the need for facilitating the transition to a new business model

Until 2019 the issue of achieving the optimal remuneration for the workforce in Serbia was resolved by relying on something that could be called an abuse of the presumptive taxation of personal income by concealing the relationship that is substantially one of employment by service contracts with seemingly independent service providers. In other words, employers did not enter into employment contracts with their workforce, although their engagement had all the characteristics of employment (so called *bogus self-employment*), but the workforce appeared in the role of independent sole proprietors who provided services to their employers on the basis of service contracts, where tax liabilities and, more importantly, liabilities for mandatory social insurance contributions for the fees received were assessed on the presumptive base in accordance with the legislation governing taxation of income from self-employment [13].

The opportunity to resolve the above described problem of the abuse of presumptive taxation by the amendments to taxation laws in late 2018 was passed, but

Explanation for the amendments to the Law on Mandatory Social Insurance Contributions		
2014	**2015**	**2017**
"In addition, the reasons for enacting this law are the need to create the setting for investment inflow, employment, and economic growth, and provide more favourable conditions for doing business by reducing the burden on businesses, as a necessary part of implementing a comprehensive reform of the business environment. In this regard, the proposed relief for hiring new staff is aimed at eliminating the grey zone of employment and transferring it to the legal sphere. This measure encourages lawful employment and, thus, improvement of the status of unemployed persons and those who work but are not registered for mandatory social insurance. This measure is one of the business environment improvement measures aimed at reducing the risk and cost of doing business in the Republic of Serbia." [8, p. 3]	"The reasons for enacting this law are the need to create the setting for investment inflow, employment, and economic growth, and provide more favourable conditions for doing business by reducing the burden on businesses, as a necessary part of implementing a comprehensive reform of the business environment. In this regard, the proposed new relief for hiring staff is aimed at eliminating the grey zone of employment and transferring it to the legal sphere. This measure is a part of the ongoing process of encouraging lawful employment and, thus, improving the status of unemployed persons and those who work but are not registered for mandatory social insurance. This measure is a continuation of the business environment improvement measures aimed at reducing the risk and cost of doing business in the Republic of Serbia." [9, p. 4]	"The reasons for enacting this law are the need to create the setting for investment inflow, employment, and economic growth, and provide more favourable conditions for doing business by reducing the burden on businesses, as a necessary part of implementing a comprehensive reform of the business environment. In this regard, the extension of the present relief for hiring new staff that expires on 31 December 2017 is proposed together with a new relief for youth employment when they start their own business by exempting them from payment of social insurance contributions (and taxes) in the first years of doing business (in the year of establishing the business and in the following year). These measures are a part of the ongoing process of encouraging lawful employment and, thus, improving the status of unemployed persons and those who work but are not registered for mandatory social insurance. The aim of the new proposed measure is to boost entrepreneurship and remove one of the key obstacles to starting and running a business through exemption from contributions. This measure would result in reducing the number of young people working in the grey economy, boost the young people's entrepreneurial spirit and participation in the economy without an actual burden on the budget." [10, p. 6]

two very important measures were introduced into our tax system at the time. These are the provisions of Article 22d of the Law on Corporate Income Tax, which doubled the amount of deductible research and development costs [1], and Article 25b of the same Law, which provides for the effective corporate income tax rate of 3% (instead of the general rate of 15%) in the case of the income derived from intellectual property created in Serbia [2].

The above-mentioned incentives provided in the Law on Corporate Income Tax aimed to ensure the most favourable tax burden on income generated by the Serbian creative industry, but not only of this sector of the Serbian economy, but also other businesses that create significant added value (by newly created intellectual property) and direct them towards research and development activities.

However, immediately upon their introduction, it became clear that the majority of the Serbian IT sector, as well as the majority of our economy as a whole, is primarily involved in the global flows as a sub-contractor, that is, its added value is based on the services rendered to foreign principals, and not on the newly created intellectual property. This business model, the service provider or sub-contractor model, generates far less added value, and at the same time is fundamentally conditioned upon labour costs, which are the key component of its profit. That is why the incentives introduced in the area of corporate income tax in late 2018 had a limited effect, as their full utilization requires a change of the business model of a large number of Serbian businesses.

In 2019, the problem of abuse of presumptive taxation was mainly resolved by the independence test accompanied by a three-year transitional solution [18], the basic aim of which was to bring in the workforce from hidden to formal employment, while preserving both the total employer's cost and net earnings of the newly employed person in the amount from the previous regime, through to and inclusive of 2022. These measures were accompanied by general amnesty under which it is forbidden to question sole traders' independence and the nature of their income in the period prior to introduction of the independence test.

During the debate on the amendments to the tax legislation in late 2019, another very significant problem was identified. Namely, there was a situation gaining momentum, where persons living and working in Serbia were hired by foreign principals to provide certain services, and for a certain number of them, the relationship with foreign principals had all the features of employment (remote work). These persons, in part, carried out their business activity as registered sole traders, so in the case of those who failed or believed they failed the independence test, the newly adopted legislation meant a significantly higher tax burden on income generated from dependent relationships. However, it is their very case that shows that adopting the independence test was fully justified.

Namely, without the independence test, i.e. allowing the abuse of presumptive taxation in the case of a relationship with foreign principals, Serbia would actually subsidize foreign employers, enabling them to be more competitive in the Serbian market than local employers who chose to enter into a formal employment contract with their employees, while such foreign employers in the Serbian territory would not have any presence. In other words, such a form of a working engagement is a direct threat to the local economy – domestic employers, all at the Serbian taxpayers' cost including within their number, of course, local businesses. Therefore, the Serbian economy is funding its own harm. Moreover, by allowing remote work, where the employee, as a rule, relies on his/her own equipment and acquired knowledge and where the opportunity for further development and acquiring new skills is very much limited due to the manner in which the work is performed, on a long term basis Serbia is losing out not only on new technology and investment, but also on the competitiveness of its workforce.

The largest number of persons who failed or believed that they failed the test of independence in the relationship with foreign employers, and did not want to or could not find jobs with Serbian employers, established single member limited liability companies in which they were employed, usually as the only employee, to continue doing business with foreign principals, and, at the same time, benefit from the introduced transitional regime.

Although the introduction of the independence test was deemed by many in the Serbian public discourse as the undertaker of the Serbian IT sector, research conducted by this author shows that the number of terminated sole

proprietorships under relevant IT sector activity codes almost completely coincided with the number of the newly employed in this very sector.

Furthermore, in 2020, computer programming, under the conditions of COVID-19 pandemic, still boasts an 8.5% growth rate. In comparison with 2019, when the export of EUR 506,252,813 was recorded, in 2020 the value of export in computer programming amounted to EUR 549,269,867 (53.6% of the total IT export), while in 2020 the entire Serbian IT sector had the total export growth of 12%.

On the other hand, the transition regime introduced together with the independence test in essence enabled a very smooth transition of a large number of people from bogus self-employment into employment and indeed does leave us with the question what to do once it expires on 31 December 2022.

COVID-19 and the freelancing problem

Most recently, in 2021 the problem of so-called freelancers appeared in Serbia. These are persons who entered into relationship with foreign principals without any registration whatsoever (registered as e.g. sole proprietors) or payment of any taxes in Serbia where the issue of damage to the Serbian tax revenue, as well as the Serbian local economy, i.e. employers, appeared on a much broader scale than with the independence test. The course of events relating to taxation of freelancers, the issue not at all specific for Serbia (e.g. in March 2021 Pakistani tax administration discovered 75,000 people generating almost EUR 350 million only through the Payoneer platform, without reporting any taxable income from abroad [12], has shown that the awareness of tax duty, and in particular the awareness of the need to pay contributions for social security is on an exceptionally low level, not only in the freelancer community, but in much of the Serbian society that showed great understanding for their position. Contrary to the independence test introduction, where the opposition was related to social media and mass media, taxation of freelancers resulted in more serious protests in our streets.

We are in Serbia now realizing that our new digital economy has not only enabled enterprises to generate profits in market jurisdictions without having any physical presence in them. Today they are capable of creating and providing their products/services without having a permanent place of business within the states where these products/services have been created or maintained.

In the case of foreign remote workers who are engaged outside of a formalistic employment relationship, the enterprise will not have any administrative obligations to the state of the worker to withhold and pay individual income taxes and perhaps even more importantly mandatory social security contributions in respect of the workers income. The worker, who can easily pose as an unregistered freelancer, is, in theory, expected to meet his or her own tax and social security contributions liabilities. The enterprise may easily be tempted to offer to the worker as compensation an amount which would not be acceptable or competitive in case taxes and social security contributions will be duly paid, but which is agreed upon by the worker who is ready not to report his or her income, wherein some payment platforms may, perhaps unwillingly, aid in such tax avoidance being undetected by his or her tax authorities. Thus, not only are the cost of the employment relationship avoided in purely labour law terms (sick leave, various compensations, bonuses, responsibilities in case of termination of the employment), but the model has the potential to enable a significant cost reduction at the expense of individual income taxes and mandatory social security contributions revenues of the work state [3, p. 81], [20, pp. 10-11].

The revenues from individual income taxes and mandatory social security contributions are not the only ones threatened. The described digital economy model may easily endanger the fiscal revenues collected from domestic enterprises. Namely, domestic enterprises cannot avoid paying or, to be more precise, withholding individual income taxes and mandatory social security contributions from their local workforce compensations. If they are to compete for local talent with foreign employers who are able to provide more competitive remunerations, wherein this competitiveness has been enabled by virtue of essentially tax avoidance, then their development and even survivability may be questioned as they may not be able to find the employees they need. This conclusion may

hold true even in countries which have an abundance of young workforce, as a rule developing countries, due to the fact that the digital economy will target those who possess adequate education or skills of which there is always a deficit. In other words, allowing remote work in the state of work may provide short-term benefits in terms of higher income of some individuals (at the cost of avoiding local taxes and mandatory social security contributions), but may threaten the development of the local digital economy as independent freelancers will never arise to this level [21].

The argument in favour of remote work may be linked to the prevention of the brain drain, a problem which is plaguing not only Serbia, but an increasing number of countries worldwide [14, pp. 364-367]. Namely, finding work with foreign employer on-line enables individuals to remain in their native states, enjoy a more affluent life style in them for the same amount of money as compared to the one they would have had they emigrated. However, this is done at the cost to the development potential of domestic companies and, in case of the tax avoidance element in the equation, by the foreign employer being effectively subsidized by domestic taxpayers who are not in the position to avoid their obligations. Thus we can conclude that this stemming of the brain drain tide is essentially paid for locally with costs, potentially, particularly in the long term, outweighing the benefits.

Determining the principle goals

The global COVID-19 pandemic started a bit before the introduction of the independence test in the Serbian legislation and it halted normal economic activities. Although it slowed down development of the Serbian economy, it nevertheless gave us precious time needed to get a thorough insight into the steps that will, on a mid-term basis, provide for continuation and possible acceleration of its growth. As we have seen from the previous historic review it was during the COVID-19 pandemic that our society came to be aware of the remote work and freelancing problem. Now we should attempt to set the framework in which future taxation measures should move in order to achieve the best possible results for both the economy and society as a whole, with the least possible cost for the Serbian budget.

a) *It is necessary to transition from the predominantly service-based business model to the generation of original valuable intellectual property* [4].

This transition is needed, not only because it provides for much higher income for the businesses and their employees, but consequently for the public revenue of the Republic of Serbia, the same public revenue that will suffer increased pressure due to extraordinary loans taken during the COVID-19 pandemic, i.e. due to the need to return our public finances into the pre-pandemic framework. In other words, the change of business model is aimed at the elevation of the taxable base and at ensuring a future sustainable growth of Serbian public revenues.

Nevertheless, the described transition is, to a great extent, also a prerequisite for the survival of the Serbian economy as it is. Namely, as it has already been said, the business model of service providers or subcontractors mainly depends on the amount of cost for the workforce. The income of the Serbian workforce in the area of IT, but also in an increasing number of sectors, has long exceeded the amounts that may make them competitive in comparison to e.g. Ukrainian, Philippine, Indian or IT economies of some African countries which are increasingly rising in relevance. To put it simply, the business model based on cheap workforce is either no longer possible in Serbia or will not be possible very soon, even if the state renounces all of its revenue. In case the Serbian employers start reducing salaries of their staff, this will result in accelerated emigration of this workforce, while if they fail to reduce their labour cost driven prices, they will no longer be able to find clients in the increasingly competitive global market.

b) *It is necessary to enable the Serbian economy to generate new jobs that will be offered, under competitive terms, to the local workforce. At the same time, generating new jobs is the only way to preserve the current volume of the workforce in the Serbian economy.*

Having in mind the pressure exerted on the cost of labour, the Serbian economy can generate new jobs only in the segment that is not so dependent on the cost of labour, namely in the business model crucially linked to research and development, i.e. activities leading to the production of new, valuable intellectual property. If the Serbian economy fails to generate new jobs, and even more importantly recruit new staff successfully, this will result in stagnation of the current forms of business and gradual loss of what has already been achieved.

c) *It is necessary to help the Serbian economy to wrestle with the competition of foreign employers, be that those who attract our workforce to emigrate or those hiring them directly from abroad as freelancers, triggering thus a series of adverse consequences that affect both the Serbian economy and Serbian society as a whole.*

In order to reduce the migratory trends, we need several more years of significant economic growth to provide for not only the income competitive to what one can make in other countries, but also overall more attractive social environment that also is a factor in the workforce decisions to emigrate. The increase in net salaries of employees in the Serbian economy will make the freelance arrangements with our tax residents unprofitable either for themselves (remuneration will be too low), or for their principals (due to demand for excessively higher pay), which will eventually reduce the pressure that we currently have to come in Serbia. Images of tax payers' bursts of dissatisfaction, unjustified to a great degree, seen during the protests of freelancers indicate the need to introduce certain measures of primarily psychological nature, whereby our most promising workforce, without which there will be no economic growth or survival of our economy in the long term, could be convinced that Serbia is a country of the future.

