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FROM THE EDITOR: THE TRUTH ABOUT GROWTH

Public sentiment about the 2015-17 program of fiscal consolidation has taken a sharp turn. However, even among some professional economists, doubts about sustainability of the fiscal balance as a stable base for growth have not fully receded.

This edition of *Ekonomika preduzeća* is delineated by the *Introductory paper* of *D. Vujović* titled *Serbia beyond fiscal consolidation: The quest for dynamic, sustainable, inclusive growth.* After spending more than three years in the fiscal consolidation program, Minister of Finance takes on another grand topic in this edition, sources of growth. In the following paper, a duo of authors - *D. Đuričin* and *I. Vuksanović Herceg* - acknowledged the abovementioned shift and elaborated on a new model of growth and economic policy platform for double GDP, with special focus on industrial policy for ICT. They try to update the heterodox economic policy platform by opting to enhance the economy ambitiously rather than incrementally. In his research, President of the Fiscal Council *P. Petrović* and his team - *D. Brčerević* and *S. Minić* - argue for public sector reforms along with locking in the budget. They find that policymakers tend to underestimate the impact of binding constraints on fiscal balance sustainability and overestimate their harmful consequences. The list of constructive sceptics' contributors ends with *M. Labus* and his comparative analysis of business cycles in Serbia and its five neighboring EU Member States over the long-term period (2000-17). His research suggests that public policy leaders tend to underestimate the harmful consequences of transitional recession in Serbia.

The block of optimists begins with Governor of the National Bank of Serbia *J. Tabaković,* who addressed the role of non-performing loans resolution in the stability of the financial system and recovery.

Digital transformation is in the spotlight of this edition. Perhaps it is the most overused phrase in today's business jargon. At the start of this spotlight package, a trio of authors - *G. Pitić, N. Savić* and *S. Verbić* - tries to demystify some core concepts. *S. Nešić* and *J. Subotić,* led by *A. Trbovich,* are also joining the debate by placing special focus on scaling up the innovative start-ups. Their valuable recommendations are evidence-based. Another trio of authors - *N. Savić, G. Pitić* and *J. Lazarević* - dedicated their article to innovation-driven economy. Their standpoints are backed up by the results of an empirical study of the innovation ecosystem in Serbia. The section dedicated to digital transformation in Serbia ends with a paper prepared by *R. Pindžo* and *M. Agić Molnar,* headed by *G. Petković*. The paper addresses the problem of non-incremental changes in tourism and retail under the impact of digital transformation.

Deputy Prime Minister *Z. Mihajlović* analyzes infrastructure as a conventional source of growth. She argues that infrastructure development exerts strong influence on GDP increase and competitiveness improvement. In a paper he co-authored with *M. Obradović, F. Stojanović* and *S. Milošević, D. Lončar* made a valuable contribution to the field of market concentration and regulatory framework adjustments. The authors advocate for some improvements in the regulations and offer several ideas for fixing some important problems. In the final paper, *S. Kisić* brings clarity to the debate of institutional setting adjustments for a more robust growth from the education perspective. She presents a view on how to fix things based on relevant think thanks' recommendations with the aim to abolish the skills gap vis-a-vis the market needs.

Before fiscal consolidation, Serbia's economy was out of tune and impotent. After the fiscal consolidation, it is now pretty well-balanced, but still impotent. More and more economists share the concern about growth, but systemic change has been relatively slow. We hope that ideas presented in this edition of *Ekonomika preduzeća* will contribute to the effort toward dynamic, sustainable and inclusive growth while keeping fiscal balance intact.

Prof. Dragan Đuričin, Editor in Chief

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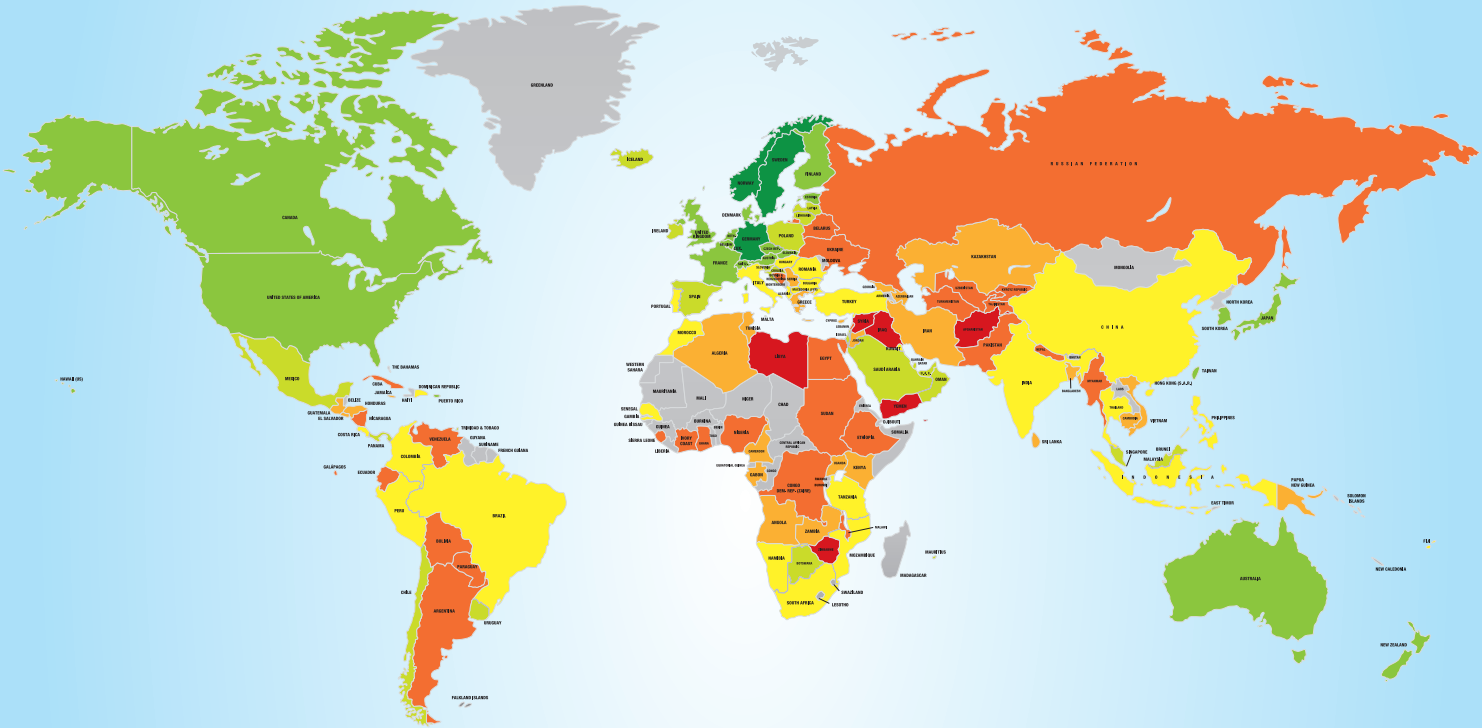

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SERBIA BEYOND FISCAL CONSOLIDATION: A QUEST FOR DYNAMIC, SUSTAINABLE, INCLUSIVE GROWTH*

Srbija posle fiskalne konsolidacije - u potrazi za dinamičnim, održivim, inkluzivnim rastom

Abstract

The fifth fiscal consolidation in Serbia was based on a comprehensive, multi-year program built on broad-based expenditure cuts, better revenue performance, and related structural reforms and pro-growth policies. The program exceeded all planned fiscal results (both nominal and structural) and had a beneficial impact on economic growth. To sustain macro-fiscal results and prepare the basis for dynamic, sustainable and inclusive long run growth, pending institutional and structural reforms must be completed, supplemented by a set of carefully designed and well implemented pro-development and pro-growth policies. In addition, improved competitiveness, enhanced capabilities and stronger connectedness are needed to respond to challenges of new technologies and changing global patterns.

Keywords: *Fiscal consolidation, fiscal deficit, public debt, institutional reforms, structural reforms, sustainable growth, inclusive growth*

Sažetak

Peti program fiskalne konsolidacije u Srbiji zasniva se na sveobuhvatnom programu smanjenja rashoda, povećanju budžetskih prihoda i povezanim strukturnim reformama i politikama koje podržavaju ekonomski rast. Program je premašio sve planirane fiskalne rezultate (kako nominalne tako i strukturne) i, pored toga, ostvario pozitivno dejstvo na ekonomski rast. Da bi se održali postignuti makro-fiskalni reyultati i pripremila osnova za dinamičan, održiv, inkluzivan dugoročni rast, moraju se kompletirati važne institucionalne i strukturne reforme, praćene skupom pažljivo pripremljenih i dobro sprovedenih politika koje podržavaju rast i razvoj. Pored toga, neophodno je unapredjivati konkurentnost, produbljivati znanje i sposobnosti, i jačati povezanost da bi se uspešno odgovorilo na izazove koje nameću nova tehnologija i promenjeni globalni tokovi.

Key words: *Fiskalna konsolidacija, fiskalni deficit, javni dug, institutcionalne reforme, strukturne reforme, održivi rast, inkluzivni rast*

* This article was produced as part of the research project "Advancing Serbia's Competitiveness in the Process of EU Accession", no. 47028, during the period 2011-2015, supported by the Serbian Ministry of Education, Science and Technological Development.

Introduction

After more than three years of successful fiscal consolidation Serbia has restored macroeconomic stability and is now safely out of dire straits experienced in the aftermath of the global financial crisis. Fiscal balance has improved from a 6.6 percent deficit in 2014 to a 1.2 percent surplus at the end of 2017. GDP went through a turning point in the third quarter of 2014 and has retained a positive trend expected to level off at 3.5 percent growth this year and around 4 percent thereafter. Debt to GDP has declined by 10 percentage points and is likely to come down to 60 percent by the end of 2018. Current account balance declined from double digits to around 4 percent of GDP and is fully covered by FDI inflows. Unemployment is down by more than 10 percentage points. Inflation is very low at around 2 percent and very stable. And so is the exchange rate. Credit rating has been upgraded and the interest rate spreads have improved by more than 500 basis points significantly lowering the cost of both public sector debt and private borrowing.

In short, Serbia has successfully completed a 3-year fiscal consolidation program supported by the IMF and is now ready to address the new challenges of completing structural reforms, reaching investment grade in international financial markets, and embarking on a faster GDP growth path that is both sustainable and inclusive. And this has to be done within the very difficult domestic political economy landscape while being extra mindful of the EU integration requirements and the ever growing complexity of downside risks from new technologies and changing globalization patterns.

Reaching and sustaining a dynamic medium-run GDP growth under those circumstances is not simple. A very recent World Bank study on The Future of Manufacturing-Led Development [12] identifies inevitable changes in the traditional manufacturing-led development strategy in the presence of new technologies brought by the fourth industrial revolution.

This change will bring significant costs of adjustment as well as present open and hidden opportunities. The net impact will depend on how we respond. How we enable firms to adapt and continue to add value and create jobs in the new and evolving global environment. How we educate and train future generations to perform to their potential in both domestic and international arena. How we identify new policy priorities and adjust development strategies to account for changing technology and globalization patterns.

"As heightened global competition raises the bar for what it takes to succeed in export-led manufacturing, the feasibility agenda is at the heart of expanding the set of available opportunities." [12] The study further postulated that this feasibility agenda can best be achieved through increased competitiveness, enhanced capabilities, and better connectedness.

Increased *Competitiveness* is needed to shift the burden from workers (low wages) to quality business environment in securing productivity (low unit labor costs).

Enhanced *Capabilities* are indispensable for individuals and firms to adopt and use new technologies in a continuously growing regulatory and policy complexity.

Better *Connectedness* indicates that both shifts in the trade agenda and growing synergies across sectors will be necessary to achieve and sustain success in manufacturing.

Following this introduction, the paper is organized as follows. Section 2 explains the role of fiscal consolidation in establishing an indispensable stable basis for dynamic sustainable long run growth and provides a short account of previous four attempts at achieving it in Yugoslavia, Serbia and Montenegro, and Serbia. Section 3 reviews the results of the latest 2015-2017 fiscal consolidation program, while section 4 analyzes the sources of economic growth in the 2001-2017 period to draw lessons learned and sketch the space for future policy interventions with sustainable outcomes. The remaining structural reform agenda is covered in section 5. In section 6 we evaluate Serbia's readiness to reach sustainable manufacturing-led growth along the proposed "3C" dimensions, as well as apply an alternative methodology based on composite development potential index. Section 7 concludes and proposes a set policy recommendations.

Fiscal consolidation as an indispensable basis for sustainable growth

The quint-essential purpose of fiscal consolidation is three-fold: Closing internal and external gaps (twin deficits) in

the short-run; securing sustainability of fiscal consolidation outcomes; and creating a basis for dynamic, sustainable growth in the medium-to-longer run. Internal gap refers to fiscal balance, monetary and overall macroeconomic stability, while external gap refers to trade and current account balance, as well as the level of external debt relative to the size of GDP. Sustainability of fiscal outcomes hinges on the completion of key institutional and structural reforms needed to resolve dysfunctional gaps related state owned and public utility companies and prevent misuse of public resources and uncontrolled leakages of constrained fiscal revenues.

Fiscal consolidation programs in the post-Tito period were always designed and launched in haste, under time pressure, and out of dire necessity. The triggers usually included need to stop growing and unsustainable twin deficits, looming debt crisis or even sovereign default. The results of past fiscal consolidation programs were partial, limited to measurable (often superficial) improvements in select macroeconomic indicators (less overall macroeconomic performance, and unsustainable in the absence of the necessary institutional and structural reforms. Ipso facto, these programs fell critically short of securing the necessary (and sufficient) conditions for creating a basis for launching dynamic, sustainable, and inclusive economic growth in the medium-to-longer run, completion of the endless transition process and reaching a long awaited entry into the club of developed countries.

A long sequence of utterly wrong economic policy choices and public investment decisions from the „rich classical socialist repertoire of the self-managed kind", enabled by easy external financing from IFI's, commercial banks and supplier loans, pushed Yugoslavia into a deep fiscal and debt crisis at the beginning of 1980's. A rational, justified, timely and painful response offered by the *first fiscal consolidation program* (attributed to then Prime Minister Milka Planinc) was never properly understood, nor politically and socially accepted. Less than two years after inception, soon after achieving the initial improvements in visible macroeconomic indicators, the program was abandoned with a popular bang. The front page of daily Politika happily exclaimed: "Goodbye stand-by". The sustainability of hard won short-term macroeconomic results was in jeopardy in the absence of substantive institutional and structural reforms. These reforms were flatly rejected by the collective political and state leadership of the country as they questioned the very substance of the non-market socialist economy with a human face resting on a "generalized soft-budget constraint". The wake-up call voiced by the program was put on a multi-year snooze. The drift from reality continued, floating on "ideological illusions" and "old economic misconceptions" justified by the appeal of promised future, and unreal social expectations.

The ensuing series of missed opportunities and forced policy decisions deepened the economic chaos during the rest of the 1980's until a solution was finally offered through the well-known *second program of fiscal (and the overall macroeconomic) consolidation* marked by then Prime Minister Ante Marković. It is hard to determine to what extent the ensuing chaos addressed by the program contributed to the break-up of Yugoslavia, but it appears almost certain that the war and diverging non-economic forces destroyed the rationale and effectiveness of this late program before the non-austerity (expansionary) nature of proposed macro-monetary and fiscal policies and structural reforms could be tested in reality. The impressive nominal macroeconomic results (attributable to fixed exchange rate and loose fiscal stance) coupled with a battery of laws allowing massive privatizations and marking discontinuity with self-managed enterprise and other core self-management laws, were stopped short of meaningful implementation. Politically inspired implosion of the fiscal and monetary system, and the destruction of the very substance of (federal) state in favor of forming independent national mini-states, partitioned the economic space and dis-empowered the monetary and fiscal authority.

The third program of primarily monetary stabilization, as well as fiscal consolidation, designed by Dragoslav Avramović, offered a solution for one of the highest hyperinflations in history caused by a non-existent never-declared war. Following notable initial successes stabilizing the inflation and the exchange rate, the program was gradually abandoned as it imposed "unacceptable limitations" on the conduct of (economic) policy and state strategy. The multi-year unfortunate outcome is well known. Despite the

fact that many important privatizations were initiated and completed during this period, and that the vast majority of the new owners and business elite was formed during that period, it is not easy to establish a clear correlation (let alone a causal relationship) between this ownership restructuring and the introduction of much needed rational market institutions and the consistent implementation of structural reforms. Actually, much of the privatizations during that period were done in a legal and institutional vacuum. Furthermore, in parallel with privatizations in an incomplete institutional setting, we observed strong expansion of the state both in terms of ownership and its role in the economy, as well as the introduction of some failed socialist concepts successfully resisted during the decades of soft self-managed socialism.

The fourth fiscal consolidation and macroeconomic stabilization program (authored by Miroljub Labus, Mladjan Dinkić and Božidar Djelić) came into existence at the start of the millennium soon after the change of guards in late-2000 and early 2001. The objective was to offer a comprehensive reform framework to address the enormous debt overhang after a decade of economic and financial sanctions, achieve fiscal balance and monetary (and exchange rate) stability, as well as complete a huge number of pending institutional reforms and restart the engines of economic growth in an economy running at about half of its pre-war capacity. The program was successful in lowering and stabilizing the inflation, securing a stable exchange rate, restore trade, lower (or eliminate) much of tariff and non-tariff protections, continue the privatization process and kick-start the consolidation of the banking sector.

This program also managed to restart economic growth by fueling aggregate demand primarily through external sources of income and financing (public and private debt). Despite the fact that the underlying increase in nominal and real incomes received an undivided political, social and even professional (analytical) welcome, this method of initiating growth through extreme and inappropriate application of Keynesian approach produced two undesirable outcomes: it created an increase in the long term structural fiscal deficit and fueled a similar structural increase in the trade and, consequently, current account deficit. These weaknesses surfaced in full strength after foreign official grants predictably dried up around 2005-6, remittances dipped and external sources of financing became more expensive and less available after the outset of the global financial crisis in 2008. Even if these shocks had not happened, it was obvious that aggregate demand stimulus could not produce sufficient supply response in an economy badly in need of new equipment, technology, productive labor force and modern management. The increase in twin deficits and the secondary notorious impact on inflation in non-tradeable sectors, including but not limited to real estate price bubble, further eroded real wages, increased unit labor cost harmed competitiveness of tradeable sectors. All these effects of the "easy solution" were predictable and painfully visible. But neither politicians nor polity were ready to see that. In that respect it appears that we were experiencing a déjà vue of the 1980's.

Irrespective of political and social denial, real economic developments followed a negative trend through 2011 and continued, due to inertia and adverse external shocks, until the second half of 2014. *The fifth and still current fiscal consolidation and economic reform program* (Aleksandar Vučić, Dušan Vujović) was conceptualized in the midst of this combined recession and economic crisis to stop the imminent slide to fiscal bankruptcy, as well as reopen the painful issues of completing the unfinished reform agenda (regarding both institutional and structural reforms) and creating a solid basis for dynamic, sustainable and inclusive long-run economic growth.

The results of fiscal consolidation program 2015-2017

Compared to the aforementioned previous four fiscal consolidation programs, the current, fifth program has achieved a real and huge improvement in the twin deficits (internal – fiscal and external – current account); turned around GDP growth dynamics (from stagnant and/or declining trend after the start of the global crisis, to a growing trend stabilizing at around 3.5-4 percent annual growth rate); it significantly reduced the unemployment level, increased FDI, improved the business environment and strengthened Serbia standing in international financial markets.

More precisely, after more than three years of exceptionally successful fiscal consolidation Serbia has fully restored its macroeconomic stability, ended the trade, economic and fiscal weaknesses revealed and triggered by the global financial crisis. Fiscal balance improved from a 6.6 percent of GDP deficit at the end of 2014 to a 1.2 percent of GDP surplus recorded at the end of 2017. The turning point in GDP dynamics was passed in the third quarter of 2014 when GDP declined by a 3.7 percent (annualized). Since then GDP has consistently followed an upward trend and is expected to grow 3.5 percent this year and around 4 percent in the following few years. On a related dimension, by the end of 2017 the share of debt in GDP declined by more than 10 percentage points and is expected to further fall, below the 60 percent Maastricht target. Current account deficit (also expressed as a share of GDP) has been reduced from double-digit levels (ranging between 12 and more than 20 percent) to around 4-5 percent and is fully covered by the inflow of (low-risk) FDIs. Unemployment has been reduced by more than 10 percentage points. Inflation is low (around 2%) and very stable. And so is the exchange rate. Country credit rating has been improved by all rating agencies during 2017. Financial markets offer an even more robust recognition of improved macroeconomic performance and good prospects through a record reduction in spreads by more than 550 basis points to less than 100 recently. This will further strengthen the macroeconomic fundamentals by lowering the cost of public debt and narrowing the gap between primary and total fiscal balance, and improve investment and growth prospects by providing more affordable access to (domestic and international) financing for the private sector.

In more detail, fiscal performance substantially exceeded the original and the revised deficit targets set in the IMF supported three-year precautionary program. Nominal and structural improvements in fiscal deficit (presented in Table 1) indicate that the targeted overall improvements have already been achieved during the first two years of the program, and far exceeded by the end of the program.

The mix of actual adjustments on the revenue and expenditure side has also changed during the implementation. The original plan to place the brunt of adjustment burden

Table 1: Serbia – improvement in fiscal deficit explained, in % of GDP

	2015	2016	2017	Total
TOTAL ADJUSTMENT IN THE FISCAL BALANCE	**2.9**	**2.4**	**2.8**	**8.1**
Of which: permanent structural fiscal balance change	2.6	1.8	2.4	6.8
Total adjustment on the revenue side	**1.9**	**3.7**	**3.3**	**8.9**
Of which: permanent structural revenue changes	1.0	2.5	2.8	6.3
Revenue changes with one-off effects including:	0.9	1.2	0.5	2.6
Extra dividends and profits of public companies	0.8	0.3	0.3	1.4
*Increases in other non-tax revenues**)*	0.1	0.9	0.2	1.2
Total adjustment on the expenditure side*)**	**1.0**	**-1.3**	**-0.5**	**-0.8**
Of which: permanent structural expenditure changes	1.6	-0.7	-0.4	0.5
Pension reductions	0.6	0.0	0.0	0.6
Public sector wages reductions	1.0	0.0	-0.1	0.9
Other expenditures w permanent effect on fiscal balance****)	0.1	-0.7	-0.3	-0.9
Of which:				
Interest payments	-0.4	0.0	0.2	-0.2
*Subsidies*****)*	0.4	0.0	0.0	0.4
Capital expenditures	-0.4	-0.6	0.1	-0.9
Increase in expenditures	0.0	-0.7	-0.4	-1.1
Assumed debts******)	-0.1	0.7	0.0	0.6

*) In 2016 includes 0.4% CIT, 0.7% VAT, 0.5% contributions, 0.2% excise taxes and 0.2% Telecom dividends.
**) Includes 0.3% effect of the change in methodology.
***) Positive number indicates reduction in expenditures i.e. positive fiscal impact.
****) Includes 0.3% goods and services, 0.1% social transfers, and 0.3% other expenditures.
*****) Includes reductions/changes in all subsidies
******) Includes assumption of public company debts, recapitalization of banks and insurance companies, military pensions, ad ag-subsidies.
Source: Ministry of Finance and own/staff calculations.

on expenditures (as suggested by theory [1], [2], [3], [6]) was fully observed only in the first year of the program: Out of 2.6 percent structural deficit improvement in the first year 1.6 percent (or more than 3/5) was achieved on the expenditure side and one percent on the revenue side. In the subsequent two years the situation has changed. Due to allowed increases in pensions and public sector wages, the contribution of expenditure adjustment became negative (-0.7 percent of GDP in 2016 and -0.4 percent of GDP in 2017). Permanent revenue adjustment (2.5 and 2.8 percent of GDP in 2016 and 2017 respectively) was sufficient to sustain the continued progress towards the overall structural improvement of 6.8 percent of GDP over three years of the program.

In short, large nominal fiscal consolidation over three years (8.1 percent of GDP) included an impressive 92% share of structural fiscal deficit adjustment (6.8 percent of GDP). This adjustment was owed mainly to permanent improvements on the revenue side (92 percent) and only marginally to expenditure cuts. After the first program year, the contribution of expenditure cuts (focused initially mainly on pensions and public sector wages) became negative which reduced their contribution over three years to only 0.5 percent of GDP. Despite good overall result, we should be keenly aware of the inherent pressures to increase pensions, public sector wages, and other costs of delivering public services relative to available GDP envelope.

Those risks notwithstanding, lesser emphasis on expenditure-cuts also helped ameliorate the risks of a potential recessionary impact [5], [6], clearly one of the major concerns of governments embarking on this type fiscal a consolidation programs, especially when implemented in the presence of global recessionary pressures [10], external shocks [7] and multiple constraints to growth [11] all relevant for Serbia. The prevailing perception was that fragile growth could not withstand an additional shock from fiscal consolidation [8], [9].

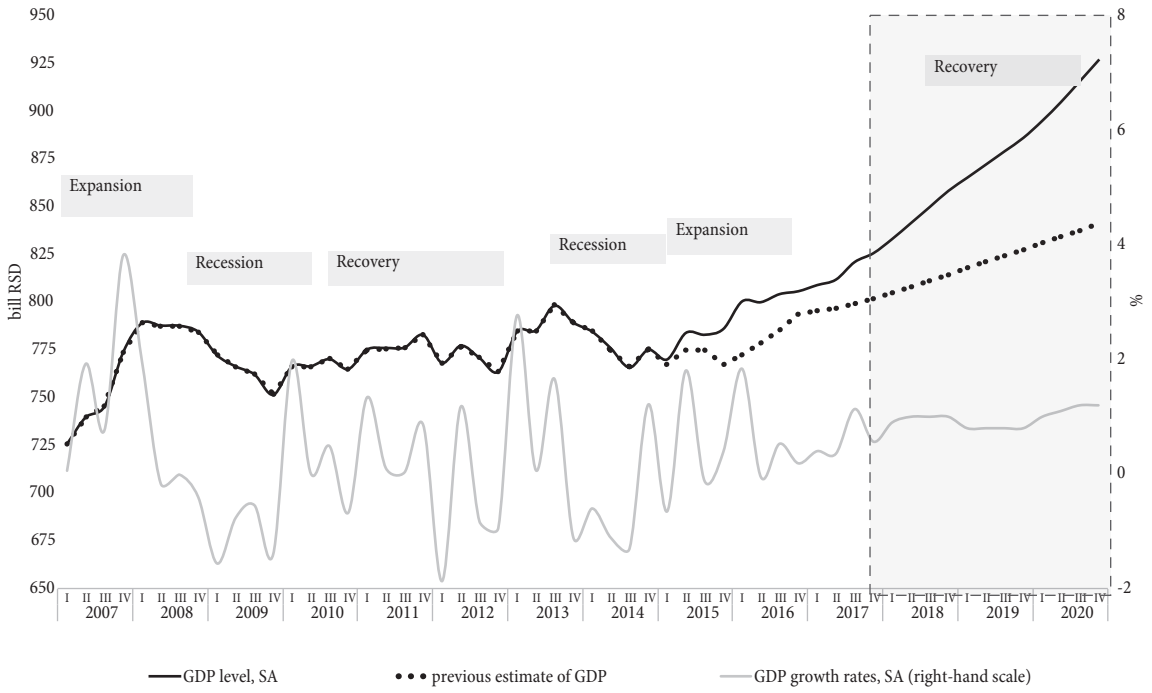
Another concern regarding growth impact of a possible fiscal consolidation program came from the fact that brief economic expansion in 2013 was to a large extent attributed to the introduction of new FIAT car production and exports. Although car production and exports continued, additional effects on economic growth were negligible and recessionary pressures resumed in the first quarter of 2014. The next downward push came from the negative impact of May 2014 floods creating another dip in GDP growth. It clearly demonstrated how fragile the un-restructured economy was and, actually, reversed the sentiments in favor of tough reforms that would ultimately create a more robust economy. It became apparent that the call for fiscal consolidation and economic reforms was not just an electoral pitch for more votes, but a sign of ownership and clear commitment to follow a difficult path out of decades-long economic decay [4].

As indicated in Figure 1, the turning point in GDP dynamics occurred after the third quarter and the economy started recovering in late 2014-early 2015. Despite conservative projections from the IMF and other IFIs that growth will remain negative throughout 2015 (between -0.5 and -1.0 percent), the economy dipped out of recession and reached a positive 0.8 percent growth for the entire year. The path to strong growth recovery established in 2016 with 2.8 percent GDP growth is expected to continue throughout the 2018-2020 period covered by the latest Fiscal Strategy despite the lower than projected result in 2017 caused by the supply side factors. The difference between originally projected and actual quarterly GDP numbers from the start of the reform program is depicted by the area between the GDP levels predicted without the reform (dotted line) and with the reform (full line).

The program was equally successful in stopping the buildup of public debt, one of the primary reasons for embarking on a fiscal consolidation program. As can be seen in Figure 2, an expansionary trend of fiscal deficit observed after 2008 was reversed after the introduction of the fiscal consolidation program. The reduction in fiscal deficits from 6.6 percent in 2014 was continued to 3.7 percent in 2015, 1.3 percent in 2016 and a 1.2 percent surplus at the end of 2017. Conservatively planned small 0.7 percent deficit for 2018 is likely to be sustained in the medium run (2019-2020) and beyond. The level of public debt (expressed as debt-to-GDP ratio) peaked in 2016 and then followed a sharp downward trend.

Fiscal surpluses implied by the intersection of fitted lines in Figure 2 below do not represent projections or commitment to adhere to restrictive fiscal policies. As

Figure 1: Serbia GDP level and growth rates, quarterly data



Source: Statistical Office of Serbia, Ministry of Finance Staff Calculations.

shown in Figure 3, the prevalence of primary fiscal surpluses in 2016-2017 (1.8 and 3.9 percent of GDP respectively) is likely to be continued in the coming years as the cost of international borrowing declines in line with continuously improving credit rating. This will finally reverse the negative developments triggered by the global financial crisis resulting in a large build-up of public debt and a record expansion of primary deficit during the 2008-2012 period: Increased country risk and large borrowing needs quickly increased the cost of public debt from 0.4-0.6 percent of GDP in pre-crisis years to 1.0-3.2 percent in the subsequent period. This tendency could not be changed quickly due to built-in lags. Starting with 2016 Serbia is increasingly reaping the benefits of fiscal consolidation (and improved credit rating) through lower cost of borrowing. This has already eliminated the difference between the overall and primary fiscal balance and, together with stable GDP growth rates, will help achieve long-run debt sustainability. Equally important, this will free up additional fiscal space for well-designed and carefully selected public investment projects crowding-in private investment and preparing the country to address the challenges of long-run economic growth discussed in the final sections of the paper. Before that, we analyze the sources of economic growth in the 2001-2017 period and draw some lessons for the future.

The sources of economic growth in the 2001-2017 period

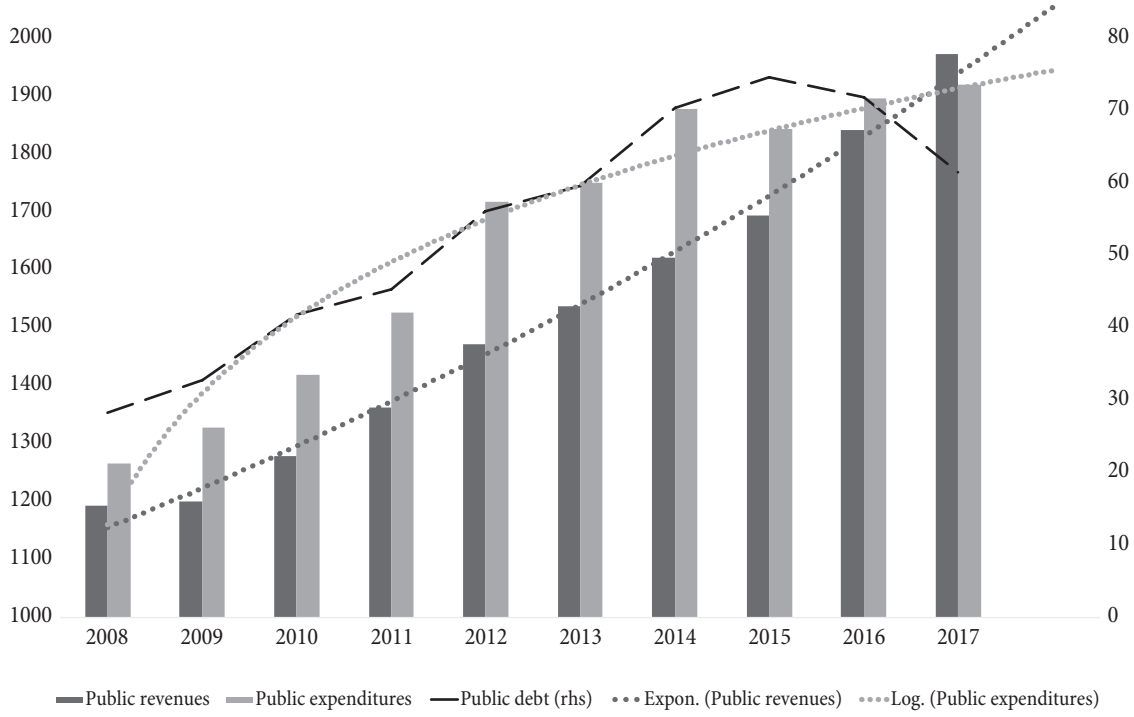
The political changes in October 2000 also marked a paradigm shift in economics. It changed the concept of public sector governance and macroeconomic management, and triggered a new wave of institutional, policy and structural reforms. We, therefore, limit our analysis of the sources of economic growth to the post-2000 period to avoid the complexities of analyzing and isolating the impact of admittedly very different underlying governance rules and institutional set-up.

The gist of our analysis can be summarized in the five figures presented below. The sources of growth on the demand side are presented in Figure 4 (by sub-period) and Figure 5 (ungrouped annual data). The sources of growth on the supply side are presented in Figure 6 (by sub-period) and Figure 7 (ungrouped annual data). Finally, Figure 8 presents the developments of the current account balance and the main sources of external financing following the same sub-period groupings.

The data clearly show that four distinct sub-periods can be identified.

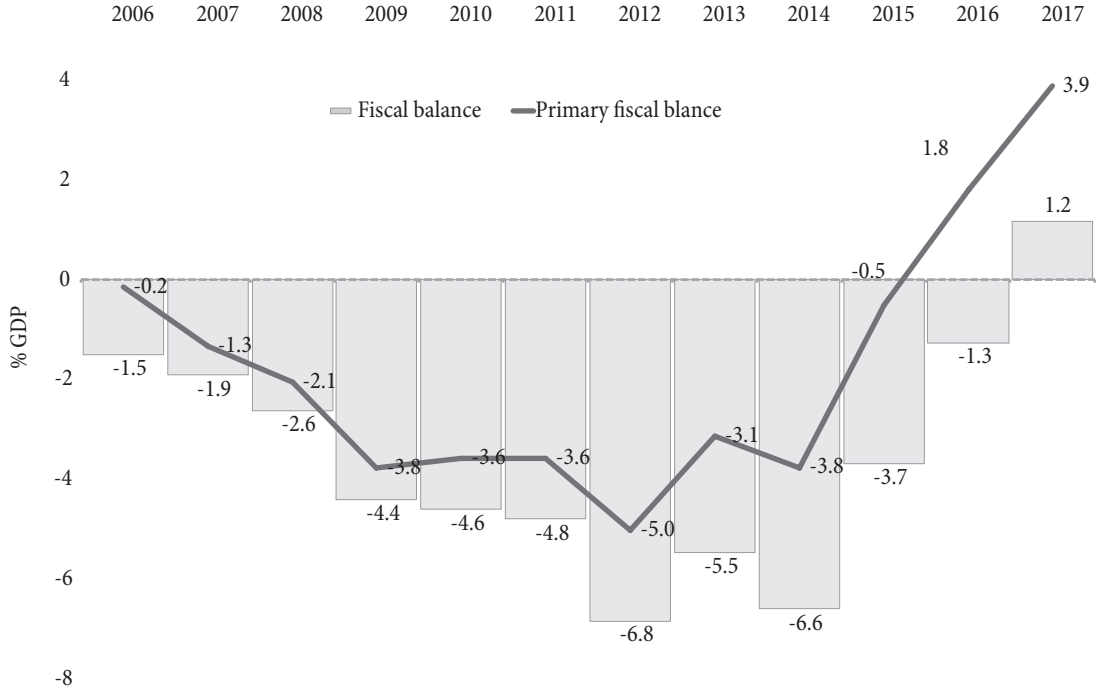
The first sub-period (2001-2008) is characterized by high average GDP growth rate of 5.9 percent annually (with annual rates ranging from 4.4 to 9.0 percent). *On the demand side*, the main positive drivers of growth were private consumption, government consumption, investment, and "the change in inventories". Net exports exerted a large negative impact on GDP growth mainly due to huge increase in imports. *On the supply side,* by far

Figure 2: Serbia - public revenues, public expenditures, and debt-to-GDP ratios



Source: Ministry of Finance, Public Debt Department.

Figure 3: Serbia - primary and overall fiscal deficit: Sustainability issues



Source: Ministry of Finance.

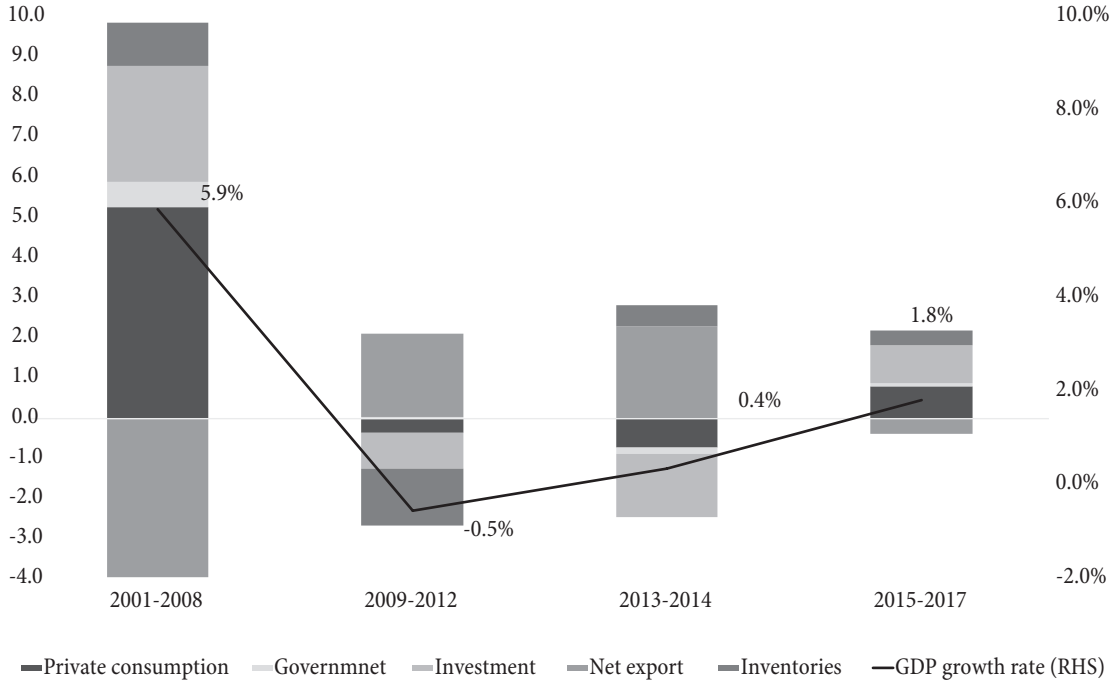
the largest contribution to GDP growth came from non-tradeable sectors (services and taxes). Supply response of agriculture and construction was very modest, and that of industry (manufacturing) was minimal. *On the external side*, average current account deficit was 10.0 percent of GDP. FDI inflows amounted to 6 percent of GDP and provided 60% of financing of the CAD.

The second sub-period (2009-2012) showed a negative average GDP growth rate of 0.5 percent annually (with annual rates ranging from -3.1 to +1.4 percent) caused by the onset of global financial crises. *On the demand side*, the main positive driver were improvements in net exports due mainly to lower imports as real incomes declined. The main negative drivers (in order of contribution) were "the change in inventories" (decline), investment, private consumption, and government consumption. *On the supply side,* all sectors went through a contraction (i.e. negative contribution to GDP growth) except industry which finally started to respond. *On the external side*, average CAD remained high at 9.0 percent of GDP. FDI inflows declined to about 5 percent of GDP and together with a large increase in portfolio investment (to almost 3 percent of GDP) continued to provide the main source financing CAD.

The main characteristic of *the third sub-period (2013-2014)* is the lack of clear economic concept. It showed a small positive average GDP growth rate of 0.4 percent annually (with annual rates ranging from -1.8 to +2.6 percent). *On the demand side*, the main positive drivers were again improvements in net exports due both to lower imports and higher exports, and "the change in inventories" (increase). The main negative drivers (in order of contribution) were investment, private consumption, and government consumption. *On the supply side,* all sectors again went through a contraction (i.e. negative contribution to GDP growth) including industry. The only exception was agriculture which had a bumper crop in 2013 plus a cyclical recovery from poor 2012 result. *On the external side*, average CAD declined to 6.0 percent of GDP. FDI inflows declined further to less than 4 percent of GDP, portfolio investment continued to increase, while other investment substantially declined.

The fourth sub-period (2015-17) focuses on the actual results of the reform program in 2015-2017. As an indication it adds forecasted 2018 values in graphs with ungrouped annual data. The average annual GDP growth rate increases to 1.8 percent (with annual rates ranging from 0.8 to 3.5 percent). *On the demand side*, the main

Figure 4: Serbia – Sources of GDP growth (the demand side by sub-period), 2001-2017

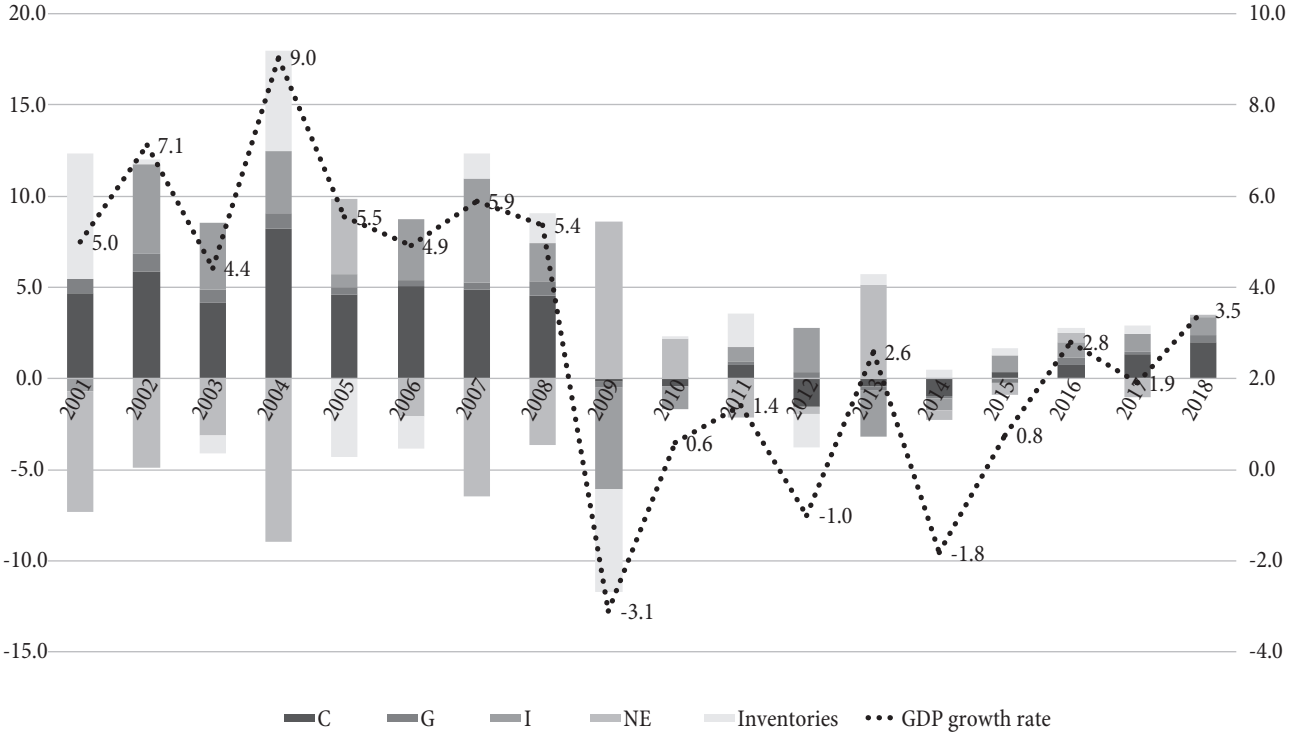


Source: Statistical Office of Serbia, and Ministry of Finance.

feature is that all components of aggregate demand are positive drivers of GDP growth (except small negative contribution of net exports). *On the supply side,* all sectors show positive contributions to GDP growth except agriculture with a small net drag on GDP growth resulting from continued cyclical dynamics (quite visible in Figure 6). *On the external side*, average CAD was reduced to 4.5 percent of GDP. FDI inflows recovered to above 5 percent of GDP on average. Moderate cyclical capital outflow moved to portfolio investment allowing ample CAD financing.

Based on empirical evidence presented in Figures 4-8 we can reconstruct a plausible explanation of the

Figure 5: Serbia – Sources of GDP growth (the demand side annual data), 2001-2017



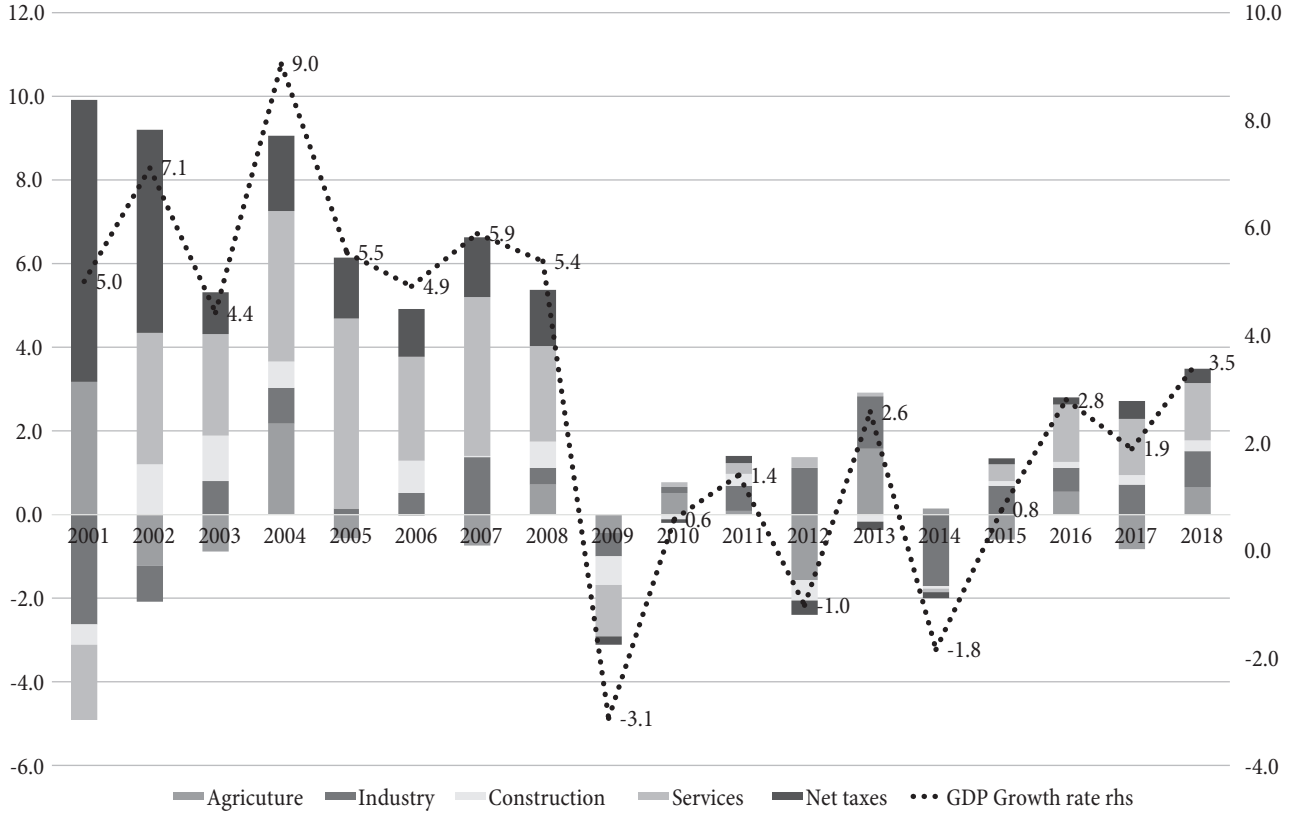
Source: Statistical Office of Serbia, and Ministry of Finance.

Figure 6: Serbia – Sources of GDP growth (the supply side by sub-periods), 2001-2017

Source: Statistical Office of Serbia, and Ministry of Finance.

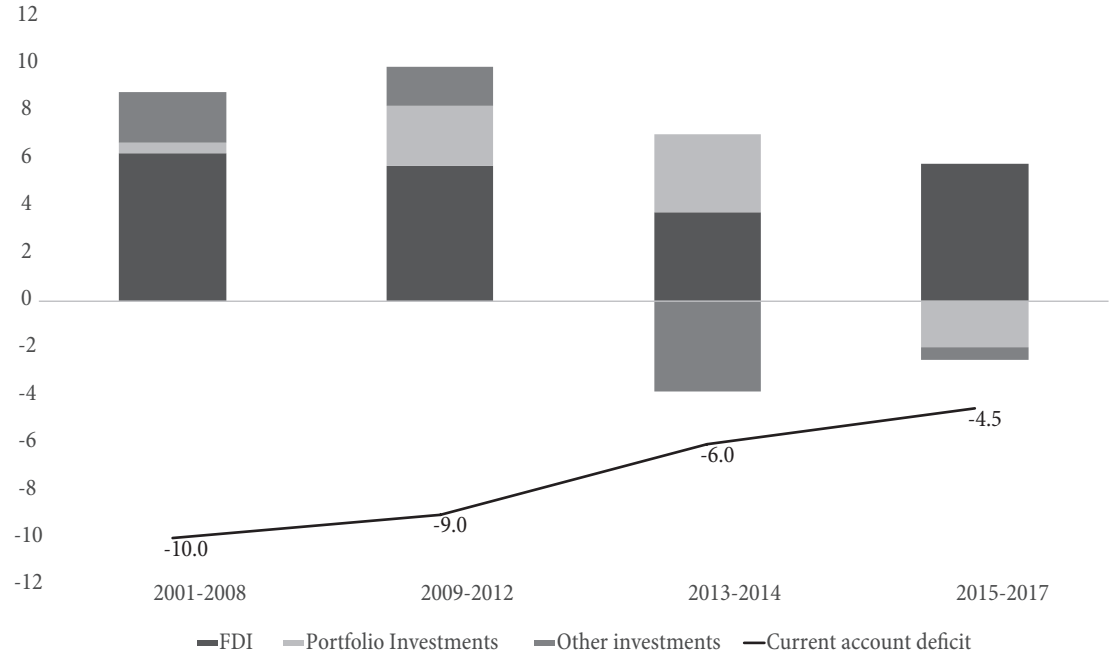
sources of GDP growth (5.9 annually) in the 2001-2017 period. The initial impetus for growth came from a large and sustained increase in private consumption, investment and government consumption. Given the sluggish performance on the supply side, it is clear that the source of increased incomes and consumer demand was not domestic employment. Rather, the impetus came from an abundant inflow of external sources of financing

Figure 7: Serbia – Sources of GDP growth (the supply side annual data), 2001-2017



Source: Statistical Office of Serbia, and Ministry of Finance.

Figure 8: Serbia – Balance of Payments, 2001-2017



Source: NBS, Statistical Office of Serbia, and Ministry of Finance.

dominated initially by grants and remittances (fueled by positive expectations triggered by the end of economic sanctions and good prospects for the start of reforms), as well as privatization proceeds. In the later years of this sub-period, following the resolution of old debts in the Paris and London club, new loans supplemented the external sources of financing. The hypothesis of externally fueled aggregate demand growth is corroborated by the large increase in imports leading to a growing trade deficit (i.e. negative net exports) and current account deficit, as well as by the huge increase in (non-tradeable) services and taxes assessed on imported goods. Additional confirmation is found in the appreciated real effective exchange rate and the continuous increase in real estate prices.

Unfortunately, this approach to generating a basis for long-run growth was not sustainable in the absence of hard institutional and structural reforms. Easy external financing sources and ample privatization proceeds could not possibly last long enough to generate the necessary governance improvements and deep structural reforms needed to address the legacy of the past. In reality, all these sources lasted even less. Most sources came to an end even earlier than originally promised (official grants) or could have been expected (remittances, privatization proceeds). The global financial crisis brought an abrupt stop to soft sources of financing, negatively affected remittances, and markedly raised the cost of commercial sources due to heightened risk pricing for countries like Serbia.

True, the global crisis brought some external shocks and made things worse. Without the global crisis, fiscal crisis would have been postponed by few years but not avoided in the absence of deeper institutional and structural reforms that would move the economy back on an unsustainable path. In other words, the negative effects of the second sub-period (-0.4 percent annual decline of GDP) would have been smaller without the global crisis, but a significant slowdown from the almost 6 percent annual GDP growth rate recorded in the 2001-2008 period was inevitable after the easy financing stopped and tough reforms were never implemented.

The third short sub-period (2013-2014) was singled out as it did not represent continuation of policies which defined the first sub-period and created vulnerabilities that led to the second; nor a start of the new fiscal consolidation program launched in 2015.

The fourth sub-period shows improved traction of reforms, clear export and investment orientation and more stable sources of growth on the supply side (especially industry). It is worth noting that private consumption gradually becomes an important source of growth, but this time based on domestic incomes.

Remaining challenges faced by the fiscal consolidation program

After three years of very good implementation results, often exceeding expectations, the fifth fiscal consolidation program comes to an end. At least an end of phase one. The continuation of the program in phase two will build on results achieved thus far and pursue the same long run objective of securing a basis for dynamic, sustainable and inclusive growth. Four intermediate objectives (depicted in Figure 9) are macroeconomic stability, improved investment climate, productivity growth, and efficient financial sector, mapped into three overlapping areas of multiple policy intervention and pending reforms (fiscal framework, business environment, and financial markets).

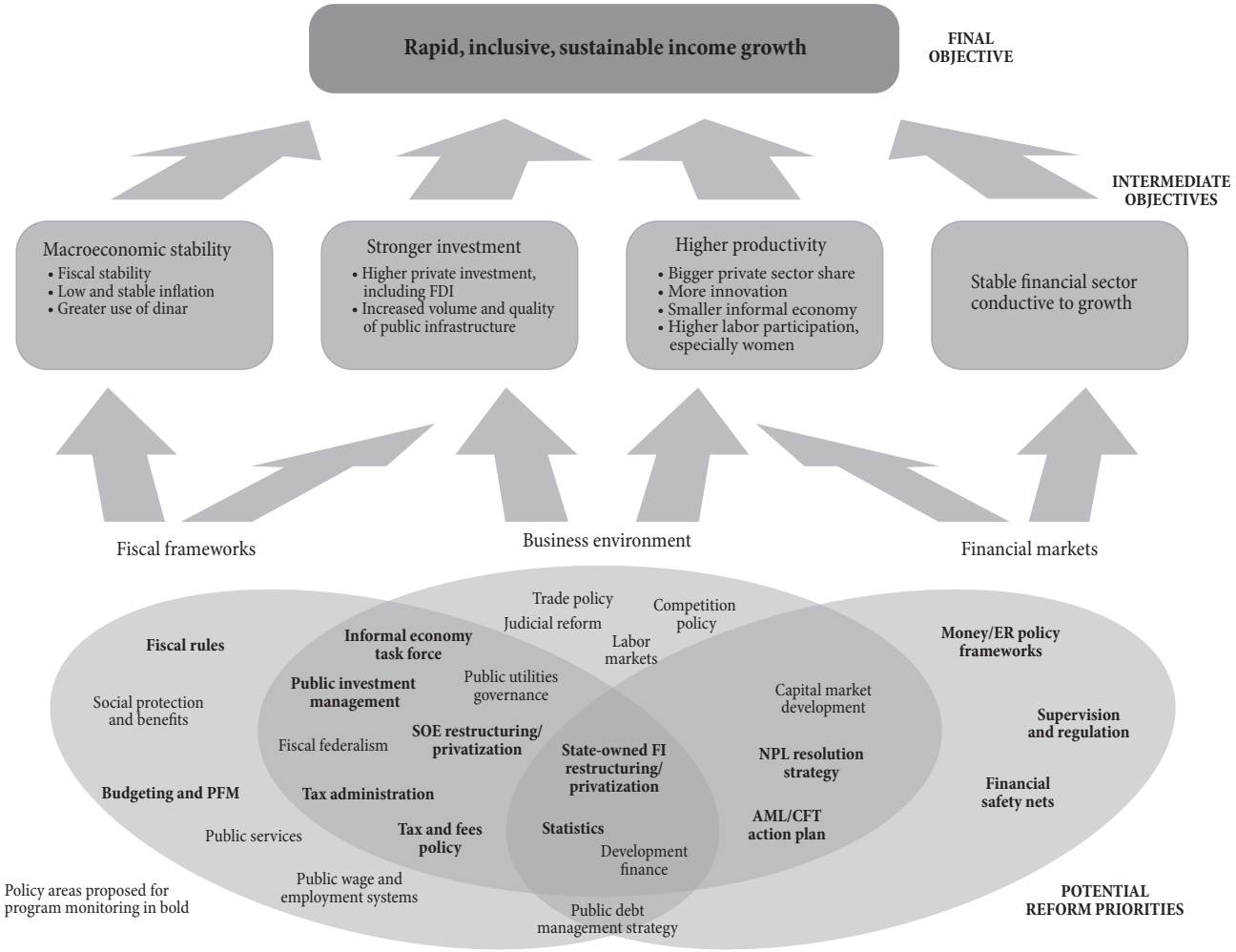
We have tentatively identified 25 policy (reform) areas that should receive adequate government attention in the medium term, out of which 14 policy areas (depicted in bold) are likely candidates for monitoring under a possible IMF supported future program based on Policy Coordination Instrument.

The proposed comprehensive size and scope of continued institutional and policy reforms is self-explanatory. The selection of priority policy and reform areas and the timing of implementation must be done in the coming months to be reflected in the next year budget and completed within the mandate of this government.

Quest for dynamic, sustainable, and inclusive GDP growth

For the first time in four decades we are in a position to discuss pending institutional and structural reforms from a strong macroeconomic and fiscal position. Without

Figure 9: Serbia – pending institutional and policy reforms for dynamic, sustainable, inclusive growth



these reforms it would be impossible to sustain present level of fiscal and monetary stability. More importantly, we have created a conducive policy space to discuss ways of extending these successes into creating a platform and an eco-system, to use the new buzzword, needed to launch a more dynamic sustainable GDP growth that would help close the income gap with Europe (income convergence) and be truly inclusive through employment and education opportunities and shared prosperity. Ultimately, the objective is to exit the transition and join the club of developed high income countries.

To make things more complicated, this demanding and complex multi-year task must be performed in the context of complicated political economy involving diverse political parties, business interests, and social aspirations. At the same time due attention must be paid to multiple legal, technical, policy and political requirements associated with the EU accession, as well as the need to embrace the new technology and adapt to fast changing global trends and patterns.

Achieving and sustaining dynamic medium-to-long run GDP growth under such circumstance is neither simple nor easy. A recent World Bank study on The Future of Manufacturing-Led Development has done a valiant effort to identify the indispensable changes in our traditional thinking about industrial-led (or better manufacturing-led) growth and development in order to be able to properly understand and include (endogenize) the true characteristics of the new technologies brought about by the fourth industrial revolution.

Although the ensuing global changes will generate large costs of adjustment, not least because of jobs that will become obsolete or lost to robots, they will also create new opportunities and reveal now hidden development

opportunities. The net impact on each country could be positive or negative depending on its readiness to face the challenges ahead and the policy response to global changes. More specifically, will the enterprises be ready to adapt and continue to create new jobs and add value in the changing global and domestic markets. Will the education and training systems be able to equip the new generations with skills and attitudes needed to effectively perform under ever changing circumstances. Will we be able to adjust our development priorities and develop new strategies which would adequately take into account (internalize) the true impact of fast changes in technology, work ethics and global flows.

As the World Bank study indicates [12], our ability to face new demanding norms and performance standards will critically depend on "3Cs": improved Competitiveness, enhanced Capabilities, and better Connectedness.

Improved Competitiveness is needed to move the burden of continuously increasing productivity from individuals/employees (i.e. wages) to the quality of the business environment and corporate governance. This is the only way to ensure that low and decreasing unit labor costs are not translated on wages, and hence the wellbeing of employees and the population at large. This is one of critically important aspects of inclusiveness.

Enhanced Capabilities, expressed among other things, through greater knowledge, capacity, and ability is vital for individuals and enterprises to smoothly adopt new technologies and work processes, and effectively use them in an ever changing regulatory and policy space.

Finally, better Connectedness is essential not only to closely monitor and adapt to changes in the free movement of goods, services and factors of production, but also to reach optimal synergy between sectors at the national, regional and global level needed to attain and sustain good performance in continuously changing redefined modern industry with embedded high-value services.

To evaluate the global pro-development characteristics (i.e. potential) of individual manufacturing sectors, the World Bank study combines indicators related to export orientation (share of exports in output), productivity (value added per worker), education level and qualifications of the work force (i.e. the share of blue-collar workers as a limiting factor in achieving maximum pro-development impact), sector size (i.e. sector share in manufacturing employment), and innovation potential (i.e. expenditures on research and development).

Based on empirical results the study identifies seven groupings with distinct global pro-development characteristics (see Figure 11):

Commodity-based regional processing (with seven manufacturing subsectors such as food, wood, basic metal, fabricated metal, nonmetallic products, paper, rubber and plastics) has large share of blue-collar workers, large share of manufacturing employment, and low share of exports in total output (around 25%).

Capital-intensive regional processing (with two manufacturing subsectors: coke and petroleum products, and chemicals) has lower share of blue-collar workers, relatively small share of manufacturing employment, and a relatively large share of exports in total output (around 40%).

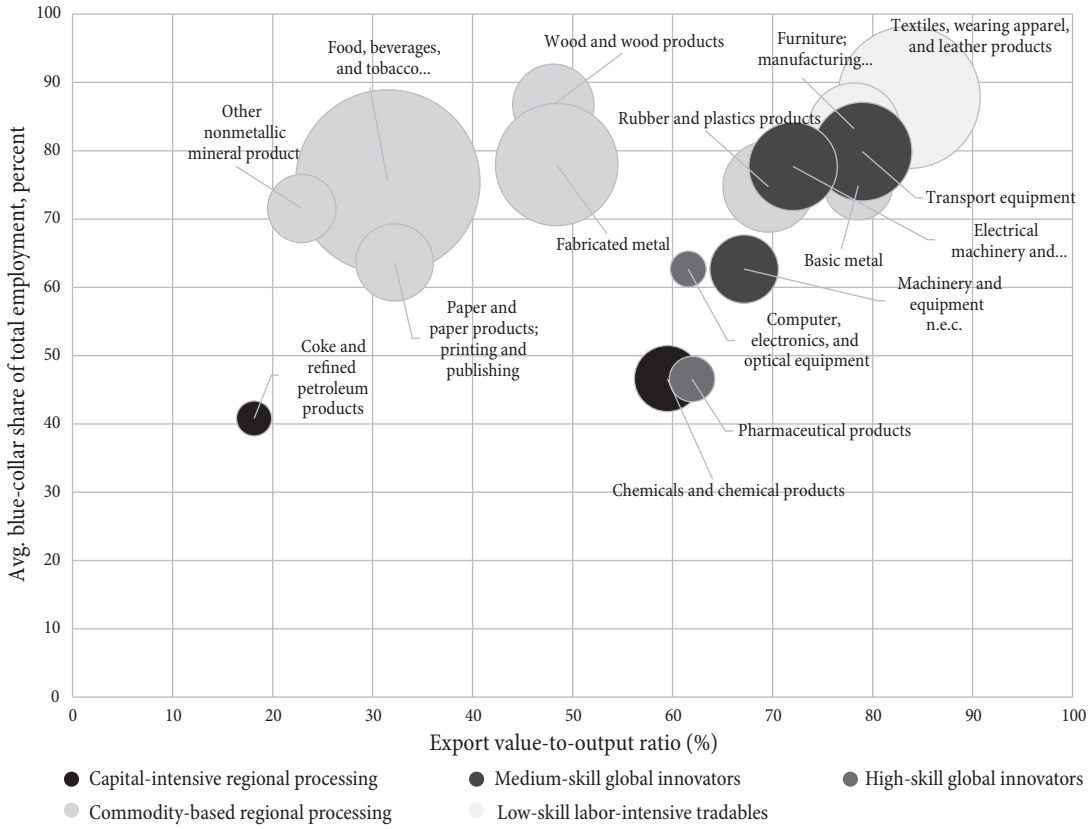
Low-skill labor-intensive tradables (with two manufacturing subsectors: textiles and apparel, and furniture) has a large share of blue-collar workers, very large share of manufacturing employment, and a large share of exports in total output (around 50%).

Medium-skill global innovators (with three manufacturing subsectors: transport equipment, electrical machinery and equipment and other machinery and equipment) has a slightly lower share of blue-collar workers, large share of manufacturing employment, and a large share of exports in total output (around 50%).

High-skill global innovators (with two manufacturing subsectors: pharmaceuticals, and computers and ICT) has the lowest share of blue-collar workers, relatively small share of manufacturing employment, and a very large share of exports in total output (over 70%).

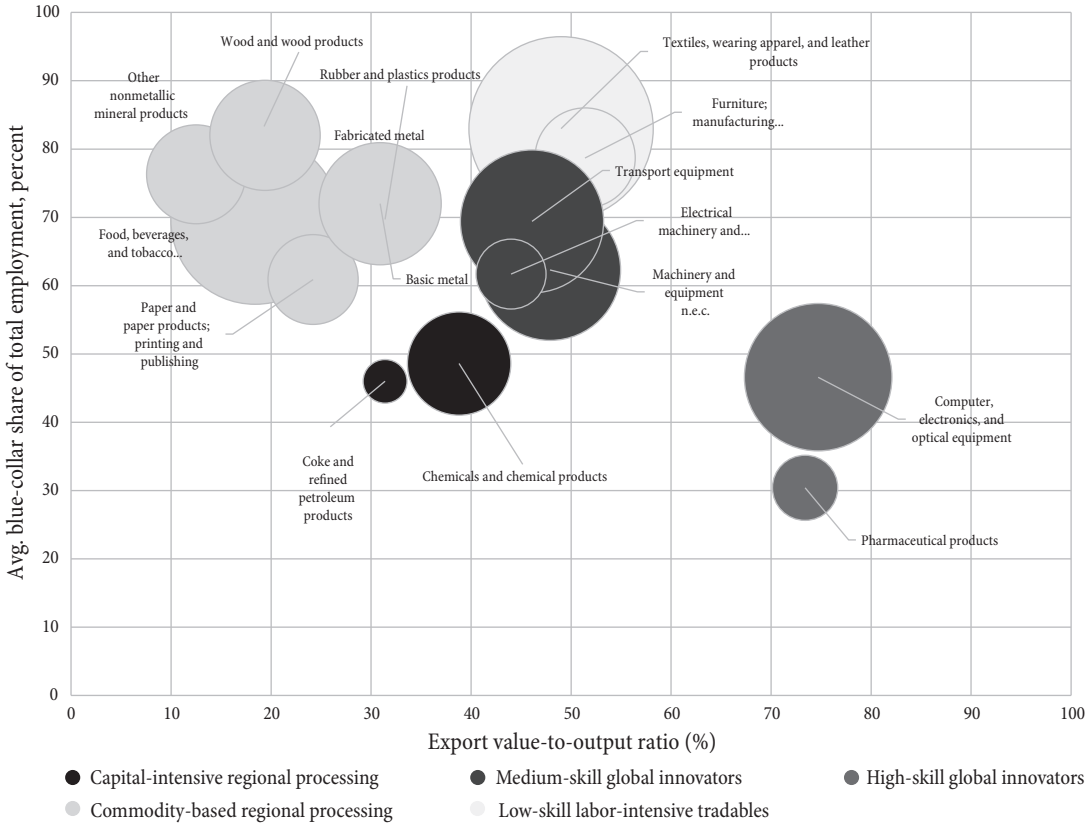
Compared to the global patterns (Figure 11), Serbia (Figure 10) has similar export shares in medium-skill innovator sectors and capital-intensive sectors (such as transport and electrical equipment). However, Serbia exhibits a much larger share of exports in sectors with large employment ad low-skilled labor force (e.g. wood and fabricated metal with 50% share of exports, and rubber, basic metals, and furniture with export shares

Figure 10: Serbia: Global Development Potential – Manufacturing subsectors



Source: Serbian Statistical Office, Ministry of Finance, own calculations.

Figure 11: World: Global Development Potential – Manufacturing subsectors



Source: World Bank study [12].

between 70 and 80%). By contrast, sectors with the best pro-development characteristics (pharmaceuticals, and computers and ICT) have lower share of exports and notably smaller size (i.e. share of manufacturing employment).

A detailed study [13] of Serbian manufacturing sectors done by the Serbian Chamber of Economy and the Center for high economic studies (CEVES) identifies competitive sectors on the basis of a composite Development Potential Index of Tradable Sectors. The index evaluates: 1. Business track record; 2. Potential for future development including the positive multiplier effects within and across sectors; and 3. Contribution to social and economic development priorities. This analysis identifies the following ten best ranked sectors on the basis on their development potential: (1) automobiles and transport equipment; (2) textiles (socks); (3) electrical and electronic equipment for cars; (4) military industry; (5) household appliances; (6) automobile tires; (7) electricity; (8) plastic parts; (9) special equipment; and (10) general equipment.

Based on the key parameters and characteristics of global pro-development manufacturing sub-sectors in Serbia (based on the World Bank methodology) and the profile of 10 leading sub-sectors identified by the Development Potential Index we derive the following suggestions for pro-growth industrial and economic policies: First, Serbia will likely face substantial challenges in adjusting to present and future trends in new technology and changes in the global economy. Second, time and resource limitations will require selective interventions in favor of sectors and sub-sectors well positioned to become the leaders in pro-development global innovation sub-sectors, and hence create new well-paid high and medium-skill jobs. Selective interventions exponentially increase risks of failure (both in selecting sectors and measures) and, thus, require well organized highly professional effort to mitigate the risk. Third, present investment promotion activities aimed at creating new jobs and boosting equal regional development will have to be revisited in light of the new approaches to manufacturing-led development. The same applies to all other subsidies in agriculture and industry (manufacturing). Fourth, many of the sectors that presently generate the brunt of exports but do not have the desirable global pro-development characteristics, should get ready to boost their ability along 3C dimensions to successfully adjust to new technologies and keep their competitive edge safely ahead of the middle income trap. Fifth, the sectors with strong pro-development features (computers and ICT, pharmaceuticals etc.) appear to be relatively small in size (share of employment and value added) to generate a more substantial positive impact on employment, exports and GDP growth. Increasing the size of these sectors requires not only substantial investment in new production facilities, but also public and private financing of innovations, research and development, and massive education of required technical profiles in line with declared strategy to boost the digital economy. Finally, sectors with large import content and relatively low productivity (i.e. low value added per worker) cannot be the focus of policy attention nor represent development priorities in the medium run.

Conclusion

The fifth fiscal consolidation in Serbia recorded exemplary improvements in fiscal performance and substantially exceeded the original and revised growth, deficit and debt-to-GDP targets set in the IMF supported three-year precautionary program. Achievements in improving structural deficit were even more impressive in overall size, albeit the sources of adjustment moved more towards better revenue performance.

To secure sustainability of these fiscal results the attention must now shift to completion of institutional and structural reforms, and to creation of a stable base for more dynamic, sustained and inclusive longer-run growth. Our analysis of sources of GDP growth during the 2001-2017 period confirms that easy solutions, based on boosting aggregate demand through external sources of financing, are not feasible nor sustainable in the longer run.

Policy lessons learned from the analysis of global pro-development manufacturing sub-sectors (based on the World Bank methodology) and leading sub-sectors (based the Development Potential Index methodology) appear to be as follows:

- First, Serbia will likely face substantial challenges in adjusting to new technology and changes in the global economy.

- Second, selective interventions in favor of sectors with high pro-development potential are risky and should be done with great caution.
- Third, present investment promotion activities and subsidies must be aligned with new approaches to manufacturing-led development.
- Fourth, sectors that presently generate the brunt of exports should boost their ability along 3C dimensions to successfully adjust to new technologies and keep their competitive edge safely ahead of the middle income trap.
- Fifth, the sectors with strong pro-development features (computers and ICT, pharmaceuticals etc.) must be bigger to have the full beneficial impact on the creation of new jobs and GDP growth.
- Sixth, sectors with large import content and low value added per worker cannot be the focus of policy attention nor represent development priorities in the medium run.

References

1. Alesina, A. (2012). Cut deficits by cutting spending. *VoxEU. org*, *30*.
2. Alesina, A., & Ardagna, S. (2010). Large changes in fiscal policy: taxes versus spending. *Tax policy and the economy*, *24*(1), 35-68.
3. Alesina, A., C. Favero, & F. Giavazzi (2012). *The output effect of fiscal consolidations* (No. 18336). Cambridge, MA: National bureau of economic research
4. Alesina, A., Carloni, D., & Lecce, G. (2012). The electoral consequences of large fiscal adjustments. In *Fiscal Policy after the Financial Crisis* (pp. 531-570). University of Chicago Press.
5. Auerbach, A. J., & Gorodnichenko, Y. (2012). Fiscal multipliers in recession and expansion. In *Fiscal Policy after the Financial crisis* (pp. 63-98). University of Chicago Press.
6. Auerbach, A. J., & Gorodnichenko, Y. (2012). Measuring the output responses to fiscal policy. *American Economic Journal: Economic Policy*, *4*(2), 1-27.
7. Blanchard, O., & Cottarelli, C. (2010). Ten commandments for fiscal adjustment in advanced economies. *VoxEU. org*, *28*.
8. Buti, M., & Pench, L. (2012). Fiscal austerity and policy credibility. *VoxEU. org*, *20*.
9. Christiano, L., Eichenbaum, M., & Rebelo, S. (2011). When is the government spending multiplier large? *Journal of Political Economy*, *119*(1), 78-121.
10. Corsetti, G. (2010). Fiscal consolidation as a policy strategy to exit the global crisis. *VoxEU. org*, *7*.
11. Corsetti, G., Kuester, K., Meier, A., & Müller, G. J. (2013). Sovereign risk, fiscal policy, and macroeconomic stability. *The Economic Journal*, *123*(566), F99-F132.
12. Hallaward-Driemeier, M., & Nayyar, G. (2018). *Trouble in the Making? The Future of Manufacturing-Led Development*, The World Bank Group.
13. Šormaz, N., & Bobić, D. (2017). *Development Potential Index of Tradable Sectors in Serbia*. Chamber of Commerce and Industry of Serbia.
14. Vujović, D. (2016). Serbia: Fiscal consolidation: Program design and political economy issues. *Ekonomika preduzeća*, *64*(1-2), 1-13.
15. Vujović, D. (2017). Serbia: Two years of fiscal consolidation: Results and medium-term sustainability issues. *Ekonomika preduzeća*, *65*(1-2), 25-41.

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DIGITAL SERBIA: ECONOMIC CONTEXT ADJUSTMENTS FOR DOUBLE GDP

Digitalna Srbija - prilagođavanje ekonomskog konteksta za udvostručeni BDP

Abstract

Serbia's economy is full of binding constraints feeding the crisis of transitionism. Breaking away from transitionism requires a complex reform agenda, including three sets of activities. First, annulation of past failures through crisis management (or fiscal consolidation) as well as structural reforms. Second, adoption of the new growth model and economic policy framework consistent with paradigm change in economic theory and policy, as well as with new normalities. Third, investment in new fields in accordance with mega trends.

This paper updates the status of debate about what to do in Serbia after success in program of fiscal consolidation 2015-17. There are two priorities. First, for catching up to the EU, Serbia must double the output in the foreseeable future. Second, to achieve meta-national advantage, Serbia's economy must undertake digital transformation. Our intention is to offer a conceptual paper, by debating broad-based institutional design questions with some nitty-gritty technical points and provide recommendations based on past experience in Serbia and successful examples of other countries. After fiscal consolidation, we propose concentrating on two remaining issues. Along with locking-in fiscal balance, our priorities are: the manufacturing-led growth model based on digital transformation and heterodox policy platform with industrial policy for ICT in the center. In the suggested growth model (and policy platform), the main sources of growth are advanced manufacturing and high value-added services.

In terms of digital transformation, Serbia is lagging behind its counterparts from the EU. In closing the gap, the role of industrial policy is imminent. Our objective is to analyze the general principles to guide industrial policy for ICT sector in the long-run, as well as to discuss specific measures to be taken today. In our previous papers we have already advocated for heterodox approach giving the framework with concrete hard macroeconomic policy regime as well as the architecture of industrial policies, both horizontal and vertical.

This paper explores how policy makers can facilitate transition toward digital economy and what choices they can make to prepare for the impending wave of change. In a digital transformation, Serbia must concentrate on structural reforms based on broader adoption of ICT products and solutions in advanced manufacturing that will reconfigure value chains of industry leaders and boost productivity in tradable sectors from the real economy (manufacturing, agriculture, physical infrastructure, transport and logistics, waste management, etc.). Also, it must concentrate of high value added services (science, education, health care, programming, etc.) due to their catalyst role in dynamic economic growth.

Previous logic is a base for structuring the following sections. The paper is organized in seven sections, apart from Introduction and Conclusion. We start with two main realities, the fourth industrial revolution and demising orthodox approach in economics and economic policy formulation, continue with new global normalities and heterodox approach as an antidote to crawling jobless growth around the world, and finish with fiscal balance and the role of industrial policies in the new growth model as well as with the role of digitalization in tradable sectors. Special attention is dedicated to industrial policy in ICT and its role in Serbia's economic recovery.

Keywords: *Industry 4.0, digital transformation, ICT, fiscal consolidation, heterodox approach, hard macro-economic policy regime, automatic stabilizers, industrial policy*

Sažetak

Ekonomija Srbije obiluje uvreženim ograničenjima koja su uslovila krizu tranzicionizma. Izlazak iz tranzicionizma zahteva program kompleksnih reformi koji uključuje tri grupe aktivnosti. Prvo, otklanjanje grešaka iz prošlosti pomoću kriznog menadžmenta (ili fiskalnu konsolidaciju) kao i strukturne reforme. Drugo, primenu novog modela rasta i nove platforme za vođenje ekonomskih politika koji su konzistentni sa promenom paradigme u ekonomskoj teoriji i politici kao i sa novim normalnostima. Treće, investicije u nove oblasti koje su u skladu sa mega trendovima.

Ovaj članak daje presek debate o tome šta Srbija treba da uradi posle uspeha programa fiskalne konsolidacije 2015-17. Postoje dva prioriteta. Prvo, za dostizanje EU, Srbija mora u sagledivoj budućnosti da duplira BDP. Drugo, da bi se ostvarila meta-nacionalna prednost, ekonomija mora da sprovede digitalnu transformaciju. Naša intencija je da ponudimo koncepcijski članak, na bazi analize najopštijih institucionalnih rešenja kao i određenih tehničkih detalja kako bi smo dali predloge na bazi prošlog iskustva u Srbiji i uspešnih primera iz drugih zemalja. Posle fiskalne konsolidacije, mi predlažemo prebacivanje pažnje na dva preostala pitanja. Pored očuvanja fiskalne ravnoteže, naši izbori su na proizvodnji zasnovan model rasta i heterodoksna platforma za vođenje ekonomskih politika sa industrijskom politikom za IKT u centru. U predloženom modelu rasta (i platformi za vođenje eko nomskih politika), glavni izvori rasta su napredna industrijska proizvodnja i usluge najvećeg stepena dodate vrednosti.

U pogledu digitalne transformacije, Srbija zaostaje za zemljama EU. U zatvaranju jaza, uloga koncepta industrijske politike je neizbežna. Naš cilj je da analiziramo opšta pravila za formulisanje industrijske politike za sektor informacionih i komunikacionih tehnologija (IKT) u dugom roku kao i da diskutujemo o konkretnim kratkoročnim merama. U našim prethodnim radovima više puta smo usmeravali pažnju prema heterodoksnom pristupu predlažući čvrst režim makroekonomskih politika kao i odgovarajuću arhitekturu industrijskih politika, kako horizontalnih, tako i vertikalnih.

Ovaj članak istražuje kako da donosioci odluka naprave prelazak prema digitalnoj privredi i koje izbore moraju da učine kako bi se pripremili za talas značajnih promena. U digitalnoj transformaciji Srbija se mora skoncentrisati na strukturne reforme zasnovane na široj primeni tehnologija napredne industrijske proizvodnje koje imaju moć rekonfigurisanja lanca vrednosti granskih lidera kao i rasta proizvodnje i produktivnosti u realnoj ekonomiji (industrija, poljoprivreda, fizička infrastruktura, transport i logistika, upravljanje otpadom i dr.). Takođe, neophodno je usmerenje na usluge najvećeg stepena dodate vrednosti (nauka, obrazovanje, zdravstvo, programiranje i dr.) zbog njihove katalizatorske uloge u dinamičnom ekonomskom rastu.