All three items mentioned above require well considered mid-term plan for a period of at least 5 years. The Serbian economy has to initiate its next transformation in the manner that will enable at least mid-term planning, agreement with decision makers on the key elements of this transformation, all of this with increasing level of social consensus about the agreed terms and direction of the road ahead.

From the viewpoint of our region, Serbia has a chance to take the champion's role in the 4.0 economy. All countries in our neighbourhood still try to maintain their market positions on the basis of the cheap workforce model (e.g. Bulgaria). Besides, some of them, due to political pressure, very serious general social circumstances or misunderstanding of true challenges of some forms of business, even resort to support of the freelance models of domestic workforce engagement with foreign principals (Ukraine, Macedonia), although these business models prevent the development of domestic economy since they deprive it of the acutely needed workforce, i.e. prevent its conglomeration and exploitation of its overall creative potential. Conversely, Croatia, supported by the EU funds, goes in the opposite direction and recognizes the importance of research and development, i.e. the change of the business model to provide for the future of its IT sector and development of its economy in general.

A plea for short-term solutions

Partial or short-term measures are always less attractive, at least from a theoretical perspective, than broad reform sweeps resulting in fundamental overhauls of tax legislation, overhauls which should at the very least aim to ensure a neutral and fair tax system. However, when debating tax policy one must take into consideration the reality of the world we live in. When it comes to Serbia, a general reform of the Serbian system of direct taxation (our corporate income tax, personal income tax and most importantly our mandatory social security insurance and corresponding contributions) would require under the most optimistic scenarios 3 years in the minimum. Namely, such a step warrants not only in-depth research and debate, but also necessitates that we wait for the transformation of the Serbian Tax Administration to take place, as this crucial element of our civil service, an element without which no tax reform can hope to be successful, is not in a position to withstand the pressures of such a tectonic change in our system that would have to result from the unavoidable abandonment of the cedular system of personal income

taxation. On the other hand, the Serbian economy cannot wait another 3 years and we need to use the respite provided to us by the COVID-19 epidemic to introduce measures which will ensure that we have a vibrant economy at the time when our system is ready to endure a fundamental tax reform. As a result, while the debate on the general outline of our future tax reform should start now, we must simultaneously introduce measures which will attempt to *buy* us the time we need.

The proposals we present in the following part of this paper have been designed to provide for the successful transformation and, thus, the future of the Serbian economy.

a) *Incentives for investment in R&D at the level of human capital*

As we have stated previously in this article, a large number of Serbian companies have found their place in the global economy as service providers on the basis of the low costs of labour and have had so far little incentive to initiate the development of their own products, due to a high cost of research and development. Since we would like to motivate companies to change their business model towards activities with higher added value, it is necessary to introduce an earmarked incentive for activities that we want to see expand, primarily research and development. The objective of this measure is to motivate companies to pursue activities that generate higher income, in order to increase the profits, whereby GDP, export and, eventually tax revenue, would also be increased.

Thus we propose a reduction (through relief of the duty of the employer to pay assessed and withheld taxes and contributions) of the tax on salaries and contributions for mandatory social security insurance in the amount of e.g. 70% for employees working on research and development (R&D) projects.

The mechanisms of implementation, monitoring and control of such an incentive are already in place, since this is a combination of two already existing incentives: for qualified new employees under the transitional regime supporting the independence test and the double R&D deduction from Art. 22g of the Law on Corporate Income Tax.

The negative effect of this incentive on the budget revenue would be significantly reduced due to the fact that a part of employees that would be entitled to using this new incentive would overlap with the number of employees that would, with expiry of the term of the transitional regime for qualified new recruits, stop using the incentive which supported the introduction of the independence test.

b) *Continuation of the use of transitional regime supporting the introduction of the independence test under special terms*

Companies with less than 50 employees, particularly in the Serbian IT sector, will suffer most with expiry of the transitional regime accompanying the independence test. These are, first of all, companies that are locally owned, and companies that enabled development of the IT and other innovative sectors in smaller communities, beyond three largest urban centres in the country. The lack of resources limits the capacity of small companies for change that is available to larger companies, particularly in affordability of hiring expert advisory support necessary for these undertakings. Unfortunately, these companies have not clearly received the message which the introduction of the corporate income tax incentives from late 2018 should have sent, and they are not sufficiently aware of the absolute necessity to change their current service provider business model.

We suggest that all Serbian IT companies with up to 50 employees on 31 December 2021 be allowed to continue to use the transitional regime referred to in Article 21ž of the Personal Income Tax Law, and Article 45đ of the Law on Mandatory Contributions for Social Insurance for another 3 years (ending with 31 December 2025). This entitlement would be applicable only to those qualified employees for which the entitlement from the transitional regime is already in use, where the entitlement would be extended for three more years, but with gradual reduction of the incentive. The right can be claimed only with the employer where the qualified employee was employed on 01 January 2023 without the right to carry the entitlement over to another employer. All employers using the incentive would be required to fulfil their duty relating to maintaining the number of

employees even during the extended duration of the incentive for qualified employees.

This incentive does not require any additional budgetary resources, since this is only a continuation of the already existing regime. Moreover, this will result in the rise of budget revenue due to a gradual fall of the incentive amount.

A combination of the two previously described measures would accomplish several goals:

- A reduction of the fiscal burden on wages of employees engaged in R&D activities, together with quite generous treatment offered at the level of corporate income taxation, would allow Serbian companies to not only have a favourable tax environment in respect of changing their business model, but would be in the position to compete on equal or even more preferential terms with foreign companies for Serbian talent.
- The continuation of the transition regime which supported the introduction of the independence test for only those companies which employ up to 50 people would drive large market participants to the change in the business model, while at the same time providing more breathing space for the smaller ones. It would also allow those who enter into the transition of their business model to create new jobs, jobs which will in the future be filled by the employees of those smaller companies which fail to survive the termination of even the prolonged transition regime.

At this point in time 25,000 people in Serbia enjoy the benefits of the transitional regime which followed the independence test. Not all of them are engaged in the Serbian IT sector which today has approximately 20,000 employees. Half of all employees in the Serbian IT sector are currently employed by companies which have a workforce of under 50. Thus, even with a carve-out for these companies, the ending of the transitional regime on 31 December 2022 will result in the benefits of the incentive no longer being available for at the minimum 15,000 employees. Thus, only if the Serbian economy manages to engage more than 15,000 people in R&D projects, wherein these individuals would be enjoying the same privileges now offered by the incentives provided under the transitional regime which supported the introduction of the independence test, would the Serbian fiscus be in the position to allocate more funds than it is doing at this very moment. And, if such a number of people is truly engaged in R&D projects in Serbia, this figure would only confirm the success of the introduced measures, as the transition of the business model would have been successfully initiated.

c) *The provision of a tax-friendly environment for the corporatization of IP in Serbia*

Experience shows that Serbian businesses have been quite callous when it comes to their IP. In some cases long existing companies have seen their IP being transferred somewhere abroad pursuant to their privatization. Innovative companies have not yet realized the value of their IP and the dire need for its protection and corporatization, all in order to maximise their potential value and long-term benefits from such assets.

If we are to transition to a new business model we must provide Serbian companies with an opportunity to declare, protect and dispose of their IP in the most efficient manner. Unfortunately, our current system is far from such a standard.

Namely, under current Serbian legislation in case a resident individual, or a company, would like to declare, protect and contribute already created IP into the capital of a Serbian company, such a step may require significant funds. For example, if the IP in question was created at a cost of EUR 100,000 (one should bear in mind that in a large number of cases Serbian taxpayers are not in the position to substantiate any cost related to the R&D which resulted in the creation of IP as they have simply not kept any records of such costs), while its current fair market value is 1,000,000 EUR, in case such IP was contributed into the capital of a legal entity (Serbian or foreign), the tax bill emanating from this transaction would amount to 15% of the capital gain seen as the difference between the cost of creating the IP and its current market value. It is not difficult to see that such a tax burden is an excellent motivator for Serbian residents to try and avoid contributing

IP they created into the capital of their companies. On the other hand, if IP is not corporatized it cannot be properly protected, managed and exploited. This is just pure common sense.

Therefore, we would propose two parallel measures.

Firstly, the contribution of IP into the capital of Serbian companies should be exempt from capital gains taxation. In other words, IP business reorganizations should be tax free.

Furthermore, the companies into whom the IP has been contributed should be allowed to use the fair market value of the assets at the time of contribution as their acquisition value. This second measure could be supported by a measure which we could name an IP repatriation amnesty.

Namely, we know that some of the IP created by Serbian companies in the past has been transferred abroad during the privatization process, without any compensation payed to them. In addition, these same companies were placed in the position to pay royalties for the right to use the IP they themselves created. In some business sectors we also see the prevalence of structures wherein although Serbian companies and their employees are the only ones contributing to the creation of IP, they are treated and remunerated as simple service providers with the most significant part of the overall income from such IP being generated by their related foreign entities which have no economic substance.

The Serbian Tax Administration was not capable of effectively combating both of the described structures. Furthermore, its ability to do so in the near future may be questioned. Thus, on the basis of such a state of affairs we propose an amnesty for previous periods for all IP contributed into the capital of Serbian companies within e.g. the calendar 2022. In essence, if the IP was repatriated to Serbia, provided that it still has material value, the Serbian Tax Administration would not challenge and assess additional tax liabilities and penalties with respect to the initial removal of IP from the Serbian entity, or the subsequent royalty payments made to the new holder of the IP. In addition, the profits of the Serbian entities posing as mere service providers would not be increased by virtue of the application of transfer pricing provisions so as to bring their previous results in line with their true role in the creation of the IP.

Although one may argue that the proposed measure gratifies those who have avoided Serbian taxes in the past, it is inspired by the same arguments which were behind the US legislation on the beneficial tax treatment of repatriated foreign earnings of US corporations and takes into account the exurban costs, as well as limited success potential of using tax audits in order to remedy past problems in this area.

Reverting to ancient Romans for inspiration instead of a conclusion

As an active participant in most Serbian tax policy debates regarding those segments of its economy which are and will continue to be the drivers of our economic growth the author is tempted to conclude this paper with a rather bold proposal.

Namely, the Serbian creative industry is quickly reaching the economic relevance of our agricultural sector, while more than half of all employees in this sector are between 25 and 40 years of age [17, p. 530]. Serbia will win the battle of the future provided it is capable of keeping at least a portion of its young and bright. If in addition to maintaining its talent pool it manages to draw in foreign talent success is ensured. Alas, our young and bright often have limited trust that their future is here. The Serbian society, including its tax system, must make an additional effort to convince them otherwise.

Thus, instead of a conclusion, we propose that all resident taxpayers with college or university education who are under the age of 40 be exempt from the obligation to pay the complementary annual individual income tax which is due in cases one's annual income is above the threshold of three average annual salaries paid in Serbia in the respective year. These individuals have firstly deserved this exemption as they invested, by virtue of education, in gaining the skills needed by our economy, wherein this investment postponed them being able to generate income. Secondly, the annual individual income tax is a grossly unfair tax levied at essentially at the remnants of the Serbian middle class and not, as it is the common

misconception, wealthiest sections of our society [16, pp. 80-82]. In other words, by virtue of this exemption we would be investing in the rebirth of our middle class. The measure is also value oriented, as it promotes and awards education, while it tends to the most qualified, those whose immigration renders the highest cost for our society. Finally, by requesting all those who would emigrate before the age of 50 to repay (with interest) any benefits enjoyed from this incentive, we would be confirming the merit basis of the proposal.

This measure is not discriminatory towards those older than 40, as the preservation of the young population is in their vital interest. For example, if nobody is left to fund the pensions system, pensions will not be paid, regardless of the existence of entitlement. Without those paying the contributions and filling the budged by the way of taxes, pure legal entitlements to healthcare or retirement income are worth less than the paper they are written on.

In times of desperation in the Roman Republic extraordinary powers were granted to the Consuls by the decision of the Senate called in Latin *senatus consultum ultimum*. The majestic formula of this decree was *Dent operam consules ne quid detrimenti res publica capia* – and let the Consules take care that the Republic suffers no harm. Our Republic is in peril. And it needs extraordinary measures in order to have a chance of survival. Our battle is on the demographic front and in trying to maintain our home grown talent in the country with our employers. And as in Roman times when the legions were facing dire need the veterans' stepped into the front line, while the young soldiers were sent to the back lines. The future was to be preserved by the sacrifice of those who were not to be its promoters. Thus, our proposal may be seen as removing our young and the best, who have done all that we as a society have asked them to do, from the front fiscal lines. And in doing so we would not only be doing the right thing when it comes to the future, we would (*we* as the author is beyond the age when he would be able to benefit from his own proposal) be doing what is just.