Prethodna logika je osnova strukturiranja izlaganja koja slede. Rad se sastoji od sedam delova, pored Uvoda i Zaključka. Započinjemo sa dva realiteta, četvrtom industrijskom revolucijom i napuštanjem ortodoksnog pristupa u ekonomskoj teoriji i politici, nastavljamo sa novim normalnostima i heterodoksnim pristupom kao lekom za puzeći rast praćen gubitkom radnih mesta širom sveta, i završavamo sa ulogom fiskalne konsolidacije i industrijskih politika u novom modelu rasta kao i ulogom digitalizacije u sektorima razmenljivih proizvoda. Posebna pažnja biće posvećena industrijskoj politici za IKT i njenoj ulozi u obnovi srpske privrede.

Ključne reči: *Industrija 4.0, digitalna transformacija, IKT, fiskalna konsolidacija, heterodoksni pristup, čvrst režim makroekonomskih politika, automatski stabilizatori, industrijska politika*

Introduction

In the new economy, usually labeled "Industry 4.0", there are two explanatory elements: the fourth industrial revolution and new normalities in a socio-economic context. These elements are not stand-alone, but interrelated. Also, the structure of relations and intensity of dependency between their components are pretty unstable. Sometimes they are reinforcing, sometimes they are offsetting each other. No matter what the final result is, their interactions influence the structural changes in economy and society.

Technology is the main driver of economic growth and social prosperity. Also, it influences the growth model, economic policy platform and behavior (business model and strategy) of basic economic agents. Technology is an ambivalent phenomenon, a factor shaping opportunities (inclusive innovations) and threats (disruptive innovations), or both (structural changes). Industrial revolution exacerbates velocity and impact of changes enabling change imperative to function.

The purpose of this paper is to discuss the impact of the last version of change imperative on the economy and business organizations inside them with the purpose to extract the main theoretical and policy recommendations. This is particularly important because there is a real threat that the Great Recession of 2008-2009 and, particularly, counter recession measures until today exacerbated the global turmoil and diminished the capacity to respond adequately on national and company level to new normalities. It is particularly true for peripheral economies lagging significantly behind core economies. Our intention is to offer a conceptual paper with feasible recommendations.

Our view is based on three mainstays. First, the model of managed capitalism as a preferred socio-economic framework for manufacturing-led development. In the case of Serbia it could be the framework to escape transitionism as never-ending transition [6], as well as for catching up with

developed economies. We strongly believe that advanced manufacturing and high value added services are the main drivers in the new model of growth. Also, we are advocating for "heterodox approach" as a conceptual platform for new economic policies with industrial policies in the center. We will implement this conceptual novelty in the case of Serbia offering the framework with core elements of the hard macroeconomic policy regime providing stability as well as concrete vertical and horizontal industrial policies with the purpose to capitalize growth potentials. We will particularly concentrate on information and communication technology (ICT) as the industry with the greatest potential for transformation not only for itself, but also for other industries. ICT is embedded in other technological fields. It has potential to revolutionize everything (economy, business model and strategy of business organizations, the way of life, etc.).

Industry 4.0: The impact on an economy

The industrial revolution is an ongoing process, a concept standing for major alterations occurring within a relatively short period that cause fundamental change in the economy and society. In the industrial revolution we can distinguish four stages since its start in 1784. In each stage, the impact of core technology for economic and social development has been enormous.

Regularly, technology change enables exponential growth of opportunities expressed by an S-shaped curve. According to K. Schwab [38], until the advent of the first mechanical weaving loom and water and steam technology, and its application in emerging industries signifying the start of the first industrial revolution, humankind lived in abject poverty. Industrialization of the economy and expansion of new jobs in emerging industries provoked a standard of living increase by movement of people from rural to urban areas and expansion of modern cities with better infrastructure and social services, including education, science, and health care.

The following stage of industrial revolution started in 1870. The symbol of this stage is the conveyor belt. This time, electrical power gave birth to mass production of standardized products. The second industrial revolution brought modernization and formidable rise in quality of life and thus unprecedented population growth. It also opened the door to the service economy expansion.

The first programmable logic control system in 1969 was just an overture to the third wave of industrialization. In the third industrial revolution, also called "information revolution", a symbiosis between electronics and ICT led to further automation of the processes and their integration along the value chain. Internet and millions of connected devices gave the new meaning to communication. Starting in this period, artificial intelligence has been replacing humans in a vast array of activities.

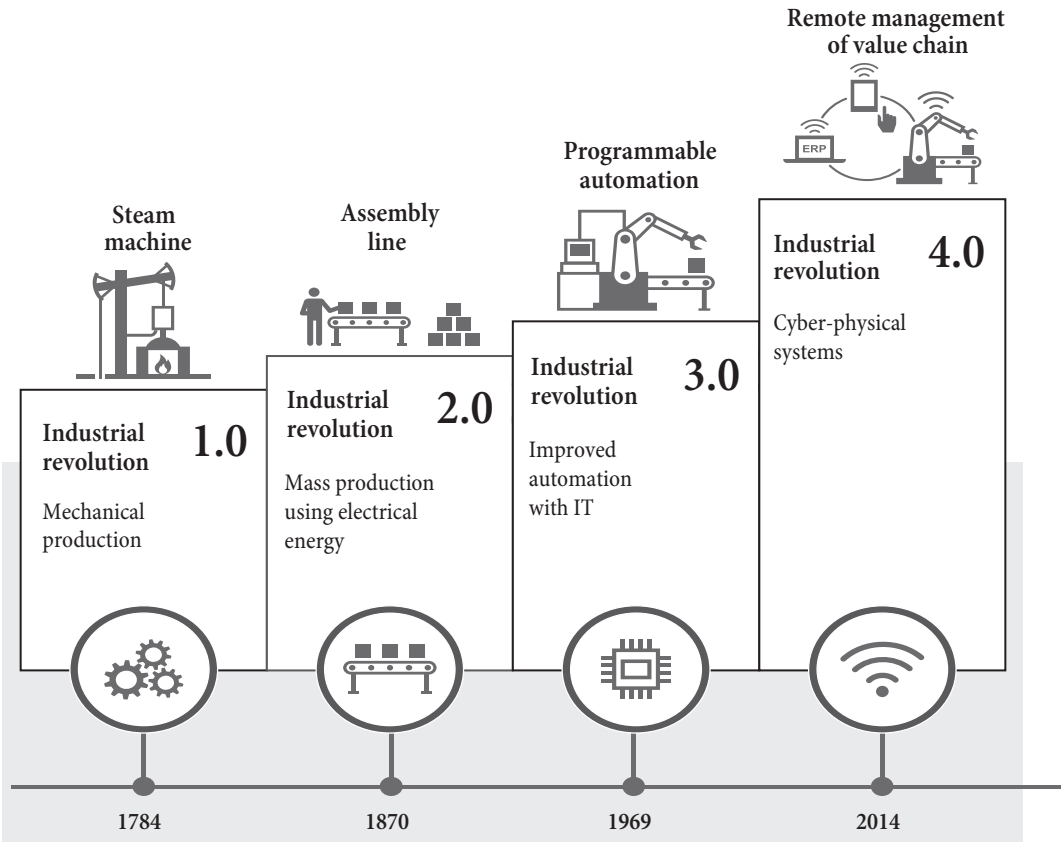
Now we are in the midst of the fourth wave of major technological advancement, known as "digital revolution". The fourth industrial revolution is fundamentally different in comparison to the other three. New technologies are fusing the digital world, from one side, and physical and biological worlds, from the other side.

The main characteristic of digital economy (or Industry 4.0) are cyber-physical production systems, or symbiosis of the real and the virtual world. Cyber-physical production systems are in fact network of machines organized in a similar way as social networks. Mechanical and electronic components linked by ICT communicate via networks.

Over time, the character and impact of former industrial revolutions on economy and society have changed dramatically (see Figure 1). The main consequence of the first industrial revolution was that machines substituted labor. The main impact of the second industrial revolution was automation of production process based on the assembly line and power of electricity. The main impact of the third industrial revolution is augmented automation based on information technology. In the center of the fourth industrial revolution is remote control of whole value chain based on universal connectivity.

Industry 4.0 is more than ICT that lies beneath. What distinguishes the fourth industrial revolution from previous ones is its speed and scope of change. The latest industrial revolution is so complex that it has the systemic impact on economy and society. It is embedded technology. It has potential to revolutionize everything, including other technological fields out of ICT, entire economy, and the way of life. Also, there is a difference in

Figure 1: Industrial revolution impact



speed and the scope of the innovative solutions diffusion. In previous industrial revolutions, with the exception of the third industrial revolution, diffusion of innovations came relatively slowly leaving many potential acquirers, including whole continents, unaffected. The new industrial revolution brought about a profound and systemic change in the economy and society. The core structural change is universal connectivity, breaking down barriers between industries as well as between business and private life. Digital forces like disintermediation, disaggregation and dematerialization also contribute to structural changes, by reshaping traditional value chains.

The term digitalization encompasses three aspects. First, digitalization of assets, including infrastructure, connected devices, data and data platforms, and technologies like big data analytics, cloud computing, internet of things (IoT), virtual reality (VR), augmented reality (AR), 3-D printing, etc. Second, digitalization of business model, including robotics in operations, customer and supply chain interactions, mobile payments and other activities from the value chain. Third, digitalization of labor, including employee's use of digital tools, new digital jobs and new digital responsibilities. Mentioned aspects of digitalization belong together. In measuring return on investment we find relatively large disparities across national economies, industries and business organizations. Without any doubt, a significant part of future economic growth and productivity improvement could come from digital applications. It is particularly important for peripheral economies lagging behind the core economies since they are looking for the way for catching up and income conversion.

The rate of structural changes and the level of disruption of incumbent technologies driven by digital transformation are enormous. Large-scale innovation from ICT, fueled by other form of consumerization of ICT, continuously drive change in demand and other technological fields, as well. Also, in Industry 4.0, new possibilities for manufacturing emerge so quickly that it is regularly difficult for business organizations to keep pace of the progress. Typical innovation is, actually, the amalgam of innovation from cyber (or digital) space, from one side, and physical and biological space, from the

other side. Also, it changes the character of competition from product to amalgams of products and services. As a consequence, a modern competitive arena is dominated by double amalgams (between different technologies and between products and services) that are usable, available, affordable and accessible to almost unlimited number of users.

Nowadays, traditional manufacturing is exposed to digital transformation caused by emergence and fast implementation of cutting-edge technologies in advanced manufacturing. The pace of change reflects almost Moore's law on the speed at which information technology driven change happens [32].

Three digital forces: disintermediation, disaggregation and dematerialization are continually shifting value from conventional business models to new ones, from slow-moving incumbents to nimble digital attackers, and from one activity in value chain to another [22].

Industries which are ripe for disintermediation are industries with high margins on offline channels, a lack of information transparency due to multiple layers between suppliers and customers, and a highly fragmented landscape. Typical example is retailing. In the global context, continued growth of online sales has disrupted retail industry by cutting out a middle layer and linking suppliers and consumers directly through digital platforms. Integrated omnichannel experience for consumers that mixes offline and online (O2O) in combination with further penetration into rural areas and smaller cities exacerbates this trend.

Disaggregation takes place when digital attackers disrupt conventional business models and reinvent industries by disaggregating huge assets into many pieces, turning them into services, and serving fragmented consumer bases. Industries that have high value, high durability, and fluctuating utilization are the main territory for disintegration. Share mobility is a prime example.

Dematerialization is virtualization. It changes processes and products, or both, from physical to virtual, unbundling demand with digital delivery and enabling consumers to receive products or services anywhere and anytime. Prime examples are e-book and distance learning.

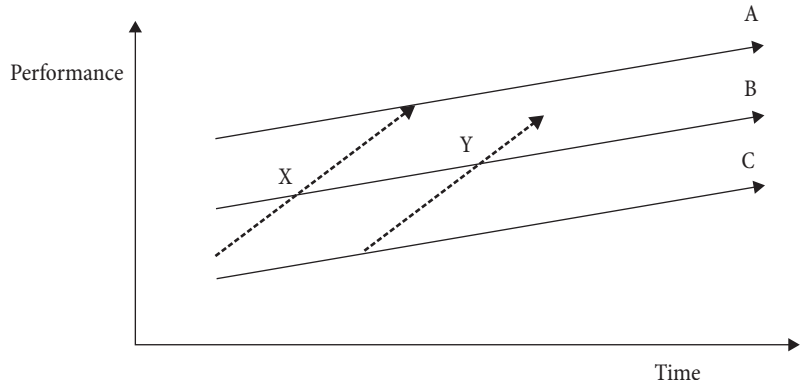
According to [22], between the three main digital forces, disintermediation and disaggregation can have the largest impact. Also, the pattern of impact of the three digital forces varies according to the sector. In the case of disintermediation and disaggregation, digital platforms play an important role by directly matching fragmented suppliers and customers, by improving transparency across the value chain, while offering multisided solutions that enable the rapid expansion of supply and cater to underserved demand.

Previous changes require that we master and lead in what might be termed as inclusive innovation instead of disruptive innovation. C. Christensen [3] has differentiated sustaining and disruptive technologies when companies are faced with the so-called "innovator's dilemma". Sustaining technologies improve product performance along the dimensions that customers have learned to expect. In contrast, disruptive technologies initially offer lower performance than existing technologies, but in the meantime their performance improves at higher speed than customers expect. These technologies are ignored by incumbents, because they are underperforming in early stages. However, with time, these technologies outperform sustaining technologies causing new entrants to take over business from incumbents. Demand pull innovation based on rapid customer feedback from early prototypes (or customer relationship management) is critical for rapid and massive diffusion.

Disruptive technologies outperform sustaining technologies causing new entrants to take over the business from incumbents following the "winner-takes-all" strategy. As Figure 2 shows, entrants starting to implement new fertile technology in the low-end segment but finishing in the high-end segment, gradually take over the whole business from incumbents.

From a market forces perspective, in Industry 4.0 the role of technology-push innovations has been increasing. Namely, cyber-physical amalgams of modern technologies could lead to the supply-side revolution. From the demand side, there are also dramatic changes. In global networks the marginal cost lost the meaning, because communication costs tend to be nothing and freight and logistics costs significantly decline. Technological breakthroughs have

Figure 2: Disruptive innovations



Source: [3, p. 44].

potential to accelerate the demand for new products and services, productivity improvement through the value chain, investments in new capacities and pace of growth of the global productivity frontier itself, all of which will open new markets and drive investment and economic growth.

In such a challenging situation, policy makers should first examine current position of the national economy and competitiveness of certain industries within them. Before defining the strategy for digital transformation, it is important to look at the mega trends. Or, answer the question: where the global economy may be going in the long term and what would be the role of some industries? The assumptions of possible adjustments require an effective growth model and efficient economic policy platform compatible with paradigm change in economics and economic policy platform. Skipping these steps can easily lead to new misconceptions.

Rethinking neoliberal orthodoxy in the wake of the Great Recession

In each socio-economic system there are components functioning automatically and components that require human interactions. Previous determined two institutional arrangements, market forces and state intervention, active and reactive both. Market mechanism balancing demand and supply supposes automatic behavior. Industrial policies for tradable sectors respect judgement in human reaction on technology change and mega socio-economic trends. Complementary impact of these choices leads to dynamic equilibrium.

Without any doubt, the hegemony of capitalism as worldwide socio-economic system with three fundaments, private property, free market (or enterprise) and political democracy has no realistic alternative to compete. Even before the start of the Great Recession in 2008, there was a strong conceptual diversity between economics scholars from developed and developing world regarding the dilemma as to which institutional arrangement primarily influenced growth models and economic policy platform in capitalism. Mainstream economics scholars from developed or industrialized economies (sometimes called "early developers" or "core economies"), preferred market forces, while opinion makers from developing or non-industrialized economies (sometimes called "late developers" or "peripheral economies") opted for government intervention based on the industrial policy doctrine [45].

To catch up with the developed world, developing economies regularly use technology transfer which is not obviously a manifestation of the free market mechanism. In a great majority of cases it was based on the second industrial generation technology. After industrialization based on technology transfer, under the pressure of global competition, both on the external and internal market, local industrial organizations had to move up the value chain of production and to cutting edge technologies, making more high-end products with more cost effectiveness. They managed to do this in tradable sectors, the sectors that exported or competed with imports. By doing so, national economies run the so-called "double macro deficits" (in current account and in capital balance). Industrialization based on import technologies for tradable

sectors does not lead to sustainable balance of payments due to terms of trade. Moreover, the purchase of cutting edge technology from abroad increases current account deficit. Deficit in capital balance is a result of financing of that purchase. Two macro deficits slow the speed of growth and developing economy enters in the so-called "middle income trap".

To escape from the middle income trap means, primarily, reduction of dependence on foreign borrowing. But it is not possible without reduction of technology purchase from abroad. In situ development of technology to keep a high level of competitiveness of domestic industry is a way to eliminate double macro deficits. According to [6], the core challenge will be the way for a developing economy to chart the path of technology development, not only as a beneficiary (leapfrogging), but also as an active participant in its development, or in situ research and development (R&D).

This is a complicated journey, because it requires growth that is smart, adequate science policy (and R&D), including also an education system adaptable to the requirements of cutting edge technologies. In some emerging economies from Asia, practical growth models were ahead of neoliberal orthodoxy. Empirics were outstanding, because development of own technologies in tradable sectors produces meta-national advantage and surpluses in current account and capital balance, enabling sustainability of the balance of payments.

In reconsidering orthodox approach, negative experience was also important. The Great Recession emerged in the developed world showed that the economy, unlike the technical system, is not self-stabilizing. It can implode independently of the business cycle fluctuations. There may be hysteresis. The last crisis was a direct consequence of misconceptions of the neoliberal growth model and the related economic policy regime based almost exclusively on a market mechanism. It showed the limitations of monetary policy as a core macroeconomic policy and cast doubt on some of the tenets of its intellectual foundations. On the fiscal policy side, the crisis raised new doubts about what levels of public debt are safe, optimal speed of fiscal consolidation, and the role of macro-prudential instruments.

The last crisis forced economic scholars to explore alternative growth models and economic policy frameworks. There are three main lessons we have drawn from the past. First, exclusive focus on monetary measures, inflation targeting and prime rate rule is not enough to reach sustainability proposal toward both the people and nature. Second, in core macro policies there is more space for fiscal measures, particularly if the safe real rate is lower than growth rate. Third, active role of state in the economy (both proactive and reactive) is inevitable.

One should add and we cannot leave it aside, stationary status of the economy due to high level of financialization. According to G. Mukunda [25, p. 74], financialization is the increase in the influence of financial markets, institutions and elites over both the economy and other institutions of society, including the government. Namely, when the financial sector growth is not harmonized with the growth in the real economy, it leads to structural imbalances like deindustrialization, output gap, asset-price, credit bubbles, and income inequality.

Disequilibrium between the financial sector and the real economy influences disparity between value creation and value release, emergence of speculative bubbles, bubble burst and, finally, the crisis. The crisis imposes costs on the government in the form of lost tax revenues and fiscal imbalance due to increased spending [6].

A growth model related with neoliberal version of capitalism based primarily on services, and predominantly on financial services, is not sustainable, because these activities are distributive by nature. Rent-seeking is a typical manifestation of a distributive mentality. It involves trying to make value by manipulating regulatory policies. In a system with high financialization, a significant share of transactions is zero-sum, instead of positive-sum (or win-win).

There are, at least, fifth weak points of such model. First, over-proportional development of the financial sector increases the economy's exposure to the downside scenario [16], [18], and [23]. Second, overdeveloped financial sector easily misallocates resources, meaning disproportionately high rewards for executives. Third, investment in financial assets tends to crowd out investment in real assets, because the capital market prefers short-term and liquid

investments [30]. Fourth, deindustrialization. Along with deindustrialization, wealth concentration is another weak point of the neoliberal model of capitalism. Despite global growth, relative income inequality has been on the rise. According to [31], almost half of the world's wealth is owned by the global "top 1 percent" of the population (which includes about 70 million of people), and the bottom half owns as much as the richest 85 individuals.

The changes in the global economy are so radical that they require an ideological discourse not only in developing economies, but also in developed ones. Instead of the neoliberal blueprint of capitalism up to 2008, when there was no power to balance it, the new normality is a multipolar world with ideological compromise with the market and the state promoted by new structural economics. It leads to the existence of some hybrid capitalist systems with the greater role of the state in the economy. Emerging system in which government gives some level of support along with conventional privileges to favored national champions effectuated many times in superior performance and competitive advantage on the global level. R. Rajan [35, p. 56] labeled this version of capitalism "managed capitalism". This system is conceptually different from neoliberal model of capitalism. This change opens the new question: What are the fundamentals of the new structural economics staying behind managed capitalism and its consequence "development state" *vis-à-vis* neoliberal blueprint and "suppressed state"?

Before answering to the previous question, we will analyze whether paradigm change in economic theory and policy is compatible with the new normalities?

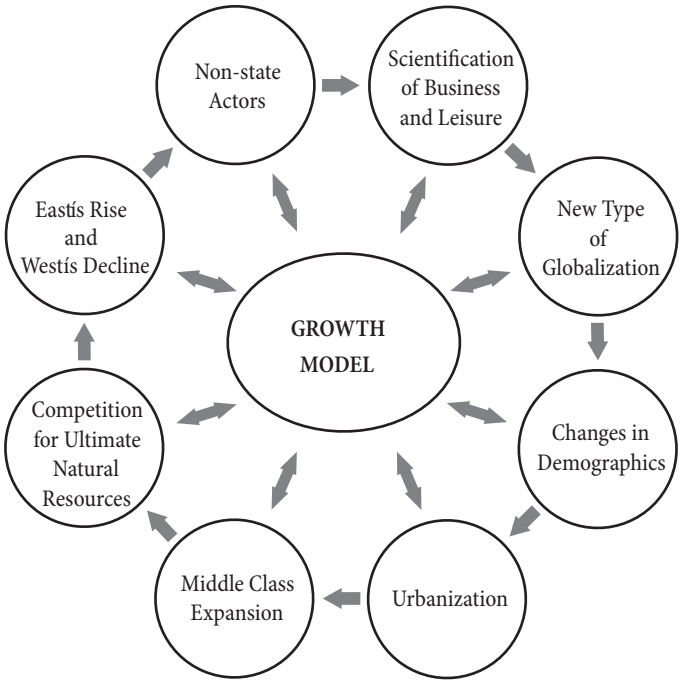
New Normalities: Challenges, opportunities, or both

Macro management depends on socio-economic system and the model of growth. Micro management depends on organization and functioning of basic economic agents responding to the main challenges inspired by own aspirations. In both cases, management is social technology. In every stage of development, there is specific impact of interaction between new normalities and technology change.

As we already pointed out [6], there are some mega trends influencing new normalities in socio-economic context of the fourth industrial revolution.

Figure 3 portrays the relationships of mega trends in socio-economic context and the model of growth. Among them, scientification is the most powerful trend. The entire socio-economic context, from business to leisure, is under

Figure 3: The impact of megatrends on the growth model



the impact of scientification. The new technologies (in particular, industrial robots) have potential to disrupt labor markets. As automation that was functioning as neutron bomb, the net displacement of employees by industrial robots might exacerbate the gap between labor income and return to capital. Also, labor markets become increasingly segregated into low-skill, low-pay and high-skill, high-pay segments, which in turn will lead to breaking the social cohesion. Innovators as providers of intellectual capital and investors as providers of financial capital are the larger beneficiaries of technological breakthroughs. Great losers in terms of return on labor are less educated workers with lower competence.

The Great Recession and, almost equally, the anti-recession experimental policy measures[1] in the post-crisis period, discredited the idea of universal effectiveness and applicability of the neoliberal model of capitalism and efficiency of the related economic policy platform and, along with them, in some sense, the idea of global integration.

Despite the ambitions, the neoliberal model of capitalism did not provide global and relatively smooth growth all over the globe. Deglobalization has emerged as one of the most important deviation of the market fundamentalism. Ironically, in the post-crisis period the myth of a borderless economy has come crashing down in the most developed economies from the West.

Geopolitics is the bold pivot of deglobalization. The proliferation of economic sanctions as a foreign policy tool is a good example of political interference in global integration. Strengthening ties between trade and geopolitics changes the integration paradigm in terms of increase of trade and capital flows between emerging super economic blocks, both West-West and East-East, as well as the growing power of state wealth funds and state-sponsored projects, particularly in infrastructure and prestige sectors like space and energy.

It is reasonable to assume that deglobalization will be a temporary phenomenon. It is true that in terms of international trade and foreign direct investments, globalization as we know it is fading. However, the new globalization pattern is evolving by itself, exchanging the one where information asymmetry (conventional globalization) was the essence for the other where resource combination is the essence (new globalization). The new globalization focuses on the systemic nature of the global economy. Instead of selling to and producing in the global economy, there is an enormous possibility of creating from the global economy. The new globalization is more powerful than the old one, particularly because of its complementarity with the major ICT breakthroughs which leads to universal connectivity.

The orientation toward globalization requires from industrial organization three types of adjustments. First, adaptation by tailoring products/services to local markets. Second, aggregation to achieve economies of scale and scope by extending operations in great many regional market segments. Third, arbitrage to exploit the advantages (comparative, competitive or sustainably competitive). Global market offers aggregation effect by enabling high-perceived value for customers along with high value added for owners. Namely, strategy of global niche players followed simultaneously cost effectiveness and differentiation.

The more global the world is the greater is the significance of local matters. We came up with the new phenomenon, local integration. In many emerging technologies, local competitors were winning the game against the incumbent global companies.

By 2050, the world will have 9.7 billion people compared to 7.3 billion in 2015. Population ageing and shrinking workforce in developed world is opposite to the situation in Africa and Middle East.

Urbanization is a powerful force for output growth, productivity enhancement, and improvements in standard of living. It could be projected that more than 80% of world population will live in 600 mega cities in the time-frame of 25-30 years from now. This structural change also requires huge investments in urban planning, smart cities (and villages), renewable energy sources, transportation and waste management based on the principles of circular economy.

1 For example, "quantitative easing" is a built-in destabilizer, measure which is not sterilized and thus lead to an increase in money supply in contrast to conventional targeted (or credit) easing measures, that is, purchases of specific financial assets without change in money supply.

Middle class expansion on a global level is a consequence of sustainable and inclusive economic growth in emerging economies. Given the same timeframe, almost half of the world's population might belong to upper or middle class.

Reserves of natural resources are depleting because growth is in relation with growing consumption due to new wave of industrialization. The key question is whether the world can sustain the demands of the resulting new upper and middle class from emerging economies if they choose to replicate the current lifestyle of Western consumers, or would people throughout the world agree to move to different lifestyles that would demand far less from the earth ("green energy", "circular economy", etc.).

Major shifts in economic power are also underway. East's rise and West's decline. As a consequence, global governance, particularly multinational financial organizations, needs to be transformed to reflect new reality in the global economic landscape.

However, in an emerging context where billions of people connect via social media, violent non-state actors are the new phenomenon. As a threat to global security, they may interrupt expected economic development and social progress.

Mentioned trends are not stand-alone, but interrelated. Sometimes they are reinforcing, sometimes they are offsetting each other. The net effect of these trends on an individual national economy and its business organizations will vary from case to case may change overtime, and it strongly depends on the starting position. Great majority of mega trends work to the advantage of managed capitalism as most viable version of capitalism with agile government combining a strong economic policy regime and intelligent industrial policies for tradable sectors.

Necessary adjustments in policy platform are not trivial. The fourth industrial revolution is in infancy stage and it is not easy to forecast what form it will take in the future. The more we can understand its character, the more likely we enjoy benefits. In the growth equation, technology is variable. Technology is an enabler leading to scientification of business and social life, as well. The impact of double amalgams of Industry 4.0 is practically unlimited. Unfortunately, disruptive too. However, when capital markets inhibit reinvestment in research and development, "innovator's dilemma" is transforming into "capitalist's dilemma" [4].

There are two perspectives, demand side and supply side. As far as the demand side is concerned, innovations from the ICT field have the capacity for becoming an integral part of the product itself and formation of smart connected products (SCP). The phrase "internet of things" (IoT) has risen to reflect the growing power of SCP. Also, a major shift from the demand side is consumer engagement in design, marketing and delivery of new products/services through customer's relationship management (CRM). In the near past there was a disconnection between the usability of digital data and the physical world in which we can apply it. Namely, decisions remain trapped on two dimensional pages and screens (or 2D), while reality is three-dimensional (or 3D). The gap between the real and cyber (or digital) worlds limits capability to use billions of information produced from SCP as actionable information for business decisions. Set of technologies that superimpose digital data and images of the physical three-dimensional world known as augmented reality (AR) can close this gap. Smart glasses and screens have potential to increase demand particularly in consumer's goods, construction and retail [34].

Potential for improvement from supply side is even stronger. Namely, on the supply side, many incumbents are seeing the introduction of new technologies that create an entirely new way of serving existing need as disruption of existing supply-chains. More importantly, demand push innovations will be multiplied if the technology-push innovations in the new technology fields like robotics, 3D printing, artificial intelligence, life science, etc. integrate with them. AR also has a role to play on the supply side. Disruption is also flowing from competitors using global digital platforms for change in business model and improvements in the way how the products or services are delivered.

Life science and health care improve quality and duration of the basic human capital. Basic science and education (particularly dual academic education) offer advanced services for people and, by doing that, improve advanced human capital. Last but not least, every national economy must consider technological base of the energy

production, particularly in the fields of renewable energy and energy storage and conservation of soil and water by projects like smart cities and smart villages.

How to adjust the growth model and react with economic policy to a rapidly changing and complex environment full of mutually interrelated risk stressors, particularly if the economy is, like Serbia's, strongly burdened with binding constraints from the past? To answer this question, we start with a paradigm change in economics and economic policy in the wake of new normalities.

Heterodox approach for tackling new growth and development opportunities

Previous theories of growth and related economic policy platforms have developed from macroeconomics perspective, from an altitude of ten thousand feet. This perspective is good for spotting, for example, the impact of capital expenditures and research and development on the growth. In that case, the outcome (growth) is under the impact of these two independent variables. Despite limitations of modeling in macroeconomics[2], to understand what causes growth, you have to crawl inside the microeconomics and form a framework from the ground up to adjust risk appetite of business organizations *vis-à-vis* market and technology change. In a search for model of growth and its principal drivers, microeconomics (or business) perspective, also, matters.

Growth (sustainable and dynamic) is, notwithstanding, number one priority. We can all agree that economic reforms after 2008 should be set with that goal in the center.

It took some time to realize that uniform prescription for growth model embedded in market fundamentalism doctrine implemented in all sorts of economies – big and small, developed and developing, with different backgrounds, history and current conditions – did not deliver expected results. From this perspective, it sounds silly to believe that one set of policy measures can produce the same results in a whole array of different conditions.

According to [13], the impact of the neoliberal growth model was heavily dependent on circumstances. Moreover, policies that worked wonders in some places had weak, unintended, or negative effects in others. Empirics confirmed that universal efficiency of the market is not common, particularly in cases of major macroeconomic distortions like output gap, stagflation, and deflation. In such situations, market forces unleash recession, instead of booming development prospects. Moreover, standard anti-crisis measures based on the same doctrine push the economy to jobless recovery, at best. Consequently, there is a growing consensus among relevant economics scholars and practitioners that the industrial policy is an additional common-sense institutional arrangement [1], [21], and [40]. In the context of new structural economics, the relevance of the so-called "heterodox approach" in policy framework formulation, instead of orthodox (or neoliberal) one is increasing. The heterodox approach integrates macro-economic policies (monetary and fiscal) with industrial policies.

Today, in economic theory mainstream there is almost a consensus that not only in crisis, but also in normal times, the functioning of a capitalist economy requires proactive government instead of a passive one choosing wait-and-see behavior against what the market forces dictate [19]. Previous leads to the rejuvenation of industrial policy as a common-sense institutional choice in formulation of economic policies [40]. The concept is acknowledged by mainstream economists from different sides of the ideological spectrum and most influential politicians around the globe, as well. Industrial policy enthusiasts like D. Rodrik [36] have even treated new policy platform as a key lever for income convergence and catching up with developed economies.

According to W. Lim [19, p. 174], there is possibility to achieve not only a competitive advantage, but also sustainable competitive advantage based on industrial policy. Namely, in later stages of economic development, the growth model based on heterodox approach introduces sustainable competitive advantage, which can be seen as a result of synergies between new technologies and enhanced human capital. In that case, heterodox approach involves horizontal industrial policies or complementary investments

2 In such models, a favourite expression is ceteris paribus, or with all other things being constant. In reality, other factors hardly ever remain constant.

in physical and human capital through high value added services like science, education, and health care.

In the heterodox policy approach, industrial policies dedicated to advanced manufacturing can be used to correct market failures as well as previous economic policy failures producing double macro deficits. But, industrial policies are not just about advanced manufacturing. Support to technological change and support of infant industries (vertical policies) are also critical tenets in agro-food, infrastructure, automotive, and other industries from the real economy as well as high value added service industries. Education policy, science policy and health care policy are typical examples of sector-neutral (or horizontal) policies.

To conclude, as far as the economic policy platform adjustable for the new growth model is concerned, we see three dramatic changes. First, the shift from orthodox (or neoliberal) to heterodox policy platform with two key components: hard macro-economic policy regime and industrial policies for tradable sectors. To stabilize the output by supporting hard budget constraints (both macro and micro), the architects of the concept, for example O. Blanchard et al. [1] and [2] used the old Keynes's idea of automatic stabilizers particularly in fiscal sphere[3]. Industrial policies are dedicated to tradable sectors (sectors increasing the export and substituting the import). These policies, actually vertical industrial policies, should be combined with horizontal policies.

Second, wider set of policy tenets in comparison with orthodox (or neoliberal) approach. According to partially modified source [1], the main policy tenets are as follows: (1) the output gap (low and stable) along with inflation (low and stable) as a primary policy tenets, (2) sustainable employment instead of flexible labor market, (3) balanced GDP structure with the growing role of the real economy instead of financial sector, (4) price parity between all types of assets (including FX rate) instead of tolerance towards speculative bubbles, primarily in the financial sector, and (5) dynamic equilibrium between the real economy and the financial sector instead of stability of the financial system.

Third, in policy formulation holistic approach dominates optimization modeling. Hardening budget constraints and introducing "smart" industrial policies based on advanced manufacturing and high value added services should be at the center of the rejuvenated wisdom in economic theory and policy platform known as new structural economics.

Beneficial impact of fiscal balance on heterodox approach implementation

The long-term prospects for dynamic, sustainable and inclusive growth in Serbia depend primarily on the implementation of the strong macroeconomic policy regime. Hardening budget constraints was based on the need to stop unsustainable twin deficits, looming crisis of indebtedness or even sovereign default. Following centrality of hard budget constraints, architects of the last program for fiscal consolidation 2015-17 revisited fiscal golden rule by separating the current account and the capital account. Program of so-called "expansionary austerity" was supported by the IMF three-year precautionary program. Program has actually balanced the current account over the period by financing the capital account partly by debt. Results, both nominal and structural, are signalizing the shift of Serbia's economy toward inflection point, from transitional recession to recovery. The most important achievement is fiscal balance because fiscal imbalance always jeopardizes growth prospects. Fiscal balance has improved from a 6.6% deficit (2014) to 1.2% surplus (3Q 2017). Current account deficit has been reduced from double-digit levels to around 5% level, and it is fully covered by FDI inflow. Growth in positive territory is also a respectable achievement indicating turnaround. Price stability is maintained in both components, core inflation and customer price inflation. Level of unemployment is decreasing. The level of debt and cost of debt[4] is decreasing. Credit rating is one step below investment grade. All of this will narrow the spread between primary and total fiscal balance and improve access to finance, as well.

3 For example, Taylor's Swedish variable investment tax, variable income tax, and variable VAT rates.

4 The interest rate spreads have improved by more than 500 b.p.

Despite positive achievements, Serbian macroeconomic reality has a dual nature, the shining upside and the dangerous inside. Some vulnerabilities must be considered. First, indebtedness besides debt declined in 2017 by more than 10% and it is expected to fall further in 2018 for the next 10%. Unfortunately, the median debt-to-GDP is at 60% Maastricht target is not in line with the level considered prudent. Namely, the prudent level for developing economies is considered to be lower, 40-45%. This level of debt has given the national economy more room for countercyclical fiscal policy. Second, impotency. Due to binding constraints, the economy is too sluggish to achieve sustainability proposal toward people and nature. Third, low capacity to respond adequately through investments to new challenges. Earning power and debt capacity of real economy is too weak to follow change imperative inspired by digital transformation.

There are many things to do to achieve the sustainability proposal. Hardening budget constraints requires not only fiscal balance, but also resolution of lasting uncontrolled leakages and points of misuses of public funds (state-owned enterprises from natural monopolies and infrastructure as well as state-owned commercial enterprises). In the following stage of fiscal consolidation, cleaning must replace leaning.

Inflation targeting needs to be reconsidered, too. Large fluctuations in FX, due to a sharp shift in capital flows after, for example, high volume of privatization proceeds, can create new pressure on the output gap. A large appreciation of domestic currency may squeeze tradable sector and make it difficult to recover competitiveness when FX returns back. When significant part of contracts is denominated in reserve currencies, depreciation of domestic currency can cause negative effects on output and stability of the financial system. In a small and open economy, strict inflation targeting is not sufficient and the central monetary power must use other policy tools in a form of reserve accumulation and sterilization.

Debt consolidation also matters. It is a logical consequence of the output gap. Because public investment has been too low during austerity, another imperative is to increase the space for monetary policy maneuvering. Indeed, there is a lot of room for fiscal policy, particularly in the segment of automatic and semi-automatic fiscal stabilizers.

Today's macro-management in Serbia is much better than in the previous period, but much more can and needs to be done with the growth. After hardening budget constraints and some adjustments in monetary and financial policy, to unleash new avenues of growth we need an improvement in industrial policy platform. Intention to duplicate the level of GDP requires compound average growth rate of 7% for the next 15 years. Also, Serbia's economy must close the gap vis-à-vis global technology frontiers. If it intends to unleash new avenues of growth by adopting cutting edge technologies in carefully selected tradable sectors, the economy must implement industrial policy doctrine in order to create new jobs, increase productivity and improve competitiveness. Industrial policy, both vertical and horizontal, should empower start-ups as manifestation of technological entrepreneurship as well as research parks and clusters development. Also, previous institutional forms are prerequisite for self-employment in micro and small and medium-sized tech companies.

Heterodox economic policy platform structure

The new structural economics tends to emphasize policy of "winners picking themselves" by replacing the conventional industrial policy of "picking winners". Industrial policy has three focuses: (1) particular sectors (vertical or sector-specific policy), (2) the economy as a whole (horizontal, non-discriminatory, or neutral policy), and (3) future opportunities (creation of new strategically important industries). The vertical policy is most suitable for late developers. Horizontal policy that provides better conditions for all sectors in the economy comes with higher income level [6] and [45]. Namely, as the capacity of the private sector improves, the government gains the opportunity to shift to a sector-neutral approach which supports overall competitiveness improvement. This industrial policy, usually, appears as the last stage of development. Economies that wish to go through structural adjustment to achieve meta-national advantage have to implement industrial policy in coordination with compatible macro management automatic stabilizers (in monetary and

fiscal spheres) and follow cutting edge technologies for tradable sectors.

The essence of the heterodox approach is formulation of a framework and measures for achieving national economy growth (dynamic, sustainable and inclusive). Hausmann et al. [13] developed a unified framework for analyzing and formulating growth strategies, in line with heterodox approach, both operational and based on good economic intuition.

Growth strategies are likely to differ according to domestic opportunities and constraints.[5] The purpose of the model is identifying the most binding constraints on economic activity, and hence the set of policies that, once targeted on these constraints at any point in time, are likely to provide "the biggest bang for the reform buck" [13, p. 1]. The framework is useful for identifying the main causes of stationary status of an economy on the road to dynamic growth. The structure of growth barriers is given in Figure 4.