References

1. Article 3 of the Law on the Changes and Amendments to the Law on Corporate Income Tax. *Official Gazette of the Republic of Serbia*, No. *95*/2018.
2. Article 5 of the Law on the Changes and Amendments to the Law on Corporate Income Tax. *Official Gazette of the Republic of Serbia*, No. *95*/2018.
3. Black, C. M. (2020). The future of work: The gig economy and the pressures on the tax system. *Canadian Tax Journal, Canadian Tax Foundation*, *68*(1), 69–97.
4. 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.
5. Explanatory Memorandum for the Bill Amending the Law on Personal Income Tax that the Government of Serbia submitted to the National Assembly on 20 May 2014. Retrieved from http://www.parlament.gov.rs/upload/archive/files/cir/pdf/predlozi_zakona/1612-14.pdf
6. Explanatory Memorandum for the Bill Amending the Law on Personal Income Tax that the Government of Serbia submitted to the National Assembly on 17 December 2015. Retrieved from http://www.parlament.gov.rs/upload/archive/files/cir/pdf/predlozi_zakona/3437-15.pdf
7. Explanatory Memorandum for the Bill Amending the Law on Personal Income Tax that the Government of Serbia submitted to the National Assembly on 2 December 2017. Retrieved from http://www.parlament.gov.rs/upload/archive/files/cir/pdf/predlozi_zakona/3787-17.pdf
8. Explanatory Memorandum for the Bill Amending the Law on Mandatory Social Insurance Contributions that the Government of Serbia submitted to the National Assembly on 20 May 2014. Retrieved from http://www.parlament.gov.rs/upload/archive/files/cir/pdf/predlozi_zakona/1612-14.pdf
9. Explanatory Memorandum for the Bill Amending the Law on Mandatory Social Insurance Contributions that the Government of Serbia submitted to the National Assembly on 17 December 2015. Retrieved from http://www.parlament.gov.rs/upload/archive/files/cir/pdf/predlozi_zakona/3446-15.pdf
10. Explanatory Memorandum for the Bill Amending the Law on Mandatory Social Insurance Contributions that the Government of Serbia submitted to the National Assembly on 2 December 2017. Retrieved from http://www.parlament.gov.rs/upload/archive/files/cir/pdf/predlozi_zakona/3784-17.pdf
11. Fuchs, V. R., Krueger, A. B., & Poterva, J. M. (1998). Economists' views about parameters, values and policies: Survey results in labor and public economics. *Journal of Economic Literature*, 36(3), 1387-1425. Retrieved from https://economics.mit.edu/files/19900
12. Geo News. (2021, March 10). *FBR goes after Payoneer, freelancers over billions of rupees transferred from abroad (geo.tv)*. Retrieved from https://www.geo.tv/latest/338963-fbr-uncovers-rs60-billion-overseas-transactions-mega-scam
13. Hayes, J., & Hastings , T. (2017). *The Practices of Enforcement Bodies in Detecting and Preventing Bogus Self-Employment* (European Platform Undeclared Work). Retrieved from http://ec.europa.eu/social/BlobServlet?docId=17971&langId=en

14. Kostić, S. (2020). International taxation and migrations. In Y. Brauner (Ed.), *Research Handbook on International Taxation* (pp. 353–368). Cheltenham, UK: Edward Elgar Publishing Limited.
15. Kostić, S. (2018). Nepoštovanje ustavnosti u oblasti oporezivanja zarada u Srbiji. *Anali Pravnog fakulteta u Beogradu, 66*(3), pp. 257–264.
16. Kostić, S., & Vuković, D. (2019). The perfect silence: An empirical study on how ignorance and lack of critical debate effect the process of enacting tax legislation in Serbia. *Anali Pravnog fakulteta u Beogradu*, *67*(1), 67–92.
17. Kovačević, I., Anić, A., Ribić, M., & Zorić Đorđević, A. (2020). Economic impact of the creative industry and the example of Serbia. *Ekonomika preduzeća*, *68*(7-8), 522–531.
18. Law on the Changes and Amendments to the Law on Personal Income Tax. *Official Gazette of the Republic of Serbia*, No. *86*/2019. & the Law on the Changes and Amendments to the Law on Mandatory Social Security Contributions. *Official Gazette of the Republic of Serbia*, No. *86*/2019.
19. Melguizo, A., & González-Páramo, J. M. (2013). Who bears labour taxes and social contributions? A meta-analysis approach. *SERIEs 4*, 247–271. Retrieved from https:// link.springer.com/ article/10.1007/s13209-012-0091-x.
20. Nikulin, D. (2021). The determinants of false self-employment: A survey of Polish enterprises. *Eastern European Economics 59*(1), 70–81.
21. Yerby, E., & Page Tickell, R. (2020). Talent Disrupted: Opportunities and Threats for Human Resource Development (HRD) Strategy and Practice in the Gig Economy Through the Critical HRD Lens. In M. Loon, J. Stewart & S. Nachmias (Eds.), *The Future of HRD* (Vol. I, pp. 93–114). Springer Nature Switzerland AG.

Svetislav V. Kostić

Dr Svetislav V. Kostić, LL.M is an Associate Professor at the University of Belgrade Faculty of Law teaching at both undergraduate and graduate levels. Until 2016 Dr Kostić also held the post of a Director with Deloitte Serbia Tax Services. He is one of the founders of the Serbian branch of the International Fiscal Association, currently in the capacity as its Secretary General. He is a member of the Practice Council of the New York University School of Law LL.M in International Taxation and one of the Vice Chairs of the IFA Europe Region.

ORIGINAL SCIENTIFIC PAPER
UDK: 338.246.027:339.564(497.11)
339.727.22
DOI: 10.5937/EKOPRE2103273A
Date of Receipt: Febrary 17, 2021

Jasna Atanasijević
University of Novi Sad
Faculty of Sciences
Novi Sad
and Competitiveness and Jobs Project
Belgrade

Duško Vasiljević
The World Bank
Finance, Competitiveness and Innovation
Global Practice
Belgrade

Zoran Nikolić
University of Belgrade
Faculty of Physics
Belgrade
and Competitiveness and Jobs Project
Belgrade

Olivera Pavlović
Competitiveness and Jobs Project
Belgrade

UNTAPPED EXPORT OPPORTUNITIES OF SERBIAN ECONOMY AFTER A DECADE OF INVESTMENT AND EXPORT BASED GROWTH MODEL

Neiskorišćene izvozne mogućnosti srpske privrede nakon decenije modela rasta zasnovanog na izvozu i investicijama

Abstract

Relying on the economic complexity and product space approach developed by Hidalgo and Haussmann [21], and using trade data, exporters' financial reports and available macroeconomic statistics, we try to assess the degree of transformation of structure and production potential of the Serbian economy over the last decade. We argue that although the overall economic complexity, as a decent predictor of higher economic growth, did slightly improve over the observed period, there is still large untapped potential in local knowledge and know-how. FDI inflow into manufacturing industry, as the most important factor of the transformation of the production structure and size of the economy, has contributed to growth in employment and export, improving the macro stability. On the other side, its contribution to the higher growth outlook by improving the production capacity was limited as FDI inflow has been directed mostly into low and medium-low technology industries with low complexity products. Moreover, it seems that the vertical spillover through linkages with local suppliers and transfer of technology, knowledge and practices could also be larger. In the same period, some positive developments of limited scale yet are reflected in emergence of a certain number of high-tech industries' products with high complexity, most likely produced by SMEs, such as electrical equipment, lighting, various software embedded devices, etc.

Keywords: *economic complexity, export, FDI, growth policy.*

Sažetak

Oslanjajući se na ekonomsku složenost i pristup proizvodnog prostora (*product space*) koji su razvili Hidalgo i Haussmann [21] i koristeći podatke o trgovini, finansijske izveštaje izvoznika i dostupne makroekonomske statistike, pokušavamo da ocenimo stepen transformacije strukture i proizvodnog potencijala privrede Srbije tokom poslednje decenije. Iznosimo stav da se ekonomska složenost, kao dobar prediktor većeg ekonomskog rasta, donekle povećala, ali da postoji značajan neiskorišćen potencijal u domaćem znanju i *know-how*. Priliv stranih direktnih investicija u prerađivačku industriju, kao najvažniji faktor transformacije proizvodne strukture i veličine privrede, doprineo je rastu zaposlenosti i izvoza, poboljšavajući makrostabilnost. Međutim, njegov doprinos potencijalu za veći rast poboljšanjem proizvodnih kapaciteta bio je prilično skroman, jer je priliv SDI uglavnom bio usmeren u industrije niske tehnologije sa proizvodima male složenosti. Štaviše, čini se da se nije dogodilo ni vertikalno „prelivanje" kroz veze sa lokalnim dobavljačima i prenos tehnologije, znanja i praksi. S druge strane, neki pozitivni pomaci ograničenog obima i dalje se ogledaju u pojavi određenog broja proizvoda visoke tehnologije sa velikom kompleksnošću, koje su najverovatnije proizvela MSP, poput električne opreme, osvetljenja, različitih ugrađenih uređaja, itd.

Ključne reči: *ekonomska složenost, izvoz, SDI, privredni rast.*

Introduction

Ever since the 2008 global crisis, Serbia has based its growth on exports and investments. However, despite recent improvements, growth rate has in general been relatively lukewarm and the gap between Serbia and its peers is not closing. Although this growth model has resulted (and has been supported) in much more stable macroeconomic environment, achieving much higher growth rates in a sustainable manner is necessary. As Serbia is facing demographic challenges, increasing productivity and competitiveness will be especially important. Higher value-added will need to come both via continued attraction and improved quality of FDI as well as enhancing domestic SMEs. With an aging population, emigration pressures and shrinking labor force, shift toward higher value-added activities and higher productivity will be a key tool in attaining and sustaining higher growth.

Over the observed period, since the GFC, the industrial policy in Serbia has been implicitly mostly relying on direct subsidies to FDI investing in manufacturing industry. Although since 2015 all investors – both domestic and foreign were given the same rights to subsidies, the users – new investors were predominantly foreign ones. The rule for attribution of subsidies was proportional to the number of newly created jobs. Other policies, though minor in terms of value of budget envelope, consisted in grants and subsidized loans to SMEs for investment and export promotion and grants to startups for innovation. Until 2020, grants to SMEs were not explicitly targeting a specific policy outcome in line with usual industrial policy goals such as export or productivity and were rather based on compliance to formal rules of the call [31].

The overall literature on FDI and host economy benefits can be observed through two main approaches. Macro level approach, though suffering from a clear lack of theoretical guidance as no overall theoretical prediction connects the stock of foreign investment to the rate at which national income grows (for more elaboration see [11], [27]), aims to identify the causal link from FDI to growth. Hence, micro level approach focuses on measuring of the level of positive externalities, so called spillovers of FDI to local economy. Through the lenses of welfare economics, these positive spillovers should exceed the cost of policy and negative effects in order to confirm the host country's interest to devote scarce domestic resources to attracting and incorporating FDI into its development strategy [28].

In general, the evidence on the macro-level effect of FDI suggests that economic growth is positively associated with FDI but only under certain conditions: for example when countries have sufficiently high incomes [8], have a minimum threshold stock of human capital [9], or are financially developed [2]. One recent study on the developments and the drivers of foreign direct investment in Central and Eastern European countries over the period 1993–2014, through a dynamic panel data analysis, shows that the positive impact of FDI inflows on economic growth has amplified during this 2007-2008 crisis.

Another stream of literature analyses impact of FDI on host economy by focusing on microeconomic effect of FDI spillovers to domestic industries. The spillover from FDI takes place when the entry or presence of multinational corporations increases the productivity of domestic firms in a host country and the multinationals do not fully internalize the value of these benefits. Spillover may take place through improvement of the efficiency of local firms as they introduce new technologies or knowledge by hiring workers trained by foreign firms. Another kind of spillover occurs through intensifying competition in host market led by the entry of FDI. The latter forces local firms to use their resources more efficiently or to search for new technologies [7].

As comprehensively summarized in Estrin and Uvalic [14], examples of mechanisms for positive external spillovers from FDI in the literature include those through the dissemination of new higher levels of technological productivity on locally-owned firms ([3], [4]), via demonstration effects or reverse engineering [5]. Situations where this happens include enhancing of the knowledge base of host economy by foreign firms, for example by introducing new products, processes, management techniques and workforce skills. Through interaction of local and foreign firms, domestic firms can learn about new technologies, market opportunities, and superior manufacturing techniques and as a result improve their productivity [25]. Knowledge can also

spread to local firms via workforce dynamics, as some of the workers from foreign owned firms and trained in new technological or managerial methods move to domestic companies, either vertically or horizontally [15]. Efforts by foreign owned firms to raise the productivity of their local suppliers can also result in vertical spillovers. However, as for the macro-economic impact, some authors also highlight that there could be negative externalities from FDI for domestic firms [1], [4]. One of the negative impacts can occur by the crowding out of domestic firms in an industry through the use of uncompetitive practices such as predatory pricing or entry-deterrence [11].

The empirical studies on the host country productivity spillover effects of FDI mostly address the possibility of horizontal spillovers i.e., within an industry, while there is limited evidence on vertical spillovers on firms up and down a value chain of industries [14], probably due to the lack of data. The existing studies on FDI spillover in European transition economies have found rather ambiguous results in terms of local spillovers of FDI. Lipsey [26] found that foreign participation in Central and Eastern Europe (CEE) countries is associated with higher productivity in the affiliates themselves while spillovers to indigenous firms are more spotty, clearer to upstream suppliers than to firms in the same industries as the affiliates. On the other side, Bijsterbosch and Kolasa [6] analyzed factors of productivity convergence of CEE countries using a new harmonized industry-level database and provided empirical evidence that FDI and absorptive capacity are key factors for productivity convergence in these countries. More importantly, according to the same authors, the favorable impact of FDI on productivity is not automatic and can be strengthened by improving the absorptive capacity of the recipient economy, for example via raising the level of human capital. One more recent study on FDI spillover on the Western Balkan countries [13] using data for five countries (Albania, Bosnia and Herzegovina, Croatia, Macedonia and Serbia) for the period 2002-2012, indicate that FDI inflows have had almost no horizontal effects on key measures of performance of the manufacturing industry, a sector of fundamental importance for strengthening export potential and accelerating economic growth of the Western Balkan countries.

In contrast with earlier literature that failed to find positive intra-industry spillovers from FDI, one of the few studies exploring vertical spillovers by Javorcik [24] focuses on effects operating across industries. The analysis is based on manufacturing firm-level data from survey from Lithuania covering 1996-2000 period. It produced evidence consistent with positive productivity spillovers from FDI taking place through contacts between foreign affiliates and their local suppliers in upstream sectors.

On the other side, presence of the well-developed domestic SME sector is very important both as a generator of income and employment. The recent empirical literature on perspective for high growth firms among SMEs in developing countries add insights to the existing grounds that the policy focus should be on productivity due to its linkage to growth. The large longitudinal study on firm level high growth episodes in large set of developing countries show that factors such as innovation, agglomeration and network economies, managerial capabilities and worker skills, global linkages, and financial development contribute significantly to increasing the probability of a high-growth episode [16].

In this paper we explore the potential for spillovers of abundant FDI to Serbia in the post 2008-crisis period. We focus on the two main drivers of growth – investment and exports – and try to assess what it would take to scale up these drivers and achieve higher growth rates. It should be noted that the paper focuses mainly on export of goods, which contributes to approximately 72% of total exports in 2020. Goods exports performance is generally used for the analysis of countries' overall competitiveness and technological development. Beside the advantage in terms of relative richness in data, trade of goods is also a good proxy for overall competitiveness of an economy as traded goods compete on both domestic and foreign markets, as discussed in Durand and Giorno [12]. In this paper, we focus in particular on manufacturing industry, as it provides a room for productivity improvements. Moreover, that FDI in manufacturing can be important for economic development is supported by the experience worldwide and the related empirical literature. According to detailed evidence examined in a study on FDI, among the twelve principal channels through which FDI impacts

development (real income, standard of living and the growth rate of the host economy), as many as eight are through FDI in manufacturing and only one is through FDI in services [28]. Notwithstanding, services exports have been growing rapidly in recent years, in particular ICT exports (which over the previous decade expanded almost six-fold, from EUR 240 million in 2010 to EUR 1.4 billion in 2019), and these warrant attention as well, but are outside the scope of this paper.

By exploring the possibility for FDI spillovers and more effective SME support programs under the overall industrial policy framework, we try to explore the indicators of competitiveness of the Serbian economy, and in particular of its manufacturing industry, in terms of its performance in attracting foreign investment and the ability to compete on the international market. In doing so, we aspire to contribute to assessing the outcome of the overall industrial policy conducted over the past (post-GFC) decade and to put some ground for next generation of policies.

In this context, we try to identify some important opportunities for improvement in the overall export performance of Serbian economy, both in terms of value of direct export and in terms of integration into international value and supply chains. In other words, given the significant change of the structure of the economy over the last decade which was in a large part driven by FDI inflow into more export oriented industries, we try to assess the productive capacity of this change and to point to some axis of how to leverage it and proceed in future in order to move to higher growth rates of income.

As many other studies in this area of thinking, we are to the certain extent limited in terms of details that could be found in the available data. Apart from macroeconomic statistics, we use product level data on international trade and firm level data on Serbian exporting companies where we combine data on export with financial information in order to assess the export orientation of firms.

We largely rely on our analysis on the economic complexity approach [21]. The economic complexity can be highly predictive of future economic growth as it, together with the product complexity in the product space, offers an excellent measure capturing information about the capacity of an economy to generate income over the long run [22]. In that respect, following the implications of this framework, valuable insights related to the production structure and its evolution can be traced as a direction for more targeted and more effective industrial policy in terms of FDI and SME promotion. In other words, as in Serbia, like in many other countries, the changes of product structure and economic complexity thereof are mainly driven by FDI and local SME emergence, according to the proposition of this strand of economic literature, focusing on supporting industries/products which contribute to increase in economic complexity of a national economy contributes to its more sustainable growth and prosperity.

After this introductory section, we proceed with the overview of the recent trends in export and its structure. In the third section we analyze export pattern of FDI. In the fourth section we examine the perspective of domestic SMEs in internationalization of their businesses and contribution to export. In the last section we conclude and give some policy recommendations.

Export structure and trends

Serbian exports are dominated by exports of mineral and metal, agricultural products and some low value added manufacturing like textile, rubber products, cables and wiring, and wood products. These products represent more than half of the total export in 2008 and almost half of it in 2020 (Figure 1).

Nevertheless, much of the growth of Serbian goods exports over the recent decade can be attributed to products aggregated in the group Tools, machines, and devices. Importantly, this group contains a number of products of higher complexity and higher value added. Exports of this group grew by 218 percent from 2008 to 2020 (corresponding to compound annual growth rate of 11.1 percent). This group of products contributed to almost a third of the overall growth of exports (Figure 1, Table 1).

The concept of economic complexity and its product space represent a measure of an important determinant of economic development which is highly predictive of future economic growth [22]. This measure, developed and empirically tested as a predictor of economic growth

by Hidalgo and Haussmann (see for example [18], [19], [20], [21]) aims to capture the knowledge, know-how and information accumulated at the collective level, which gives rise to the diversity and sophistication of economic activities [22]. By using data on industries and products from international goods trade statistics, these authors create a statistical measure that incorporates the identity of an economy in terms of its productive capacity. Data on industries and products represent, according to this concept, not only the knowledge and know-how embodied in the region's productive networks but also its diversity of physical and human capital. For calculating the final indicator of the economic complexity and product complexity both diversity and ubiquity of export are taken into account by extracting information from a country-product matrix with values for products with Revealed Comparative Advantage (RCA)[1] in international trade of above 1. Normalized eigenvectors of matrices are considered a measure of the economic complexity of all analyzed countries and products.[2].

Economic complexity index (ECI) and product complexity index (PCI) values exist in the range (-4, 4). The mean values of ECI or PCI in the datasets are 0 and the standard deviation values are 1, due to the normalization by Z-transform. The distributions of ECI and PCI values are flatter than the Gaussian distribution (kurtosis is less than 0 in such distributions) and slightly inclined (for PCI to the right side - skewness < 0, the median is about 0.1, and for ECI to the left side - skewness > 0, the median is about - 0.1).

In our analysis, we calculate ECI and PCI values for all countries and products using calculations based on a complete set of data on international trade (240 countries and over 5,000 products) applying the relevant methodological grounds set by Hidalgo and Haussmann [21] and presented in more details in [17] and [10]. Some small differences in

1 RCA - the revealed comparative advantage is a measure of competitiveness in the international trade of any country for any export product in any market and it is calculated using the following formula:

$$RCA_{Ai} = \frac{\frac{X_{Ai}}{\sum_{j\in P} X_{Aj}}}{\frac{M_{W_i}}{\sum_{j\in P} M_{Vj}}}$$

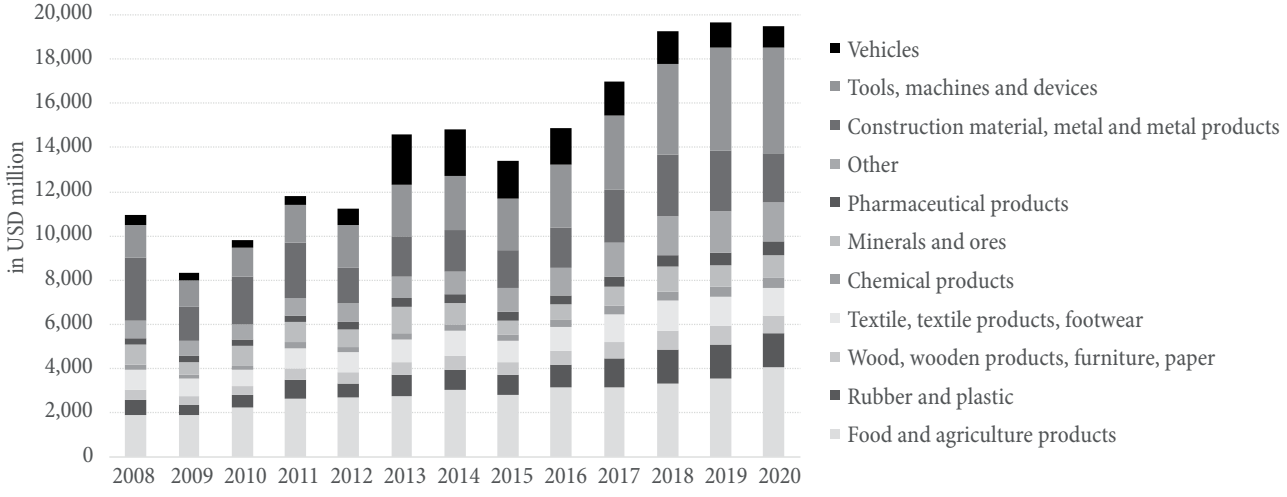
, where X_{Ai}) is the export of product *i* of country A and M_{Wi} is the world import of product *i*.

2 The Economic Complexity Index (ECI) is a measure of the production capacity of economic systems. The equivalent of ECI is a Product Complexity Index (PCI) in product space. The value of each element $M_{c,p}$ of the trade matrix, M (countries by-products) has a value of 1 (for RCA≥1) or 0 (for RCA<1). The diversity of the economy represents the sum of the values of $M_{c,p}$ in the row, and the ubiquity of the product represents the sum of the values of $M_{c,p}$ in the column of the matrix M. The $M_{c,c'}$ and $M_{p,p'}$ matrices are obtained after multiplying the $M_{c,p}$ matrix by itself:

$$M_{c,c'} = \frac{\sum_p \frac{M_{c,p} M_{c',p}}{k_{p,0}}}{k_{c,0}}$$ (trade matrix of countries) and $$M_{p,p'} = \frac{\sum_c \frac{M_{c,p} M_{c,p'}}{k_{c,0}}}{k_{p,0}}$$

(trade matrix of products).
By applying the Z-transform, the eigenvectors of matrices $M_{c,c'}$ and $M_{p,p'}$ were normalized, and ECI and PCI values were obtained as the final result.

Figure 1: Structure of export by sector, 2008-2018



Source: Statistical Office of the Republic of Serbia. Authors' calculations.

Table 1: Contribution to overall growth of export of goods 2020-2008, by type of goods

Export of goods by type of goods	Value of export in USD million, 2020	CAGR 2020-2008	Growth rate 2020-2008	Share 2008	Share 2020	Contribution to growth rate 2020/2008
Tools, machines and devices	4,760	11.1%	218.39%	13.62%	24.41%	29.75%
Food and agriculture products	4,089	7.1%	112.33%	17.55%	20.97%	19.71%
Other	1,734	7.3%	117.99%	7.25%	8.89%	8.55%
Rubber and plastic	1,523	7.6%	123.58%	6.21%	7.81%	7.67%
Vehicles	981	7.0%	109.84%	4.26%	5.03%	4.68%
Pharmaceutical products	664	7.4%	119.44%	2.76%	3.40%	3.29%
Wood, wooden products, furniture, paper	781	5.6%	82.33%	3.90%	4.01%	3.21%
Textile, textile products, footwear	1,247	3.0%	37.81%	8.24%	6.39%	3.12%
Chemical products	458	6.1%	91.46%	2.18%	2.35%	1.99%
Minerals and ores	1,002	1.1%	13.40%	8.05%	5.14%	1.08%
Construction material, metal and metal products	2,260	-2.1%	-20.73%	25.97%	11.59%	-5.38%
Total export of goods	19,498	5.4%	77.68%	100.00%	100.00%	77.68%

Source: Statistical Office of the Republic of Serbia. Authors' calculations.

obtained output vis-à-vis that of Harvard Observatory of Economic Complexity (OEC) result from the fact that OEC calculation was performed for 140 countries (excluding small countries) and for 3,000 products (excluding products with lower trade volume). Serbian economy, according to our calculation has ECI at 0.59 in 2018 (latest available detailed trade statistics) represent a slight improvement since 2008 when it was at 0.55.