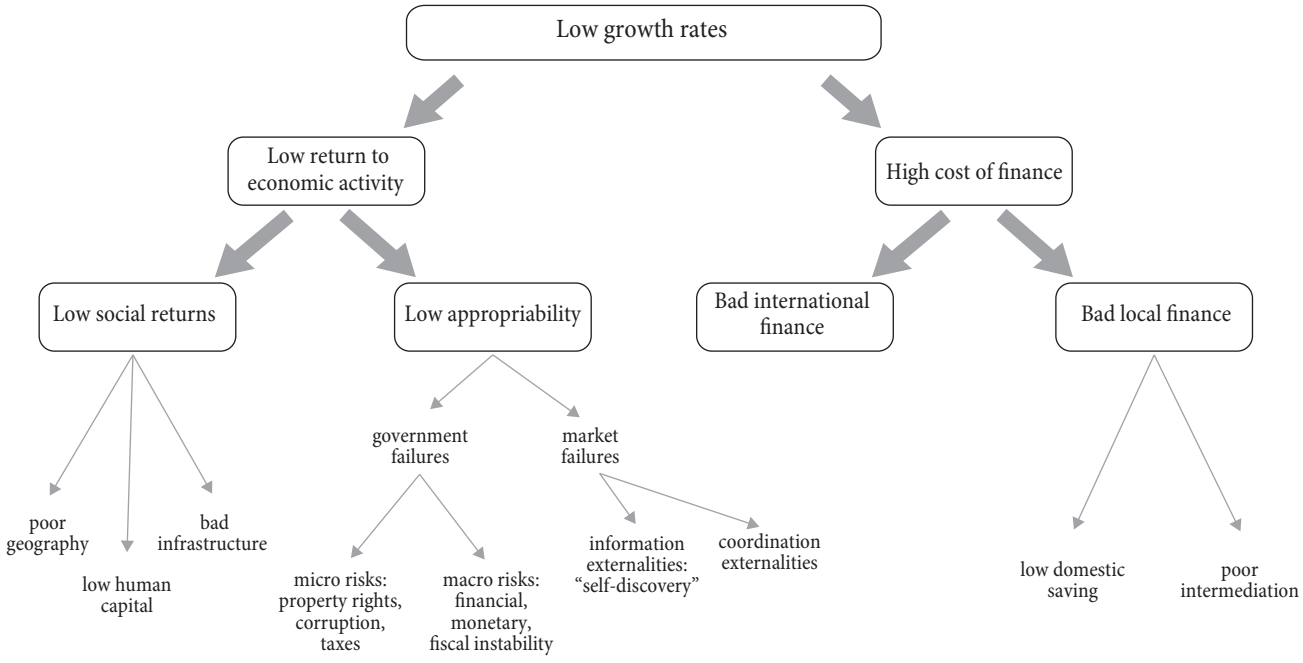
The first analysis of the binding constraints to growth in Serbia was given in [44]. The main binding constraints identified were: (1) protection of property rights and other key market institutions, (2) appreciated real FX rate, (3) limited availability of credit, high real cost of financing and inefficient financial intermediation, (4) expensive, large and intrusive state, (5) inefficient corporate governance and expensive labor force (manifested through high unit labor costs or low productivity). Furthermore, the tradable sector was identified to represent a bottleneck in moving the economy to sustainable growth.

We checked whether the main binding constraints stayed or changed and revealed the following. First, according to [41], Serbia has made significant effort in improving regulatory environment for doing business. The rule of law is still falling substantially behind developed countries, but this reform is expected to be a slow process given the experience of the young EU members. Hence, it would be wise to incorporate horizontal policy measures to provide more favorable business environment in general, and for tradable sectors, particularly.

Second, the real FX rate is slowly depreciating in 2017, although it has been appreciated for most of the past period [26]. Third, even though Serbia used to be a country with the highest interest rate spreads which severely limited operation and growth of the economy [44, p. 273], since 2012, according to the [27], the interest rates on investment loans fell from around 15% to 6.2%

5 There are, of course, some general principles in institutional set up, such as property rights, rule of law, sound financial system, and sustainable public finances which are desirable everywhere.

Figure 4: Diagnosing growth barriers



Source: [13, p. 27].

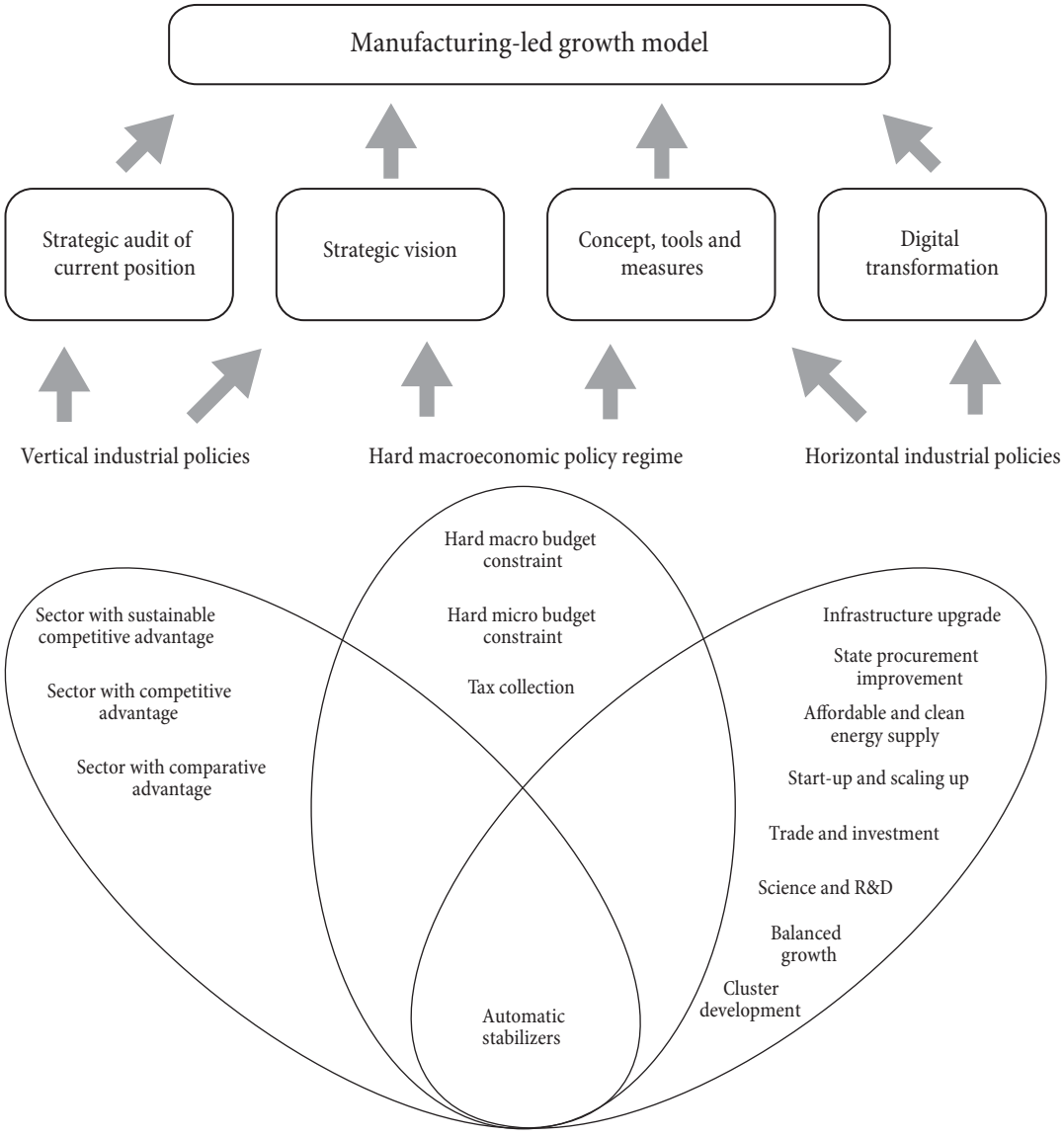
and from 7.3% to 3.3% for non-denominated and euro-denominated loans, respectively.

Fourth, the reform of the public administration has started in 2015, but relies on natural leave and retirement of the existing workers while (mostly) restraining new employments. The state is, however, still failing to provide an adequate level of competition in various sectors, and is constantly compromising itself when it comes to public procurement. Public procurement can play a vital role in stimulating business activity in sectors with high priority in country's growth strategy [6].

Finally, according to [44], inefficient (and often unprofessional) corporate governance and unproductive labor force have been a huge deterrent to FDI and business deals, as well as a cause of weak price competitiveness in many sectors. The visible hand of the state is unavoidable in solving previous problem. We have no cognition of the potential improvements in this field since 2012 but some indicators [42] suggest persistently low level of education system quality and availability of staff training opportunities. Again, horizontal policy measures are aimed at solving previously mentioned problems, but we still don't see sufficiently determined state policy in this field. Rather, we are witnessing slow and often shackled efforts to introduce changes in the education system.

As Figure 5 shows, manufacturing-led development model in Serbia has to be based on three pillars [6]. The first pillar refers to vertical industrial policies. Vertical policies are sector-based. They usually refer to the tradable sector. The tradable sector consists of industries with some kind

Figure 5: Heterodox economic policy framework



of meta-national advantage (comparative, competitive and sustainable competitive). Comparative advantage is based on the abundance of factors of production like natural resources, labor force, financial capital, and position rent (near to market). Competitive advantage is a difference between the value added and cost of production enabling price premium and/or cost leadership for the same level of price. Sustainable competitive advantage is a long-run advantage, one that accumulates such powerful lead over competitors based on innovations that no one can catch up to.

The second pillar refers to horizontal industrial policy including components such as infrastructure upgrade, state procurement improvement, startup and scaling-up, education and developing skills, investment in science and research and development, etc.

The third pillar of new industrialization represents hard macroeconomic policy regime, including hard budget constraint policy (both macro and micro), automatic stabilizers, and tax collection.

In Figure 6 we present tradable industries as candidates for vertical industrial policy in Serbia. As figure shows, the majority of tradable sectors belong to the field of manufacturing. The role of manufacturing in Serbia's new industrialization is different than in the high income countries. It is true that starting from the early 1980s and finished in the eve of the Great Recession, most of the developed economies in the world experienced a decline in manufacturing as a share in GDP. The decline was the sharpest in the high income economies. For example, in the US, the share of manufacturing dropped from 19.3% in 1980 to around 12.1% in 2006, and in the EU 15 from 23.5 % to 15.6% during the same period. There are several factors explaining this [45]. First, technical progress improves productivity, reduces manufacturing costs, keeps the prices down and, hence, decreases the share of manufacturing in GDP. Second, services have higher income elasticity and thus have a rising share in the rising GDP, along with economic development and population ageing. Third, it is a consequence of neoliberal growth model based on financialization and deindustrialization through outsourcing.

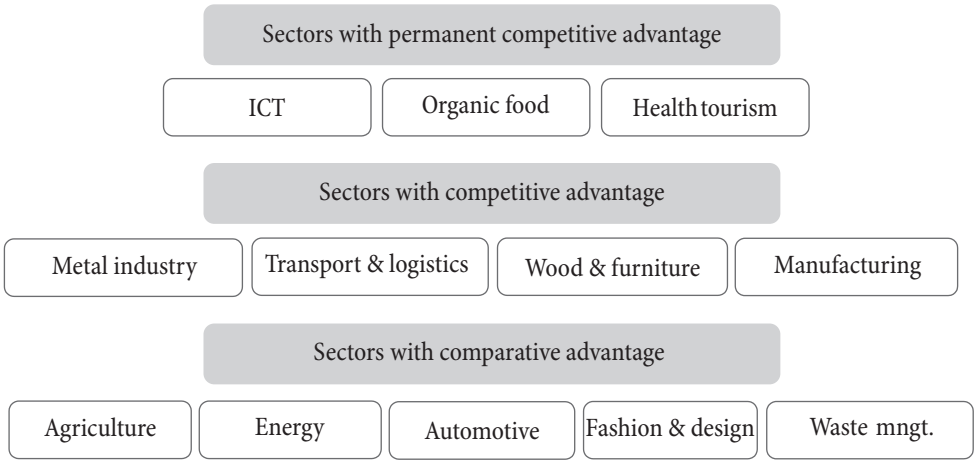
Experience with middle income countries in transition is a little bit different. Economies from the Visegrad Group reached the middle income status maintaining current account balance primarily based on their increase of share of manufacturing in GDP (around 20%), which is comparable to a manufacturing giant like Japan.

Advanced manufacturing combined with high value added services is the way to realize manufacturing-led development model in Serbia. Golden pivot in this model is ICT.

ICT industrial policy specifics

ICT is an industry that gives the "visible hand of the state" full satisfaction, because digitalization has exponential opportunities for growth, productivity increase, and meta-

Figure 6: Main pillars of vertical industrial policies for Serbia



Source: [6, p. 346].

national advantage achievement. The great majority of the world's unicorns[6] come from this industry. ICT has potential to revolutionize everything, including other technological fields out of ICT. Digital disruption is accelerating globally, and business organizations need to be agile to respond rapidly to this structural change. A new wave of digitalization is now unfolding in which many more businesses from the real economy and high value added services put digital solutions at the heart of their value chain and strategy.

Governments are exploiting their role as a purchaser, user and provider of services using ICT to help accelerate the widespread diffusion of ICT products and solutions. According to [22, p. 5], companies from the most digitized sectors from the US and the EU tend to be two to three times more profitable as those of less digitized sectors. It is, therefore, no surprise that ICT plays an important role in virtually all industrial policy programs.

According to [10], there are several reasons for taking ICT as one of the top priorities for industrial policy program: (1) positive impact on employment, (2) positive impact on productivity growth in other sectors, and (3) positive impact on quality of life. The facilitation and diversification of financial activities, the enrichment of recreational activities, simpler and more accessible government procedures, and the extension of health and education services are just some of the wider benefits of ICT for a national economy [37].

The industrial policy for ICT is a logical choice for a national economy, given the growth potential of the sector and impact on other sectors, particularly for developing economies in the catching-up process [28]. A Korean motto colorfully explains the previous point: "Though belated in industrialization, we should be advanced in informatization". Industrial policy in the ICT sector ultimately strives at transforming a manufacturing of low-end product country into a knowledge-based country (advanced manufacturing combined with high-end service economy).

However, in Industry 4.0 there is a general recognition that without close integration of ICT transformation and new industrialization (implementation of innovations through investment in advanced manufacturing and their spillover across different industries), no economy in the world has been able to close the development gap between itself and those at the frontier. In this stage of development, ICT becomes an integral part of the product itself (smart connected products - SCP), and by doing so, it has the capacity to unleash a new era of industrialization [33]. Also, high end services have the capability to deal with the output gap and jobless recovery, and, by doing so, to substantially affect the trajectory of the overall economy toward sustainable and inclusive development.

It should be noted, however, that this is a sector in which the US is providing major support to speed up progress, since this to a large degree is what technological ICT upscaling is about. The industrial policy for ICT is somehow specific, because it has both horizontal as well as a vertical character. Namely, ICT has been seen as a sector with significant potential for boosting a national economy's competitiveness since it involves comparatively more value added and has major diversification possibilities, whilst at the same time being an infrastructure for other sectors bringing up their efficiency, and, moreover, the quality of output. Furthermore, ICT industry has stronger domestic sectoral links than the corresponding to other sectors, and has proven to be a growing source of new jobs [37].

Unfortunately, there is a large gap in Serbia vis-à-vis developed countries concerning the level of digitalization. The US and the EU are many times more digitalized than Serbia. As a consequence, Serbia's government has made it clear that digitalization of the economy is a major priority. Industrial policy for ICT is an ideal way to trigger, implement and manage digital transformation. Also, it is in business organizations' interest to keep in touch with such industrial policy and regulatory developments.

The level of digitalization in Serbia varies throughout the sectors. As in other economies, the most digitalized sectors include ICT, media and finance. Internet companies are rapidly ramping up investment in digital infrastructure because digital technologies are a cost of staying on marketplace. They become key enablers by offering their digital platforms for sectors like retail, freight and logistics, hospitality, entertainment, etc. Production of sensors

6 Unicorns are defined as privately held start-ups valued at over $1 billion.

supports automation and digitalization in manufacturing and process management. Consumer facing industries and sectors associated with the government (electric power, water supply, etc.) rank lower relative to their counterparts in the EU. In government associated sectors there is massive investment in smart grid and related technologies. The sectors that lag furthest behind the counterparts from the EU are fragmented and localized industries such as agriculture, construction, real estate, and utilities.

Despite previous facts, Belgrade, Novi Sad and Niš are home to extremely enthusiastic digital natives (aged 25 or under), strongly supported by university and networks of research institutes and innovative centers. Such innovative start-ups already produce and export some digital products and solutions. Earnings from those activities range from 0.7 to 2 billion of euros.

From the perspective of final products, ICT can be seen as a sector that produces two different types of outputs: ICT goods and ICT services. When it comes to ICT goods, electronics is the major manufacturer of the products that vastly rely on digital components, including robots, global positioning systems (GPS), video cameras, Bluetooth, video games, etc., but it is ever more present in more traditional sectors like agriculture or textiles. ICT services are developing faster than ICT goods and include a wide offer, from operation system design and telecommunication, to data processing, data mining and cloud services.

To a greater or lesser degree, industrial policies prioritize the development of ICT in nearly all countries, although in the case of developing ones, actions to encourage the ICT sector are much more modest than in the developed ones. In any case, government measures play a crucial role in ensuring that ICT innovations are developed and diffused throughout society more efficiently. As mentioned previously, there are substantial differences in the development and diffusion of ICT across countries, but at the same time an increasing number of countries are adopting similar policies for ICT [29].

There are two choices when designing industrial policy for ICT. Government can strive towards centralized or more or less decentralized approach. Both approaches share advantages and pitfalls. The main advantage of a top down centralized approach is that it permits greater and more effective coordination, but tends to diminish the importance of the local environment and faces implementation difficulties. The emphasis on consensus seeking can lead to delays and stagnation in policy definition, but allows for more effective identification of user needs [11]. In general, policy definition is likely to benefit from central coordination, while bottom-up decentralized approaches will usually be better suited to the implementation stages of an ICT policy.

Experience from more developed economies suggests that horizontal industrial policy instruments might generally be the most appropriate policy response in ICT sector. The main issues and barriers that ICT businesses face include: (1) a need for government certainty over the medium term to encourage investment, (2) generic concerns about the availability of particular skills such as STEM or access to necessary skill sets to enable SMEs to grow, and (3) access to finance – either for growth capital or for R&D [11].

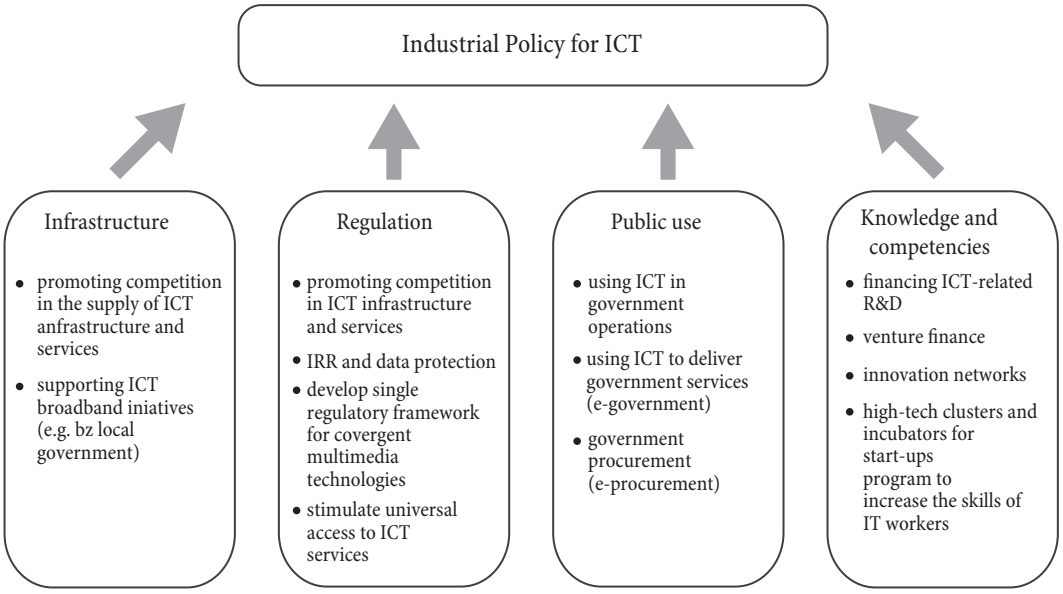
Industrial policy in ICT sector encompasses a wide range of measures related to investment, financing, taxation, export, income distribution, training, government procurement, intellectual property rights, etc., to support a number of aspects of ICT goods and services. For the purpose of more effective implementation of industrial policy for ICT, a foundation of a separate Ministry or similar body with the clear ICT strategy and policies proved as reasonable solution.

For the purpose of designing industrial policy for ICT, we divided it into four segments, representing four pillars for further identification of more general as well as tailor-made measures and instruments (Figure 7). The pillars are as follows:

1. Infrastructure
2. Regulatory framework
3. Public use of ICT
4. Knowledge and competences

1. *Infrastructure*. Policy measures and instruments in this area are to support directly the development and deployment of advanced telecommunications infrastructure. In most of the countries, the common policy trend is the support for broadband technologies,

Figure 7: Industrial policy for ICT



including the deployment of advanced mobile phone technologies, digital television, and, in general, the provision of broadband and IP services to the home and businesses.

2. *Regulation.* The changing nature of ICT, and their associated markets (technology, goods and services) requires regular changes in regulation. New regulations are needed to stimulate infrastructure development and facilitate access to key services. In addition, the dissemination and use of ICT has generated new problems requiring novel legal frameworks, such as IPR legislation, and data protection and privacy regulations. Telecommunication regulation, electronic signature law, broadband regulation are just some examples of the regulation with significant influence on country's ICT development.

   Regulatory regimes have two key policy objectives. First, to encourage greater competition in ICT infrastructure and services to foster innovation and efficiency in domestic ICT markets. Second, to promote universal access to ICT services to individuals, households (particularly for lower income) and other public institutions (e.g. libraries and schools).

   Regulatory regime can be shaped in a way to introduce/promote competition from abroad (South Korea) or to enable protectionism to domestic market (Brazil), but ensure fair competition among existing players. In case a country wants or has to allow for higher presence of FDI, the regulation can postulate requirements for FDI to incorporate a minimum percentage of national ICT components. In the case of Serbia, attracting FDI can be facilitated due to country's cost advantages, modest quality human capital and proximity to the EU.

3. *Public use.* The first thing we can think of is e-government. A key element in the diffusion of ICTs is their use by government offices and agencies. ICT can be used to improve the delivery of public services and enhance the efficiency of public administration processes. The indirect role of government use can be twofold. First, as a large customer government agencies can act as "first users" and influence the emergence of formal or de facto standards. Second, the use of ICTs for the delivery of public information and services can provide a powerful channel for the diffusion of these technologies among users.

   Government procurement (e-procurement) can help to stimulate ICT innovation by creating a large source of demand for ICT products and services. Rapid uptake of ICT has been promoted by providing public services online, such as health and education.

4. *Knowledge and competences.* Government agencies can also play an important role in promoting the generation of ICT-related knowledge and technologies, their diffusion and their application. These policies, aiming at generating learning and

improving competences can include, among others, the financing of research and development, the promotion of high-tech innovation clusters and incubators for startups, and support measures to assist in the commercialization of novel applications and the use of new ICT products and solutions across economy.

Governments are funding ICT related R&D programs usually organized as public private partnerships between industry and government-supported laboratories and universities. One of the practical ways of surmounting access barriers to technology is through public-private partnerships with firms that are at the frontier in this industry. In addition, governments have developed a range of indirect measures to support the development and use of ICT by business. These include policies to:

- offer fiscal incentives for R&D (e.g. tax exemptions to firms that agreed to produce certain goods locally, incorporate local content, or undertake R&D)
- enhance startups access to venture capital
- stimulate SMEs activity (e.g. formation of regional centers to support collaboration between SMEs producing software, along with human capital formation and the provision of international links for software export)
- cluster development, existing ICT clusters in Serbia [14], [15] and [43] should be oriented towards becoming smaller scale production of higher value-added goods
- strengthen the ICT skills (e.g. by taking care of ICT-oriented education through horizontal policy measures)

Vertical industrial policies are no different from other areas of policy in facing these risks which can arise for the following reasons: lack of knowledge amongst policy makers about the barriers that prevent the achievement of policy objectives, the incentives on recipients of support to "game" the government, and the risk that recipients act in their own self-interest rather than society at large [11]. All these risks need to be managed. D. Rodrik [36] argues that experimentation in institutional set up is vital to the successful implementation of industrial policies. In particular, successful policies are likely to emphasize strategic collaboration and co-ordination between the private sector and the government to uncover significant bottlenecks to growth, design the most effective interventions, and learn from any mistakes made.

As Serbia's economy digitizes, industries will experience huge shifts in competitiveness, revenue and value pools across value chain, involving a degree of disruption that will create losers and winners, and disproportionate value for the latter. It is a price of the progress.

Conclusion

Serbia has been living for more than a quarter of a century in a crisis of transitionism due to a never- ending systemic transition. Systemic crisis needs systemic responses. Moreover, we are living in a very unusual period of a paradigm change in economic theory and policy platform in the wake of the Great Recession, the fourth industrial revolution and new normalities in the global socio-economic context. Now is the time for the visible hand of the state to play a catalyst role in market mechanisms. In formulation of comprehensive economic policies, along with macroeconomic perspective, microeconomic (or business) and sector perspective also matter.

Until fiscal consolidation in 2017, Serbia's economy was out of tune and impotent. Now, it is pretty balanced, but still impotent. Actually, the economy is in a stationary state. Despite some growth episodes, it has ceased to grow in a sustainable way. As a small economy lagging significantly behind the EU mainstream, Serbia is not going to stay stuck in this situation for a very long time.

To escape from the stationary economy status and to keep up with the speed of changes, Serbia must energize its growth. It is not a trivial endeavor. For example, the strategic objective to double the level of GDP means 7% compound average growth rate until 2033. Last year, the growth rate was 2.4%. Forecast for this year is 3.5%. Is dynamic growth possible? Maybe, yes. Maybe, no. If the answer is yes, it requires adequate institutional, theoretical and policy platform responses. Our choices are manufacturing-led growth model, new structural

economics and a heterodox approach with industrial policies in the center, respectively.

Due to exponential growth of opportunities, digital transformation can help to achieve more robust growth. But, digital transformation is a double-edge sword, because disruption as a side effect is happening globally in ICT and related sectors. In the case of Serbia, advanced manufacturing and high value added services both have potential to create up to one-third of their share in GDP formation by 2033. The rest belongs to traditional drivers of growth like infrastructure (and infrastructure related businesses) and agriculture, as well.

Policy makers in Serbia can facilitate digital transformation in two ways, at least. First, because this technology has exponential growth potential. Second, because it is embodied in other technology fields. There is a huge further scope to use ICT to transform economy. Three specific digital forces (disintermediation, disaggregation and dematerialization) combined with universal connectivity could lead to meta-national advantage. The main digital forces reshape value chains and boost productivity not only in the ICT sector but also in other tradable sectors. There is a need to improve some tradable sectors with applications like programmable automation (organic agriculture, waste management, etc.), 3-D printing and industrial robots (automotive and mobility, wood and furniture, textile and fashion), augmented reality (construction and infrastructure development), and block chain (freight and logistics, energy, etc.).

Artificial intelligence technologies have priority against consumer driven digital economy tools like big data and financial technologies (mobile payments and mobile credit release). The reason for that is the potential impact of advanced manufacturing in keeping output gap on low and stable level as well as in maintaining fiscal balance. Conventional manufacturing companies should drive their digital transformation, building their own ecosystem, and going global. In the global economy, nobody can export if he cannot sell on domestic market. Robotics, 3-D printing, augmented realities are great priorities for advanced manufacturing. Also, digital solutions can be used to build high value added services like education, science, health care, programming skills, etc. For example, in health tourism digital solutions are a critical success factor to build a patient-centric business model. Moreover, mobile health care applications and telemedicine solutions can help users with chronic diseases.

To achieve Digital Serbia, short-run actions should be consistent with long-run vision. The ICT industrial policy is a key component of the new wisdom. This industrial policy could help transform brokerage mentality-dominated economy with industrial and/or digital one on the road of recovery and catching up. In "3C" requirements for meta-national advantage (competitiveness, capabilities, and connectedness), digital transformation is a bold pivot.

Last year the government became an active supporter of digital transformation. But, to accelerate transition toward the digital economy, more can be done. First, the government should build world-class infrastructure to support digitalization as an investor, developer, and customer. It creates the market for frontier technologies, for example in the military, agriculture, automotive and mobility sectors. Also, the government must give startups in ICT sector and related technology sectors space to experiment before enacting official regulation. It is particularly important in the area of taxation. Implementation of some fiscal automatic stabilizers makes sense, primarily stabilizers relying on intertemporal substitution (variable investment tax), stabilizers relying primarily on relaxing liquidity constraints (variable income tax), and stabilizers relying on a combination of the two (variable value-added rate). As segments of digital sector mature, regulators are becoming more active and their influence on the speed of possible creative destruction is likely to arise. Also, the government must manage the labor market during digital disruption too, by supporting dual university education, lifelong learning, and job redeployment.

ICT sector in Serbia, particularly in the not-at-arm's length part, has the capacity to make the shift from the status of the subject of outsourcing by industry leaders to self-made product developer. Along with games, there are some market niches where this shift in strategy is feasible. Also, the ICT sector in Serbia has an opportunity to support technological entrepreneurship in other tradable industries. Technological entrepreneurship should be a necessary skill for engineers, physicians, scientists and other people with

STEM expertise. We suggest the inverse order. Namely, initiatives for "turning learning into returning" this time come from laboratories, science institutes and R&D units and are targeted toward manufacturing in startups and/or incumbents. Also, privatizations of some state-owned enterprises from commercial sector could be completed in this manner.

In today's world, people with STEM competence will dominate social animators, including economists. Besides some short-term controversies along with digitalized economy, in the long run, the creative destruction inspired by digital transformation will be a good thing for everyone. In the short run, technological advances can be extremely disruptive, and the disruption can persist into the long run if national economies and business organizations do not have the means to adapt. These days, defining the adequate context for new technological amalgams to prosper, including industrial policies for tradable sectors and complementary horizontal industrial policies, is the role of economists. Great priority is ICT. In a good context, excellence comes along.

References:

1. Blanchard, O., Dell'Ariccia, G., & Mauro, P. (2010). *Rethinking macroeconomic policy* (IMF Staff Position Note SPN 10/03). Washington, DC: IMF.
2. Blanchard, O., Dell'Ariccia, G., & Mauro, P. (2013). *Rethinking macroeconomic policy II: Getting granular* (IMF Staff Position Note SDN 13/03). Washington, DC: IMF.
3. Christensen, C. (2015). One more time: What is disruptive innovation? *Harvard Business Review, 93*(6), 44-53.
4. Christensen, C., Bever D.V. (2014). The capitalist's dilemma. *Harvard Business Review, 92*(6), 60-68.
5. DHL Global connectedness index 2016. Retrieved from http://www.dhl.com/en/about_us/logistics_insights/studies_research/global_connectedness_index/global_connectedness_index.html#.VFff5MkpXuM.
6. Đuričin, D. (2017). Escape from transitionism: What Serbia has learned from past failures and recommendations for the future. Serbian Association of Economists and University of Belgrade Faculty of Economics Press, Belgrade.
7. Đuričin, D., & Vuksanović I. (2012). How macroeconomic policies erode business competitiveness: Serbia's experience. *Zagreb International Review of Economics and Business*, *3*(2012), 19-35.
8. Đuričin, D., & Vuksanović, I. (2013). Reindustrialization strategy of Serbia: How to get it and how to use it. *Ekonomika preduzeća*, *61*(5-6), 289-308.
9. Đuričin, D., & Vuksanović, I. (2014). Quest for new development model and economic policy platform for Serbia: The role of industrial policy. *Ekonomika preduzeća*, *62*(5-6), 229-238.
10. eEurope - An information society for all. (2000). Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Al24221.
11. Falch, M., & Henten, A. (2008). ICT as an example of industrial policy in EU. In *Information Communication Technologies: Concepts, Methodologies, Tools, and Applications* (pp. 882-888). IGI Global.
12. Ghemawat, P. (2017). Globalization in the age of Trump. *Harvard Business Review 95*(4): 114-23.
13. Hausmann, R., Rodrik, D., & Velasco, A. (2008). Growth diagnostics. *The Washington consensus reconsidered: Towards a new global governance*, 324-355.
14. ICT Cluster central Serbia. Retrieved from http://ict-cs.org/.
15. ICT Network. Retrieved from http://www.ict-net.com/.
16. Kindleberger, C.P. (1996). World economic primacy: 1500-1990. New York: Oxford University Press.
17. Kohli, H.S. (Eds.), (2016). *The world in 2050: Striving for a more just, prosperous, and harmonious global community*. Washington, DC: Oxford University Press.
18. Krugman, P. (2009). *The return of depression economics and the crisis of 2008*. New York: W. W. Norton and Company.
19. Lim, W. (2011). Joint discovery and upgrading of comparative advantage: Lessons from Korea's development experience. In Fardoust S., Kim Y., Sepulveda C.P. (Eds.), *Post crisis growth and development: A development agenda for the G-20* (pp. 173-237). Washington, DC: The World Bank.
20. Lin, J.Y. (2012). New structural economics: A framework for rethinking development and policy. Washington, DC: International Bank for Reconstruction and Development.
21. Lin, J.Y., & Monga, C. (2010). *Growth identification and facilitation: The role of the state in the dynamics of structural change* (Policy Research Working Paper No. 5313). Washington, DC: The World Bank.
22. McKinsey & Company (2017). Digital China: Powering the economy to global competiveness. Brussels: McKinsey Global Institute.
23. Minsky, H. (2008). *Stabilizing an unstable economy*. New Jersey: McGraw-Hill.
24. Moss, D. (2007). *A concise guide to macroeconomics: What managers, executives, and students need to know.* Boston: Harvard Business School Press.
25. Mukunda, G. (2014). The price of Wall Street power: How the financial sector's influence is undermining business. *Harvard Business Review*, *92*(6), 70-78.
26. National Bank of Serbia. Exchange rates – period averages. Retrieved from https://www.nbs.rs/internet/english/80/index.html.
27. National Bank of Serbia. Interest rates on loans to household and non-financial sectors, by type, maturity and purpose – new business. Retrieved from https://www.nbs.rs/internet/english/80/index.html.
28. Niebel, T. (2014). ICT and economic growth–Comparing developing, emerging and developed countries. Retrieved from http://www.iariw.org/papers/2014/NiebelPaper.pdf.
29. OECD. (2003). *Seizing the benefits from ICT: An international comparison of the impacts of ICT on economic performance*. Organization for Economic Co-operation and Development, DSTI/IND/ICCP.

30. Orhangazi, O. (2011). Review of financialization at work: Key texts and commentary. *Journal of Economic Issues*, *XLV*(1), 247-249.
31. Oxfam international. Oxfam data on global wealth distribution and projections. Retrieved from https://www.oxfam.org/en/pressroom/pressreleases/2016-01-18/62-people-own-same-half-world-reveals-oxfam-davos-report.
32. Peppard, J., Ward, J. (2016). The strategic management of information systems: Building a digital strategy. John Wiley and Sons.
33. Porter, M., Heppelmann, J. (2014). How smart, connected products are transforming competition. *Harvard Business Review*, *92*(11), 64-88.
34. Porter, M., Heppelmann, J. (2017). Why every organization needs an augmented reality strategy. *Harvard Business Review*, *95*(6), 46-57.
35. Rajan, R. (2010). *Fault lines: How hidden fractures still threaten the world economy*. Princeton: Princeton University Press.
36. Rodrik, D., (2009). Industrial policy: Don't ask why, ask how. *Middle East Development Journal*, *1*(1), 1-29.
37. Schatan, C., & Enríquez, L. (2015). Mexico: industrial policies and the production of information and communication technology goods and services. *CEPAL Review*, 147-163.
38. Schwab, K. (2017). *The fourth industrial revolution*. Geneva: Crown Business.
39. Stiglitz, J., & Lin, J.Y. (Eds). (2013). *The industrial policy revolution I: The role of government beyond ideology*. New York: Palgrave Macmillan.
40. Stiglitz, J., & Lin, J.Y., Monga, C. (2013). *The rejuvenation of industrial policy* (Policy research Working Paper 6628). Washington, DC: The World Bank.
41. The World Bank. (2017). *Doing business 2018. Reforming to create jobs. Economy profile: Serbia*. Retrieved from http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Profiles/Country/SRB.pdf.
42. The World Bank. (2018). *Global competitiveness report 2017-2018*. Retrieved from http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf.
43. Vojvodina ICT Cluster. Retrieved from http://vojvodinaictcluster.org/sr/.
44. Vuksanović, I. (2017). Industrial policy for Serbia: A matrix approach. *Ekonomika preduzeća*, *65*(1-2), 175-189.
45. Vuksanović, I. (2017). Industrial policy for Serbia: A matrix approach. *Ekonomika preduzeća*, *65*(1-2), 175-189.
46. Wade, R. (1990). *Governing the market*. Princeton: Princeton University Press.

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GOING FORWARD: PUBLIC SECTOR REFORMS AND LOCKING IN BALANCED BUDGET IN SERBIA

Kako dalje – reforme javnog sektora i „zaključavanje" uravnoteženog budžeta u Srbiji

Abstract

From an enormous fiscal deficit in 2014 (6.6% of GDP, i.e. 2.2 bn euros), Serbia practically reached a structurally balanced budget in 2017. However, indisputable achievements aside, the implemented fiscal consolidation has numerous weaknesses (absence of reforms, greater reliance on revenues than on savings). This is why public finances in Serbia, regardless of its excellent, balanced budget, are still not completely well ordered, nor are they growth-promoting; this is where Serbia is seriously lagging behind other comparable Central and Eastern European countries. Looking forward, the most important fiscal policy objective, which would prevent any future risks and allow for faster economic growth, is to have a balanced budget become the "new normal" in the upcoming five to seven years. In addition, the key shortcomings of the current fiscal policy have to be corrected, i.e. necessary public sector reforms have to be implemented and business climate improved (most of all, the rule of law). In the second part of the paper, we analyse, again, the reliability of official data on the unusually high employment growth in Serbia, occurring, allegedly, with low GDP growth, using 2012-2017 data. The length of the available data series allows us to consider the issue with greater reliability. By using comparative and other analyses, we demonstrate that there are still indisputable issues with the official statistical monitoring of employment trends, i.e. that the Labour Force Survey is still unreliable.

Keywords: *fiscal consolidation, fiscal policy, public debt, credit rating, economic growth, employment, LFS*

Sažetak

Srbija je od ogromnog fiskalnog deficita u 2014. (6,6% BDP-a, odnosno 2,2 mlrd evra) stigla u 2017. do strukturno izbalansiranog budžeta. Međutim, sprovedena fiskalna konsolidacija osim nespornih dostignuća ima i brojne slabosti (izostanak reformi, veće oslanjanje na povećanje prihoda nego na uštede). Zbog toga javne finansije Srbije i pored odličnog, izbalansiranog, budžeta još uvek nisu potpuno uređene, niti podsticajno utiču na privredni rast po kom Srbija znatno zaostaje za drugim uporedivim zemljama Centralne i Istočne Evrope (CIE). Gledajući unapred, najvažniji cilj fiskalne politike koji bi predupredio buduće rizike i omogućio ubrzanje privrednog rasta jeste da izbalansirani fiskalni rezultat postane nova normalnost u narednih pet do sedam godina. Ali uz to, potrebno je i da se isprave ključni nedostaci dosadašnje fiskalne politike, odnosno da se sprovedu neophodne reforme javnog sektora i unapredi poslovni ambijent (pre svega vladavina prava). U drugom delu rada na seriji podataka od 2012. do 2017. ponovo analiziramo pouzdanost zvaničnih podataka o neuobičajeno visokom rastu zaposlenosti u Srbiji do kog navodno dolazi uz nizak rast BDP-a. Dužina raspoložive serije podataka omogućava da se ovo pitanje sada razmotri sa još većom pouzdanošću. Komparativnim i drugim analizama pokazujemo da nesumnjivo postoje problemi u zvaničnom statističkom praćenju kretanja zaposlenosti, odnosno da Anketa o radnoj snazi još uvek nije pouzdana.

Ključne reči: *fiskalna konsolidacija, fiskalna politika, javni dug, kreditni rejting, privredni rast, zaposlenost, ARS*

Introduction and main findings

In this paper, we analyse the results of fiscal consolidation (2015-2017) to map out, through its undisputed achievements, but also its numerous weaknesses, the future course for a fiscal policy that would prevent fiscal risks and boost economic growth. In the second part of the paper, we examine the unusually high employment growth in Serbia (still indicated by the official data), which is allegedly happening alongside a low growth of GDP. We demonstrate that there are still issues with the official statistical monitoring of employment trends.

From an enormous fiscal deficit in 2014 (6.6% of GDP or 2.2 bn euros), Serbia practically reached a structurally balanced budget in 2017. In addition to that, the fiscal adjustment in the 2015-2017 period is comparable to the well-known examples of ambitious and successful fiscal consolidations implemented by the Baltic countries and Romania after the global economic crisis had erupted in late 2008. However, Serbian fiscal consolidation had some specific characteristics with important implications for the sustainability of the results achieved so far, as well as for future economic growth. Namely, indisputably good fiscal results in Serbia have not come only as a consequence of the planned austerity measures and reforms (reforms have almost entirely failed), but are largely the result of unforeseen circumstances that were reflected primarily in a strong increase of public revenues.

The initial fiscal consolidation plan from 2014 envisaged that the general government deficit in 2017 would be decreased to 3.8% of GDP, i.e. to the amount of about 1.4 bn euros. Even though it may seem easily achievable from this perspective (knowing that Serbia reached a balanced budget in 2017), it was quite an ambitious task at the time. The plan to reduce deficit by almost 3 p.p. of GDP was based on enormous savings on public expenditures, of about 7% of GDP (about 2.5 bn euros), as it was expected that the unfavourable trends, which led to a growth of deficit until 2014, would continue in the upcoming years. First of all, an additional decrease of the public revenue share in GDP of about 2.5% (900 million euros) was expected in the 2015-2017 period, as well as an increase of expenditures on interest on the public debt of 1% of GDP (350 million euros).