We use both concepts of economic complexity and RCA to look in more detail at the structure of Serbia's export basket, and observe some important trends. Table 2 below shows Serbia's export disaggregated to 4-digit level of SITC classification. We can observe from the table that in general the product groups with largest share in exports are low complexity products. For example, the largest product group in Serbia's export consists of insulated wires, cables and similar products, and this group has the PCI value of -0.373, indicating low complexity (and low value added). Several other product groups among the top 20 exports have similarly low PCI values. With these products predominant in terms of share of exports, weighted average PCI of overall Serbian export in 2018 was fairly low, at -0.0767. Further, many of these products also have high RCA values. Although this indicates Serbia has comparative advantage when it comes to these products, it also indicates that Serbia's share of exports of these products in global markets is already fairly high, also indicating limited scope for longer term growth.

More importantly, products that have a low product complexity index are produced by low and mid-low technology industries, which in turn implies they have only limited perspective in terms of the future growth outlook of Serbia's economy [21]. Rather, these products should be viewed in the context of possibilities for upgrading their technological content, and as a potential basis for expanding production and exports of similar but more complex and sophisticated products.[3]

At the same time, Serbia's exports include many product groups which contain more complex products, although these in general have smaller share in exports. Table 3 shows Serbia's exports for top 10 product groups in terms of product complexity (as measured by PCI). Those products (many are from the broader category of Tools and Machinery) have registered very dynamic growth over the observed decade. At the same time, most of these products have fairly low

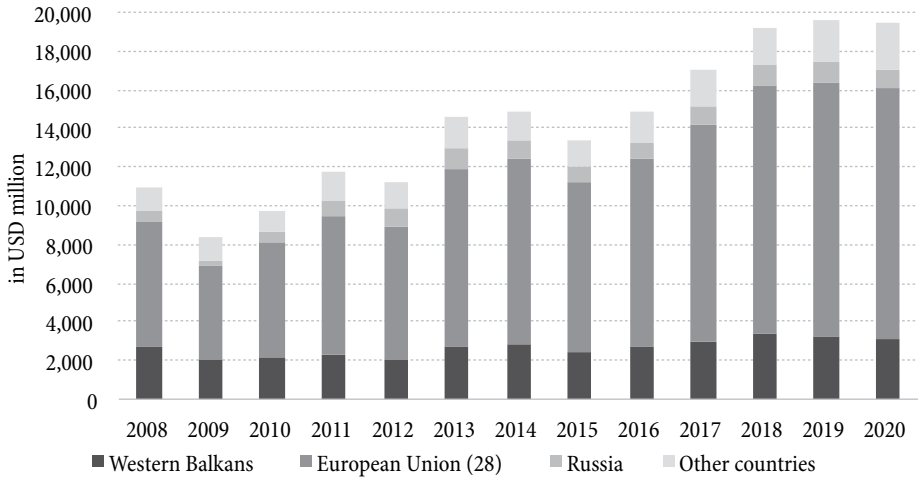
3 As an illustration, pork has the highest PCI value (0.8) compared to the meat of all other animals. This is because pork meat is frequently used by the processing industry or fast-food industry. Conversely, sheep or goat meat is generally not processed in the industry, and thus has low PCI value (-1.7). Another illustration is related to copper and copper products. Serbia has significant reserves of copper ore. The ore itself without processing has extremely low PCI. Copper is obtained by a very complex process in the form of massive pieces that have no significant use-value. Only in rolling mills did the first forms of usable copper in the industry appear, in the form of sheets, pipes, and wires. The complexity of copper wires (pipes) over 6 mm thick is - 0.6, and those used in electrical installations of smaller thicknesses - 0.2. The complexity of the conductors and connectors used in electricity is close to that value. Copper foils required for electronics less than 0.15 mm thick and used in printed circuit boards have a complexity significantly greater than 1.0. Basic components in electronics and electromechanics, even active electronic components, have significant use in industry but do not belong to high tech level (PCI: 0.0 - 1.0). PCI values are greater than 1.0 for integrated circuit parts or sensor components, specialized development modules (embedded amplifiers, etc.). Complex measuring (oscilloscopes), control, and automatic systems (robotic systems), which are used exclusively in industry, can have PCI values close to 2.0.

RCA values, indicating that, although individual companies are successful in exporting them, overall Serbia's exports of these products are well below potential.

Yet presence of such fairly sophisticated products in Serbia's export basket indicates that there are pockets of excellence among Serbia's exporting companies, and companies successfully exporting these and similar products could serve as a basis for sustained expansion and growth of exports. The respective industries belong to the mid-high technology and high-technology (for electronic devices) industries and have higher PCI, improving the overall economic complexity index of the Serbian economy (ECI). Having such companies also increases the overall absorptive capacity of Serbia's economy in terms of technology transfers and upgrades.

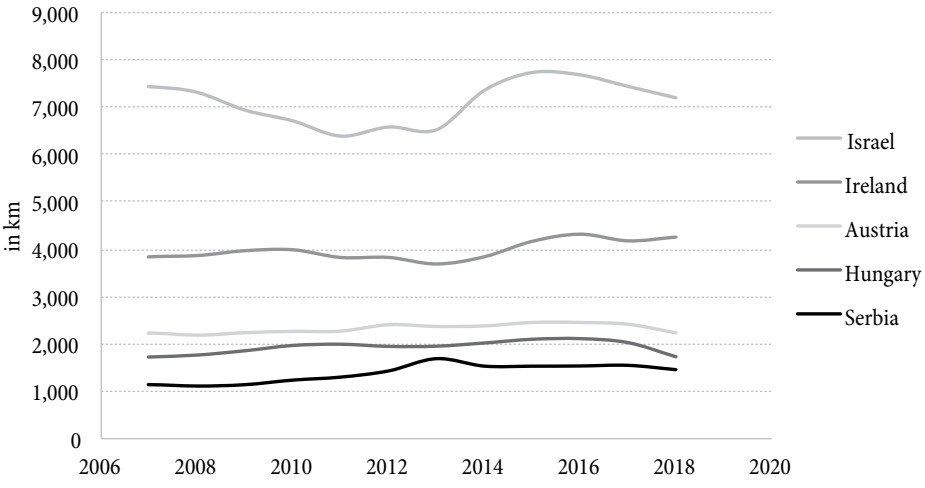
Another interesting observation can be made looking at the data from Tables 2 and 3, and this relates to weighted average distance of export. Although there are exceptions, broadly speaking products of higher complexity (higher PCI) have higher average distance of exports, while less complex products have lower average distance of exports. This makes intuitive sense, as lower complexity products compete primarily on price, and thus transport costs can play an important role. As such, these products are likely to be less competitive for more distant markets where transport costs are higher. For higher complexity products it is likely that transport costs are comparatively less important, and as a result they can be competitive at more distant markets as well. Much of Serbia's current exports are direct to close-by markets (Figures 2 and 3).

Figure 2: Structure of Serbian export by destination country, 2008-2018



Source: Statistical Office of the Republic of Serbia. Authors' calculations.

Figure 3: Average distance of export



Source: UN Comtrade statistics. Google.com (KML format). Authors' calculations.

Table 2: Top 20 products by value of export in 2018

Rank by value of export	Item name	HS 1992, 4- digit code	Value of export in 2018, in USD million	RCA, in 2018	PCI, in 2018	10-year growth rate 2018-2008, in %	Weighted average distance of export, in km	Share of Serbian export in total world export, 2018	Share in total Serbian export of goods in 2018
1	Insulated wire, cable and other electric conductors, connector fitted or not; optical fiber cables of individually sheathed fibers, whether or not assembled with electric conductors or fitted with connectors	8544	1,114	8.63	-0.37	708%	925	0.869%	5.9%
2	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading no. 8702), including station wagons and racing cars	8703	860	1.14	1.06	2721%	836	0.115%	4.6%
3	Iron or non-alloy steel; flat-rolled products of a width of 600mm or more, hot-rolled, not clad, plated or coated	7208	586	11.09	0.53	-36%	1,010	1.116%	3.1%
4	New pneumatic tires, of rubber	4011	581	7.47	0.54	126%	2,047	0.751%	3.1%
5	Cigars, cheroots, cigarillos and cigarettes; of tobacco or of tobacco substitutes	2402	434	16.02	-0.75	1697%	6,219	1.601%	2.3%
6	Electric motors and generators (excluding generating sets)	8501	379	6.92	1.00	139%	1,590	0.696%	2.0%
7	Copper, refined and copper alloys, unwrought	7403	348	5.66	-1.35	982%	860	0.570%	1.8%
8	Fruit and nuts; uncooked or cooked by steaming or boiling in water, frozen, whether or not containing added sugar or other sweetening matter	0811	329	70.59	-0.51	26%	2,187	7.108%	1.7%
9	Seats (not those of heading no. 9402), whether or not convertible into beds and parts thereof	9401	291	3.56	0.35	251%	1,005	0.358%	1.5%
10	Petroleum oils, oils from bituminous minerals, not crude; preparations n.e.s. containing less than 70% petroleum oils, oils from bituminous minerals; these being the basic constituents of the preparations	2710	287	0.36	-0.65	76%	584	0.036%	1.5%
11	Hosiery; panty hose, tights, stockings, socks and other hosiery, including stockings for varicose veins and footwear without applied soles, knitted or crocheted	6115	270	20.23	-0.66	23%	2,751	2.037%	1.4%
12	Paper, paperboard, cellulose wadding and webs of cellulose fibers, coated, impregnated, covered, surface-colored, decorated or printed, rolls or sheets, excluding goods of heading no. 4803, 4809, 4810 and 4818	4811	242	12.37	0.64	58%	2,020	1.245%	1.3%
13	Medicaments; (not goods of heading no. 3002, 3005 or 3006) consisting of mixed or unmixed products for therapeutic or prophylactic use, put up in measured doses or in forms or packings for retail sale	3004	232	0.67	0.73	20%	1,999	0.067%	1.2%
14	Motor vehicles; parts and accessories, of heading no. 8701 to 8705	8708	228	0.56	1.25	158%	1,304	0.057%	1.2%
15	Furniture and parts thereof, n.e.s. in chapter 94	9403	199	2.29	0.42	97%	1,050	0.230%	1.1%
16	Tubes, pipes and hoses and fittings thereof (for example, joints, elbows, flanges), of plastics	3917	198	7.58	-0.13	251%	1,641	0.763%	1.0%
17	Organic surface-active agents (not soap); surface-active, washing (including auxiliary washing) and cleaning preparations, containing soap or not, excluding those of heading no. 3401	3402	194	5.53	0.12	216%	1,343	0.557%	1.0%
18	Pumps for liquids, whether or not fitted with measuring device, liquid elevators	8413	191	2.88	1.30	847%	2,926	0.290%	1.0%
19	Lighting or visual signaling equipment (excluding articles of heading no. 8539), windscreen wipers, defrosters and demisters; electrical, of a kind used for cycles or motor vehicles	8512	191	5.69	1.01	17211%	1,773	0.573%	1.0%
20	Electric motors and generators; parts suitable for use solely or principally with the machines of heading no. 8501 or 8502	8503	182	10.30	0.79	8%	1,199	1.037%	1.0%

Note: Items 'Electrical energy' HS 1992 code 2716 and 'Commodities not specified according to kind' HS 1992 code 9999 are not ranked in the list notwithstanding the value of export of 438 USD million (2.3% of total export) and 291 USD million (1.5% of total export), respectively.
Source: Harvard Dataverse, Atlas of Economic Complexity. Authors' calculations.

Table 3: Top 10 products by value of product complexity (PCI) and total value of export above 10 million USD, in 2018

Rank by PCI in 2018	Item name	HS 1992, 4-digit code	RCA, in 2018	PCI, in 2018	Value of export in 2018, in USD million	10-year growth rate 2018-2008, in %	Weighted average distance of export, in km	Share of Serbian export in total world export, 2018	Share in total Serbian export of goods in 2018
1	Machinery and mechanical appliances having individual functions, n.e.s. in this chapter	8479	0.37	1.96	47	200%	1,564	0.037%	0.25%
2	Measuring or checking instruments, appliances and machines, n.e.s. or included in this chapter; profile projectors	9031	0.47	1.71	22	741%	1,855	0.047%	0.12%
3	Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like, including pressure-reducing valves and thermostatically controlled valves	8481	0.30	1.63	27	46%	1,423	0.030%	0.14%
4	Tools, interchangeable; for hand tools, whether or not power-operated, or for machine tools (pressing, stamping, punching, drilling, etc.), including dies for drawing or extruding metal, and rock drilling or earth boring tools	8207	0.74	1.58	18	28%	1,223	0.075%	0.09%
5	Ball or roller bearings	8482	0.46	1.55	15	-16%	2,370	0.046%	0.08%
6	Transmission shafts (including cam and crank); bearing housings and plain shaft bearings, gears and gearing, ball screws, gear boxes, flywheels and pulleys, clutches	8483	0.44	1.47	26	-17%	1,953	0.044%	0.14%
7	Tools for working in the hand, pneumatic or with self-contained non-electric motor	8467	3.83	1.46	32	141%	1,291	0.385%	0.17%
8	Machinery, plant or laboratory equipment for the treatment of materials by a process involving change of temperature (i.e., heating, cooking, etc.); instantaneous or storage water heaters, non-electric	8419	1.00	1.45	40	42%	922	0.101%	0.21%
9	Machine-tools; parts suitable for use with the machines of heading no. 8456 to 8465, work or tool holders, self-opening die heads, dividing heads and other attachments	8466	1.13	1.41	23	-1%	1,158	0.114%	0.12%
10	Screws, bolts, nuts, coach screws, screw hooks, rivets, cotters, cotter-pins, washers (including spring washers) and similar articles, of iron or steel	7318	0.59	1.36	24	101%	1,381	0.059%	0.13%

Source: Harvard Dataverse, Atlas of Economic Complexity. Authors' calculations.

To ensure sustainable growth of exports, opening up new markets, including more distant ones, will be important for Serbia over the medium term. This is another reason why a shift toward more complex products is desirable.

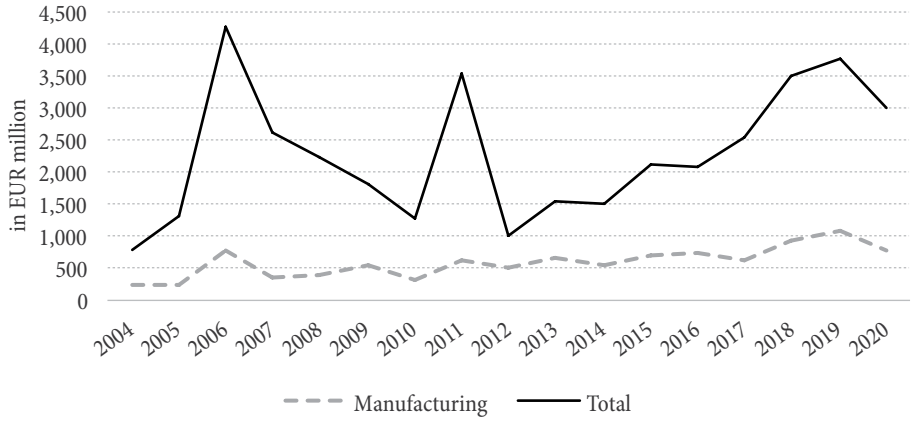
Foreign direct investment (FDI) and export

In very broad terms, FDI developments in Serbia since the beginning of the transition went through two stages. In the first stage, FDI inflows from 2004 to 2010 have been high and volatile, mainly related to privatizations and often dominated by several large transactions in financial sector and telecommunications. In the second stage, since 2011 FDI has been constantly growing (Figure 4). FDI inflows in this period became to a good degree a result of targeted FDI attraction policies as a mechanism for job creation, through abundant support by subsidies targeting job creation, especially since 2012-2014. This policy shift focus was marked by the Government's decision to attract a major car manufacturer (FIAT) to establish its plant launched in 2012 on the existing site being a part of the inherited metal and machines industry complex developed through the 1970s and 1980s. The share of FDI in manufacturing industry doubled from 18% in the 2004-2008 period to 32% of total net FDI inflow (Figure 5).

FDI attraction policies have been successful in job creation. For example, Serbia was ranked first globally in terms of FDI jobs created per million inhabitants in 2018 [23]. Also, some 40 thousand net new jobs have been created in de novo FDI companies in manufacturing between 2014 and 2019 out of ca. 256 thousand total net job creation in the same period [32].

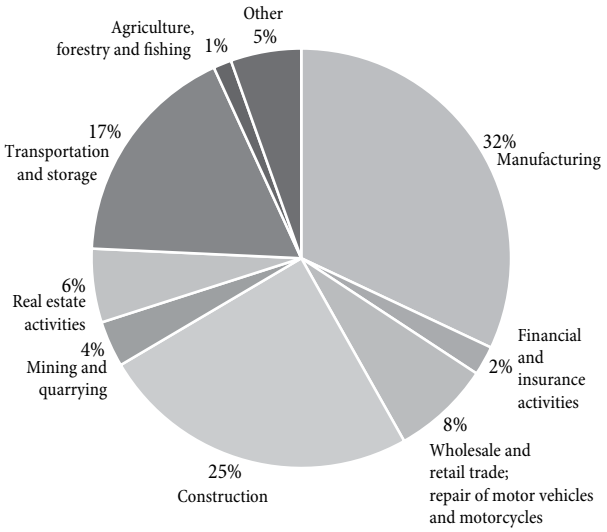
Yet in the same period, the productivity of de novo FDI did not increase significantly and the gap with domestic de novo firms in manufacturing industry has been almost closed. This is mainly because much of the

Figure 4: Value of net FDI inflow to Serbia 2004-2020



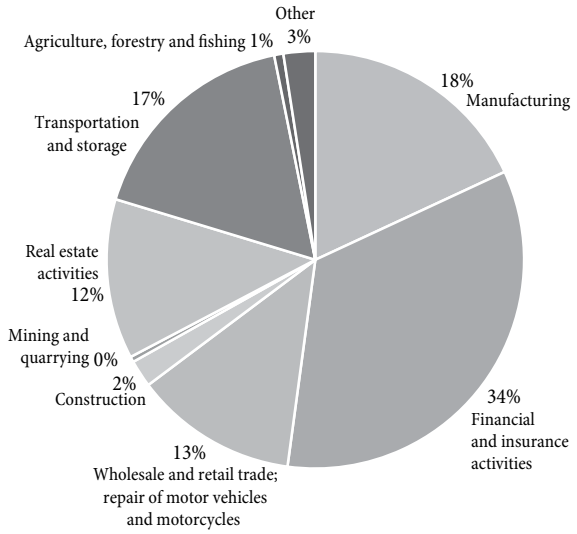
Note: Two peaks relate to large one-off deals: privatization of nationalized mobile operator Mobi063 to Norwegian Telenor (1.5 billion euro) and state-owned pharmaceutical company Hemofarm to German Stada (475 million euro), both in 2006, and to the sale of the retail chain Delta Maxi to Belgian Delhaize (933 million euro) in 2011.
Source: National Bank of Serbia. Authors' calculations.

Figure 5: FDI net inflow to Serbia by sector, 2010-2019



Source: Statistical Office of the Republic of Serbia. Authors' calculations.

Figure 6: FDI net inflow to Serbia by sector, 2004-2008



Source: Statistical Office of the Republic of Serbia. Authors' calculations.

recent de novo FDI in manufacturing has been in low-value added, labor intensive sectors such as cable production and rubber products such as tires. As a result of these developments, productivity in the FDI companies has in fact been decreasing from 2014 to 2018 (Figure 7).

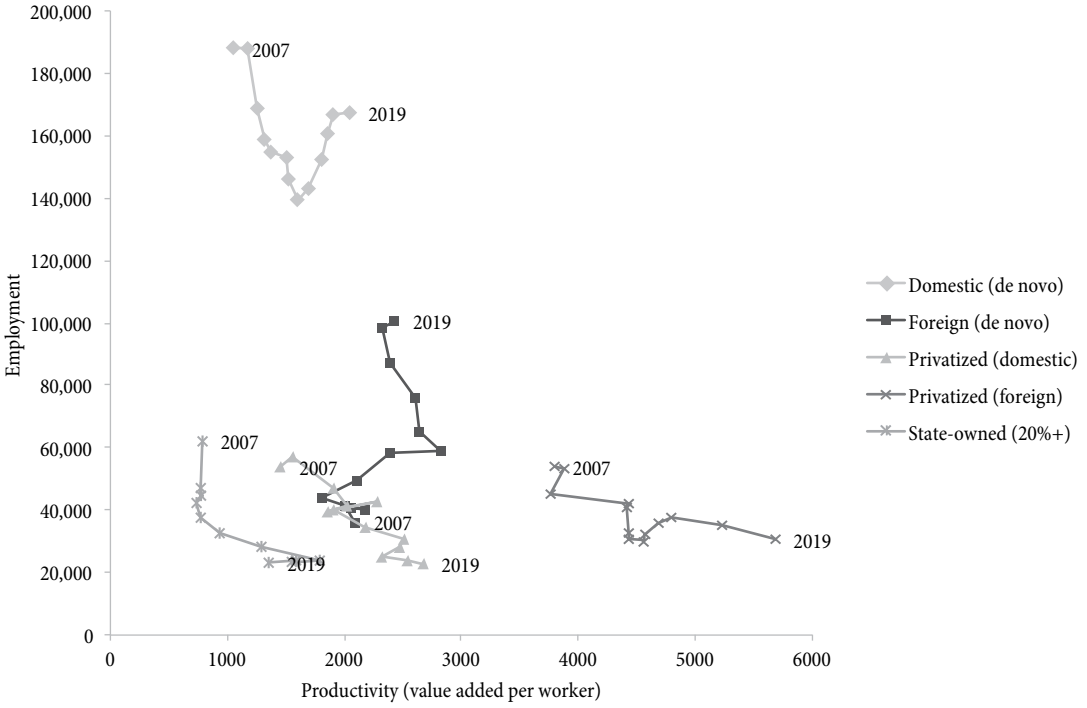
FDI has also significantly contributed to the growth of exports. For example, out of 30 largest exporters in 2019, 26 are FDI companies. Top 30 exporters account for EUR 5.48 billion of exports, of which FDI companies account for EUR 4.73 billion, or 86 percent according to the calculations based on Customs Administration data in combination with Business Registry data for 2019.

However, many export oriented FDI is still based on products with relatively low PCI (with the exception of car production), which is clearly reflected in the structure of Serbia's exports. Out of top 30 exported products, which account for EUR 9.2 billion of Serbia's exports in 2019 (about half of total exports), there are 16 low complexity products (with PCI < 0.3), accounting for approximately 60 percent of top 30 products export value.

Further, FDI companies are still not highly integrated in the local economy. By combining data on firm level import and financial reports, we estimate that foreign companies import approximately 60 percent of inputs.

Moreover, Serbia has a relatively significant number of products where it has a relatively high RCA as it is exporting significant volume of these products to the world market, yet at the same time importing fairly

Figure 7: Productivity and employment in manufacturing, by firm ownership, 2007-2019



Source: World Bank, 2019 (updated with data for 2018 and 2019).

large volume of these same types of products. These are typically products of mid and low-technology industries that are well established in Serbia on highly competitive grounds due to cheap technology and labor. For example, in 2018 Serbia imported USD 176 million of the products in the category Articles for the conveyance or packing of goods, of plastics (HS code 3923), while exporting USD 157 million of the products from this same group. Similarly, it imported USD 88 million of the products from the category Cartons, boxes, cases, bags and other packing containers, of paper, paperboard, cellulose wadding or webs of cellulose fibers (HS code 4819), while exporting USD 74 million of products from this group.

There is apparently a large potential for vertical integration of local SMEs into supplier chains to FDI and to international market in providing more complex and sophisticated products which can spur productivity and employment by much higher pace than the existing production structure dominated by low complexity products and high PCI products represented only in small pockets and niches.

In other words, there are a number of products where Serbia is exporting basic products with relatively low value added, and at the same importing more sophisticated products based on these. For example, in 2018 Serbia exported USD 1,114 million of the products from the group Insulated wire, cable and other insulated electrical conductors; optical fiber cables, of individually sheathed fibers, with conductors etc. or not (HS code 8544). It also exported USD 348 million of products from the group Refined copper and copper alloys, unwrought (HS code 7403). Both of these groups of products are comprised mostly of low value-added products that serve as inputs for more complex products of higher value added.

With still significant share of low-tech industries FDI and generally low integration with the local suppliers, important benefits such as technology transfer and productivity improvements that are typically associated with FDI are underused for local economic development.

Domestic SMEs and export

Serbia's SME sector plays an increasingly important role in the economy. Although about 60% of export is realized by large companies and almost 40% by foreign owned large companies, SMEs play an important role with 40% share in total export. SMEs generate significant employment (66% of employees in all enterprises), [29]. As shown in

Figure 7, since 2014 domestic de novo companies (which are almost exclusively SMEs) have been creating new jobs (not as much as foreign companies) and have in parallel been able to increase their productivity. By 2019 labor productivity of these companies has reached the level comparable to that of FDI companies (Figure 7). Similarly, when it comes to exporting trends, growth of SME exports has been broadly similar to that of large companies.

As noted in the introductory section, presence of the well-developed domestic SME sector is very important for generation of growth and employment. From the perspective of positive spillovers from FDI, these to a large extent depend on the absorptive capacity of the domestic economy, including capacity for technology absorption and level of human capital, all of which at the same time contribute to and depend on the existing sophistication of the domestic SMEs. On the other side, high growth perspective of domestic SMEs is supported by the establishment of global linkages, managerial skills and belonging to networks and agglomerations [16].

For the purpose of the analysis of the relative export orientation and internationalization of SMEs v. FDIs, we took the list of all Serbian exporters in 2019 from the Customs Administration and amended it with the relevant financial data from the Business Registers Agency. As some of firms are exporting (even imported) goods, we took as a criterion that firm had disclosed in its income statement any revenue from export of goods and services in the observed period (2019) to select the product exporting SMEs.