However, instead of decreasing by 900 million Euros, public revenues increased by 1 bn Euroand interest payments fell by 75 million Euro(instead of rising by 350 million Euros). These two sources alone led to over 2.3 bn Euroin unplanned "savings", which practically allowed the fiscal consolidation in Serbia to be successful. Even though credit for these unplanned improvements should partially be given to the Government (e.g. suppression of grey economy, primarily in the excise product market), the majority of these fiscal improvements came from outside, as a consequence of favourable external factors (global drop in oil and gas prices, decrease in interest rates in Europe and a stronger economic recovery of the EU with which Serbia is strongly connected through its export and FDIs). These factors had an impact on fiscal over-performance as they led to an unexpected increase in the tax-abundant private (personal) consumption [14], increase in export and profitability of real economy (including the profitability of the largest state-owned loss-makers like Srbijagas) and also accounted for a sizeable reduction in interest payments on public debt.

On the other hand, the initially planned austerity measures were reduced practically only to a cut in pensions and salaries in the public sector. The reduction was essential, not just due to savings of over 500 million euro per annum which were crucial for avoiding a fiscal crisis, but also because the pensions and salaries in the public sector were brought down close to a level that the Serbian economy can finance in the long run. The majority of other austerity measures (some of which were unrealistically planed from the start, e.g. general government downsizing) just never happened. The more critical issue is that the planned reform of the public sector was not implemented (public enterprises, local governments, privatisation of SOEs, increase in public investments, education, healthcare, etc.). Due to a lack of reforms, fiscal policy in Serbia is still not fully sustainable, despite the excellent balanced budget result, nor is it appropriate for fostering economic growth, which is where Serbia is significantly lagging behind other comparable Central and Eastern European (CEE) countries.

Looking forward, the undisputed and most important objective of the fiscal policy in the years to come is to "lock in" the good fiscal result achieved, i.e. to have a balanced budget as the "new normal" in the upcoming five to seven years. There are at least three important reasons for this:

First, Serbian public finances are still fragile as the public debt remains too high (currently at over 60% of GDP). For countries like Serbia, the upper limit of sustainable public debt is about 50% of GDP, and anything beyond that is in the zone of increased risk. If some new global or regional recession (which will inevitably happen sooner or later) hit Serbia with public debt over 50%, it could easily lead to a serious fiscal crisis followed by a major drop in the living standard of the population. Just a few years ago, Serbia barely escaped such a crisis (by cutting pensions and salaries in the public sector), and now it is important to prevent the possibility of such a threat reemerging, by decreasing the excessive public debt. To get the public debt below 50% of GDP, the budget must be kept approximately balanced (deficit of up to 0.5% of GDP) for at least another five years.

- Second, there are still substantial internal fiscal risks that could jeopardise Serbian public finances, which means that the fiscal policy must be particularly cautious. These risks come mostly from the unreformed public sector (primarily public and state-owned enterprises), numerous court proceedings before domestic and international courts initiated by different creditors (Bor Copper Mines and Mytilineos, former employees of the socially-owned enterprises and so on), but also from postponing the abolition of temporary fiscal consolidation measures (e.g. progressive pension cut), which have to be repealed as soon as possible.
- Third, in an economy like the Serbian one, with a high public debt and non-investment (junk) rating, a balanced budget should spur economic growth in the medium term. Stimulating demand by increasing government consumption, as sometimes advocated, would provide just temporary boost and not sustainable growth. Thus, in the post-crisis period (after 2009), economic growth in Serbia was at its lowest precisely in the years when the budget deficit was at its highest (2014 and 2012). Besides, there is compelling evidence that the main cause of the 2014[1] recession in Serbia was the unsustainable fiscal policy – i.e. the excessive public consumption and fast-growing public debt, leading to an imminent danger of a public debt crisis. We will examine the effects of the fiscal policy on economic growth in Serbia in greater detail below.

Economic growth in Serbia has been at a structurally (permanently) low level ever since the end of the first wave of the crisis in 2009, lagging significantly behind the growth of other comparable CEE countries. This gap additionally widened in 2017. According to the latest data from SORS, Serbian GDP growth in 2017 amounted to a mere 1.8%, while at the same time other CEE countries experienced average GDP growth of over 4.5%. Low economic growth in Serbia in 2017 partially resulted from drought and poor management of EPS – electric power company (which led to a drastic drop in the production of this company in the first half of 2017). However, even if it had not been for these factors, GDP growth in Serbia would have been about 2.8%, still almost 2 p.p. lower than the average performance of other CEE economies. The reasons for the deficient economic growth in Serbia, spanning several years, have already been examined in Petrović et al. (2017), pointing to lagging investments compared to CEE countries. Hence, hereinafter, we will focus on the fiscal policy measures that could have a decisive impact on investment growth in time to come, thus laying foundation for high and sustainable economic growth in Serbia.

Maintaining a balanced budget in the medium to long term, as already mentioned before, is a critical policy for spurring investments and, consequently, economic growth. Namely, despite the improvement in credit rating in the last several years, all rating agencies are still awarding Serbia a relatively unfavourable grade (non-investment "speculative" level). Unlike Serbia, most CEE countries, including some in our immediate surroundings (Hungary, Bulgaria and Romania), have already attained the "investment level". This is why the economies of these

1 The recession in 2014 occurred only in Serbia and was not regional, unlike the one from 2012.

countries can take out loans and invest under far better conditions than the Serbian economy. Improvement of Serbian credit rating is directly linked to sustainable fiscal policy and a decrease in the excessive public debt. This is demonstrated by the evolution of Serbia's risk premium: at the beginning of fiscal consolidation it was by 150 b.p. higher than CEE average, while in 2017, this gap was reduced to about 30 b.p. Currently, Serbia has two to three additional steps to take to reach the investment level, which requires a balanced budget in the medium to long term and a steady decline in public debt. After fiscal improvements in the previous three years, this is now feasible and presents a rare opportunity that should not be missed.

Restructuring of public enterprises and privatisation of SOEs have two-fold importance for public finances and economic growth. First, these companies still represent a fiscal risk, and, secondly, they are not investing sufficiently and are thus impeding economic growth, instead of boosting it. Among public enterprises, the most critical issue is the restructuring of EPS (which has been postponed for years). The energy sector needs a sharp increase in investments in the upcoming years of which EPS, burdened by numerous problems in its performance, is not capable at the moment. State-owned enterprises, like RTB Bor and Petrohemija, are currently not making losses, due to favourable circumstances in the international market, but they too need enormous investments if they are to operate sustainably (and to increase the overall economic growth in Serbia). Neither the Government nor these enterprises have the funds for these investments (and the Government should not be the one making them, anyway); this is why it is essential that these enterprises find a partner who can invest, i.e. that they are privatised in 2018.

Public investments, reaching mere 3% of GDP in Serbia, are insufficient and are not contributing sufficiently to economic growth. The lack of investments in local infrastructure should be particularly emphasised, as their low level has a direct negative impact on the quality of life in Serbia (irregular landfills, low-quality drinking water, insufficiently developed sewer network, lack of wastewater treatment, etc.). Moreover, Serbia is investing far less in education and healthcare than comparable countries. The planned level of investments in road and railroad infrastructure in the upcoming years is, in general, satisfactory (but their implementation should be monitored, as the implementation in the previous years was quite inefficient).

Probably the most important measure for increasing investments and boosting economic growth in Serbia is the improvement of the business climate and, within it, the rule of law. The most significant lack of investments in Serbia has been found in the group of small and medium enterprises [15]. For them to invest more, the efficient legal system is the decisive factor (as larger enterprises and foreign investors can cope with legal issues more easily). However, on the relevant competitiveness lists (WEF, World Bank), as well as within specific research looking exclusively into this field (World Justice Project), Serbia has received by far the lowest marks for the indicators of the rule of law. Significant progress that Serbia has achieved on competitiveness lists (WEF, World Bank) in the previous years has come as a consequence of a tangible improvement in macroeconomic stability (fiscal consolidation) and some specific indicators (construction permit procedure), while the rule of law indicators have seen no particular progress (Serbia is even dropping on the World Justice Project list). This segment of the business climate is, to our belief, the main reason why there has not been a significant increase in investments in recent years, despite the visible improvement of Serbia's ranking on general competitiveness lists.

In all this, Government's initiative to support the development of the ICT sector is positive, but that alone cannot be sufficient. This segment of economy is highly productive, and its development would allow Serbia to keep a larger share of young ICT experts in the country. However, the ICT's share in Serbian GDP is too small to enable it to have a profound effect on the total GDP growth. According to SORS's data, ICT (without telecommunications) contributes 1.8%to Serbian GDP and accounts for 3.8% of the overall export (source: National Bank of Serbia). This is why even a strong increase in this activity in the upcoming years could not have a significant impact on the overall economic growth. Furthermore, this sector is already destined for success in Serbia even without

Government's intervention, as it has seen an average production growth of 15% per year and stable export growth of 30% per year in the last five years. It is uncertain by how much this growth can be further accelerated with economic policy measures. If the Government were to succeed in its intentions and additionally accelerate the growth in this sector from 15% to, say, 25%, this would translate into acceleration in the growth of GDP of about 0.2 p.p. In other words, for the necessary acceleration of GDP growth rate of 1.5 to 2 p.p. (to CEE country average), priority still lies in the reform of the public sector and improvement of the business climate, primarily in the field of the rule of law.

In the second part of the paper, we take another look at GDP trends but from a different angle, analysing the impact of GDP on employment growth in Serbia and other CEE countries. We thus contribute additionally to the discussion on the reliability of the Labour Force Survey (LFS), which shows an extremely high, but unlikely employment growth in Serbia since 2012. The length of the available data series (2012-2017) allows us now to reexamine this issue more reliably. We hope that the findings offered will conclude the two-year discussion on this topic and that they will allow for the quality of the LFS data to be improved to the level of the countries comparable to Serbia. This part of the paper can also be read independently from the remainder of the text, as it comes with its own summary, listing the key results of the conducted research.

Fiscal consolidation in Serbia 2015-2017: It's smoother sailing with the wind in your sails

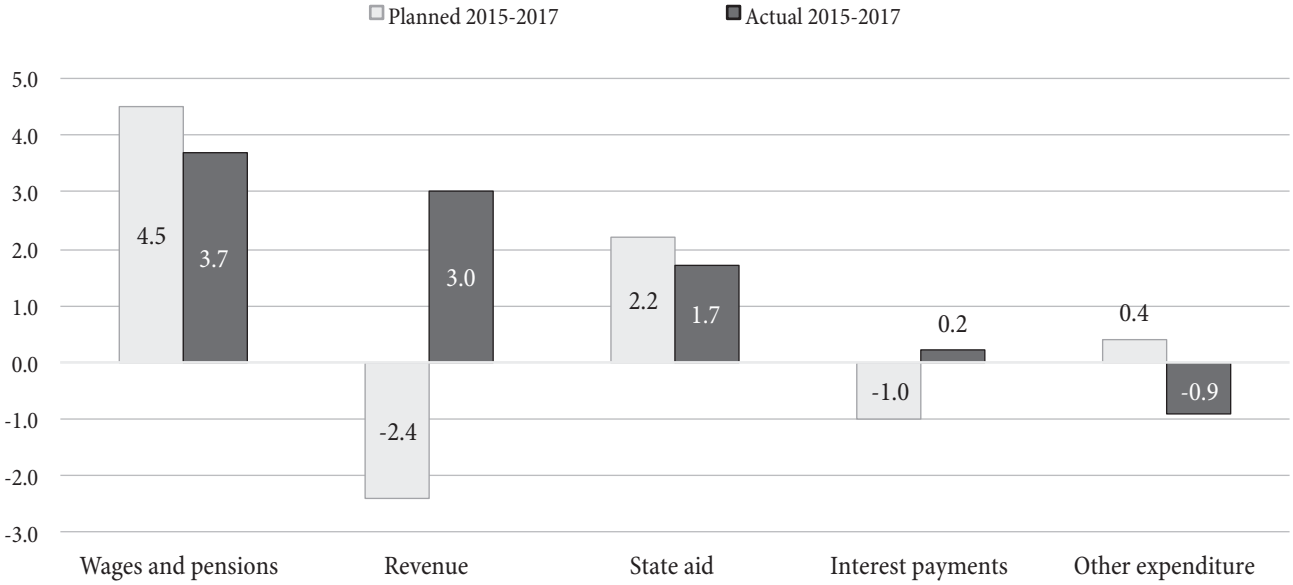
At the end of 2014, the Government of the Republic of Serbia entered a three-year fiscal consolidation programme as a part of a stand-by arrangement with the IMF to prevent the impending public finance crisis. At the same time, comprehensive reforms were expected to decrease fiscal risks in the future and set the wheels of the failing Serbian economy in motion. Despite certain doubts as to the credibility of envisaged austerity measures, which were later confirmed, and significant problems with the implementation of the planned reforms, as this arrangement draws to a close it is clear that the fiscal consolidation results have far exceeded expectations. In just three years, from an enormous fiscal deficit in 2014 (6.6 % of GDP or almost 2.2 bn Euros) Serbia practically reached a structurally balanced budget in 2017. In this respect, Serbian fiscal adjustment episode in the 2015-2017 period is entirely comparable to textbook examples of ambitious and successful fiscal consolidations of the Baltic countries and Romania following the World Economic Crisis in the autumn of 2008.

Firstly, we analyse the impressive fiscal over-performance in the 2015-2017 period compared to the plan from the end of 2014, as we believe that a thorough analysis of the discrepancy between the two bears important implications for the fiscal policy in the upcoming years. We have shown that the undisputedly good fiscal results are not grounded in the initially planned economic policies, but in some unforeseen circumstances, such as the robust growth of public revenues and a somewhat faster economic recovery. As a consequence, the structure of the achieved fiscal adjustment is quite different from the original plan, but also from the experiences of the aforementioned countries of the Central and Eastern Europe and their fiscal adjustments in the 2009-2013 period. This outcome opens up a critical question of sustainability of the accomplished results since the predominant standpoint in literature is that revenue-based fiscal consolidations are more likely to end up in failure in the long run. In the second part of this chapter, we consider the options for fiscal policy in this new reality in which the fiscal deficit has been reduced to a level sustainable in the long term, in which Serbia is no longer threatened by an imminent danger of a public debt crisis, but in which public finances are still facing significant risks. We are convinced that the recommendations we have offered have very few alternatives if the desire is to definitively "lock in" the excellent fiscal results from the 2015-2017 period and to firmly set the public finances on a sustainable path in the long run.

The plan vs the outcome: Strong revenue over-performance made all the difference

To answer why fiscal trends in the 2015-2017 period significantly exceeded expectations, let us first take a

Figure 1: Contributions to deficit decrease in 2015-2017: planned vs actual (in p.p. of GDP)



Source: Authors' calculations based on [8] and the data from the Ministry of Finance.

brief look at the original fiscal consolidation plan. The plan promised a permanent fiscal deficit decrease from the then estimated 7.5% of GDP in 2014 to 3.8% of GDP in 2017, i.e. a significant structural adjustment of 3.7 p.p. of GDP (over 1.3 bn Euros).[2] To achieve the set objective, the Government estimated that the permanent savings on public expenditure of enormous 7 p.p. of GDP (about 2.6 bn Euros) are needed. It is clear that such an ambitious adjustment would be impossible without correcting the most substantial fiscal imbalances, so the austerity measures were rightfully aimed at decreasing the disproportionally large expenditures on the wage and pension bill (compared to the country's economic power) and various forms of state aid (compared to similar countries). Thus, already at the end of 2014, salaries in the public sector were reduced by 10% across the board and pensions were reduced progressively (to cut the overall expenditures on pensions by 5%) with the intention to keep the salaries and pensions frozen until 2017. On top of that, expenditures on salaries also needed to be significantly reduced through a planned general government downsizing by 5% per year (by 75,000 employees in total). In total, these austerity measures should have allowed for the fiscal deficit to be decreased by 4.5 p.p. of GDP (over 1.6 bn Euros). The major part of the remaining fiscal deficit decline (2.2 p.p. of GDP or about 800 million Euros) was to be provided through cuts in different forms of state aid, namely a decrease in agricultural subsidies and subsidies for public service broadcasters, and limited guarantees for loans of public and state-owned enterprises.[3] The initially envisaged fiscal adjustment strategy is shown in Figure 1, while the details of individual austerity measures can be found in [8, pp. 10-21].

It is important to notice that the planned savings on the expenditure side of the budget were much larger than the targeted fiscal deficit decrease, because of an expected drop in public revenues compared to GDP and the projected increase in interest payments from 2015 through 2017. Namely, the programme envisaged a fall in public revenues by 2.4 p.p. of GDP (almost 900 million Euros) by 2017, due to a lower tax base growth compared to the nominal GDP growth. On the other hand, it was

2 To simplify this presentation, we used the actual average exchange rate in 2017 to express the planned and achieved fiscal adjustment in Euros, which is significantly different to the level assumed in IMF (2015). Since the GDP envisaged back then and the nominal GDP realised in 2017 differ very little, the planned fiscal adjustment, expressed as a percentage of GDP, was taken from [8], Tables 5a and 5b.

3 These measures should have led to a permanent fiscal deficit decrease by about 0.8 p.p. of GDP. The remaining savings of about 1.4 p.p. of GDP actually relied on some of the one-off expenditures from 2014 not repeating in the period from 2015 to 2017. As a reminder, these were expenditures for covering the losses of the failed Univerzal Banka and PBB (20 bn dinars), payment of the debt of JAT to its suppliers (20 bn dinars), additional capitalisation of Poštanska Štedionica and Dunav Osiguranje (9 bn dinars), as well as a budget loan to Srbijagas in the amount of about 9 bn dinars.

expected that the public debt and average interest rates for loans taken out by the government would rise, which should have increased interest payments by 1 p.p. of GDP (350 million Euros). If these trends were to materialise, they would increase the fiscal deficit, which is why their contributions to the planned deficit reduction are shown as negative in Figure 1.

Although a considerable part of the planned savings was achieved in the end, implementation of specific austerity measures still fell short of the mark. This is especially true for the planned reduction in the wage bill, of as much as 30% in real terms, which seemed as an unlikely and economically disputable plan from the beginning. First of all, the general government downsizing did not even come close to its desired results. Deadlines for the completion of sectoral analyses that would serve as a base for targeted downsizing (in those instances where it would be justified) were pushed back several times. Consequentially, even three years later this process is still unfolding in a non-selective manner, almost exclusively thanks to the retirement of employees with limited replacement (at a 5:1 rate). As a final result, the number of permanent employees in general government (including local public enterprises) was decreased by about 28,600 by September 2017, while the number of employees with short-term contracts increased by about 16,200 in the same period. It means that the net effect on the total employment trend in the general government was far smaller than the planned downsizing by 75,000 employees, leading to smaller savings. Besides, at the beginning of 2016 and 2017, salaries in some parts of the public sector and pensions were increased, contrary to the original plan of keeping them frozen; this caused the savings from the real reduction of these expenditures to come under the mark as well. It is important to note that, when it comes to expenditures on pensions, the unachieved savings were made up for by a drop in the number of pensioners, because the 2014 pension system reform had a greater impact than was expected.[4] As shown in Figure 1, these inconsistencies in the implementation of the original fiscal consolidation plan had an impact on permanent savings on expenditures on the wage and pension bill, which came under the envisaged target by 0.8 p.p. of GDP (about 300 million Euros).

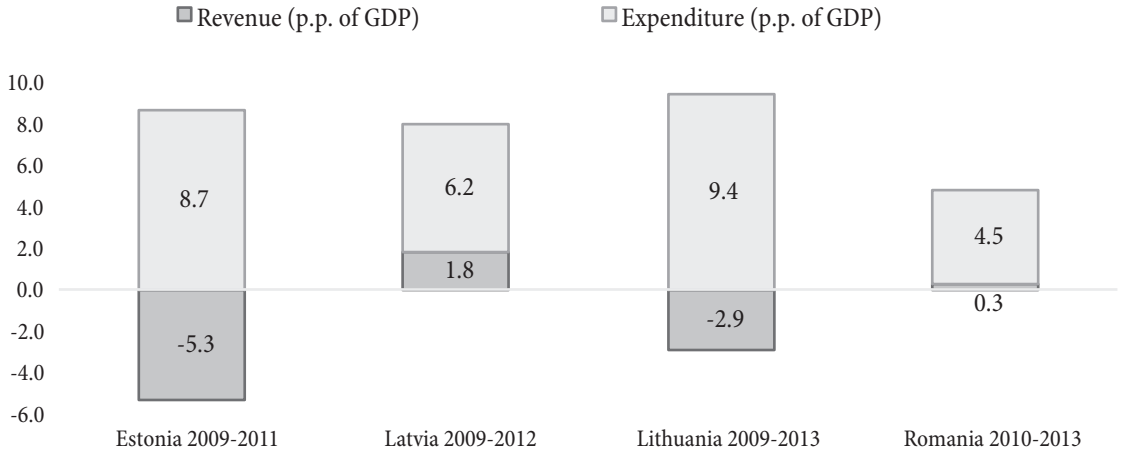
If we were to stop at primary expenditures (without interest payments which are not under direct Government control) and look only at the results of the initially planned austerity measures, it would be clear that Serbia would have been stuck at the fiscal deficit level of 4-5% of GDP. Public debt would have continued rising unstoppably, which would de facto mark the failure of the fiscal consolidation. What happened is that the fiscal trends in 2015-2017 were significantly better than was envisaged, practically in the absence of any additional austerity measures and despite the moderate fiscal relaxation during 2016 and 2017. The scale of this improvement is best illustrated by Figure 2, showing that the fiscal deficit in 2017 was by about 5 p.p. of GDP (about 1.9 bn Euros) lower than planned, while the public debt was lower than initially forecasted by over 15 p.p. of GDP (5.7 bn Euros).[5] A mere glance at Figure 1 unequivocally indicates that the answer to the question of why the fiscal results were so much better than expected lies in the strong public revenue over-performance. Instead of the envisaged drop of 2.4 p.p. of GDP (almost 900 million Euros), public revenues increased, compared to 2014, by 3 p.p. of GDP or by over 1bn Euros, which thoroughly explains the fiscal deficit decrease exceeding the plan. A more detailed analysis allowed us to identify the three main reasons behind this unplanned revenue increase, based on both domestic factors and very favourable international conditions. These are improvement in the macroeconomic environment, more efficient tax collection and grey economy suppression (including a few small revenue-enhancing changes to the tax policy) and several one-off factors that temporarily increased public revenues in 2017.

The largest contribution to the unexpected growth of public revenues in the 2015-2017 period (about 700 million Euros) can be attributed to higher economic growth than

4 In mid-2014, a decision on gradual increase of retirement age for women was issued; also actuarial penalties were introduced to de-stimulate early retirement. These changes should have improved the sustainability of the Serbian pension system, limiting the inflow of new pensioners. However, the first effects were far greater than was expected, since the overall number of pensioners has been dropping steadily since 2015.

5 The impressive public debt decrease is partly owed to a strong appreciation of dinar compared to euro and USD during 2017, which is discussed in more detail in this chapter.

Figure 2: Fiscal balance and public debt 2014-2017: planned vs actual (in % of GDP)



Source: Authors' calculations based on the data from the Ministry of Finance and [8].

the programme envisaged. In line with that, the trends in the labour market also surpassed original expectations, so that practically three-quarters of the overall increase in public revenues under the influence of macroeconomic factors came from the increased collection of social security contributions and personal income tax. The remainder of the unforeseen increase comes from higher VAT and customs duty revenues, due to a stronger recovery of private consumption. According to Mauro and Villafuerte [12], the differences between macroeconomic forecasts and actual economic trends represent one of the most common causes of (positive or negative) discrepancies between fiscal results and fiscal consolidation plans. Thus, the real question that needs answering is – what is behind these macroeconomic improvements that generated the surprising public revenue growth?

We estimate that, to some extent, they came as a result of the fiscal consolidation itself, which contributed to lowering the country risk premium and to a drop in lending interest rates, both for the Government and the economy, which in turn spurred economic growth. However, what seems indisputable at this point is that it was, in large part, a positive external shock. Namely, a set of favourable international economic conditions has proven to be very beneficial for macroeconomic trends in Serbia and the remainder of Central and Eastern Europe in recent years. Investigating drivers of economic growth in CEE countries in the 2015-2016 period, in Petrović et al. [14], we demonstrated that a significant share of the unexpected acceleration of economic activity in the region (including Serbia) in the observed period could be explained by the positive effects of external factors. Here we emphasise the most important ones, such as the decrease in commodity prices (especially oil and gas), low interest rates in Europe and increase in demand for export from these countries, due to a stronger recovery of the Eurozone and the CEE region itself. Furthermore, this wave of favourable international macroeconomic conditions is obviously still going strong. In 2017, many countries in the region continued scoring record high GDP growth rates in the post-crisis period; however, Serbia is not among them.

The second source of the unexpected, yet structural increase of public revenues lies in the more efficient tax collection (about 500 million Euros), which is further reinforced by some minor tax measures introduced during the programme (about 100 million Euros).[6] Increase in public revenues due to grey economy suppression is a positive domestic fiscal shock, reflected in the increase in VAT and excise revenue collection, which surpasses the levels that could have been expected based on the tax base trends. Even though the widespread occurrence of informal (grey) economy in Serbia is a well-known fact, as is the large potential for tax revenue growth if it were to be suppressed, the achieved result came as a surprise – as it was obtained with the existing (already insufficient) capacities of the Tax Administration. Despite

6 At the start of 2016, excise on oil derivatives was increased, to compensate, to a degree, for the salaries and pensions expenditure increase in that year. Also, several modifications have been made in the calculation of the property tax base, which led to a rise of these revenues as well.

many operational issues of this institution (insufficient number of tax inspectors, unfavourable age distribution of staff, poor analytical capacities, obsolete information systems and organisational structure, etc.), it seems that the Tax Administration nevertheless managed to make a significant improvement in the collection of VAT through tighter controls and ad hoc (sometimes repressive) measures in the field. Also, it can be observed that a stricter control has been established over the excise products market, especially oil derivatives market. It is worth noting that some local governments have managed to improve their property tax collection significantly, which has led to a substantial increase in these revenues, which are the local governments' own revenues.

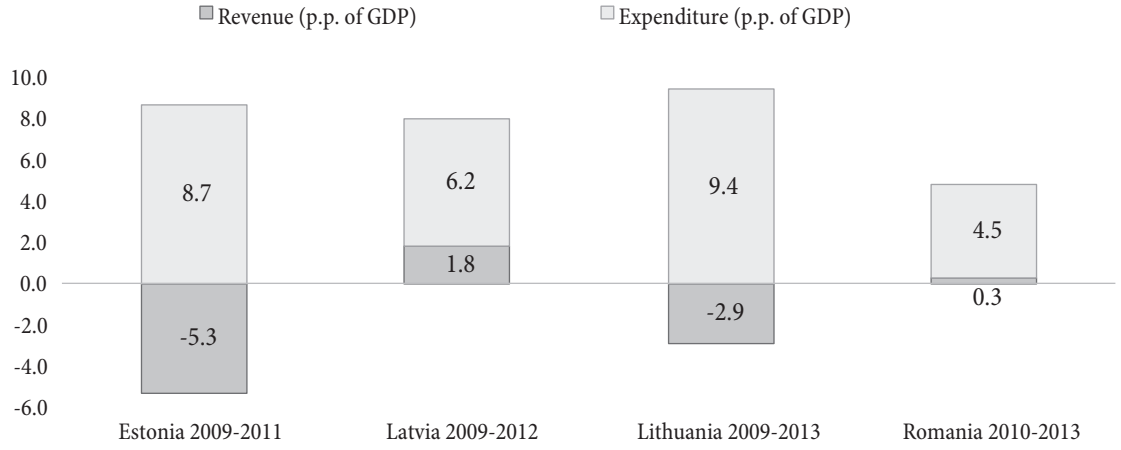
The remaining unplanned increase of public revenues in 2017 (about 600 million Euros) was achieved thanks to several temporary factors. Almost a half of this amount comes from the unusually high revenue from corporate income tax, due to increased profitability of the processing industry in 2016, while the increase in EPS's profit and the high amount of profit tax this company paid partially stems from a change in its accounting methodology. We estimate that in the upcoming years, it should be expected that the revenues from corporate income tax will return to their long-term average value (somewhat over 2% of GDP), which is why we see their increase in 2017 as a one-off improvement. Exceptional one-off payments of non-tax revenues have been a characteristic trait of the fiscal consolidation in 2015-2017 since the start, and 2017 is no exception. Thus, about 30 bn dinars of specific non-tax revenues went into the central government budget (payment from the National Bank of Serbia, profit of public enterprises and other sources) and an additional 10bn dinars went to the budgets of local governments (primarily from payments of local public enterprises). Bearing in mind that these sources of public revenue increase are, by their very nature, unique (one-offs), they need to be excluded when calculating the structural fiscal result which is the real measure of the fiscal consolidation success in the 2015-2017 period. Starting from the official surplus in the general government budget of 1.2 % of GDP (about 450 million Euros) in the last year, by excluding one-offs we can easily conclude that the permanent fiscal deficit level, going into 2018, amounted to about 0.5% of GDP (about 150 million Euros). This is an extraordinary result, bearing in mind that only three years ago, in 2014, Serbia had the highest fiscal deficit in Europe of 6.6% of GDP (almost 2.2 bn Euros).

In the end, we emphasise that the implementation of the fiscal consolidation in 2015-2017 was unexpectedly supported by a significantly slower growth of interest payments than expected. Instead of the forecasted increase by 1 p.p. of GDP (about 350 million Euros), these budget expenses in 2017 were somewhat lower than in 2014 (by about 0.2 p.p. of GDP). The better-than-planned fiscal trends and a reduced need for new government borrowing, as well as a sharp drop in interest rates applied to loans taken out by the Government in recent years, certainly contributed to this result. In part, it is a consequence of the omnipresent trend of decreasing interest rates in Europe, due to the expansionary monetary policy of the ECB; however, we believe that some domestic factors contributed to this as well. The potential link between fiscal consolidation (and macroeconomic stabilisation in general) and the trends of interest rates in Serbia in the observed period we have analysed in more detail in the section about fiscal policy in 2018 and beyond.

Fiscal adjustment was not implemented the way it had been planned – how sustainable is it?

The presented results of fiscal consolidation in Serbia in the 2015-2017 period can briefly be summarised as follows: although some planned measures for a permanent expenditure decrease failed to yield desired results, the strong growth of public revenues allowed the outcome to exceed the plan overwhelmingly. This means that, contrary to original intentions of achieving the fiscal adjustment almost exclusively on the expenditure side of the budget, practically a half of the structural savings came from the revenue side of the budget. Researchers who followed a similar approach in analysing fiscal adjustment episodes by comparing the results achieved to original plans [12] found several examples where public revenues somewhat unexpectedly "saved" fiscal consolidations in the period preceding the World Economic Crisis. However, such a

Figure 3: Contributions to deficit decrease in Baltic countries and Romania (in p.p. of GDP)



Source: Authors' calculations based on the data from Eurostat.

major improvement in fiscal trends thanks to unplanned public revenue growth, like the one that took place in Serbia, is truly rare. The same conclusion can be reached if we look at several successful fiscal consolidations in Central and Eastern Europe in the 2009-2013 period. Without exception, the largest share of fiscal adjustments was achieved by a permanent reduction of public expenditures and approximating them to the level of general government revenues (see Figure 3). Of course, this does not mean that these countries had not envisaged any tax policy measures, but these were usually only sufficient to maintain the level of public revenues in the conditions of a deep recession.[7]

There is a widespread consensus in literature that fiscal consolidations primarily based on structural reductions in public expenditures provide longer lasting results. For instance, Alesina and Ardagna [1], [2], as well as [9], show that the fiscal consolidations that were successful in the long term and had a lower adverse effect on economic growth were the ones based on measures for public expenditure cuts, compared to those aimed at increasing public revenues. A part of the explanation lies in the fact that public revenues often increased during fiscal consolidation due to favourable influences of the economic cycle - when the macroeconomic trend deteriorated, they diminished, leading to an increase in fiscal deficit and annulment of the previously achieved results. Besides, it turned out that a decrease in all types of public expenditures correlated positively with the ultimate success of fiscal consolidation, except the cuts in capital expenditures. The results of this and similar studies contributed to the initial design of the fiscal consolidation in Serbia in 2015-2017 (as did the fiscal adjustments implemented in the Baltic countries and Romania), steering the austerity measures mostly towards a decrease of the largest public expenditures. However, reality turned out quite differently than the plan. Does this mean that the sustainability of the undisputedly good fiscal trends in recent years is in jeopardy? Not necessarily. The Government has a nice opportunity to translate this (partly temporary) success into a permanent state of Serbian public finances, under the currently favourable international circumstances. This will require adhering to a responsible fiscal policy for at least five years, as well as a far greater commitment to the implementation of unfinished reforms, which will be discussed in more detail in the last section of this chapter.

To conclude this section, let us take a look at another striking difference between the fiscal consolidation episodes in Serbia and the comparable Central and Eastern European countries. Faced with unfavourable international and domestic economic movements, economic policy makers in the Baltic countries and Romania were, as a rule, faced with the insufficiency of their envisaged austerity measures needed for achieving the objectives set and with the recurring dilemma – what else could be saved on? On the other hand, after the initial and necessary sacrifice in the form of salary and pension cuts, it seems that the fiscal adjustment in Serbia was enforced without much further effort. All the

7 Measures for increasing public revenues in the original plan for fiscal consolidation in the Baltic countries and Romania should have allowed, on average, 20-30% of structural fiscal adjustment [5].

quantitative objectives were met quite comfortably, with additional fiscal space to repay some old debts, such as debts of Srbijagas and Petrohemija to NIS, liabilities to military pensioners and others. The key difference lies in the fact that Serbia implemented its fiscal consolidation in very favourable international conditions – economic recovery of the Eurozone, the accommodative monetary policy of the ECB and declining interest rates, drop in fuel prices, recent depreciation of the dollar – to list just a few. Bearing in mind that all these external factors made it much easier to implement the fiscal consolidation in the 2015-2017 period, does it mean that it was a good thing to postpone the efforts devoted to getting Serbian public finances in order until "better times"? We are convinced that the answer is negative. The fact that the public debt reached a very high level in the meantime and that it will take at least another five years to bring it down to a safer level is just one part of the explanation. The far more important point is that, in postponing serious fiscal consolidation and eradication of numerous structural imbalances in the economy, for the time being, Serbia has missed the opportunity to achieve much higher economic growth in the light of supportive international economic trends – unlike the majority of CEE countries.[8]

Fiscal policy in 2018 and beyond: Achieved results can, and should, be "locked in"

On the basis of good fiscal performance over the recent years, Serbia is entering 2018 and beyond with a new primary objective in its fiscal policy. An almost balanced budget was already achieved in 2017, therefore there is no need for further fiscal tightening, but it is of crucial importance to preserve the achieved result in the longer term. The good news is that this can be accomplished even with a carefully measured increase of public expenditures and/or decrease in the tax burden on economy. Namely, pensions and salaries in the general government have come sufficiently close to a level sustainable in the long run, which Serbian economy can finance (11% of GDP and 8% of GDP), which is why their expansion in line with the growth of nominal GDP (by 5-7% per year) is now possible. An additional advantage from maintaining the current course of fiscal policy would be reflected in an automatic decrease in expenditures on interests, due to the declining public debt (by about 0.6 p.p. of GDP in the medium term) and a gradual disappearance of expenditures on called guarantees (de facto subsidies). Decreasing these non-productive budget expenditures would open fiscal space that could be used for much better purpose, for instance, for the urgently needed increase in public investments. If favourable fiscal trends and budget surpluses continue in the upcoming years, there are several good ways to use the excess funds in the budget: a relaxation of labour tax burden could be considered, additional investments made in public and local infrastructure, or the public debt decreased at a higher rate. These are all well-documented ways in which the fiscal policy could provide an effective incentive to economic growth in the medium and long run. The budget for 2018, the last one prepared by the Government within the existing arrangement with the IMF, is essentially aligned with these recommendations and represents a step in the right direction.

The main reason the fiscal results achieved in 2017 need to be "locked in" and the reason excessive fiscal policy relaxation in the upcoming period would be harmful and dangerous lie in the level of public debt which is still high. In 2016, public debt growth was stopped, while in 2017, a very sharp decrease in debt of about 10 p.p. of GDP was achieved – from 73% to 62.4% of GDP. The last year's result should not create an illusion that the problem of Serbia's over-indebtedness could be resolved overnight since it was achieved largely with enormous (and, to an extent, certainly temporary) support from favourable exchange rates dynamics. We estimate that the strong appreciation of dinar, compared to euro – and especially compared to dollar – contributed to the public debt reduction by slightly over 6 p.p. of GDP.[9] Despite this unexpected help, public

8 In the period from 2012 to 2017, Serbia marked a cumulative GDP growth of mere 6%. In the same period, the average cumulative GDP growth in the Central and Eastern European countries was almost three times higher, at over 17% (see Table 2 in the second part of this paper).

9 In 2017, dinar saw nominal appreciation of 4% compared to euro and about 15% compared to dollar. Appreciation of the real exchange rate of dinar was even more pronounced, since Serbia saw higher inflation than the Eurozone and the USA.

debt exceeding 60% of GDP is still too high, and the only way to permanently reduce it to a safer level is to keep low fiscal deficits over a somewhat longer period. Preservation of a balanced budget would allow for a sustainable public debt decrease by about 2.5 p.p. of GDP annually, which means it would take at least five years to bring the public debt down to a more prudent level of about 50% of GDP (in 2023). If this is not done now, there is danger that Serbia will not be prepared for some future crisis, which will certainly come in the long term. A new recession and consequential decrease in public revenues would lead to a new growth of the fiscal deficit with inevitable and very negative consequences for the economy. Unlike the crisis in 2008, which came when Serbian public debt was below 30% of GDP (leaving it at the level of about 75% of GDP), even a smaller shock would suffice to take us from the current level of debt up to a debt exceeding 80% of GDP and, very probably, landing us in a fiscal crisis.

Avoidance of a potential crisis is perhaps the most obvious, but is not the only argument firmly supporting the position that a low fiscal deficit and a steady decrease in public debt must remain a priority of the economic policy in the upcoming years. Namely, an expanding number of empirical studies, e.g. Chudik et al. [4], have confirmed, quite convincingly, that there is a negative correlation between the public debt path and economic growth in the long term. While the growth of fiscal deficit funded by an increase of public debt can have some positive impact on GDP growth in the short term, it eventually leads to crowding out of private sector investments (due to higher country risk premium and interest rates) and reduces the economic growth in the long term. In Serbia's case, the opposite situation is far more interesting at this moment. Chudik et al. (2017) showed that even countries with a high public debt (as Serbia, with its debt exceeding 60% of GDP, indeed is) could achieve growth rates almost equal to those of comparable countries in a better fiscal position – if the public debt is firmly on a downward path. It seems that financial markets pay more attention to the public debt trend than to its level and that a declining public debt is a sufficient signal for lowering country risk premium and interest rates, yielding a positive effect on investment, private consumption and economic growth in general.

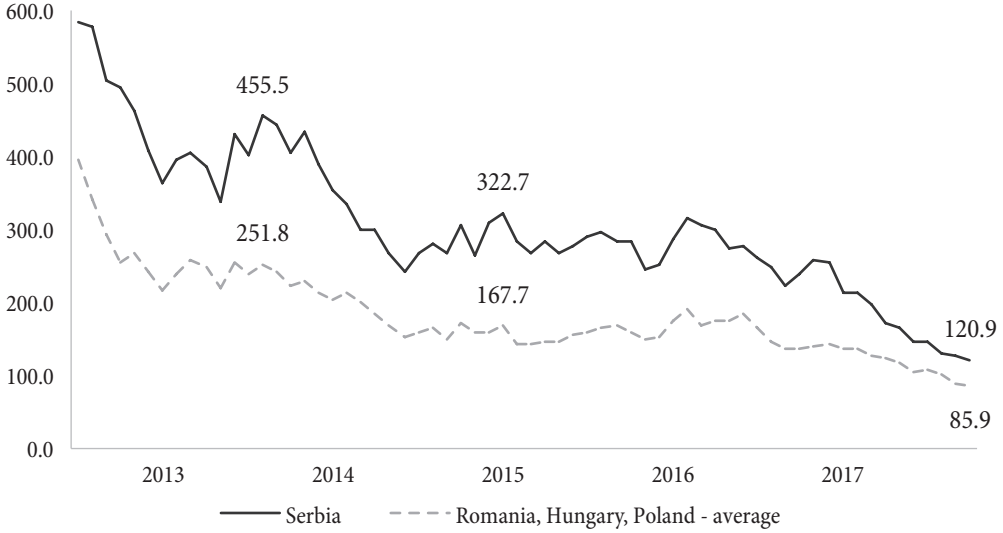
Certain data show that perhaps this is what happened in Serbia as a result of a successful fiscal adjustment and placement of the public debt on a downward path from 2016. As we have shown in Figure 4, in recent years there has been a rapid drop of the risk premium for Serbia (as measured by the EMBI), from almost 600 b.p in mid-2012 to a little over 100 b.p. at the end of 2017. In large part, this improvement can be explained by a general fall in risk aversion, since similar trends have been observed practically in all CESEE countries, regardless of their domestic economic policies.[10] To correct for this common trend and isolate the impact of fiscal consolidation and macroeconomic stabilisation in Serbia on risk premium trends, we examined the magnitude of the relative decrease compared to comparable countries. The risk premium for Serbia in mid-2013 exceeded the average of selected CEE countries by about 200 b.p., at the beginning of fiscal consolidation in 2015 by about 150 b.p. and now, following a successful fiscal consolidation implementation, the difference has fallen to mere 30-40 b.p. Positive effects of these trends are reflected in a substantial decrease in interest rates for loans taken out by the government in the 2015-2017 period. At the beginning, we noted that this was one of the factors that were important for arresting growth of interest payments from the budget. Particular significance of improvement in external financial conditions lies in the fact that the National Bank of Serbia has been given room for additional relaxation of the monetary policy, which would allow for the recovery of the credit activity in corporate and household sectors, as further support for economic recovery.