It is very interesting to note a relatively large share of export in revenues of product exporting SMEs. SMEs have typically more difficulties in internationalization, while larger companies are managing to overcome this barrier. The last holds especially for those SMEs in medium to high tech sectors which realize almost 40% of their total income from export (Table 4). This share is still lower than with FDI SMEs in the same technology group (77%) and the total amount is still small contributing with 2.8% to total value of export of all firms. The same segment of the economy is probably reflected in the presence of high PCI products in relatively small amounts of export as shown in Table 3. However, the presence of niches with highly complex products developed and produced by genuinely local SMEs which is almost entirely driven by foreign market placement represents a promising potential for larger scale shifts in economic structure and for designing policies to support it.

This observation seems aligned with other research. For example, Svetličič, Jaklič and Burger [30] note that, compared to larger firms, SMEs face larger financial and capacity problems when it comes to exporting. They note that while larger companies enjoy superiority in marketing, production capabilities and scale economies, SMEs frequently target specialized niches, with their main competitive advantages in the technological know-how, organizational flexibility, and closer relationships with customers.

The presented observations on the internationalization of Serbian SMEs (especially in high tech industries) in combination with the examples of specific products that are being imported while they are represented on highly competitive grounds in the Serbian product space or are in proximity of the existing products in terms of relevant knowledge and know-how, such as those quoted in the section on FDI and export, indicate that there might be significant opportunities for stronger integration between domestic SMEs and FDI companies operating in Serbia and positive spillovers to the local economy from FDI.

Moreover, specific policies targeting specialization and internationalization of specific niches of highly complex products can help to improve its RCA and valorize the local potential in terms of knowledge and know-how for the sake of higher economic growth.

Concluding remarks

Higher private sector investment, including foreign direct investment, in general leads to improved productivity, as well as improved competitiveness. It can also result in improved quality, design and reliability of products. One of the main mechanisms for the foreign direct investment to lead to positive transformation of the host economy is via technological and other spillovers. Yet, for spillovers to happen, the type of FDI (sectors, technology content) as well as absorptive capacity of the host economy (human

Table 4: Export orientation of product exporting firms, by firm size, ownership type and industry technology level[4], 2019

	Value of sales of products, in billion of dinars	Value of export sales of products, in billion of dinars	Share in total value of export of product exporting firms	Share of export in total revenue from sales of products	Firm level share of export in total revenue from sales of products, descriptive statistics					
					Number of firms	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile
	(1)	(2)	(3)	(4)=(2)/(1)	(5)	(6)	(7)	(8)	(9)	(10)
All firms	3,937	1,688	100.0%	42.9%	4,644	1.0%	8.0%	33.0%	82.0%	100.0%
Large firms	2,461	1,022	60.5%	41.5%	284	2.0%	9.5%	36.5%	89.0%	100.0%
Domestic firms	1,458	360	21.3%	24.7%	148	0.1%	8.0%	24.5%	58.5%	87.0%
of which: Manufacturing firms	463	216	12.8%	46.6%	71	8.0%	18.0%	41.0%	63.0%	87.0%
High-tech & Medium high-tech	**145**	**80**	**4.7%**	**55.0%**	**17**	**16.0%**	**24.0%**	**53.0%**	**63.0%**	**92.0%**
Low-tech & Medium low-tech	**319**	**136**	**8.1%**	**42.8%**	**54**	**7.0%**	**16.0%**	**55.0%**	**62.0%**	**87.0%**
Food and beverages	164	44	2.6%	26.9%	22	7.0%	13.0%	24.5%	39.0%	46.0%
Other	154	92	5.5%	59.8%	32	10.0%	23.5%	55.5%	76.0%	89.0%
Foreign firms (any share of foreign ownership)	1,004	662	39.2%	65.9%	136	2.0%	13.0%	69.0%	99.0%	100.0%
of which: Manufacturing firms	752	570	33.7%	75.7%	84	9.0%	34.5%	93.0%	100.0%	100.0%
High-tech & Medium high-tech	**283**	**259**	**15.4%**	**91.5%**	**27**	**15.0%**	**83.0%**	**99.0%**	**100.0%**	**100.0%**
Low-tech & Medium low-tech	**469**	**310**	**18.4%**	**66.1%**	**57**	**9.0%**	**27.0%**	**71.0%**	**99.0%**	**100.0%**
Food and beverages	152	45	2.7%	29.9%	20	7.0%	14.5%	30.0%	42.0%	61.5%
Other	317	265	15.7%	83.5%	37	22.0%	71.0%	98.0%	100.0%	100.0%
SMEs	1,475	666	39.5%	45.2%	4,360	1.0%	8.0%	32.0%	82.0%	100.0%
Domestic firms	813	280	16.6%	34.4%	2,923	1.0%	5.0%	22.0%	60.0%	94.0%
of which: Manufacturing firms	538	194	11.5%	36.1%	1,668	2.0%	7.0%	22.0%	55.0%	85.0%
High-tech & Medium high-tech	**124**	**47**	**2.8%**	**38.1%**	**386**	**1.0%**	**6.0%**	**20.0%**	**53.0%**	**87.0%**
Low-tech & Medium low-tech	**414**	**147**	**8.7%**	**35.5%**	**1,282**	**2.0%**	**7.0%**	**23.0%**	**55.0%**	**85.0%**
Food and beverages	135	37	2.2%	27.0%	261	1.0%	6.0%	19.0%	45.0%	77.0%
Other	278	110	6.5%	39.7%	1,021	2.0%	8.0%	24.0%	57.0%	87.0%
Foreign firms (any share of foreign ownership)	662	386	22.9%	58.3%	1,437	3.0%	19.0%	70.0%	100.0%	100.0%
of which: Manufacturing firms	311	202	12.0%	65.0%	474	5.0%	30.0%	77.0%	99.0%	100.0%
High-tech & Medium high-tech	**95**	**73**	**4.3%**	**77.4%**	**156**	**2.0%**	**24.0%**	**76.5%**	**75.0%**	**100.0%**
Low-tech & Medium low-tech	**216**	**129**	**7.6%**	**59.6%**	**318**	**9.0%**	**32.0%**	**77.0%**	**99.0%**	**100.0%**
Food and beverages	63	30	1.8%	48.3%	64	5.0%	14.5%	52.5%	88.0%	98.0%
Other	153	98	5.8%	64.3%	254	13.0%	37.0%	80.5%	99.0%	100.0%

Source: Business Registers Agency of the Republic of Serbia, Register of Financial Statements. Customs Administration for selection of the list of exporters of goods in 2019. Authors' calculations.

capital, capabilities of local SMEs, technology level of domestic economy, development of the R&D system of the host economy, etc.) are both crucial.

Ever since the 2008 global crisis, Serbia has based its growth on exports and investments with impressive inflow of foreign direct investment (FDI). However, despite recent improvements, growth rate of the economy has in general been relatively lukewarm and the gap between Serbia and its peers is not closing. Although this growth model has resulted (and has been supported) in much more stable macroeconomic environment, achieving much higher growth rates in a sustainable manner is necessary. Over the same period, the industrial policy, although not explicitly formalized so, was based on direct subsidies to foreign direct investments linked to their creation of employment in Serbia and, to a much lesser extent, on

4 Aggregation used by Eurostat (https://ec.europa.eu/eurostat/cache/metadata/Annexes/htec_esms_an3.pdf).

programs supporting local SMEs in investment, export and innovation development. In this paper, through the lens of the economic complexity and product space approach developed by Hidalgo and Haussmann [21], we analyze the overall outcome of the post-crisis developments in terms of economic structure and productivity, partly resulting from the applied policies. We draw attention to the finding that the economic complexity, as a good predictor of the future economic growth, only slightly improved over the observed period to the level of 0.59 in 2018 (against 0.5 in 2008).

By combining the perspective of product level complexity and industry level technology as both are indicating the knowledge base and growth perspective of the economy with the current export performance measured by revealed competitive advantage (RCA), we can highlight two similarly large segments in terms of value of export: industries with low and medium-low technology, low PCI products and large RCA, like food, rubber, construction materials, wood products and medium high-technology with higher PCI products (but not very high either) and relatively low RCA, like tools, machinery, equipment and vehicles.

Although the most important factor of increasing export, FDI inflow into manufacturing industry has been directed mostly into low technology industries producing products with low economic complexity. Moreover, is seams that the vertical spillover through linkages with local suppliers and transfer of technology, knowledge and practices did not occur. In sum, while Serbia has been successful in terms of volume of FDI attracted, it now needs to focus on the quality and type of FDI. Policy adjustments could be made to (i) better target FDI, focusing more on higher value-added activities and companies from sectors that have higher likelihood of integration with local economy, and (ii) facilitate spillovers to local economy; this can be done both through incentives, but also through programs assessing FDI needs, facilitating contacts with local suppliers, and upgrading the overall R&D capacity in the country.

At the same time, some positive developments are also registered in export structure dynamics. They are reflected in the presence of some high-tech products with higher complexity such as machines, electrical equipment, lighting, etc. Domestic de novo SMEs with significant share of total income realized from export have developed so far in high and mid high-tech industries. They are responsible for some high PCI products that are produced in Serbia and exported. However, the impact in terms of RCA of these products and total value of exports is still not significant.

These achievements could be significantly scaled up with the policy support. The results so far haven't been supported by a clearly articulated and focused set of measures. The recent programs' design in DAS is a step in the right direction. In general, SME programs could further focus on upgrading SME capabilities, but also technological, managerial, and operational ones, sales, etc., facilitating linkages with FDI and better integration in regional and global value chains, facilitating exports, etc.

It is important to note that the policies and measures discussed above need to be underpinned with sustained improvements to the business and regulatory environment. This should include simplification and more consistent implementation of administrative procedures (including through digitalization); ensuring market contestability and implementing sound competition policies; and having proper state aid controls to ensure level playing field.

References

1. Aitken, B., & Harrison, A. E. (1999). Do domestic firms benefit from foreign direct investment? Evidence from Venezuela. *American Economic Review*, *89*(3), 605-618.
2. Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and economic growth: the role of local financial markets. *Journal of International Economics*, *64*(1), 89-112.
3. Ayyagari, M., & Kosová, R. (2010). Does FDI facilitate domestic entry? Evidence from the Czech Republic. *Review of International Economics*, *18*(1), 14-29.
4. Barrios, S., Görg, H., & Strobl, E. (2005). Foreign direct investment, competition and industrial development in the host country. *European Economic Review*, *49*(7), 1761–1784.
5. Barry, F., Görg, H., & Strobl, E. (2003). Foreign direct investment, agglomerations, and demonstration effects: An empirical investigation. *Review of World Economics*, 139, 583–600.
6. Bijsterbosch, M., & Kolasa, M. (2009). FDI and productivity convergence in Central and Eastern Europe: an industry-level investigation. *ECB Working Paper Series*, 992.
7. Blomström, M., & Kokko, A. (1998). Multinational corporations and spillovers. *Journal of Economic Surveys*, *12*(3), 1-31.

8. Blomström, M., Lipsey, R., & Zejan, M. (1994). What explains developing country growth?. *National Bureau of Economic Research*, 4132.
9. Borensztein, E., De Gregorio, J., & Lee, J. W. (1998), How does foreign direct investment affect economic growth?. *Journal of International Economics*, *45*(1), 115-135.
10. Caldarelli, G., Cristelli, M., Gabrielli, A., Pietronero, L., Scala, A., & Tacchella, A. (2012). A network analysis of countries' export flows: firm grounds for the building blocks of the economy. *PLOS One*, *7*(10). Retrieved from https://doi.org/10.1371/journal.pone.0047278.
11. Caves, R. (1996). *Multinational enterprise and economic analysis*. Cambridge University Press.
12. Durand, M., & Giorno, C. (1987). Indicators of international competitiveness: conceptual aspects and evaluation. *OECD Economic Studies*, *9*(3), 147-182.
13. Estrin, S., & Uvalic, M. (2014). FDI into transition economies: are the Balkans different?. *Economics of Transition*, *22*(2), 281–312.
14. Estrin, S., & Uvalic, M. (2016). Foreign direct investment in the Western Balkans: what role has it played during transition?, *Comparative Economic Studies*, *58*(3), 455-483.
15. Fosfuri, A., Motta, M., & Rønde, T. (2001). Foreign direct investment and spillovers through workers' mobility. *Journal of International Economics*, *53*(1), 205–222.
16. Grover Goswami, A., Medvedev, D., & Olafsen, E. (2019). *High-growth firms: Facts, fiction, and policy options for emerging economies.* The World Bank.
17. Hartmann, D., Guevara, M. R., Jara-Figueroa, C., Aristarán, M., & Hidalgo, C. A. (2017). Linking economic complexity, institutions, and income inequality. *World Development, 93*, 75-93. Retrieved from http://dx.doi.org/10.1016/j.worlddev.2016.12.020.
18. Hausmann, R., & Hidalgo, C.A. (2011). The network structure of economic output. *Journal of Economic Growth, 16*(4), 309-342.
19. Hausmann, R., & Hidalgo, C.A. (2014). *The atlas of economic complexity: Mapping paths to prosperity.* MIT Press.
20. Hidalgo, C. A. (2009). The dynamics of economic complexity and the product space over a 42-year period (Working Paper No. 189). Center for International Development at Harvard University. Retrieved from https://www.hks.harvard.edu/sites/default/files/centers/cid/files/publications/faculty-working-papers/189.pdf.
21. Hidalgo, C. A., & Hausmann, R. (2009). The building blocks of economic complexity. *Proceedings of the National Academy of Sciences, 106*(26), 10570-10575. Retrieved from https://doi.org/10.1073/pnas.0900943106.
22. Hidalgo, C. A. (2015). *Why information grows: The evolution of order, from atoms to economies*. New York: Basic Books.
23. IBM Institute for Business Value (2019). Global Location Trends 2019 Annual Report: Trade regulations and digital disruptions affect the economic outlook. Retrieved from https://www.ibm.com/downloads/cas/R9VW3VO5.
24. Javorcik, S. B. (2004). Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. *American Economic Review*, *94*(3), 605-627.
25. Kokko, A. (1992). *Foreign direct investment, host country characteristics, and spillovers*. Stockholm: The Economic Research Institute.
26. Lipsey, R. (2006). *Measuring the impacts of FDI in Central and Eastern Europe* (NBER Working Paper No. 12808), National Bureau of Economic Research.
27. Moran, T. H., Graham, E. M., & Blomström, M. (2005). Does foreign direct investment promote development?. *Peterson Institute Press: All Books*. Peterson Institute for International Economics, 3810.
28. Moran, T. H. (2011). *Foreign direct investment and development: Launching a second generation of policy research: Avoiding the mistakes of the first, reevaluating policies for developed and developing countries*. Peterson Institute for International Economics.
29. OECD, European Union, ETF & EBRD (2019). SME Policy Index: Western Balkans and Turkey 2019-Assessing the Implementation of the Small Business Act for Europe. Paris.
30. Svetličič, M., Jaklič, A., & Burger, A. (2007). Internationalization of small and medium-size enterprises from selected central European economies. Eastern European Economics, *45*(4), 36-65.
31. World Bank (2019). Public expenditure review of small and medium enterprises and competitiveness programs in Serbia. Washington DC, *mimeo*.
32. World Bank (2019). Country Economic Memorandum: Serbia's new growth agenda. Washington DC.

Jasna Atanasijević

is Associate Professor of Economics at the Department for Mathematics and Computer Science of the Faculty of Sciences, University of Novi Sad. From 2009 to 2014, she was chief economist at Hypo Alpe-Adria Bank in Serbia. She is engaged on a few projects: as coordinator of an Erasmus+ KA2 project for capacity building in higher education *Interdisciplinary Short Cycle Programs in Public Policy Making and Analysis* (PPMA), team leader for experts in the implementation unit of the World Bank supported Competitiveness and Jobs Project, and member of a data science research team working on a research project developing big data methods for risk management in the Tax Administration in Serbia. She holds a PhD in Economics from the University Paris 1 Sorbonne.

Duško Vasiljević

is a Senior Private Sector Specialist in the World Bank country office in Serbia. Mr. Vasiljević joined the Bank in 2010 as an economist. In 2012 he moved to the Private Sector Development. He covers areas such as competitiveness, SME development, innovation and state-owned enterprises. He led or participated in several lending operations and contributed to several analytical pieces, both in Serbia and other countries of the region. Prior to joining the World Bank, he was a researcher at the Center for Advanced Economic Studies, and before that a consultant for the IFC/SEED. Mr. Vasiljević holds a master's degree in Quantitative Finance from the Faculty of Economics, University of Belgrade, and a bachelor's degree from the Faculty of Electrical Engineering, University of Belgrade.

Zoran Nikolić

is Associate Professor at the Faculty of Physics, University of Belgrade, at the Department of Applied and Computational Physics. He holds a PhD in Applied Physics in the field of development of analytical and numerical methods in the characterization of physical and biological systems. His research interests include data processing and multivariate signal analysis in a variety of scientific areas. His specialties in computer programming are data mining, image and multimedia processing, mathematical data modeling, and numerical simulations. Mr. Nikolić has published over 50 articles in scientific journals, which have been cited about 900 times. For more than two decades, he has participated in scientific research and commercial projects.

Olivera Pavlović

is currently engaged as data support expert for M&E and impact assessment for investment and export promotion strategic framework on the World bank supported Competitiveness and Jobs Project. She has a master's degree in Banking. She took part in many business advisory and academic research projects as data analyst, data administrator and research assistant performing different tasks: from BI/DWH solutions, developing and establishing reporting system, automation of numerous reporting processes to preparation of data bases, statistical and econometric analysis and data visualization. She was employed at the Public Policy Secretariat of the Government of Serbia from 2017 to 2019, Addiko Bank (former Hypo Alpe-Adria Bank) from 2007 to 2017, Pošte Srbije from 2004 to 2007.

RES SERBIA

RENEWABLE ENERGY SOURCES OF SERBIA

WWW.OIE.RS

---

newenergy SOLUTIONS

- PROJECT DEVELOPMENT
- PROJECT MANAGEMENT DURING CONSTRUCTION AND PMC/OE/SUPERVISION SERVICES
- ASSET MANAGEMENT,
- OPERATIONAL MENAGEMENT,
- BOP O&M

Đorđa Stanojevića 12
11070 New Belgrade
Serbia

+381 11 7853 700
office@newenergy.rs
www.newenergy.rs

ADDIKO BANK A.D. BEOGRAD
BEOGRAD, MILUTINA MILANKOVIĆA 7V
TEL: 011/222-67-13
FAX: 011/222-67-98
www.addiko.rs

AGENCIJA ZA OSIGURANJE DEPOZITA
BEOGRAD, KNEZ MIHAILOVA 2/I
TEL: 011/2075 102
FAX: 011/3287 741
www.aod.rs

ATLANTIC GRUPA
BEOGRAD, KUMODRAŠKA 249
TEL: 011/395 6007
FAX: 011/2472-628
www.atlanticgrupa.com

BANCA INTESA AD BEOGRAD
NOVI BEOGRAD, MILENTIJA POPOVIĆA 7B
TEL: 011/2011-200
FAX: 011/2011-207
www.bancaintesabeograd.com

BANKA POŠTANSKA ŠTEDIONICA AD
BEOGRAD, ULICA KRALJICE MARIJE BROJ 3
TEL: 011/2020-292
FAX: 011/3376-777
www.posted.co.rs

BISNODE doo
NOVI BEOGRAD, MILUTINA MILANKOVIĆA 7V
TEL: 011/2252-740
www.bisnode.rs

BUCK
11147 BEOGRAD, p.f. 2, SRBIJA
TEL: 011/2052-400
FAX: 011/2052-401
www.buck.rs

NBGP PROPERTIES
Ogranak Crowne Plaza Beograd
BEOGRAD, Vladimira Popovica 10
TEL: 011/2204-004
Fax: 011/2204-104
www.crowneplaza.com

"DDOR NOVI SAD" A.D.O. Novi Sad
Deo Unipol Gruppo S.p.A.
NOVI SAD, BULEVAR MIHAJLA PUPINA 8
TEL: 021/4871-000
0800/303-301
www.ddor.co.rs

ELEKTROPRIVREDA SRBIJE
BEOGRAD, CARICE MILICE 2
TEL: 011/2628-622
FAX: 011/2623-984
www.eps.rs

NOVI BEOGRAD, ANTIFAŠISTIČKE BORBE 13a
TEL: 011/2095-808
FAX: 011/2095-890
www.ey.com/rs

ERSTE BANK
NOVI SAD, BULEVAR OSLOBOĐENJA 5
NOVI BEOGRAD, MILUTINA MILANKOVICA 11B
TEL: 0800 201 201
FAX: 021/480 97 00
www.erstebank.rs

EUROBANK
BEOGRAD, VUKA KARADŽIĆA 10
TEL: 011/206-5816
FAX: 011/302-8952
www.eurobank.rs

FOND ZA RAZVOJ REPUBLIKE SRBIJE
BEOGRAD, KNEZ MIHAILOVA 14
NIŠ, BULEVAR NEMANJIĆA 14A
TEL: 011/2631-239
www.fondzarazvoj.gov.rs

JEDINSTVO
UŽICE, PRVOMAJSKA BB
TEL: 031/533-681
FAX: 031/533-685
www.mppjedinstvo.co.rs

KOMERCIJALNA BANKA AD
BEOGRAD, SVETOG SAVE 14
TEL: 011/3080-100
FAX: 011/3440-033
www.kombank.com

HOLDING KORPORACIJA „KRUŠIK" A.D.
VALJEVO, VLADIKE NIKOLAJA 59
TEL: 014/221-121
FAX: 014/220-516
www.krusik.rs

MEDIGROUP SEE
NOVI BEOGRAD, PARISKE KOMUNE 26
TEL: 011/4040-100
http://bolnica.medigroup.rs/

MEĐUNARODNI CENTAR ZA RAZVOJ FINANSIJSKOG TRŽIŠTA DOO
BEOGRAD, NEBOJŠINA 12
TEL: 011/3085-780
FAX: 011/3085-782
www.mcentar.rs

AD "NOVOSADSKI SAJAM" NOVI SAD
NOVI SAD, HAJDUK VELJKOVA 11
TEL: 021/4830-310
FAX: 021/4830-263
www.sajam.net

OTP BANKA SRBIJA AD BEOGRAD
NOVI BEOGRAD, BULEVAR ZORANA ĐINĐIĆA 50a/b
TEL: 011/3011-555
www.otpsrbija.rs

POINT GROUP Int doo
BEOGRAD, FRANCUSKA 6
TEL: 011/7346 661
FAX: 011/7234 431
www.pointint.com

RAIFFEISEN FUTURE A.D. BEOGRAD
DRUŠTVO ZA UPRAVLJANJE
DOBROVOLJNIM PENZIJSKIM FONDOM
NOVI BEOGRAD, ĐORĐA STANOJEVIĆA 16
TEL: 011/220-7180
FAX: 011/220-7186
www.raiffeisenfuture.rs

REPUBLIČKI FOND ZA PENZIJSKO
I INVALIDSKO OSIGURANJE
BEOGRAD, DR ALEKSANDRA KOSTIĆA 9
TEL: 011/206-1102
FAX: 011/206-1127
www.pio.rs

ROCHE SRBIJE
NOVI BEOGRAD, MILUTINA MILANKOVIĆA 11A
TEL: 011/2022-860
www.rochesrbija.rs

SAVA NEŽIVOTNO OSIGURANJE a.d.o.
BEOGRAD, BULEVAR VOJVODE MIŠIĆA 51
TEL: 011/3644-801
FAX: 011/3644-889
www.sava-osiguranje.rs

JP SRBIJAŠUME
NOVI BEOGRAD, BULEVAR MIHAJLA PUPINA 113
TEL: 011/311-5036
FAX: 011/311-5036
www.srbijasume.rs

TRIGLAV OSIGURANJE A.D.O.
NOVI BEOGRAD, MILUTINA MILANKOVIĆA 7a
TEL: 011/3305-100
FAX: 011/3305-138
www.triglav.rs

UNIVERZITET U BEOGRADU
EKONOMSKI FAKULTET
BEOGRAD, KAMENIČKA 6
TEL: 011/3021-240
FAX: 011/2639-560
www.ekof.bg.ac.rs

VISOKA POSLOVNA ŠKOLA
STRUKOVNIH STUDIJA NOVI SAD
NOVI SAD, VLADIMIRA PERIĆA VALTERA 4
TEL: 021/450-101
FAX: 021/334-055
www.vps.ns.ac.rs

JAVNO PREDUZEĆE „VOJVODINAŠUME"
PETROVARADIN, PRERADOVIĆEVA 2
TEL: 021/431-144, lokal 125
FAX: 021/431-144, lokal 217
www.www.vojvodinasume.rs

WIENER STÄDTISCHE OSIGURANJE A.D.O. BEOGRAD
VIENNA INSURANCE GROUP
BELGRADE, TREŠNJINOG CVETA 1
TEL: +381 11 2209 800
FAX: +381 11 2209 900
http://www.wiener.co.rs

KOPAONIK BUSINESS FORUM

XXVIII KOPAONIK BUSINESS FORUM
ANNUAL MEETING 2021

Савез економиста Србије

in partnership with

mastercard

GENERAL SPONSOR

NLB

GOLD SPONSORS

ADVOKATSKA KANCELARIJA ALEKSIĆ sa saradnicima

ВојводинаШуме

Roche

SILVER SPONSORS

УОС Удружење осигуравача Србије Association of Serbian Insurers

MK GROUP One vision. Smart decisions.

SPONSORS

WIENER STÄDTISCHE VIENNA INSURANCE GROUP

BANCA INTESA

Telekom Srbija

AIK Banka domaća i jaka

DDOR OSIGURANJE | Unipol

EY Building a better working world

ERSTE Bank

UNIQA

SAGA new frontier group

Eurobank Srbija

ATLANTIC GRUPA

otpbanka

sas

Addiko Bank

telenor

TeleGroup

WORLD BANK GROUP

RioTinto

newenergy SOLUTIONS

MEDIA PARTNERS

Tanjug.Tačno

НИН

Blic

Online, mobile or contactless, night or day, make the way you pay swift, smooth and, above all, safe.

Use your Mastercard® card and make every transaction easy, fast and secure.