The claim that the implemented fiscal consolidation contributed to the reduction of the country risk premium is strengthened by the Serbian credit rating trend which has been continually upgraded by all relevant agencies since 2015.[11] According to the credit agencies Standard and Poor's and Fitch Ratings, Serbia reached a BB rating

10 We estimate that the vital contribution to a general trend of decreasing interest rates in Central, Eastern and Southeastern Europe came from the launch of the quantitative easing programme by the European Central Bank in March 2015.

11 For instance, Standard and Poor's has upgraded Serbia's credit rating three times since the beginning of fiscal consolidation: from BB- with a negative outlook to the current BB with stable outlook.

Figure 4: Trends in EMBI for Serbia and selected CEE countries, 2012-2017



Source: JP Morgan.

Table 1: Credit ratings of Serbia and neighbouring countries in 2017

Country	Grade	Standard and Poor's		Fitch Ratings		Moody's Investors Service	
Hungary	Investment	BBB-	Positive	BBB-	Positive	Baa3	Stable
Bulgaria	Investment	BBB-	Stable	BBB	Stable	Baa2	Stable
Romania	Investment	BBB-	Stable	BBB-	Stable	Baa3	Stable
Croatia	Speculative	BB	Positive	BB+	Stable	Ba2	Stable
Serbia	Speculative	BB	Stable	BB	Stable	Ba3	Stable

Source: Standard and Poor's, Fitch Ratings, Moody's Investors Service.

with a stable outlook in 2017, while Moody's Investors Service gave Serbia a Ba3 rating with a stable outlook. However, it is important to note that despite the upgrade in the credit rating in recent years, all agencies still rate Serbia fairly unfavourably, giving it a non-investment (speculative) grade. In other words, this would mean that Serbia is seen as a country capable of meeting its financial obligations, but the credit risk is higher due to a pronounced risk of deterioration in the business climate and macroeconomic environment. To be classified together with the countries awarded the investment grade, depending on the rating agency, Serbia has to make two or three decisive steps. This would allow it to catch up with the countries in its immediate neighbourhood, which have already achieved this (Romania and Bulgaria), as well as with Croatia, that is just on the brink of the investment grade rank (see Table 1). We believe that the fiscal policy in 2018 and beyond could provide significant assistance in overcoming the remaining hurdles. A precondition for this is to maintain the approximately balanced budget in the long term, continue with the decisive decrease of public debt and resolve several critical issues that will remain unresolved once the arrangement with the IMF expires, representing a major fiscal risk and an obstacle to faster economic growth.

The most important reform challenges on the path to sustainable, growth-boosting public finances

Fiscal consolidation has only partially improved the structure of public expenditures, by decreasing the expenses on pensions and salaries; public investments remained at an insufficient level (about 3% of GDP). In this respect, Serbia is visibly lagging behind comparable CEE countries, which usually spend about 4% of their GDPs on capital expenditures; in the periods when they were building their major road and railroad infrastructure (which is where Serbia is at today), the figure would often reach 6% of GDP. Investments in major road and railroad infrastructural projects, which are usually given the most

prominent place in the public eye, are probably the only type of public investments that could be said to be close to a satisfactory level at this point, although even in this regard plans were often executed inefficiently in the past. The matter of concern is actually the fact that there are numerous and vital fields in which the government should be investing, but those have been completely neglected for years. The most striking example is environment protection, which was assessed as "completely incompatible with the EU acquis" during the check of domestic legislation compliance with the EU standards (the so-called "screening"), as part of the EU negotiations process (Chapter 27). This conclusion comes as no surprise at all, considering the current devastating situation. For instance, only 25% of solid waste is disposed of in line with the EU standards, there are over 3,500 wild landfills of which many endanger watercourses, wastewater is not being treated even in the biggest cities (Belgrade, Novi Sad, Niš), Serbia holds the negative European record in the lowest percentage of households connected to the sewers, etc. Our rough estimate is that Serbia will need annual investments of about 1.5% of GDP (about 600 million Euros) in the field of environmental protection to achieve compliance with the EU legislation, instead of the 80 million euro invested at the moment. A necessary increase of investments in healthcare and education should be added to this sum, as they too are only at one-third of CEE average. An increase of public investments to the level of about 5% of GDP per year would be sufficient for Serbia to resolve these burning issues and foster economic growth, and that can be achieved within the framework of the primary fiscal policy objective – maintaining a balanced budget.

Probably the most urgent task for the Government is permanent regulation of the pension system, as it currently rests on temporary measures introduced at the beginning of fiscal consolidation. Even though we have assumed that the progressive cut of above-average pensions at the end of 2014 would lead to permanent savings, the truth is that this austerity measure has been legally defined as temporary. We believe that the decrease of expenditures on pensions was indeed necessary for the situation in which Serbia was threatened by an imminent danger of a public debt crisis. However, the fact is that this measure disrupted the regular structure of the pension system, in which the amounts of pensions paid out should depend on the amount of contributions previously paid in. In developing the 2018 budget, it transpired that the technically simple task of returning to a regular pension system presented a major political challenge, even though the economic circumstances allowed it. At the end of 2017, it was clear that the public debt crisis was avoided, that the expenditures on pensions were close to a level that would be sustainable in the long run (11% of GDP), and most importantly, there was fiscal space for (at least a partial) annulment of the temporary measure. However, this good opportunity was missed. The Government decided to use this fiscal space for a linear increase of all pensions by 5%. Bearing in mind that, from 2018 onward, the arguments that were used to justify the temporary cut in above-average pensions no longer stand, this decision puts Serbian public finances at a new fiscal risk, due to the possibility that the decrease of pensions without proper legal grounds would have to be repaid in future.[12] It is still not too late to prevent major damages, but the Government would have to opt for a way out of this temporary measure immediately. At the same time, it is necessary to bring the pension system back to the framework of predictable and regular indexation of pensions, in line with a formula that would take into consideration the demographic trends (aging population) and the system's long-term financial sustainability.

The reform of general government employment was also based on a temporary measure while wage system reform has been delayed for quite some time, which needs to change if Serbia wants to have a public administration that complies with the requirements of modern economy. The approach to general government downsizing through an attrition rule (which should have been a temporary measure) failed to bring about the planned savings and only exacerbated the already unfavourable employment structure. Some crucial parts of the public sector have been facing a lack of professional staff for quite some time (lack of medical staff and doctors, teachers, tax inspectors, etc.) while others have been burdened by a surplus of non-productive employees (e.g. local administration and

12 The potential cost would amount to about 200 million euros per year, starting from 2018.

non-medical staff in the healthcare system). Wage system reform in general government has also seen very modest progress, confined to legislative solutions for individual sectors that have yet to come into force, while the original plan was to have the entire process completed by the end of 2015. Instead of regulating the wage system so that employees with identical/similar jobs in different sectors of the general government would have comparable salaries ("equal pay for equal work"), the system was rendered even more chaotic in 2018.[13] If the Government truly wants to resolve these issues without further delays, it can do so already in 2018. The temporary employment ban should be lifted and sectoral analyses finally completed (the initial deadline expired in mid-2016) to provide a sound basis for efficient general government downsizing. In addition, the process of adopting legislation that would regulate the wage system in the remaining sectors of the general government (state administration, police, military and public agencies) needs to be accelerated, to avoid ad hoc salary increases when drafting the 2019 budget and to initiate the strenuous process of establishing a more just system of valuing work in the public sector.

The story of failing public and state-owned enterprises is far from over, which is why their problems and their poor performance still represent one of the greatest risks for Serbian public finances. Except for a few positive examples,[14] substantial reforms have barely begun. Namely, about 150, mostly unsuccessful, state-owned enterprises undergoing privatisation still employ a workforce of about 50,000 people. It's a fact that some of the problematic companies from this group (such as RTB Bor and Petrohemija) are not making losses at the moment, due to a favourable market situation (low price of oil and gas, high price of copper). However, market circumstances could quickly change, which would inevitably revert these unreformed enterprises to major loss-makers and a burden on the public finances. Even these favourable market circumstances could not help some companies, such as Azotara and Resavica; they continue to perform badly and accumulate debt. It seems that at this point, twenty years since the beginning of privatisation in Serbia, the time has finally come to ascertain whether these enterprises have a future in the market and investors interested in them, or if they should be allowed to go bankrupt.

The largest domestic enterprise, EPS, can serve as an excellent example of just how poorly Serbia is managing its vital resources. Due to poor management, this company marked a steep drop in production in 2017, significantly lowering the overall economic growth, instead of acting as the engine driving it, with its profit and investments. However, reforms that would turn EPS into a profitable enterprise keep being postponed. For instance, instead of adopting a systematisation of the workforce and downsizing employment based on the surpluses found, the downsizing is implemented through voluntary and nonselective retirement of employees who already meet the criteria for retirement (with generous severance payments). The largest individual expenditure of this enterprise (wage bill) has significantly grown since 2014 instead of being decreased, in line with the Government's decision to reduce salaries in public enterprises by 10%. Practically, the only tangible improvement EPS has made so far is the increase of the previously low tariff for electricity for households, which has been raised in three stages since 2015, by a total of about 11%.[15] Perhaps the most defeating fact is that EPS's investments have been lower than its depreciation for years – and even so, the enterprise's debt has doubled since 2009. Insufficient investments in the energy sector is a problem that extends beyond the mere issue of EPS's performance, as it can become a serious obstacle to dynamic economic growth in the future.

Poor local public finance management is another major fiscal issue that Serbia has not given enough attention for years; it is not even mentioned in the Government's latest medium-term reform plans. Budgets of numerous cities and municipalities in Serbia are unsustainable, and the performance of local public enterprises and other institutions managed by the local governments is weak.

13 In 2018, the Government (seemingly arbitrarily) increased salaries in a nonlinear fashion by 5% or 10% in different general government sectors, deepening the existing imbalances in the wage system.

14 For the time being, it seems that the planned reforms are advancing nicely in Železnice Srbije; out of the large state-owned enterprises, sustainable solutions have been found for Železara Smederevo and recently for Galenika.

15 The remaining increase in electricity price of 7.5% is attributed to the excise and has gone into the budget.

As a consequence, debts of cities and municipalities and their enterprises have reached an amount of 800 million Euros, to which arrears on matured liabilities (defaults) of about 300 million euro should be added. Accumulated fiscal problems of local governments are not just a severe risk to the country's public finance, but they also impede economic growth and directly contribute to a drop in the quality of life for their citizens. Following the conclusions of Fiscal Council [6], we would like to draw attention to the three essential reform tasks for the regulation of local public finances in the medium term. First, the budgeting process at the local level should be regulated (including the financial consolidation of the cities and municipalities that are already facing crises, such as Kragujevac, Smederevska Palanka or Niš) and a predictable and objective systematic framework for financing local governments should be adopted. Second, the structure of local public expenditures is inadequate – investments are too low, and subsidies to local public enterprises are too generous. Improvement of the structure of expenditures at the local level in the upcoming period would, therefore, comprise a substantial increase of investments in local infrastructure, which can be funded to a large extent by a decrease in subsidies. However, for this to happen, it is also necessary to establish the third pillar of reform which encompasses concrete measures for resolving accumulated operational issues of (mostly) unsuccessful local public enterprises.

Tax Administration modernisation is an example of another reform that was the subject of considerable discussion from the beginning of the arrangement with the IMF, but that never went further than the adoption of an action plan (December 2017) for the implementation of the Tax Administration Transformation Programme from June 2015. It is a fact that the new management succeeded to stabilise the operations of the Tax Administration from 2015 through 2017, to increase the collection rate for tax revenues and suppress the grey economy down to the level from 2012.[16] The significance of the more efficient tax revenue collection for the success of fiscal consolidation was promptly recognised, but it seems that it was not a sufficient motivator to truly begin resolving substantial issues faced by the Tax Administration, of which some have been known for a decade now. The list is quite comprehensive: a nonrational network of 178 offices, the absence of a modern and comprehensive IT system for monitoring taxpayers and risk analysis, inadequate structure and professional profiles of employees, too many non-tax related (auxiliary) functions, obsolete business practices, etc. The plan from 2015 recognises these problems and offers solutions, but a U-turn in its implementation is necessary, which would lead to multiple benefits. Reinforcing the capacities of the Tax Administration could bring additional public revenues from informal economy suppression in the upcoming years, which would also strengthen the improvement in tax revenue collection already achieved in the 2015-2017 period. A modern and professional Tax Administration would contribute to the advancement of conditions for doing business in Serbia, which is one of its roles that is frequently neglected. Namely, it is an institution tasked with ensuring consistent implementation of tax legislation and a fair market race for all the participants in the market, which is of enormous importance for competitiveness and attractiveness of Serbian economy for investments.

16 Due to problems with Tax Administration management and the absence of a systemic approach to its reform, in 2013 and for the most part of 2014, there was a drastic increase in informal economy in Serbia and a sharp drop in tax revenue collection [7, p. 44].

Surge in employment with sluggish GDP growth: Reliability of the LFS in Serbia re-examined

Introduction and Main findings

In the previous papers, Petrović et al. [13] and Petrović et al. [15], we questioned the findings of the Labour Force Survey (LFS) suggesting a high growth of employment and a sharp drop in unemployment since 2012 in Serbia, with almost stagnant GDP. In the meantime, new data for 2016 and 2017 arrived, and additional studies on the subject, [10] and [11], have been published. This provides us with an opportunity to revisit this issue and take a more thorough look at the reliability of the Labour Force Survey (LFS) while checking the validity of the previous arguments, using new data series that are long enough, i.e. spanning the period from 2012 to 2017. The primary purpose of the research presented in this chapter

is to encourage the Statistical Office of the Republic of Serbia (SORS) to improve the statistical monitoring of employment in Serbia. If the quality of data in the LFS was to be increased to the level of comparable countries, the Survey could play an extremely significant role in providing relevant information for economic analysis of the labour market in Serbia, i.e. provide the cornerstone for the appropriate economic policies in this field.

In the first section below, using new, extended data set, we show that all the arguments pointing to the low reliability of the Labour Force Survey, that we presented two years ago, still stand. First, alleged strong employment growth in Serbia since 2012 is in sharp contrast with the slow-growing GDP. This is contrary to elementary economic theory and is not happening in any other comparable country. Second, high employment growth since 2012 is not in line with the trends of macroeconomic aggregates strongly related to employment – living standards and the collection of compulsory social insurance contributions.

The connection between employment and GDP is elementary and has been empirically proven innumerable times. According to this fundamental economic relation, GDP growth is the sum of employment growth and productivity growth. Economists often illustrate the relationship between employment and GDP in an abbreviated manner, using employment elasticity (employment growth divided by GDP growth), which generally ranges from zero to one (as employment grows slower than GDP, the difference being productivity growth).

However, according to the LFS data, in the 2012-2017 period, Serbia significantly diverged from these basic economic relations, casting doubts over the credibility of the published data. According to the LFS, from 2012 to 2017 employment increased by over 19% and GDP growth was about 6%, indicating a drop in productivity of about 13%.[17] Unlike Serbia, all other comparable Central and Eastern European (CEE) countries experienced, in the same period, an expected slower growth of employment compared to GDP growth. Employment growth in CEE countries from 2012 to 2017 amounted to 6.1% with GDP growth of 17.1% (indicating a rise in productivity of about 11%). Also, employment elasticities of all CEE countries except Serbia, in the 2012-2017 period, conformed to theoretical expectations ranging from zero to one (on average, 0.3), while in Serbia elasticity scored 3.2 according to the LFS data (Table 2).

Strong employment growth of almost 20% in the previous five years (according to the LFS) has not left any mark on any other macroeconomic aggregate closely related to employment growth. The living standard of the population has hardly increased since 2012, even though private (personal) consumption of Serbian citizens is funded, in large part, from labour income. According to the SORS's data, private consumption in Serbia grew in real terms (i.e. inflation adjusted) by a mere 1.3% cumulatively from 2012 to 2017, which doesn't even remotely support the data on high employment growth from the LFS.

Another direct indication of LFS unreliability lies in the trends of the collection of social security contributions. The increase in contributions would have to be almost identical to the growth of the wage bill (number of employed persons multiplied by the average salary) for the formally employed persons paying contributions. However, social security contributions increased in real terms by only 3.7% in the 2012-2017 period, which is not even close to alignment with the formal employment growth of 13.4% according to the LFS, with the real wages (adjusted for inflation) remaining approximately the same in the observed period. This obvious discrepancy shows that the LFS data are not even remotely correct.

In the following section, we reconsider the arguments in [3], [10] and [11] put forward in defence of LFS reliability. Using the latest available data set, we shall first look at the paper by Arandarenko et al. [3], which offers some hypothetical explanations for the coexistence of high employment growth with stagnant or low-growing GDP. According to these freak hypotheses, which the authors themselves claim to be unusual, employment growth that is significantly faster than GDP growth is possible if the increase in employment rests on low-productive jobs or part-time jobs. Empirical evidence, however, clearly rejects these hypotheses.

The part-time work explanation can be illustrated by an example where one employee, working a full day

17 Since the LFS for the fourth quarter has not yet been published, employment growth in 2017 is approximated using the year-on-year growth in the first three quarters.

of 8 working hours, is replaced, at the same job, by two employees working 4 hours each. In this case, the number of employees would double, but the number of total working hours and GDP would remain unchanged. So, if the LFS were to show that the number of working hours was fluctuating independently from the high employment growth, i.e. that it was either stagnating or growing as slowly as GDP, this could, in theory, explain why the strong employment growth in Serbia had no impact on output.

However, the data for Serbia refute this hypothesis. The number of persons employed on a full-time basis since 2012, according to the LFS, has grown over two times faster than GDP,[18] and the number of part-time employees has increased even more rapidly. With the fast growth of both full-time and part-time employees, it is impossible that the number of total working hours in Serbia has been increasing only as slowly as GDP. This conclusion is explicitly confirmed by the study of Kovačević and Pantelić [10] which provides a direct calculation of the total working hours in Serbia from a comparable data series from the LFS, from 2014 to 2016. It shows that the growth of the total number of working hours was extraordinarily high and closely related to the high employment growth (with a correlation coefficient of 0.7). The total number of working hours in Serbia, according to the said data set, climbed even somewhat faster than the number of employees in the period from 2014 to 2016, growing three times faster than GDP (Figure 7).[19]

Similarly, the new data sets also reject the second hypothesis, i.e. that the growth in jobs with low productivity explains the employment increase of almost 20% with low GDP growth. According to Arandarenko et al. (2016), such trends could occur due to an increase of low-quality (low-productivity) jobs with little impact on output. This hypothesis, however, would have to imply some other rather unusual developments: 1) that in the previous five years there had been no increase of overall productivity in economy at all (such outcome would be very unusual, since in periods spanning several years, productivity usually grows due to technological advances, market competition, etc.) and 2) that in the 2012-2017 period there was practically no increase in "normal" employment directly linked to output growth, but only in the low-productivity jobs. The first requirement is unlikely and contrary to the real wages growth in the private sector that are related to productivity growth, while the second is directly refuted by the data from the LFS.

Namely, out of the total increase in the number of employed persons by a little over 440,000 since 2012, 180,000 were informally employed persons performing low-productivity jobs, while 260,000 represent the rise in standard, formal employment. In other words, marginal informal employment in the 2012-2017 period did show a strong growth of about 47% according to the LFS data, but in the same period, the productive, formal employment grew twice as fast as GDP, by 13.4%.[20] The growth of formal employment remains in the double digits (10.8%) even if we exclude some of the less productive subcategories which show a (suspiciously) high growth, such as formal employment in agriculture. Since the more productive part of employment also grew much faster than GDP, the high growth of the low-quality, informal employment and employment in agriculture (if they even occurred)[21] cannot explain the discrepancy between the employment growth and the GDP growth.

Having tested the freak hypotheses using the new data set from 2012 to 2017, in the remainder of this text we move on to examine the results of the latest research by Kovačević et al. [11]. The authors have attempted to prove the reliability of the LFS empirically, i.e. to show 1) that the disconnection between the employment and GDP trends, suggested by the LFS in Serbia, also occur in many other European countries; 2) that the employment trend in Serbia is in line with the movements of private consumption and social security contributions and 3) that the LFS data corresponds to the administrative

18 According to the LFS data, over 85% of employees in Serbia work full time.

19 The authors intended to show quite the opposite, i.e. that the total number of working hours in Serbia fluctuated independently from employment growth. However, they failed to recognise that the data indicated the complete opposite of their hypothesis (Figures 6 and 7).

20 Due to a larger share, the 13% growth of high-quality jobs has a far more significant impact on the increase in overall employment (by 260,000 employees) than the growth of informal employment of 47% (by 180,000).

21 The plausibility of the data from the LFS that show that the formal employment growth in agriculture, as well as the growth of informal employment in the last five years, has amounted to almost 50% is very questionable. In this study, with so many other convincing indicators of unreliability of the LFS, we will not discuss this matter further.

data on employment trends from the Central Registry of Compulsory Social Insurance (CRCSI). However, each of these attempts either contains a severe error or has been misinterpreted – and in most cases, both. When considered thoroughly, these analyses also firmly indicate that there is something wrong with the data from the LFS.

We first examined the proposal of Kovačević et al. (2017) that the lack of correlation between employment and GDP observed in Serbia is also present in other European countries. The authors attempted to demonstrate this by presenting numerous examples of European countries in which employment elasticity (employment growth rate divided by GDP growth rate) fell well outside of the theoretically expected range between 0 and 1. Each of these examples, however, comprises severe oversights or has been misinterpreted, i.e. none of them demonstrates the lack of correlation between the employment and production trends similar to that in Serbia.

The conclusion of Kovačević et al. (2017) that Luxembourg (in the 2008-2010 period) and Romania (2009-2011) showed extremely high employment elasticities is a direct consequence of an oversight. Namely, for these two countries, there is a clear warning on Eurostat that in those exact periods there are breaks in time series regarding employment, which means they should not be used (Figure 11). Ironically, by looking for similarities with the Serbian example, Kovačević et al. (2017) stumbled upon these two countries, with breaks in time series for employment. This just confirms how strange the LFS data for Serbia actually is. Example of Spain is another good illustration of why there is something wrong with employment data in Serbia. In the period from 2008 to 2013, Spain showed employment elasticity outside of the theoretical range of zero to one, as the country experienced a protracted recession.[22] However, even then employment in Spain almost perfectly followed the GDP trends, with a correlation coefficient of 0.9 (Figure 9). Unlike Spain, according to the LFS data, employment and production show a systemically divergent trend in Serbia (Figure 10). Finally, examples like Hungary (2010-2012) where employment grew by about 2.5% in two years with a GDP growth of less than 0.1% perhaps mathematically yield extremely high employment elasticities (2.5 divided by 0.1), but they are utterly incomparable to Serbia (had the GDP growth in Hungary been zero, employment elasticity would have been infinite). An even more important point is that, unlike Serbia and like Spain, Hungary showed a systemically high correlation of employment and GDP growths, about 0.7.

We proceed to examining the next hypothesis of Kovačević et al. (2017) that the LFS data showing high employment growth is consistent with the collected social security contributions, as well as with the trends in private consumption. These incorrect conclusions, however, stem from irrelevant analyses which, in addition, are packed with mistakes. We will first demonstrate the main errors the authors made analysing employment and social security contributions (SSC) trends:

- First, the choice of indicators to calculate the growth of SSC is, to put it mildly, strange. Kovačević et al. (2017) are not looking at the total SSC, but just at the contributions for unemployment. These particular contributions, however, comprise less than 5% of the total sum of SSC. Over 95% of collected social security contributions in Serbia come from pension and healthcare insurance, which have been unjustifiably excluded from this analysis.
- Second, the study [11] looks at only one year, 2015, when employment according to the LFS had by far the lowest (and the most reasonable) growth in the previous five years. The claim that the data on social security contributions for 2016 was not available to the authors is incorrect. The Ministry of Finance regularly publishes data on SSC on its website, on a monthly basis. Besides, the information on the public revenues collection is regularly reported on by the media and the Government representatives frequently present them to the public, as well.
- Third, data on the growth of unemployment contributions in 2015 is incorrect. The increase of

22 From Q3 2008 to Q4 2013, Spain showed an average drop in GDP of 1.7% and a drop in employment of 3.3%, which resulted in an average employment elasticity of 2. However, such trends are entirely reasonable for the periods of prolonged recession. Namely, even at that time, employment grew slower than GDP (by the growth of productivity, in the amount of 1.6% annually); the elasticity was only "strange" because both employment growth and GDP growth were temporarily negative. As soon as Spain came out of recession, employment elasticity automatically returned to the theoretical bracket 0-1 (Figure 9).

these contributions in 2015 was not 109.9 million dinars, but 155 million dinars. Furthermore, even if 109.9 was the correct figure, it would still not represent a 1.4% growth, as Kovačević et al. (2017) mistakenly claim. In Serbia, the annual amount of collected unemployment insurance contributions is around 20 bn dinars, so their hypothetical increase by 109.9 million could only represent a growth of about 0.5%.

- Fourth, it is incorrectly claimed that the change in the rate of individual insurance contributions presents an obstacle for the calculation of growth rates of these revenues. The correction for the amended rates is a trivial calculation.
- Fifth, contribution collection should not be directly compared to employment growth, but rather to the wage bill growth for those formally employed (the number of employees paying contributions multiplied by their average salary). This is why the explanation of Kovačević et al. (2017) that the contribution collection is not keeping up with employment growth due to salary cuts in the public sector and due to salary cuts resulting from amendments to the Labour Law, is irrelevant. These changes are taken into account automatically when the data on employment growth is multiplied by the average salary increase, which is an inescapable step in the correct procedure.

Due to the mistakes stated above, in this section, we demonstrated in detail the correct calculation of the social security contribution trends and the trends of the respective tax base. When this calculation is applied correctly, it transpires that the cumulative real growth of the SSC collected in the 2012-2017 period was 3.7% and that the wage bill, which is the corresponding tax base, has increased (according to the LFS) by over 10% in real terms. This result is a clear indication that the data published in the LFS are unreliable.

In their analysis of private consumption trends [11], Kovačević et al. (2017) make similar mistakes as in the case of social security contributions. For instance, private consumption was incorrectly approximated using retail turnover growth. Retail constitutes only a minor part of private consumption, since citizens also spend their money on utility bills, culture, education, recreation, occasionally eat out, visit cafes, travel, shop at markets, etc. It is unclear why private consumption was approximated in the first place when the SORS publishes a ready-to-use data on this indicator in its regular quarterly reports. Private consumption is one of the most important macroeconomic aggregates used by international institutions (IMF, European Commission, World Bank and others) in almost all economic reports on Serbia, taken directly from the SORS. It is bizarre that the Director of SORS (Kovačević) refuses to use this data in his studies, opting instead to approximate it using an incorrect indicator. The overall real growth of private consumption in the 2012-2017 period amounted to a mere 1.3%. This does not even remotely fit in with the LFS data on employment growth of almost 20%, since the consumption of population is largely funded precisely from the income earned by labour.

Finally, we examined how Kovačević et al. (2017) show that the data from the LFS align with the administrative data on employment growth from the Central Registry of Compulsory Social Insurance (CRCSI), again finding numerous mistakes. According to them, the growth of formal employment excluding agriculture (LFS) was almost identical, from 2012 through 2016, to the growth of the comparable registered employment, agriculture excluded (CRCSI). Both employment categories allegedly increased by about 100,000 in the said period. However, there are two major issues with this result:

- First, the analysis itself is quite questionable since SORS introduced CRCSI as the source for data on registered employment in 2015. This means that CRCSI data presented for the period before 2015 are not in fact derived from this administrative source, but are themselves estimates of the SORS.[23] Therefore, the majority of this analysis actually boils down to a comparison of the LFS data to other estimates of the SORS and not with the actual administrative data on employment. Even more interesting is the fact that the LFS itself was used as one of the sources for estimating administrative employment before 2015.

23 There is even a noticeable change in trend in the data series for 2015, after the transfer from estimates to actual administrative data.

Thus, it turns out that in this analysis the LFS is being compared to itself, yielding an overlap of data.

- Second, the analysis [11] also comprises significant errors. Namely, the number of employees excluding agriculture from CRCSI in 2016 erroneously includes over 33,000 farmers employed in agriculture (as sector of economic activity by NACE). Since these employees were not included in the CRCSI data for 2012, the calculated increase in the number of employees in the period from 2012 to 2016 is incorrect. When this mistake is fixed, it can be seen that, according to the CRCSI, the number of employed persons increased by 62,400 and not 96,000, which is 40% less than the comparable data from the LFS present (growth by 103,000 employed persons). Similar trends continue in 2017, in which the number of employees according to the LFS grew by over 30,000 employees more than the CRCSI data show. Therefore, even this analysis (with its numerous shortcomings) would still indicate that the LFS has been systematically overestimating the employment growth, had Kovačević et al. (2017) used the correct data.

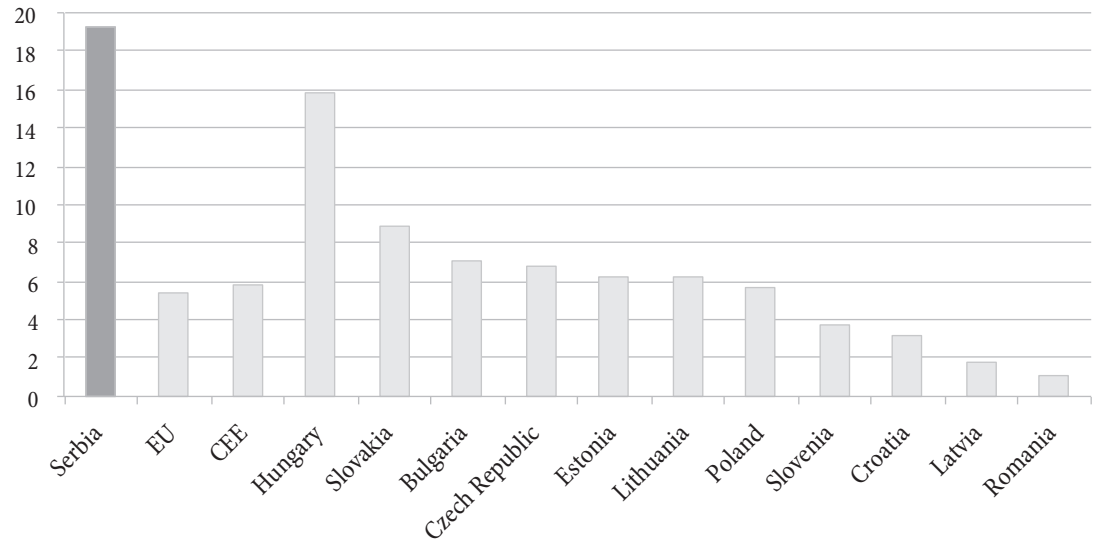
High employment growth with no production growth: A long-lasting illusion

Even though it scored the lowest economic growth in Central and Eastern Europe in the 2012-2017 period, of about 6%, Serbia holds the absolute European record in employment growth as measured in the Labour Force Survey. From 2012 and ending in Q3 2017, the number of employed persons in Serbia increased, according to official data, by about 450 thousand, i.e. by 19.3%. In other CEE countries, employment growth in the same period was on average 5.9%, i.e. 13.4 p.p. lower than in Serbia. Employment growth per CEE countries from 2012 to 2017 is presented in Figure 5.

Employment growth that is drastically faster (according to the LFS data) than the GDP growth in the last five years is a trend observed only in Serbia. In other comparable CEE countries, the evolution of employment and GDP was the opposite, i.e. the average employment growth of 5.9% in the 2012-2017 period was accomplished with a three times higher average GDP growth of 17.1%. Looking at the data for individual countries, no CEE country except Serbia showed employment increase at a faster rate than GDP growth from 2012 to 2017. Thus, for example, in Hungary, where employment growth of 15.8% was also rather high, the highest after Serbia, the GDP growth was even higher, reaching 16.7%. Such results for CEE countries are in line with the theoretical expectations of employment growth being somewhat lower than the GDP growth in the long term, by the increase of labour productivity.

In Table 2, along with the growth of employment and GDP, we have presented an additional indicator by individual countries – employment elasticity to GDP.

Figure 5: Employment growth in Serbia and other CEE countries, 2012-2017



Source: Eurostat and SORS, employment growth in 2017 shows the y-o-y growth in the first three quarters, for which the data is available.

Table 2: Serbia and other CEE countries, employment and GDP growth and employment elasticity, 2012-2017

	Employment growth	GDP growth	Employment elasticity to GDP
Serbia	19.3	6.1	3.2
EU	5.4	8.6	0.6
CEE	5.9	17.1	0.3
Bulgaria	7.0	14.2	0.5
Czech Republic	6.8	14.8	0.5
Estonia	6.3	14.2	0.4
Croatia	3.2	8.0	0.4
Latvia	1.8	14.9	0.1
Lithuania	6.2	16.1	0.4
Hungary	15.8	16.7	0.9
Poland	5.7	17.0	0.3
Romania	1.0	24.5	0.0
Slovenia	3.7	12.5	0.3
Slovakia	8.8	15.7	0.6

Source: Eurostat and SORS, employment growth and GDP growth in 2017 show the y-o-y growth in the first three quarters, for which the data is available.

Employment elasticity represents the percentage change in total employment with a GDP increase of 1%, and it should range from 0 to 1 in the long term, except in some extraordinary circumstances. For instance, employment elasticity of 0.3% (which is the CEE average in the observed period) would mean that for each percent of GDP growth, employment grew by 0.3%. Unlike all other comparable countries, in which employment elasticity in the period from 2012 to 2017 ranged precisely from 0 to 1 (Table 2), in Serbia, this elasticity amounted to 3.2. This means that employment grew over three times faster than GDP, i.e. cumulatively, as much as over 13 p.p. more than the economic growth.

We observed the disparity between the low GDP growth and the official data on high employment increase in Serbia several years ago when we decided to analyse it in more detail. The results of these analyses were reported in two of our papers, [13] and [15]. As a reminder, we demonstrated back then (as we did now, again) that extremely favourable trends in Serbian labour market since 2012 are not in line with the low GDP growth. There we also showed that nothing similar is happening in any other comparable country and that the high employment growth has no connection whatsoever with the trends in other Serbian macroeconomic indicators, which would have to be closely economically correlated with it (private consumption and revenues from social security contributions). Enormous discrepancies between the LFS data and all other related indicators (GDP, SSC, private consumption) indicated that the data from the Survey were probably not correct, i.e. that the LFS was not, for the time being, accurately monitoring the trends in the labour market in Serbia.

All the inconsistencies of the LFS data we pointed out back then still stand. For example, even with employment growth of almost 20% (according to the LFS), private consumption adjusted for inflation increased by a mere 1.3% in the 2012-2017 period. Private consumption in Serbia is largely funded by the income the population earns from their labour, which is why it is difficult to believe that employment growth of about 20% has left practically no trace on the increase in consumer spending. Even more directly and precisely, increase in social security contributions would have to be almost identical to the growth of the wage bill (number of employed persons multiplied by the average salary) for the formally employed persons. However, social security contributions increased by only 3.7% in real terms from 2012 through 2017, which is not even remotely aligned with the growth of formal employment of 13.4% according to the LFS and the drop in average real wages of 1% in the observed period.

From freak hypotheses to data that refute them

Arandarenko et al. (2016) attempted to challenge the findings on the lack of reliability of the LFS. In [3], they presented unlikely hypotheses according to which the sharp employment growth in Serbia could be possible without an increase in GDP. In addition to that, they also presented several methodological remarks that should have challenged the results of the analysis of Petrović et al. (2016a).

However, when the offered hypotheses were tested using the data for Serbia [15], it turned out that neither of them could even remotely explain the unusual high employment growth since 2012. Besides, the methodological objections were irrelevant, as they had no impact on the conclusions on the low reliability of the LFS. We will now briefly test, using the new data and new research, whether

the theoretical explanations of the high employment growth rate with the low GDP growth were confirmed in reality.

The hypothetical explanation offered for the much higher growth of employment than of GDP included an increase in low-quality and part-time jobs [3]. However, for this to be a plausible explanation for the overall employment growth of almost 20% with a GDP growth of 6%, the changes in employment structure would have to be so extreme that they would be difficult to imagine, even in theory. To provide a simple illustration of the magnitude of changes needed, we can think of two stylized examples. First one would mean that there was no technological or any other progress in a five-year period that would lead to overall productivity growth in economy, and that the 450,000 new jobs, which were created since 2012 according to the LFS, had the average working hours of 2 hours per day. Or, the second example, with the same conditions as in the first, in which only 1/3 of the workload of existing jobs were being performed, during an average working day with regular hours, in all jobs created since 2012. These examples are extremely simplified and can be combined in numerous ways, but they show, in essence, that the conditions for a high employment growth rate, three times faster than the growth of GDP, would be quite extreme. Namely, they show that the growth of regular jobs is limited by the low GDP growth rate (i.e. that it would be stagnating or even dropping), that there would be no usual growth in productivity of economy[24] and that almost entire employment growth would rest on very unusual, low-quality, part-time jobs.

However, the data for Serbia indicate that the high employment growth is not even remotely limited to the increase in low-productive or part-time employment. For instance, the number of employees in low-productive informal employment, according to the LFS, increased from 2012 to 2017 by about 180,000, but the number of employees in the productive formal sector increased even more, by about 260,000.[25] In other words, the growth of regular, formal employment did not just fail to lag behind the GDP growth, but it even grew twice as fast as GDP. Also, other most productive categories of employment also grew several times faster than GDP (employees with university degrees, full-time employment, etc.). Therefore, if the answer to the first question of why GDP was growing three times slower than employment was that the informal, low-quality employment showed a strong growth, the natural second question would be: How is, then, standard, formal employment also growing twice as fast as GDP, according to the LFS? It is true that not all jobs are created equal, some have a larger and some a smaller impact on GDP growth. Still, as long as both low and high-productivity employment were growing much faster than GDP, the hypothetical explanation of the disconnection between employment and GDP lying in the increase of low-quality work does not stand up to scrutiny.

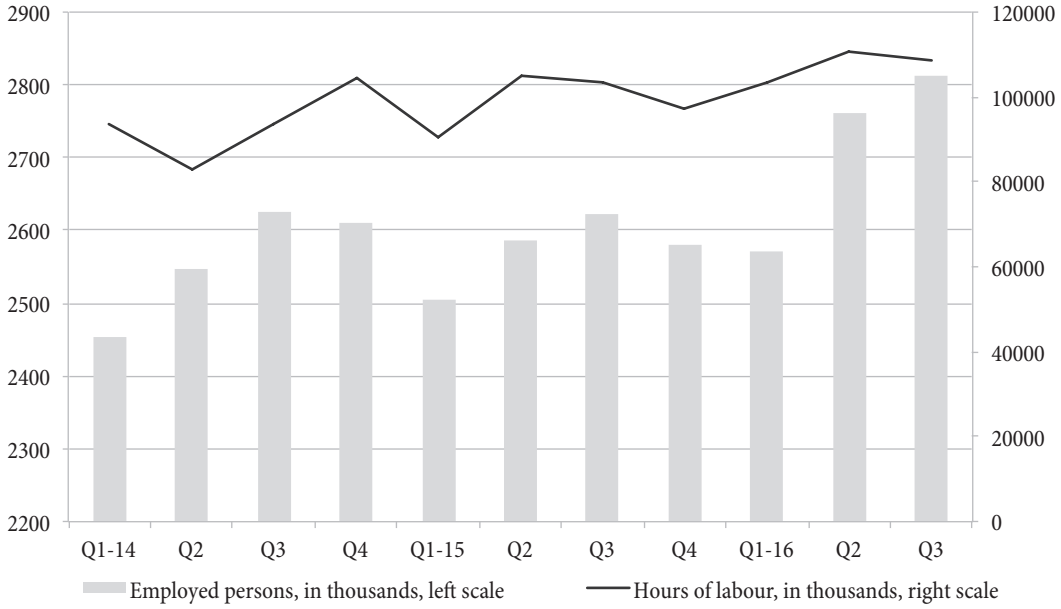
The unrealistic hypotheses which could, in theory, explain high employment growth without GDP growth are refuted from another angle, by the results of the research by Kovačević and Pantelić (2017). Namely, hypothetical employment growth not accompanied by GDP growth is possible in a situation in which the total number of working hours does not increase along with employment growth. To illustrate this, let us imagine the simplest example of one employee, working a full-time working day of 8 hours, being replaced, in the same job, by two employees working half-time (4 hours). In this case, the number of employees would double, but the number of total working hours and GDP would remain unchanged. We rejected this hypothesis as an explanation for employment growth that by far exceeds the GDP growth in Serbia, by pointing out that, according to the LFS, the number of employees in both full-time and part-time categories was growing much faster than GDP. Bearing that in mind, the total number of working hours cannot stagnate, or increase as slowly as GDP.

Kovačević and Pantelić (2017) refuted this hypothesis even more directly, by looking at the actual total number of working hours in Serbia. It is interesting, however, that they did this entirely unintentionally while trying to show that the total quantity of working hours in Serbia did not increase along with the employment growth. Here is what Kovačević and Pantelić [10] say: "...the total number of

24 These conditions are not even aligned with the growth of real wages in the private sector of about 3% in the 2012-2017 period.

25 Going a little further in detail, the number of the formally employed, excluding agriculture, increased by almost 200,000.

Figure 6: "Independent" trends of surveyed employment and working hours, in thousands



Source: [10].

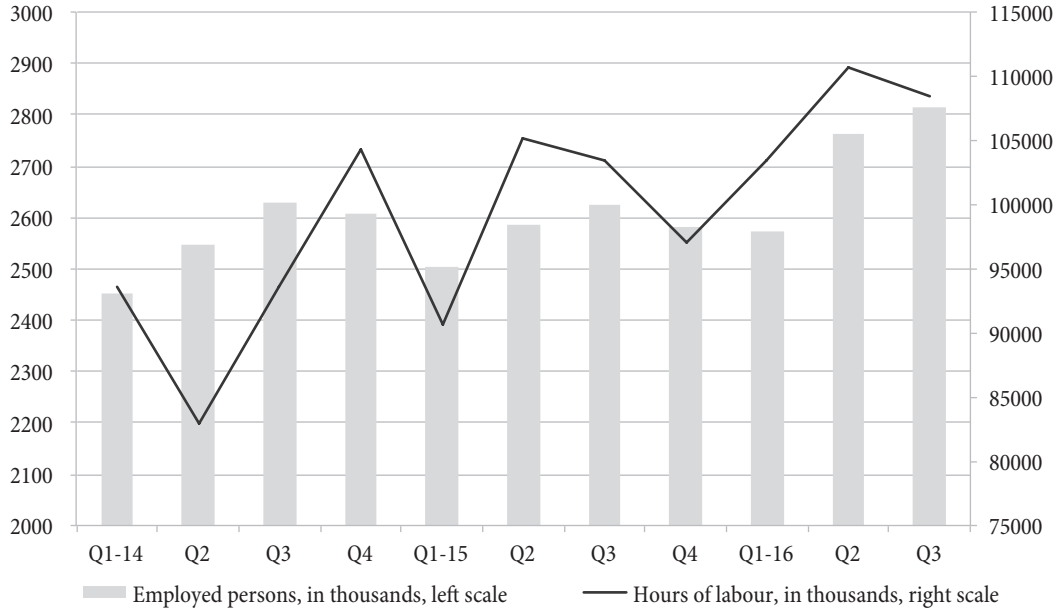
working hours is still changing independently from the employment growth." We are presenting the figure from their work in its original form (Figure 6).

Even though it may seem, at first glance, that the total number of working hours (the plotted line in the Figure) and employment (bars) change independently, we get that impression only because the data for the two indicators are presented in a misleading graph (improperly scaled). The left axis, that shows the number of employees, has been adjusted to a short interval from 2,200 to 2,900, while the right axis, that shows working hours, starts at 0 and ends at 120,000. When the axes are readjusted to a correct, comparable scale (Figure 7), it becomes evident that the same data is showing something entirely opposite – that the total amount of working hours increased to a similar degree as employment. If you still do not believe your own eyes (Figure 7), here is the calculated correlation coefficient of the two indicators that confirms this: 0.7.

It is even more interesting that the total number of working hours in the observed period, according to the LFS, actually grew even somewhat faster than employment, not slower. This is completely contrary to the hypothesis that GDP grew slower than employment because the increase of the total number of working hours was not as fast as employment growth. Employment growth from Q1 2014 to Q3 2016 amounted to about 15% while the total number of working hours increased by about 16%. To exclude any potential seasonal impacts, we compared the data for Q3 2106 with the data for Q3 2014 – and again, the growth of the total number of working hours amounted to 16% (real GDP growth, in the same period, amounted to a mere 5%).

We will now take a brief look at the two methodological objections to our calculations, presented by Arandarenko et al. (2016) which we find important, testing them using the new data. The first objection is that in our previous research we failed to take into consideration that one part of employment growth after 2012 came as a result of the data revision in 2014 by SORS, by which the total number of employees in that year increased by about 120,000. However, even a correction such as that one would still not make a difference in our conclusions. For example, if we consider the revised data from 2014, the number of employees increased by 19.3% in the 2012-2017 period, according to the LFS (to avoid any nonproductive discussions on the subject, this is the data we will use in the present analysis). Without this correction stemming from the SORS's revision, employment growth in the 2012-2017 period would be even higher, reaching about 25%. Of course, employment growth of 19.3%, just like the one of 25%, is utterly disparate from the GDP growth of 6.1%, as well as from other indicators that would have to be strongly related to employment.

Figure 7: Trends of the surveyed employment and the total number of working hours (correct scale), 2012-2014



Source: [10].

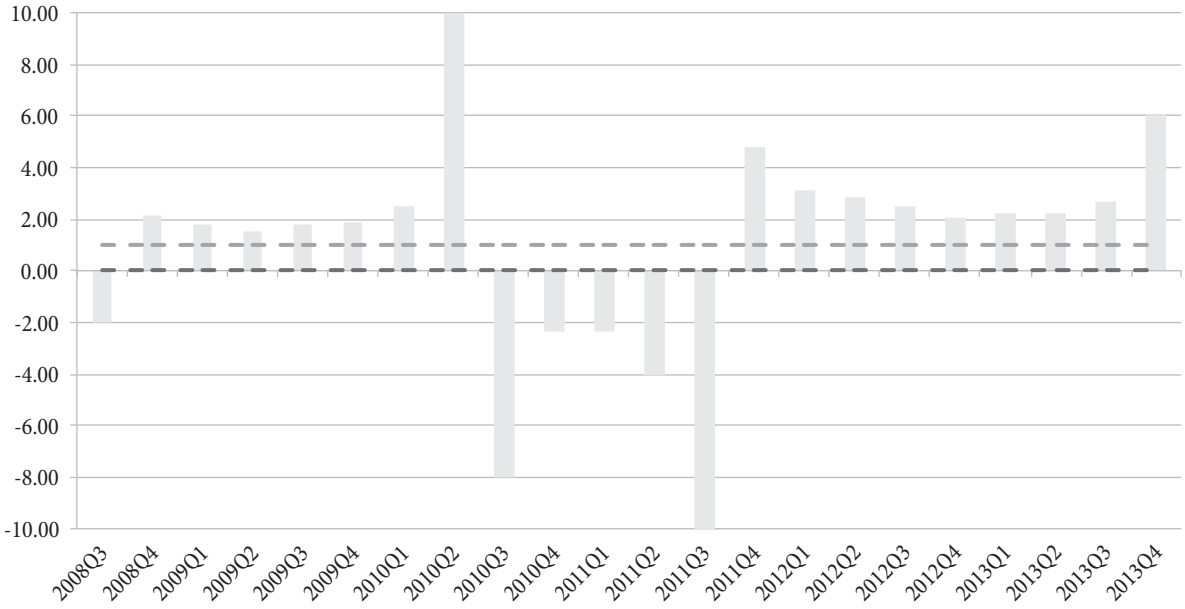
The second seemingly significant methodological objection was that the data on the average wage from the RAD survey could not be used for the calculation of the wage bill for formal employment as a tax base for social security contributions (average salary multiplied by the number of persons formally employed). Namely, the scope of RAD and the scope of formal employment from the LFS do not completely overlap (the overlap is "only" 80%). Thus, we additionally analysed the trends of salaries and employment in those professions in which the RAD survey does not overlap with the formal LFS employment (military, police, formal employment in agriculture, etc.) and came to the unrefutable conclusion that the difference between the trends in SSC collection and the wage bill for formal salaries of over 10 percentage points cannot even remotely be explained by this methodological objection. Finally, the SORS, which will soon change its average wage calculation to be based on the Tax Administration data, has declared that the average wages calculated by using the old method and the new method are very similar.

After the analyses of the freak hypotheses that Arandarenko, Kovačević and others [3],[10] have used in an attempt to justify the high employment growth in the absence of GDP growth, we will now look at the empirical research trying to prove that the LFS data are reliable. In the paper we analysed, Kovačević et al. (2017) attempted to empirically prove the following: 1) that the disconnection between employment and GDP trends also occurs in other European countries, 2) that the employment trend in Serbia is in line with the trends of private consumption and contributions and 3) that the LFS data correlate with the administrative data on employment trends from the Central Registry of Compulsory Social Insurance (CRCSI). However, each of these analyses either contains a severe error, or has been misinterpreted – and in most cases, both. When they are considered objectively, even these analyses also firmly indicate that there is something wrong with the data from the LFS.

How can it be shown that high employment growth is hardly possible without GDP growth: On employment elasticities

Kovačević et al. (2017) attempted to prove that the discrepancy between employment and GDP trends, such as those in Serbia, are possible because, allegedly, there is empirical evidence of the same occurrence in other European countries as well (Section 4: Employment elasticity and "inconceivable" disconnection between employment and GDP) [11]. However, all that the authors have actually managed to prove in this chapter speaks exactly the opposite – that there is no European country

Figure 8: Employment elasticity in Spain, 2008Q3 - 2013Q4



Source: [11, p. 347].

that has seen such a strong employment growth without GDP growth that Serbia has experienced.

Before diving into analysis of this research, it is worth noting that we have already shown, in Table 2, that from 2012 to 2017, Serbia completely diverged from all other comparable CEE countries by its disparate trends of employment and GDP. Namely, all CEE countries, except Serbia, had consistent trends of employment and GDP growth in the same period (with employment elasticities ranging between 0 and 1). However, Kovačević et al. (2017) expanded their data set to other European countries, such as Spain and Luxembourg, for which a valid question arises whether they can even be compared to Serbia. Furthermore, they are looking at a far longer period. Still, even with such a widely-cast net, they still failed to find a single example that would be similar to the Serbian case.

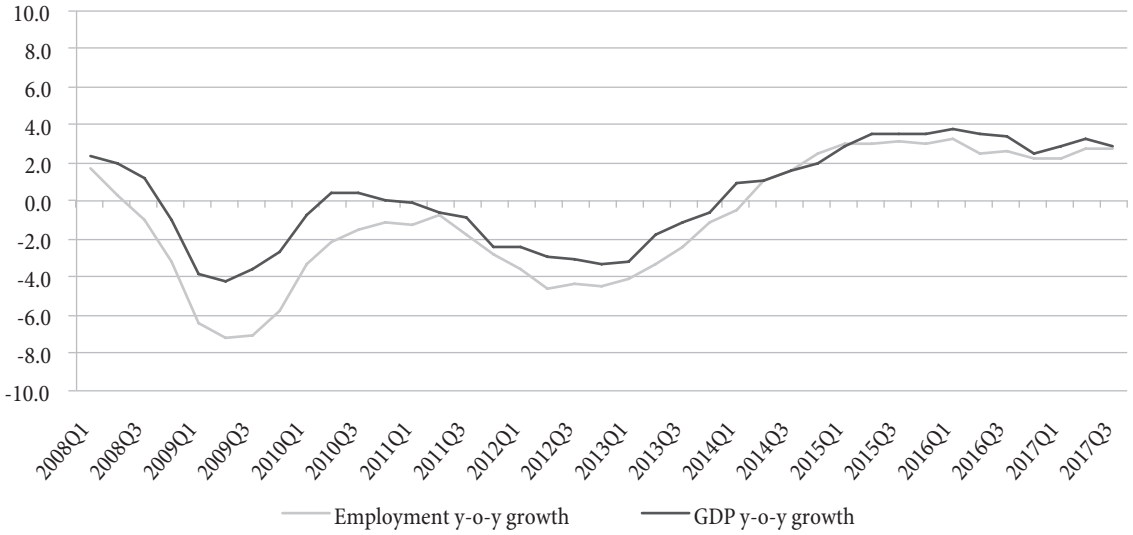
Spain is the first country that is mistakenly claimed to be similar to Serbia, in its discrepancy between employment growth and production growth. Kovačević et al. (2017) noted that in Spain, employment elasticity remained outside of the theoretically expected range of 0 to 1 in all quarters from Q3 2008 to Q4 2013. We are presenting these results in Figure 8 which was originally shown in [11].

It is not common to observe the link between employment and GDP through the data on employment elasticity on an unstable, quarterly level – which is what Kovačević et al. (2017) do. However, this very data set, when considered carefully, irrefutably shows (contrary to their intentions) that the trends of employment and GDP in Spain are extremely well correlated. As we have pointed out, employment elasticity is derived from employment trend and GDP trend. Therefore, instead of elasticity, which is an indirect indicator, let us consider the direct quarterly data on employment growth and GDP growth in Spain (y-o-y), from 2008 to 2017 (Figure 9).[26]

Figure 9 shows that there is an almost perfect correlation between employment growth and GDP growth in Spain. The correlation coefficient between the two indicators is 0.97 and, due to systematically somewhat slower growth of employment compared to GDP, Spain also experienced

26 In their analysis of employment elasticity in Spain [11], Kovačević et al. use seasonally and calendar-adjusted year-on-year quarterly employment and GDP growth, taken from Spanish national accounts developed using ESA 95 methodology, that has not been in use for quite a while now. However, analyses like these do not require seasonal adjustment followed by y-o-y comparison (y-o-y comparison already takes seasonality into account), using data on employment outside of the LFS, especially not if data is obtained using old methodologies. The differences between the regular y-o-y indices from the LFS that we use and this data set are insignificant. However, this example serves as a good illustration of the perpetual propensity of Kovačević et al. to unduly complicate the relatively simple, long-explored relations between employment and GDP.

Figure 9: Spain: employment and GDP growth, y-o-y, 2008-2017



Source: Eurostat, [namq_10_gdp], [lfsq_egan].

the expected increase in labour productivity. In the period especially emphasised by Kovačević et al. (2017), Q3 2008 to Q4 2013, the quarterly employment elasticities really did remain outside of the 0 to 1 range, but this was due to a prolonged recession,[27] while the link between the trends of employment and GDP remained at an impressive level of 0.9 even at that time. Let us now consider Figure 10 and what employment and GDP trends look like in Serbia, according to the LFS.

Let us prevent any of the typical (irrelevant) methodological objections: the year-on-year employment growth in 2014 is calculated, just like in [11], using unrevised data for 2014, while for the year-on-year growth in 2015 the revised data for 2014 were used. Also, we are aware that prior to 2014, the LFS was performed twice a year and not quarterly, as well as that one of the surveys (in 2011) was conducted in November and not in October. But if the researchers who claim that the LFS in Serbia is reliable still see nothing strange in the data for Serbia when comparing Figure 9 and Figure 10, we have lost all hope that any additional explanations may be of any assistance to them.[28] We note that it was Kovačević et al. (2017), not us, who chose Spain as evidence that the disparate employment and GDP trends occurred in other countries too.

After using Spain as an example to convincingly illustrate, contrary to their original intentions, all the logical inconsistencies in the LFS data on employment trends in Serbia, Kovačević et al. (2017) moved on to a systemic analysis of employment elasticity in 33 European countries in two-year periods (Table 3). Out of about 200 possible episodes, five were selected and presented with the idea that they would be comparable to unusual employment and GDP trends in Serbia. Table 3 is here presented in its original form, from [11].

Table 3: Highest employment elasticities in Europe by two-year subperiods

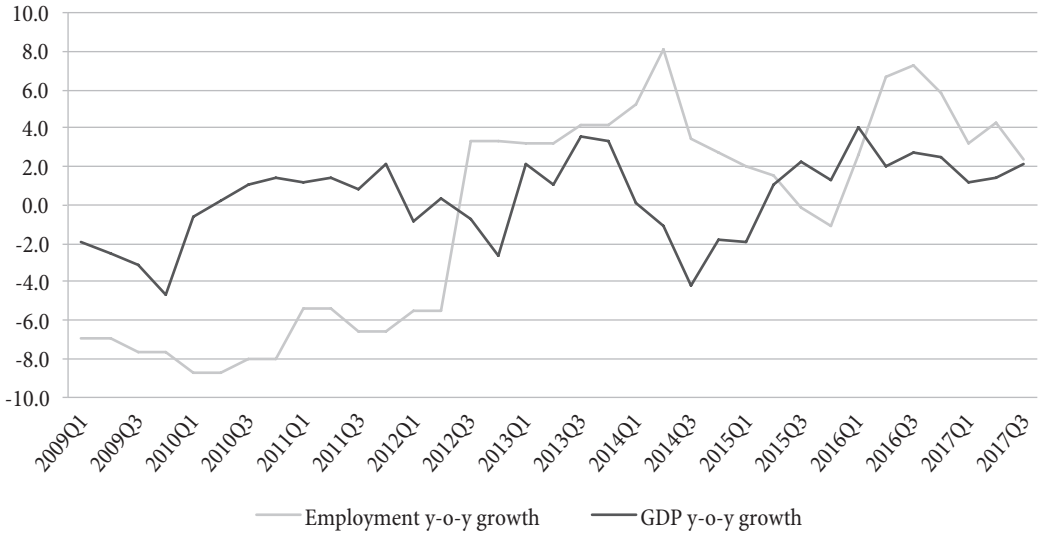
	08-10	09-11	10-12	11-13	12-14	14-16*
EU 28	1.34	-0.35	-0.28	2.1	0.38	0.63
Luxembourg	31.56					
Romania		-29.35				
Hungary			24.61	7.36		
Serbia	6.08	-6.84	-19.99	1.74	12.39	1.76
Cyprus						
Greece						-15.04

Source: [11, p. 348].

27 From Q3 2008 to Q4 2013, Spain showed an average drop in GDP of 1.7% and a drop in employment of 3.3%, which resulted in employment elasticity outside of the theoretical range from 0 to 1 (on average it was 2). However, such trends are normal for periods of prolonged recession. Productivity increased in these five years, as expected (on average 1.6% per year). Due to the increase in productivity, employment increased slower than GDP, which is also expected. Elasticity, therefore, is only "strange" because GDP growth was negative. As soon as Spain came out of recession, employment elasticity automatically returned to the theoretical bracket 0-1 (Figure 9). The correlation between employment and GDP was never lost, as the Serbian example shows.

28 If there is any doubt that the semiannual data for Serbia before 2014 is not completely comparable, it is possible to look solely at the quarterly data from 2014 onwards and compare them to Spain.

Figure 10: Serbia: employment and GDP growth, y-o-y, 2009-2017



Source: SORS.

We looked a little deeper into these, at first glance, extreme episodes of the disconnection between employment and GDP trends. The analysis shows that none of these episodes is even remotely comparable to what is happening in Serbia (according to the LFS data). Before we begin, we would like to express certain extent of reserve as to the analysis of Cyprus, as this country is only mentioned in the table by Kovačević et al. (2017), with no data entered.

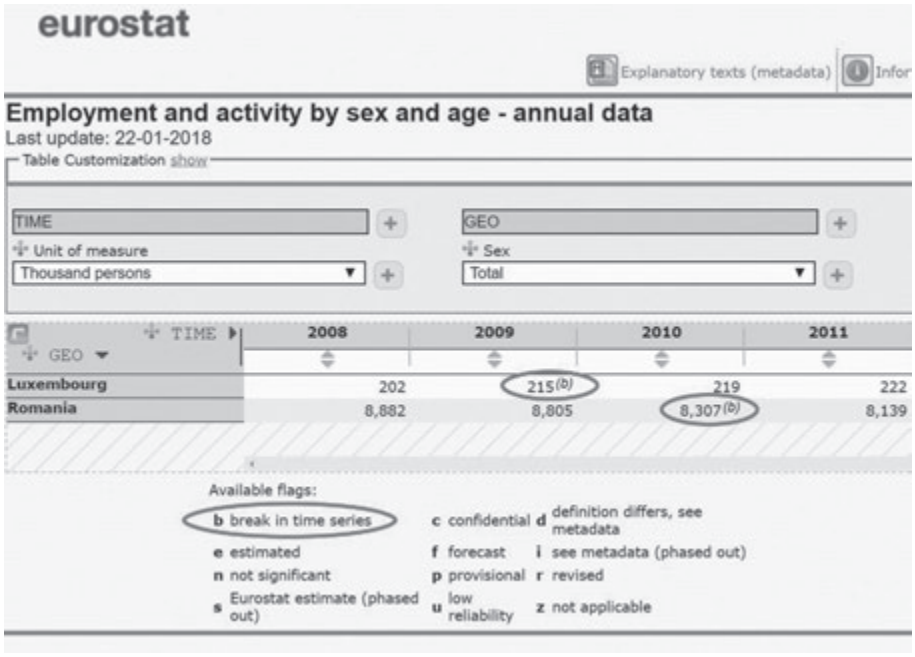
High employment elasticities in Luxembourg and Romania are easy to explain. As soon as data sets for these countries are opened on Eurostat, there is a clear warning that the data series for employment in these countries have a methodological break in 2009 and 2010, respectively – precisely the years in which Kovačević et al. (2017) found their elasticities to be strange. Due to a break in time series, the calculated elasticities for Luxembourg and Romania are worthless. Ironically, Kovačević et al. (2017) are quite persistent in their efforts to find methodological objections to our studies while they use data that is clearly indicated as incomparable (Figure 11). By looking for similarities with the Serbian example, Kovačević et al. (2017) stumbled upon these two countries with breaks in time series for employment, which just confirms how strange the LFS data for Serbia actually is.

This leaves us with two other countries, Hungary and Greece, with three episodes of extreme divergence of employment elasticities from the theoretical range of 0 to 1 (Table 3). For these countries, we divided employment elasticities into employment growth and GDP growth, as was the case earlier with Spain (Figure 9).[29] This allows us to see that, regardless of high elasticities, at no point in time did Greece or Hungary achieve even a half of Serbia's 8.7% employment growth in the 2012-2014 period. High elasticities in Greece and Hungary are a consequence of dividing moderate employment growth with GDP growth that is close to zero, and not of a strong increase in employment with low growth of GDP (as is the case in Serbia). For example, the largest elasticity in Table 3 of about 25 (Hungary 2010-2012) is the consequence of employment growth of just 2.5% with GDP growth under 0.1%. Had Hungarian GDP growth been 0, elasticity would have been infinite.

Additional research showed that there is no disconnection in Hungary and Greece between GDP and employment trends like there is in Serbia. For these two countries, we looked at the statistical connection between the growth of GDP and employment. This additional analysis has shown that in Greece and Hungary, the trends of employment and GDP show an extremely strong systemic link – like the one in Spain and completely unlike the one in Serbia. Correlation coefficients of employment (from the LFS) and GDP in the 2008-2017 period were 0.85 for Greece and 0.7 for Hungary. And the "correlation"

29 We failed to reconstruct the data used in [11] for calculating employment elasticity with complete precision. Hence, in the data source, we shall leave the exact table codes we used, from Eurostat.

Figure 11: Luxembourg and Romania: break in employment time series



Source: Eurostat, [lfsi_emp_a].

Table 4: Hungary, Greece and Serbia: employment and real GDP growth rates (in %)

		08-10	09-11	10-12	11-13	12-14	14-16
Hungary	Employment growth			2.5	3.7		
	GDP growth			0.1	0.4		
Serbia	Employment growth	-12.7	-13.9	-7.0	2.6	8.7	6.3
	GDP growth	-2.5	2.0	0.4	1.5	0.7	3.6
Greece	Employment growth						3.7
	GDP growth						-0.5

Source: Authors' calculations based on the data from Eurostat, [lfsi_emp_a], [nama_10_gdp].

between employment and GDP trends in Serbia is best illustrated by Figure 10.

In addition, we have observed that Kovačević et al. (2017), when claiming that employment growth does not necessarily have to follow GDP growth, fail to differentiate between the long-known phenomenon of GDP growth through an increase in productivity and the absence of employment growth (jobless growth)[30] and the entirely opposite trend allegedly occurring in Serbia. For instance, it is completely normal for GDP to grow by 1% with a drop in employment of 2% even though elasticity, in that case, amounts to -2, outside of the theoretical range 0-1. This, in fact, just implies a very common growth in productivity of 3%, which is why this elasticity would not indicate that there was something off with the data. However, a high growth of employment with a minimal growth of GDP, which has been observed in Serbia since 2012, does not only result in employment elasticity outside of the theoretical range, but also indicates a highly unlikely long-term steep drop in productivity and a complete absence of correlation between GDP and employment trends (Figure 10), which makes it practically impossible.

Where to look for data: On compulsory social security contributions

In this section of the paper, we will analyse the observed disconnection between employment growth and contributions collection, with some reference to the findings of Kovačević et al. (2017). Already in the abstract of [11], there is an

30 Something similar is, for example, happening in Romania at the moment.

erroneous claim that the high employment growth noted by the LFS since 2012 was in line with the increase in compulsory social insurance contributions collection. The text that follows "proves it" in the paragraph we present here without corrections.

"However, we continue monitoring the SSC trends and our findings, based on the available series of data (we still do not have access to 2016 data), suggest the increase in revenues from payroll tax by 1% (RSD 1.078 million) and from contributions for unemployment insurance by 1.4% (RSD 109.9 million) in 2015 compared to 2014. Here, we ignored the impact of amendments to the Labour Law in the middle of 2014 on salaries and salary reduction in the public sector at the end of 2014. Due to a change in the composition of SSC in 2014, we avoided measuring the increase of revenue in 2014/2015 period. As we do not have access to SSC revenue data for 2016, we are leaving it to Petrović et al. to confirm our hypothesis that SSC revenue growth in 2012-2016 period (taking into account the effects of the amendment to the Labour Law, reduction of salaries in public sector and change in the composition of SSC) was even more moderate than registered employment growth in the same period" [11, p. 350].

Thus, Kovačević et al. (2017) have not even attempted to prove that the high employment growth from 2012 according to the LFS was in line with the collected compulsory social security contributions (even though their abstract claims that this is indisputable). Instead, they have left the burden of proving their erroneous hypothesis to us. In this paper, the correct finding has already been presented – the real growth of collected contributions in the 2012-2017 period amounted to mere 3.7%, while the real growth of the wage bill in formal economy (approximate tax base for the collection of contributions) grew by over 10% in the same period (according to the LFS). This, contrary to what Kovačević et al. (2017) may believe, is not even close to representing correlated trends. Hence, for educational purposes, we will demonstrate how this is calculated and which data is used.

First, the data on collected social insurance contributions are published regularly, on a monthly basis, on the website of the Ministry of Finance. Representatives of the Government and the Ministry of Finance often present this data in public and the media report on them regularly. It is incomprehensible why Kovačević et al. (2017) would claim that the data on the collected contributions for 2016 is not available. This is why we will provide a link where this "unavailable" data on the contributions collected, on a monthly and annual level, since 2005, can be found, including not only 2016, but also 2017: http://www.mfin.gov.rs/pages/article.php?id=13526.

In addition, for the analysis of trends of the compulsory social security contributions collected (even for a single year), it is exactly the data on the collected compulsory social security contributions that should be used, and not the payroll tax and contributions for unemployment insurance, as stated in [11]. Compulsory social insurance contributions comprise contributions for (1) pension insurance, (2) health insurance and (3) unemployment insurance. Over 95% of the total amount of contributions are covered by pension and healthcare insurance. It remains unclear why Kovačević et al. (2017) opted to exclude these and only follow the unemployment insurance, which comprises less than 5% of the overall contributions and payroll tax (with payroll tax not being a contribution, at all).

Had Kovačević et al. (2017) correctly followed all collected contributions in total, and not just the unemployment insurance contributions, they would have automatically resolved another "issue" they had: "... Due to a change in the composition of SSC in 2014, we avoided measuring the increase of revenue in 2014/2015 period" [11, p. 350], because, when you look at the total and not individual contribution components, the change in their composition becomes irrelevant.[31]

Further, the data used in the analysis are incorrect. Contributions for unemployment insurance did not grow by 109.9 million dinars in 2015 [11], but by 155 million dinars. Also, even if 109.9 was the correct figure, it would still not represent 1.4% growth, like Kovačević et al. (2017) mistakenly claim. In Serbia, around 20 bn dinars are collected each year for unemployment insurance, so

31 As a side note, a change in the rate of individual contribution component should never present an analytical problem, i.e. an excuse for the lack of analyses. But, the claims of Kovačević et al. (2017) have long since stopped surprising us.

their hypothetical increase by 109.9 million could only represent growth of about 0.5%.

If the mistakes in Kovačević et al. (2017) are corrected and accurate and relevant data are taken from the website of the Ministry of Finance, the real growth of contributions in the 2012-2017 period can very easily be calculated. Of course, in doing so, one should note that in 2013 there was a decrease in the income tax rate from 12% to 10% and an increase in contributions for pension insurance from 22% to 24%. This change led to an increase in the total contributions rate by slightly over 5%, which is why the total growth of contributions in the 2012-2017 period must be corrected by somewhat over 5 p.p. compared to the original data. This procedure leads us to the precise calculation of the real growth of contributions in the 2012-2017 period of 3.7%.

We can now look at the LFS to see what it says about the growth of the contributions base. We will use the data on formal employment growth from the LFS to calculate the contributions base (employees paying contributions), as well as the data on the growth of the average wage from employment statistics (RAD survey).[32] Trivial as it may seem, we obviously have to emphasise that the contributions base is not the number of employees, but the total wage bill (the number of persons formally employed multiplied by the average wage). Hence, the warning of Kovačević et al. (2017), that we should consider the decrease of salaries arising from amendments to the Labour Law and from the cut of salaries in the public sector when calculating the discrepancy between the contributions collected and employment growth from the LFS, is pointless. These changes are automatically encompassed by the changes in average wage.

Thus, according to the LFS data, formal employment growth in the 2012-2017 period amounted to 13.4% and the real wages dropped by 1%. This is why the real wage bill of the formally employed (contributions base) approximately increased by 12.4% in the same period in which the contributions increased by 3.7% in real terms. We can now go into a little more detail. For instance, we can divide the formal employment trend (LFS) into the formal employment trend excluding agriculture (growth of 10.8% in the 2012-2017 period) and formal employment trend in agriculture (growth of over 40%). This allows us to see, directly, that the LFS is indisputably inaccurate in tracking formal employment excluding agriculture (the wage bill growth is inconsistent with the contributions growth), but also that its largest issues lie in monitoring formal employment in agriculture. Namely, while formal employment in agriculture, according to the LFS, has recorded a growth of over 40%, the contributions paid from agriculture have not only failed to show a similar high growth but have been decreasing since 2012 in nominal terms. Also, the number of registered agricultural holdings, published by the Treasury (MoF), does not show an even remotely similar growth as the growth of the formally employed farmers. These are not entirely comparable data sets, but they show quite clearly that there are no indications of such intense change in this employment sector as the LFS would have us believe.

It is also important to note that the administrative data on the contributions growth in the amount of 3.7% (with a real decrease in average wage of 1%) implies a growth of formal employment of 4.7% in the period from 2012 to 2017. This implied growth of formal employment seems a lot more reasonable than the three times higher growth of formal employment indicated by the LFS. Namely, the growth of formal employment of 4.7% would be in line with the GDP growth of about 6%, as it would indicate employment elasticity of approximately 0.75 and the expected productivity growth in Serbia in the last five years.

How to pick the proper indicators: On private consumption and the disparity between the LFS and administrative employment records

In this section, we will consider two additional erroneous analyses of Kovačević et al. (2017): 1) the analysis of increase in private consumption and its alleged correlation with the high employment growth rate, according to the LFS

32 In our previous paper [15], we showed that the methodological objection made by Arandarenko et al. (2016), that the average salary from the RAD survey cannot be used for the calculation of the average wage of the formally employed, was irrelevant. In addition, there are no indications that the measurement of the average wage is unreliable, i.e. that the disconnection between the wage bill and collected contributions is due to unreliable measuring of the average wage (that would imply a real drop in wages in the amount of around 10% that statistics failed to measure, which is highly unlikely).

and 2) analysis of the alleged correlation between the LFS and administrative employment data.

Since listing all oversights for the first topic would take too long (longer than for the contributions), we will select only one mistake, but perhaps the most bizarre one. Namely, Kovačević et al. measure private consumption by retail turnover [11, p. 351]. First, private consumption is not the same as retail turnover. Households spend a significant share of their funds on bills for housing and public utilities, culture, education, recreation, on occasional dinners in restaurants or fast food restaurants, in cafes, on travelling, shopping at markets, and in addition to all this, there is also spending in kind, etc. Secondly, the data on private consumption does not have to be approximated at all. SORS publishes the data on private consumption regularly (quarterly and annually) and it is one of the main statistical pieces of data that the national accounts of Serbia rest on. It is unbelievable that the Director of the SORS (Kovačević) would avoid using the existing data of the SORS to analyse private consumption, opting rather to (incorrectly) approximate it with the retail turnover. The real growth of private consumption from 2012 to 2017 amounted to only 1.3%. This does not even remotely fit in with the LFS data on employment growth of almost 20% since private consumption is largely funded precisely from labour income.

In the following part of the paper, we will consider the analysis of the alleged connection between the LFS data and the administrative employment data from the Central Registry of Compulsory Social Insurance (CRCSI). According to Kovačević et al. (2017), the growth of formal employment excluding agriculture (LFS) was almost identical to the growth of the comparable registered employment, agriculture excluded (CRCSI), in the period from 2012 to 2016 – both employment categories allegedly increased by about 100,000 employees in the observed period. This argument should show that the data from the LFS were consistent with the administrative data and, thus, reliable. However, this analysis is very questionable and comprises certain severe errors.

First of all, SORS introduced CRCSI as the source of administrative data on employment only in 2015. This is why the CRCSI data in the first three years covered by this analysis do not actually originate from this administrative source, but are rather estimated by the SORS. In the data series, there is even an obvious change in trend in 2015, when the data moved from estimates to true administrative data. Since administrative data have only been in use since 2015, one part of the analysis in [11] boils down to comparing data from the LFS with other estimates by the SORS and not with the administrative employment data. An even more interesting fact is that the LFS itself was used as one of the sources for estimating administrative employment before 2015.[33] Thus, it turns out that in this analysis the LFS is being compared to itself, unsurprisingly yielding an overlap of the data.

In addition, the analysis has some substantial errors. Namely, Kovačević et al. (2017) mistakenly include over 33,000 employed farmers[34] in the CRCSI data on the number of employees excluding agriculture in 2016. Since these employees were not included in the CRCSI data for 2012, the calculated increase in the number of employees in the period from 2012 to 2016 is incorrect. When this mistake is corrected, it can be seen that employment growth, according to CRCSI, encompassed 62,400 and not 96,000 employed persons, which represents a 40% slower growth than the comparable data from the LFS (increase by 103,000 employed persons) show. Similar trends continue in 2017, in which the number of employees according to the LFS grew by over 30,000 more than the CRCSI data show. The LFS data even show systematically significantly higher employment growth than the administrative data (even in the period when the administrative data was obtained by estimation). The only exception is 2015 (the year in which the transfer from SORS estimates to exact data took place). Thus, contrary to the intentions of Kovačević et al. (2017), even this analysis, with all its shortcomings, actually shows that the LFS has significantly overestimated the number of employees since 2012, i.e. that it is not reliable.

33 See the SORS table: "Registered employment 2000-2014, revised data", the section on methodological remarks.

34 Farmers employed in agriculture as a sector of economic activity by NACE.

Nullius in verba (take nobody's word for it): On claims and evidence

Kovačević et al. have been confusing the general public and the community of experts for quite some time, with their public appearances and studies comprising poorly performed analyses which fail to meet the minimum scientific criteria. From these analyses, the authors draw pretentious and incorrect conclusions which they then present in public, without hesitation. For instance: "It has been proven, both theoretically and in practice, that there is no correlation between the GDP and the number of employed persons in the short and medium term."[35] We only hope that Kovačević has not reached this conclusion using his example of Spain, where this "non-existent" correlation amounts to 0.97 (Figure 9).

If we set these extreme claims aside, some of the conclusions reached by Kovačević et al. (2017) on the basis of the (unreliable) Labour Force Survey, in their form, do somewhat resemble those that could be grounded in science. For example: "... the precarious nature of growing employment, driven by low labour productivity and low wages which, due to high labour taxes and contributions to social security funds, most often remain in informal sector" [11, p.343], would represent a serious finding – provided it was (empirically) proven. The latter means that they should first show that labour taxes and contributions in Serbia are higher than in comparable countries in which this phenomenon does not occur, then that correlation between the magnitude of contributions and taxes and the size of informal sector is statistically significant and, in addition to that, they should supply econometric evidence of the impact that tax burden on labour has on formal and informal employment. However, Kovačević et al. (2017) make no such attempt whatsoever.

When a hypothesis is not proven by scientific methods, the conclusions presented do not only lack weight, but are usually quickly refuted in time. Ironically, just a few months after Kovačević et al. (2017) had presented the aforementioned conclusion that low salaries and low productivity led to a high growth of precarious (uncertain) jobs in Serbia and that high taxes and contributions led to a strong increase in informal employment, new data were published by the SORS (where Kovačević occupies the position of Director) for 2017, which refute these conclusions. Namely, in the first three quarters of 2017, the LFS shows that secure permanent jobs are now the leading type of jobs in employment growth, while insecure jobs (fixed-term, seasonal or temporary jobs) are showing a slight drop compared to the previous year. However, there are no indications that this change has originated from significant changes in productivity and salaries which would "explain" it. Similarly, even though there has been no decrease in the tax burden on labour in 2017 (the minimal wage was even increased by 7.5%), new data indicate that formal employment is growing faster than informal employment (and, naturally, faster than GDP).

If the purpose of the research conducted by Kovačević et al. (2017) was to come to the truth, further discussion is purposeful only if the authors correct serious fundamental errors that we have pointed out in this paper and draw appropriate conclusions on LFS reliability or demonstrate that such mistakes had not been made. That is the only way to have a scientific discussion, which is something that Kovačević and his co-authors failed to adhere to until now. Namely, we already pointed out that the claim that there is no correlation between employment trends and working hours that in the 2014-2016 period [10] resulted from their severe error, i.e. that this correlation is actually very high. These authors completely ignored this fact in their next paper. Instead of correcting the noted mistake, or explaining it, they published a new article [11] with new erroneous arguments that should support their beliefs. Such avoidance of answers could continue forever, but it does not lead any closer to truth. Thus, if we again encounter silence from Kovačević and his co-authors regarding fundamental errors, mistakes and oversights that we have pointed out in this paper, we see no point in any further discussion with them.

35 Kovačević, statement for the magazine Vreme (no. 1315), March 17, 2016.

References

1. Alesina, A., & Ardagna, S. (2010). Large changes in fiscal policy: Taxes versus spending. *Tax policy and the economy, 24*(1), 35-68.
2. Alesina, A., & Ardagna, S. (2012). The design of fiscal adjustments. *NBER Working Paper Series, Working Paper 18423*.

3. Arandarenko, M., & Aleksić, D. (2016). Not all jobs are created equal: How not to misread the labour force statistics in Serbia. *Ekonomika preduzeća*, *64*(3-4), 211-225.
4. Chudik, A., Mohaddes, K., Pesaran, M. H., & Raissi, M. (2017). Is there a debt-threshold effect on output growth?. *Review of Economics and Statistics, 99*(1), 135-150.
5. Fiskalni savet (2014). Pregled uspešnih fiskalnih konsolidacija u Evropi: Mere, efekti i poruke.
6. Fiskalni savet (2017a). Lokalne javne finansije: Problemi, rizici i preporuke.
7. Fiskalni savet (2017b). Mišljenje na Fiskalnu strategiju za 2018. godinu sa projekcijama za 2019. i 2020. godinu.
8. IMF (2015). Republic of Serbia: 2014 article IV consultation and request for stand-by arrangement – Staff report; press releases; and statement by the executive director for the Republic of Serbia. *IMF Country Report 15/50*.
9. Iván Kataryniuk, Javier Vallés; Fiscal consolidation after the Great Recession: the role of composition, *Oxford Economic Papers*, , gpx032, https://doi.org/10.1093/oep/gpx032
10. Kovačević, M., & Pantelić, V. (2017). Da li još uvek ima prostora za sumnju u pozitivna kretanja na tržištu rada? *MAT 265*.
11. Kovačević, M., Pantelić, V., & Aleksić, D. (2017). Trends and challenges in Serbian labour market: Change in the nature of jobs and labour underutilisation. *Ekonomika preduzeća*, *65*(5-6), 341-354.
12. Mauro, P., & Villafuerte, M. (2013). Past fiscal adjustments: Lessons from failures and successes. *IMF Economic Review, 61*(2), 379-404.
13. Petrović, P., Brčerević, D., & Minić, S. (2016a). Economic recovery, employment and fiscal consolidation: Lessons from 2015 and prospects for 2016 and 2017. *Ekonomika preduzeća*, *64*(1-2), 53-75.
14. Petrović, P., Brčerević, D., & Minić, S. (2017). Fiscal consolidation and growth in Serbia, 2015-2017: Program, accomplishments and drivers. *Ekonomika preduzeća*, *65*(1-2), 43-66.
15. Petrović, P., Brčerević, D., & Minić, S. (2016b). Fish that fly do exist, but are rare: Are the official labour market data misread or unreliable?. *Ekonomika preduzeća*, *64*(5-6), 315-332.

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BUSINESS CYCLES IN SERBIA AND ITS EU NEIGHBOURS

Privredni ciklusi u Srbiji i njenim EU susedima

Abstract

In this paper, we have analysed business cycles in Serbia and its five neighbouring EU Member States (Bulgaria, Romania, Hungary, Croatia and Slovenia) for the Q1Y2000-Q3Y2017 period. This period was long enough to capture two depressions and two prosperity stages. The analysis was based on a RBC stochastic DSGE model because it ignores differences among countries due to particular monetary policies, and works with a small number of mutually compatible time series. Business cycles in Serbia are similar to those of the neighbouring countries; particularly, all economies considered were hit by the Great Recession. They are now out of the depression stage and the period of prosperity is highly likely to continue for the next four years. Some countries, such as Hungary, entered the depression early and the shape of its business cycles had the form of the letter U. The other countries, such as Serbia, had the letter V profile of depression, with different duration and slopes of the letter wings.

Serbia was not hit the hardest by the depression; that was Romania, but it recovered faster than Serbia and is now performing the best in the region. The problem concerning Serbia was that it stayed in the depression for the longest period of time, that its period of prosperity will probably end over the four-year horizon, and the cycle of capital accumulation is still in the stage of depression. Policymakers in Serbia need to do something to improve investment activity. We conducted simulations with conditional forecasts encompassing promotion of FDIs, and concluded that such a policy might bring positive impacts on growth. However, our other simulations clearly indicated that the optimal strategy for promoting growth should focus on improving total factor productivity instead of meddling with investment. That would imply institutional reforms and educational adjustment to match requirements of the new Industrial Revolution 4.0. We are sceptical that the Serbian policymakers will pay due attention to higher education reform and institutional changes as they did for subsidising FDIs.

Keywords: *cross-country business cycles, RBC model, Bayesian estimation, conditional forecast*

Sažetak

Mi smo analizirali privredne cikluse u Srbiji i pet susednih zemalja članica EU (Bugarska, Rumunija, Mađarska, Hrvatska i Slovenija) između Q1Y2000 i Q3Y2017. Ovaj period je bio dovoljno dug da bi obuhvatio dve faze prosperiteta i dve faze recesije. Analiza je bila zasnovana na DSGE modelu realnog poslovnog ciklusa koji ignoriše specifičnosti razlika u monetarnim politikama i zasniva se na malom broju uporedivih makroekonomskih serija. Ciklusi u Srbiji su slični onima u susednim zemljama, jer su sve privrede bile pogođene Velikom recesijom. One su sada izašle iz recesije i biće, verovatno, u fazi prosperiteta naredne 4 godine. Neke zemlje, kao što je Mađarska, rano su ušle u recesiju, dugo su stajale na donjoj obrtnoj tački, a onda su se oporavile brzo i nenadano, što sve liči na profil recesije slično slovu „U". Druge zemlje, poput Srbije, imale su profil recesije sličan slovu „V" sa različitim trajanjem i nagibom ulaska i izlaska iz recesije.

Srbija nije bila najteže pogođena recesijom. To je bila Rumunija, koja se oporavila pre Srbije i sada beleži najbolje poslovne rezultate u regionu. Problem sa Srbijom je bio u tome što je recesija trajala najduže, period oporavka teško da može da traje duže od naredne četiri godine i što se ciklus akumulacije kapitala još uvek nalazi u fazi recesije. To je razlog zbog kog se očekuju poboljšanja u investicionoj politici. Mi smo simulirali efekte fiskalnog podsticanja stranih direktnih investija i ne sporimo njihovo pozitivno dejstvo. Međutim, naše simulacije pokazuju da bi se bolji efekti na rast postigli podizanjem opšte produktivnosti faktora proizvodnje. To bi podrazumevalo reformu visokog obrazovanja i poslovnih institucija da bi se odgovorilo na zahteve nove industrijske revolucije 4.0. Mi smo, međutim, skeptični da će se dati prioritet reformama u obrazovanju i institucijama u odnosu na fiskalne stimulanse.

Ključne reči: *unakrsno poređenje privrednih ciklusa u različitim zemljama, RBC model, Bajesovo zaključivanje, uslovna prognoza*

JEL classification: C11, E32, O47

Introduction

Fiscal consolidation was implemented in Serbia mostly by increasing the tax burden and redistribution of income. Even if those factors were not recognised as drivers of growth in the modern literature on economic growth [2], Serbia recorded positive growth in the past two years. That was due to the synergy effect of the business cycle in Europe, which entered the expansion phase at that time[1]. In order to capture the main characteristics of this cycle, we need to study technology shocks and the capital accumulation process. They are the key components in any Dynamic Stochastic General Equilibrium (DSGE) model, being of the Real Business Circle (RBC) type or New Keynesian origin.

In this paper, we will conduct an empirical research that will not focus on Serbia exclusively. Serbia is not a member of the EU, but is highly integrated into its single market. The reasonable expectation is that cyclical fluctuations in the EU should have a strong impact on the Serbian economy. In order to study such an impact, we will estimate a stochastic RBC model in all EU economies neighbouring to Serbia: Croatia, Hungary, Romania and Bulgaria. We add the economy of Slovenia to this sample due to the history of economic relations, as well as the present connection with the Serbian economy. This constitutes a sample of six economies for each of which we will estimate the same DSGE model, and examine the technological progress and the process of capital accumulation. The time period for investigation is between Q1 of 2000 and Q3 of 2017. This period includes two sub-periods: one of strong growth and one of stagnation, due to the impact of the Great Recession.

The Real Business Cycle theory is one of the most controversial in the modern literature on macroeconomic fluctuations. Its conceptual simplicity and relative success in matching movements between employment, output and investment fluctuations for a given sequence of aggregate productivity shocks attracted large support. On the other hand, the absence of monetary factors and demand shocks has generated strong opposition and much debate on the merits of this theory. Nevertheless, it has become one of the most important applications of the neoclassical growth model under uncertainty and labour supply choices.

We will demonstrate that an RBC framework is useful for the analysis of macroeconomic fluctuations in Serbia and its neighbouring economies. It captures the key feature of such fluctuations, i.e. the movements of Total Factor Productivity (TFP). The estimates of TFP indicate its procyclical nature – that is, it fluctuates considerably and is higher in periods during which output is above trend and investments are high. Under standard assumptions, real wage rate and labour supply should be high, as well. The Cobb-Douglas aggregate production function associates higher employment with higher output, which should create higher savings and investment. Hence, output, investment and employment exhibit persistent fluctuations. This is the empirical evidence for all economies considered, as Table 1 suggests, with a slight aberration for Serbia in the sub-period between 2000 and 2007 due to a negative impact of transition on employment.

The paper is organised in the following way. We present a solution and estimation of a canonical RBC

1 A cycle is in the expansion stage if output or other macroeconomic variables are above the long-run equilibrium, and in the depression stage when they are below the long-run equilibrium. The long-run equilibrium in a DSGE framework is alternatively called the steady state. Large positive deviations from the steady state are called peaks, while the relatively large negative deviations are known as troughs.

Table 1: Coefficients of correlation

Economies	Period	Correlation	Economies	Period	Correlation
	Correlation between output and employment				
Serbia	2000:1-2007:4	-0.81	Serbia	2008:1-2017:3	0.80
Slovenia	2000:1-2017:3	0.85	Croatia	2000:1-2017:3	0.79
Bulgaria	2000:1-2017:3	0.77	Romania	2000:1-2017:3	0.80
Hungary	2000:1-2008:1	0.63	Hungary	2008:2-2017:3	0.71
	Correlation between output and investment				
Serbia	2000:1-2017:3	0.72	Slovenia	2000:1-2017:3	0.95
Croatia	2000:1-2017:3	0.93	Bulgaria	2000:1-2017:3	0.91
Romania	2000:1-2017:3	0.94	Hungary	2000:1-2017:3	0.75

model in the first part. The output cycles of the analysed economies are discussed in the second part. The third part is dedicated to TFP and capital accumulation cycles. The fourth part is reserved for Serbia and its conditional forecasts based on TFP improvements and investment promotion. Finally, we offer a brief conclusion.

Model representation and estimation

The Real Business Cycle literature began with Kydland and Prescott [5], but gained widespread attention only after Hansen presented his model with indivisible labour [4]. In a simple one-sector stochastic growth model with shocks affecting technology, it is assumed that individuals can either work for a given positive number of hours or not work at all. Fluctuations in the number of employed people reveal fluctuations in the number of hours worked. Those fluctuations are caused by real (in contrast to monetary) shocks in a market environment with flexible prices. It is assumed that households are similar to each other, so there is only one representative household in the model. The budget constraint of the representative household for each period balances the real income, i.e. the sum of capital income, labour income and real profits, with the sum of real consumption and investment. The problem faced by the representative household consists of selecting the paths of consumption, employment rate and capital stock for each period so as to maximise an expected inter-temporal utility function subject to the budget constraints. The law of motion of the physical capital stock for each period is equal to the capital stock of the previous period that has not depreciated, plus the investment in physical capital in that period. Firms are also assumed to be similar to each other and are represented by a single representative firm. A representative firm maximises the real profits function subject to the Cobb-Douglas production function. It chooses the amount of capital and labour that maximises the expected profit. TFP follows a (strictly) stationary autoregressive stochastic process driven by technology shocks.

In addition to the technology shock, we introduced one more shock to our model. This additional shock indicates higher maintenance costs associated with a more intensive use of capital, and it captures all uncertainties related to investment decisions. We also eliminated the impact of growth rates on cyclical fluctuations by detrending all variables. Despite that, the model remains simple and standard. It is explained in detail in many textbooks such as Dejong and Dave [3], McCandless [8], Wickens [10] and Torres [9]. We used the Bayesian technique to estimate the model's parameters and provide results that proved the elegance and usefulness of the model.

The model specification is summarised in Table 2 with equations (1)-(6). The non-linear system of equations describes the dynamic evolution of the model's variables: output y_t, consumption c_t, capital accumulation k_t, investment i_t, employment h_t and TFP a_t. The steady-state equations (7)-(12) are derived from the non-linear

Table 2: Model specification

Stochastic non - linear equations		Steady - state equations	
(1)	$k_t = \frac{1}{1-\delta}(k_{t+1} - i_t(1+\varepsilon_t^i)$	(7)	$k = \alpha^{\frac{1}{1-\theta}}\left(\frac{\beta\theta}{1-\beta(1-\delta)}\right)^{\frac{1}{1-\theta}} \frac{(1-\theta)(1-\beta(1-\delta))}{\rho(1-\beta(1-\delta)-\theta\beta\delta)}$
(2)	$y_t = a_t k_t^{\theta} h_t^{1-\theta}$	(8)	$y = \alpha^{\frac{1}{1-\theta}}\left(\frac{\beta\theta}{1-\beta(1-\delta)}\right)^{\frac{\theta}{1-\theta}} \frac{(1-\theta)(1-\beta(1-\delta))}{\rho(1-\beta(1-\delta)-\theta\beta\delta)}$
(3)	$lna_t = \rho \cdot lna_{t-1} + \varepsilon_t^a$	(9)	$a = 1$
(4)	$i_t = \frac{y_t - c_t}{1+\varepsilon_t^i}$	(10)	$i = \alpha^{\frac{1}{1-\theta}} \frac{(1-\theta)\theta\beta\delta}{\rho(1-\beta(1-\delta)-\theta\beta\delta)}\left(\frac{\beta\theta}{1-\beta(1-\delta)}\right)^{\frac{\theta}{1-\theta}}$
(5)	$h_t = \frac{1}{\gamma}\frac{(1-\theta)y_t}{c_t}$	(11)	$h = \frac{(1-\theta)(1-\beta(1-\delta)}{\rho(1-\beta(1-\delta)-\theta\beta\delta)}$
(6)	$c_t = \frac{1}{\beta E_t\left\{\frac{1}{c_{t+1}}\left(1-\delta+\theta\frac{y_{t+1}}{k_{t+1}}\right)\right\}}$	(12)	$c = \alpha^{\frac{1}{1-\theta}} \frac{1-\theta}{\rho}\left(\frac{\beta\theta}{1-\beta(1-\delta)}\right)^{\frac{\theta}{1-\theta}}$

equations under the assumption that shocks disappear in the long-run equilibrium. They provide solutions for the steady-state levels of the model variables *k*, *y, i, h, c* and *a* in terms of the model parameters α, β, γ, δ, θ, and ρ. The model parameters will be estimated by using the Bayesian estimation procedure.

DSGE models usually do not have closed-form analytical solutions, and the underlying non-linear system of difference equations needs to be solved numerically. Following Adjemian et al. [1], a DSGE model of rational expectations can be expressed in a general form by a set of first order and equilibrium conditions:

$$\begin{gathered} E_t\{f(y_{t+1}, y_t, y_{t-1}, \varepsilon_t)\} = 0 \\ E(\varepsilon_t) = 0 \\ E(\varepsilon_t \cdot \varepsilon_t') = \Sigma_\varepsilon \end{gathered} \tag{13}$$

where E_t is the expectation operator, f are structural equations, y_t is a vector of endogenous variables, and ε_t is a vector of stochastic shocks. The system of equations (13) comprises linear and non-linear first-order difference equations, with leads and lags, which have no explicit algebraic solution. The solution needs to be computed numerically in the form of policy functions that 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 state variables alone in the previous period and current shocks:

$$y_t = g(y_{t-1}, \varepsilon_t) \tag{14}$$

The policy functions g are computed by linearising the system (13) around the steady state (y_{ss}) using the first-order Taylor expansion and the certainty equivalence principle:

$$y_t = y_{ss} + g_y \cdot (y_{t-1} - y_{ss}) + g_u \cdot \varepsilon_t \tag{15}$$

Labus and Labus [6] demonstrated that endogenous variables in equations (15) can be split into state s_t and control variables q_t, $y_t = s_t + q_t$, and transformed into deviations from the steady states $\hat{s}_t = s_t - s_{ss}$, $\hat{q}_t = q_t - q_{ss}$, and $\hat{y}_t = \hat{s}_t + \hat{q}_t$. Then, evolution of the system (15) can be rearranged as follows:

$$\begin{bmatrix} \hat{s}_t \\ \hat{q}_t \\ \hat{\varepsilon}_t \end{bmatrix} = \begin{bmatrix} g_s^s & 0 & g_s^\varepsilon \\ g_q^s & 0 & g_q^\varepsilon \\ 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} \hat{s}_{t-1} \\ \hat{q}_{t-1} \\ \hat{\varepsilon}_t \end{bmatrix} \tag{16}$$

The submatrix g_s^s denotes responses of $\hat{s}_t$ to movements in $\hat{s}_{t-1}$, while the submatrix g_s^ε denotes responses of $\hat{s}_t$ to movements in the exogenous shock terms $\hat{\varepsilon}_t$. Submatrices g_q^s and g_q^ε capture responses of the control variables to the movement of state variables and exogenous shocks, respectively. From equations (16) it is obvious that only the state variables and the exogenous shocks drive the dynamics of the model.

We shall now proceed with the estimation for the parameters of the model. To do this, we first need to select data. Quarterly data from Q1 year 2000 to Q3 year 2017 are obtained from the national statistical offices[2]. Following Hansen [4], these data must be suitable to be transformed before they are used as observables for the estimation. The only difference with respect to the Hansen model is that the present model neither has a government, nor does it assume an open economy. Therefore, we needed to correct the GDP series (Y) for the effects of government expenditure (G) and net exports (X - M). The obtained series was the GDP used domestically, and it is expressed by y = Y - G - X + M. It can be called GDP in a Closed Economy (GDPCE). The coefficient of correlation between GDP and GDPCE is 0.9638 in Serbia. Also, their cyclical components are highly correlated. As an example, graphs of both the GDP series for Serbia and their cyclical variations are provided in Figure A1 in the Annex. A similar situation is observed in all other analysed economies. All variables are further transformed into logarithms. Then, series are seasonally adjusted by using the X13 procedure. The model's variables should also be stationary, and for that reason a detrending process was deployed. We used the Hodrick-Prescott filter with a high value for the smoothing parameter (10,000) in order to detrend the observable variables.

2 Statistical Office of the Republic of Serbia, http://webrzs.stat.gov.rs/WebSite/public/PublicationView.aspx? pKey=41&pLevel=1&pubType=2&pubKey=4464, Webrzs.stat.gov.rs/WebSite/userFiles/file/Zaposlenost i zarade/ZP20/Registrovana zaposlenost 2000-2014, revidirani podaci.xlsx, http://www.nbs.rs/internet/english/80/index.html , Croatian Bureau of Statistics, Republic of Croatia, https://www.dzs.hr/Hrv_Eng/publication/2014/12-01-01_02_2014.htm, Romania's National Institute of Statistics, http://statistici.insse.ro/shop/index.jsp?page=tempo2&lang=en&context=35, Republic of Slovenia, Statistical Office, http://pxweb.stat.si/pxweb/Dialog/viewplus.asp?ma=H244E&ti=&path=../Database/Hitre_Repozitorij/ &lang=1, Republic of Bulgaria, National Statistical Institute, http://www.nsi.bg/en/content/5509/gdp-final-expenditure-%E2%80%93-total-economy, Hungarian Central Statistical Office, https://www.ksh.hu/docs/ eng/xstadat/xstadat_infra/e_qpf003a.html.

Next, let μ denote the vector containing the model's parameters

$$\mu = [\beta, \delta, \theta, \gamma, \rho, \Sigma_a, \Sigma_i]'$$

where $0 < \beta < 1$ denotes the discount rate, $0 < \delta < 1$ denotes the depreciation rate of physical capital, $0 < \theta < 1$ denotes the exponent of the Cobb-Douglas production function, $\gamma > 0$ denotes a positive utility parameter of the household's utility function, $0 < \rho < 1$ denotes the auto-correlation coefficient of the strictly stationary AR(1) process that the total factor productivity is assumed to follow, $\Sigma_a > 0$ denotes the standard deviation of the independent and identically distributed stochastic error of the strictly stationary AR(1) process of the total factor productivity, while $\Sigma_i > 0$ denotes the similar value for investment shocks.

Finally, we specify priors in the following way:

$$\mu = [0.990, 0.010, 0.340, 0.780, 0.950, 0.040, 0.05]'$$

We have chosen the beta distribution density for parameters β, δ, θ and ρ, whereas the gamma distribution density was selected for parameter γ, and the inverted gamma distribution densities were selected for parameters Σ_a and Σ_i. We relied on the empirical literature for specifying the means and standard errors, being aware that the concerned economies might differ from the examples or each other. In order to capture their diversities, we allowed a rather large margin of standard errors.

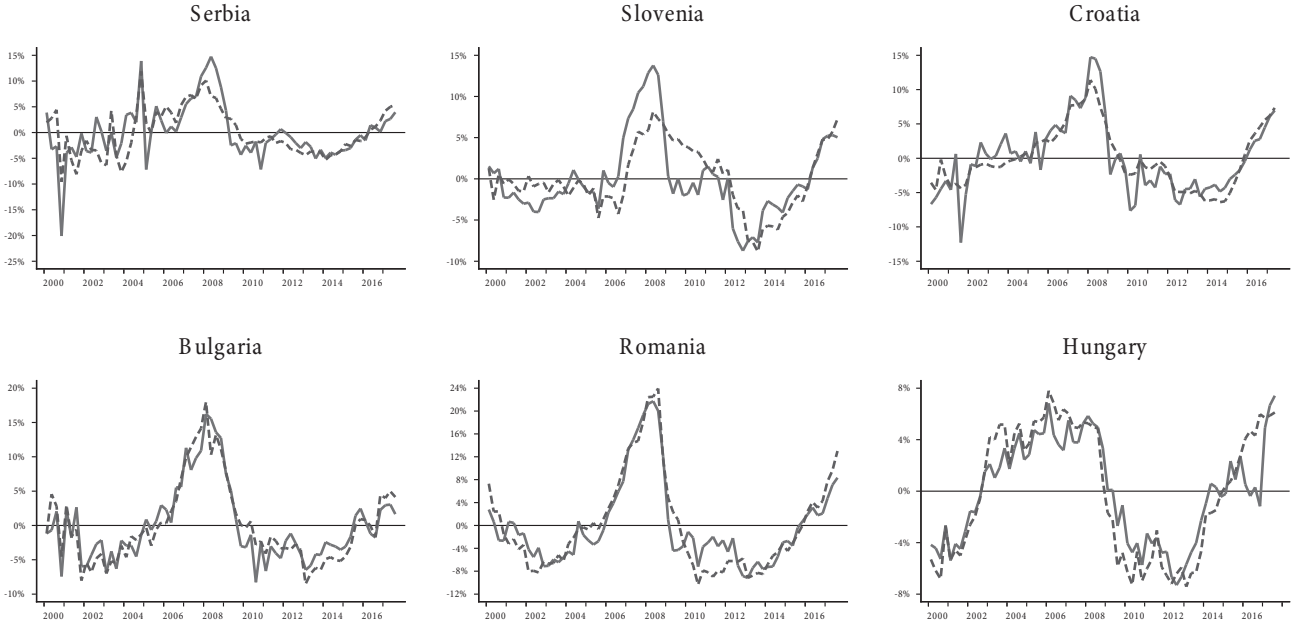
The model's parameters were estimated by using the Bayesian technique and the Random Walk Metropolis-Hastings sampling algorithm with 10,000 random draws. All econometric analyses are performed in Dynare, which is a collection of procedures written in MATLAB for solving rational expectation models.

The posterior values of the parameters for the Serbian economy and all other economies are reported in Table 1A of the Annex. The solution of the model reveals that out of six endogenous variables, there are only two state variables: TFP a_t and capital k_t. Other variables are control, as well as empirical variables: domestic output y_t, consumption c_t, investment i_t and employment h_t. There are two additional shocks: technology shock ε^a_t which drives TFP, and investment shock ε^i_t which drives capital accumulation. In the case of Serbia, the solution to equation (16) has the following numerical representation:

$$(17)\quad \begin{bmatrix} \hat{a}_t \\ \hat{k}_t \\ \hat{c}_t \\ \hat{h}_t \\ \hat{y}_t \\ \hat{i}_t \\ \varepsilon^a_t \\ \varepsilon^i_t \end{bmatrix} = \begin{bmatrix} 0.9991 & 0 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0.1325 & 0.9148 & 0 & 0 & 0 & 0 & 0.1326 & -0.0378 \\ 0.7891 & 0.4815 & 0 & 0 & 0 & 0 & 0.7898 & -0.0199 \\ 0.6043 & -0.3857 & 0 & 0 & 0 & 0 & 0.6048 & 0.0573 \\ 1.3934 & 0.0957 & 0 & 0 & 0 & 0 & 1.3947 & 0.0374 \\ 2.8789 & -0.8525 & 0 & 0 & 0 & 0 & 2.8815 & 0.1782 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} \hat{a}_{t-1} \\ \hat{k}_{t-1} \\ \hat{c}_{t-1} \\ \hat{h}_{t-1} \\ \hat{y}_{t-1} \\ \hat{i}_{t-1} \\ \varepsilon^a_t \\ \varepsilon^i_t \end{bmatrix}$$

TFP and capital are two state variables, which do not have corresponding empirical values. They are computed by the model, but nevertheless they provide a solution for

Figure 1: Original output (blue solid line) and the replicated output (red dotted line)



all empirical variables in the model. This is one of the striking characteristics of our model. Numerical solutions for economies other than Serbia are reported in Table 2A of the Annex.

Original and the model's replicated output are presented in Figure 1. The solid (blue) line shows the original data of the business cycle, while the dotted (red) line shows data replicated by the model. The scale in each graph is different because the local minimum and maximum points do not coincide across the time series. The goodness of fit of the model, i.e. the differences between values predicted by the model and the values actually observed, is measured by RMSE (Root Mean Square Error). The countries' figures are reported in Table 3. RMSE is the smallest for the Hungarian economy, while the Serbian and Slovenian economies have the highest RMSE. RMSE is a scale-dependent measure, but the output cycle means in the all economies are close to zero, and the scale bias is negligible[3].

Output cycles

Figure 2 depicts real business cycles for all the analysed economies, as reported by the model, marks the time of depression with a shadow, and forecasts the output paths for the next four years. The Great Recession hit all of the regional economies, but with different durations and severity, as shown in Table 4. Serbia was not as badly hit by the depression as some other economies. The maximum decline from the steady state at the point of trough was only -5.3%. The problem originated, however, on the other side. Serbia stayed in the depression for too long, at 26 quarters. No other economy was stuck in the depression for so long. Additionally, the period of prosperity before depression was short, following another episode of serious depression. This previous depression was a consequence of international sanctions, isolation and inappropriate macroeconomic policy during the time of the authoritarian regime. Other economies in the region were in a similar depression stage at that time, but the severity in Serbia's depression cannot be compared to their experience. Finally, recovery in Serbia was modest. The level of activity in the post-depression period was only 3.1% over the steady state. The maximum absolute difference between the peak and the trough points in the cycle was 15%.

Hungary entered the Great Recession in the first quarter of 2009, before others, and stayed in it for the next 24 quarters. The maximum absolute difference between the peak and the trough points in its cycle was also 15%. This means that cycle amplitudes were similar for two countries, but the shape of cyclical adjustment was different. Serbia was slowly moving towards the lowest point of activity and, afterwards, slowly recovering. Hungary, on the other side, quickly fell into depression, fluctuated around the bottom of the cycle for some time, and then suddenly and rapidly recovered.

On the other hand, Romania fell into depression rapidly and recovered slowly. Bulgaria recorded a similar pattern of depression as Serbia. Activity in Croatia was slowly declining, but quickly recovered. The Slovenian economy declined rapidly, but also came out of the depression rapidly. The depression period was the shortest for this economy, i.e. 16 quarters only.

Let us now consider the period of business fluctuations since the depression ended. All economies experienced more vibrant activity than Serbia. The last column in Table 4 shows the average level of activity compared to the steady state. So far, Romania has performed the best among the group of countries. It is interesting to notice that this economy suffered the most from the depression: its trough point was at 10.3% below the steady state and the absolute distance between the maximum and the minimum

3 There are complaints in the Serbian economic literature that the time series on employment is not correctly compiled after a recent revision of the methodology. If we apply the Bayesian estimation of parameters without the employment series, log data density is 254.540. However, if we do the same estimation including the employment series, log data density is 288.760, which is clearly higher than in the previous case. Since the Bayesian estimation maximises log data density, the better performed model has a higher value of log data density. Therefore, we stick to the officially released series on employment.

Table 3: RMSE between actual outputs and the model's replicates

Variables	Countries					
	Serbia	Slovenia	Croatia	Bulgaria	Romania	Hungary
Output	0.0353	0.0314	0.0236	0.0206	0.0282	0.0195

points in the cycle was very large (34%). Nevertheless, its economy has recovered and it is currently performing the best in the region.

We can visually inspect from Figure 2 the two stages of prosperity and two stages of depression in the business cycle since the beginning of 2000. Our model was quite successful in reproducing this cyclical behaviour. As the literature predicts and Table 5 shows, variability of the activity was higher during the prosperity stage than during the depression stage. The only exception refers to the Hungarian economy. Its depression profile had a U shape, while depression in other cases had a V shape.

The model also generated a forecast for GDP over the next four years. Serbia's stage of prosperity will continue for a while and return to the steady state at the end of the four-year horizon. Bulgaria will have a similar shape, but will stay above the steady state all of the time. It seems that Slovenia will soon reach the peak of its business cycle and slow down steeply in the midterm. Croatia, Hungary and Romania will stay above the steady state with a non-linear downturn trend. Broadly speaking, the considered economies will not return to a depression in the midterm, but their activities will slowly lose momentum.

Total factor productivity and capital accumulation

In equations (2) and (3), a_t represents the state of neutral technology that is called the Total Factor Productivity (TFP). It is unobservable, but can be estimated in the

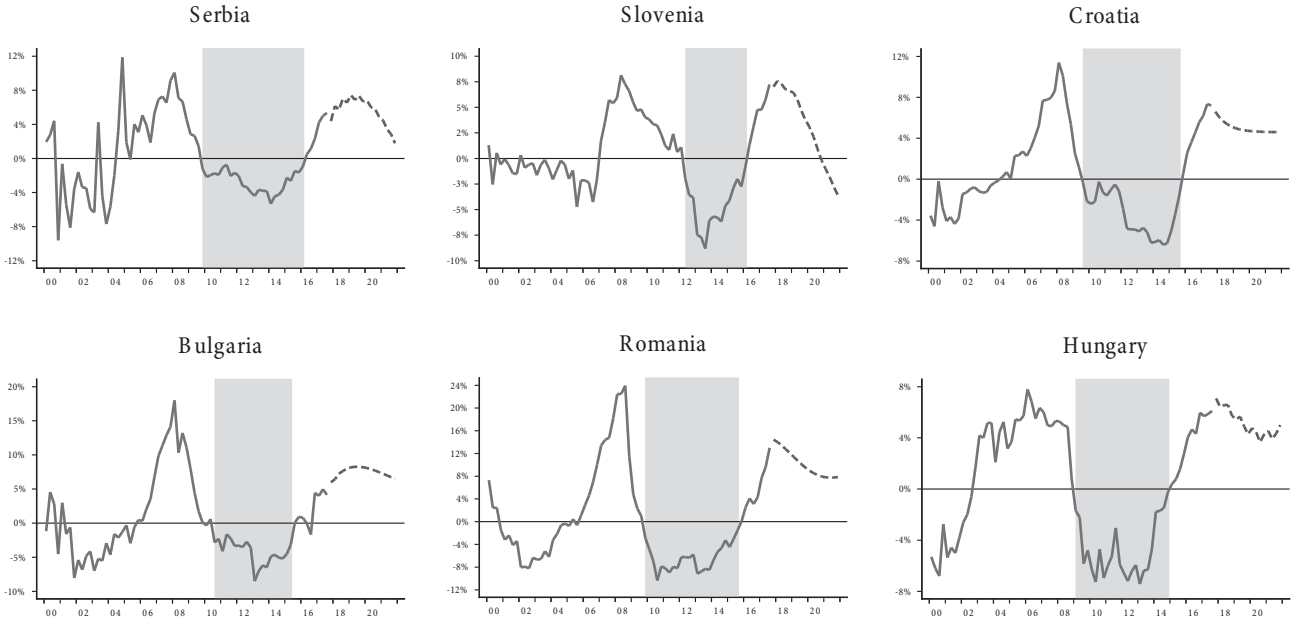
Table 4: Timing and severity of the business cycles

Countries	Depression period	Quarters	Trough	Decline	Absolute difference	Recovery above steady state
Serbia	2009:4 – 2016:1	26	2014:1	-5.3%	15%	3.1%
Slovenia	2012:2 – 2016:1	16	2013:3	-8.8%	17%	4.5%
Croatia	2009:3 – 2015:3	25	2014:3	-6.1%	18%	4.3%
Bulgaria	2010:1 – 2015:2	22	2013:1	-8.5%	26%	4.4%
Romania	2009:4 – 2015:3	24	2010:3	-10.3%	34%	5.5%
Hungary	2009:1 – 2014:4	24	2013:1	-7.4%	15%	3.8%

Table 5: Coefficients of variation of GDP across cycles

Country	Prosperity	Depression	Country	Prosperity	Depression
Serbia	148%	-120%	Bulgaria	188%	-111%
Slovenia	150%	-140%	Romania	184%	-104%
Croatia	170%	-122%	Hungary	114%	-121%

Figure 2: Model's updated output (blue solid line) and its forecasts (red dotted line)



model as a variable of the production function. It can be interpreted as a broad concept of technology reflecting aggregate productivity of the economy in the use of labour and physical capital. It is modelled in the equation (3) as an autoregressive stochastic process. In reality, it would be determined by technological knowledge, organisational structure, human capital, and institutional factors. It is subject to an exogenous autoregressive technology shock ε_t^a. Dynamics of the total factor productivity is reported in Figure 3 on the left-hand side for all the economies in the group. Data for Serbia are displayed as bars, while for other economies they are displayed as different types of lines.

According to the literature, estimates of TFP should reveal a procyclical nature. TFP is expected to fluctuate more in periods during which output is above trend and employment is high, than in the opposite periods of depression. Those expectations are broadly supported by figures stimulated by the model, for which the statistics are reported in Table 6.

Fluctuations of TFP were almost equal in the periods of prosperity and depression in Slovenia. The situation in Hungary was surprising, where fluctuations were clearly higher during depression than in the prosperity stage (-126% vs. 114%). However, in all of the remaining four economies, TFP was more volatile in the prosperity than in the depression stage, which was broadly expected by the literature.

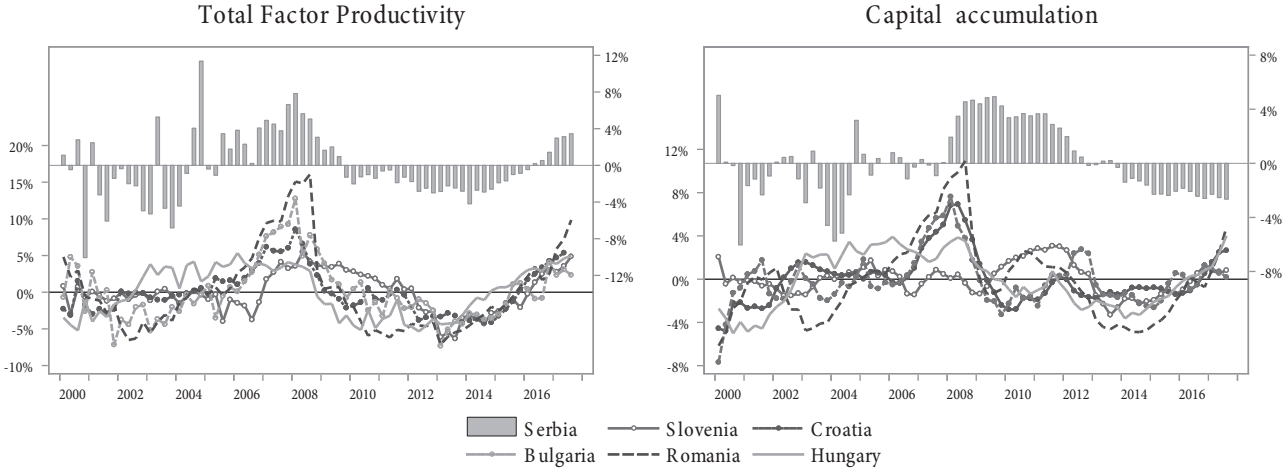
Fluctuations are measured by coefficients of variation. The other moment is the average of TFP over the period under consideration. Overall, the average TFP was negative in Serbia and (almost negative in) Slovenia. This should be a concern for the Serbian policymakers. The good thing is that it was above the steady state in the last six quarters. On the other hand, the average TFP had a clear positive value in other neighbouring economies, and an upward trend above the steady state in the past eight quarters.

TFP was a fairly uniform process across the region. Coefficients of correlation between TFP in Serbia and in

Table 6: Fluctuations around the steady state

	Serbia	Slovenia	Croatia	Bulgaria	Romania	Hungary
			Total Factor Productivity			
Mean overall	-0.06%	-0.01%	0.06%	0.07%	0.10%	0.06%
Peak	1.41%	1.07%	1.19%	1.55%	2.19%	1.56%
Coefficient of variation	162%	147%	174%	179%	186%	114%
Trough	-1.47%	-1.08%	-1.13%	-1.49%	-2.09%	-1.49%
Coefficient of variation	-133%	-144%	-125%	-124%	-112%	-126%
			Capital accumulation			
Mean overall	0.08%	0.01%	-0.05%	-0.09%	-0.13%	-0.08%
Peak	1.08%	0.59%	0.83%	0.82%	1.35%	1.07%
Coefficient of variation	155%	149%	194%	198%	188%	127%
Trough	-1.00	-0.58%	-0.88%	-0.91%	-1.47%	-1.15%
Coefficient of variation	-145%	-140%	-126%	-139%	-128%	-129%

Figure 3: TFP and capital accumulation cycles



other economies were: 0.4505 (Slovenia), 0.6721 (Croatia), 0.6579 (Bulgaria), 0.6833 (Romania) and 0.3972 (Hungary). All coefficients were positive and fall into the range of significant, albeit not very strong, comovements.

Capital accumulation k_t in the equation (1) depends on investment activity i_t, rate of depreciation δ, and investment shocks ε_t^i. In reality, capital stock is composed of different types of assets with different depreciations rates associated with them. The value of δ depends on the proportion of each type of physical capital asset in the aggregate capital stock. In equilibrium, total savings, selected by households, should match total investment performed by the firms. This process does not go without costs and uncertainties. We assume that all external shocks originated in the open economy were absorbed by investment inside the domestic market. Therefore, there is a particular stochastic shock ε_t^i, which captures all of these uncertainties and costs.

Capital accumulation is an unobservable variable which is generated by the model. It is displayed in Figure 3 on the right-hand side for all the economies in the group. Figures for Serbia are displayed as bars, while for other economies they are displayed as different types of lines. The striking contrast between Serbia and all the other economies is that capital accumulation in Serbia is still below the steady state, while in other economies it has already recovered from the previous episode of depression.

One curiosity is that Serbia recorded a period of quite a high capital accumulation, and its overall average, compared to the steady state, is a positive number. The same is true for Slovenia, while other economies in the group experienced negative average rates of relative capital accumulation.

It is evident that all the economies but Hungary display a procyclical nature of the capital accumulation process. Coefficients of variation are much higher during the prosperity period than they were in the depression stage.

Capital accumulation processes in the region were completely heterogenic, with no significant correlation across countries. Coefficients of correlation between capital accumulation in Serbia and in the other economies were: 0.3605 (Slovenia), 0.0652 (Croatia), -0.0209 (Bulgaria), 0.3278 (Romania) and 0.0688 (Hungary).

Conditional forecasts in Serbia

Serbia's TFP cycle is similar to those of its neighbouring countries. However, Serbia's capital accumulation cycle is lagging four quarters behind the comparable cycles in the region. Its positive value with respect to the steady state is predicted to emerge with a delay of four quarters. This finding corresponds to the empirical evidence of how investments have contributed to the GDP growth in Serbia. In Figure 2A of the Annex, we report on the contributions of investments to the GDP growth rates. It is evident that investments had a much lower impact on growth during the last five years than in any period before. That makes the official policy of promoting FDIs through fiscal subsidies highly controversial. Therefore, the interesting question is how to proceed with the policy measures in order to improve the business climate and promote more efficient investments.

This can be achieved in various ways. In a technical way, potential effects of the policy measures can be simulated by using a technique of generating conditional forecast in a DSGE model. Before proceeding with this simulation, we will now briefly explain the process of computing conditional forecast [6]. Generating a conditional forecast implies that variables are split into two subsets – predetermined policy variables and adjustable flexible variables, and that the entire process of forecasting is conducted in two steps. For policy variables, the future paths are given by the policymaker in accordance with the policy scenario which the policymaker aims to implement. These variables are fully under control of the policymaker for all the forecast periods and have the status of exogenous variables in a DSGE model. Adjustable variables are endogenous, for which equilibrium values are the solution of the underlying non-linear DSGE model.

Each policy variable must have an associated stochastic shock in order to perform a conditional forecast. In a DSGE framework, shocks are stochastic variables with a known probability density distribution, variance and stochastic path modelled by first-order autoregressive equations. Solutions of the conditional forecast suppress these autoregressive equations and compute the corresponding shocks that are needed to match the restricted paths from the reduced form of first order state-space representation of the DSGE

model (15). However, the state-space representation (15), before moving to a transformation (16), should be rearranged in order to accommodate for both policy and flexible variables. Vectors of all variables and shocks (y_t, ε_t) are therefore split up into policy variables ($\bar{y}_t$, $\bar{\varepsilon}_t$) and adjustable variables ($\tilde{y}_t$, $\tilde{\varepsilon}_t$) in order to get to the solution for the policy variables:

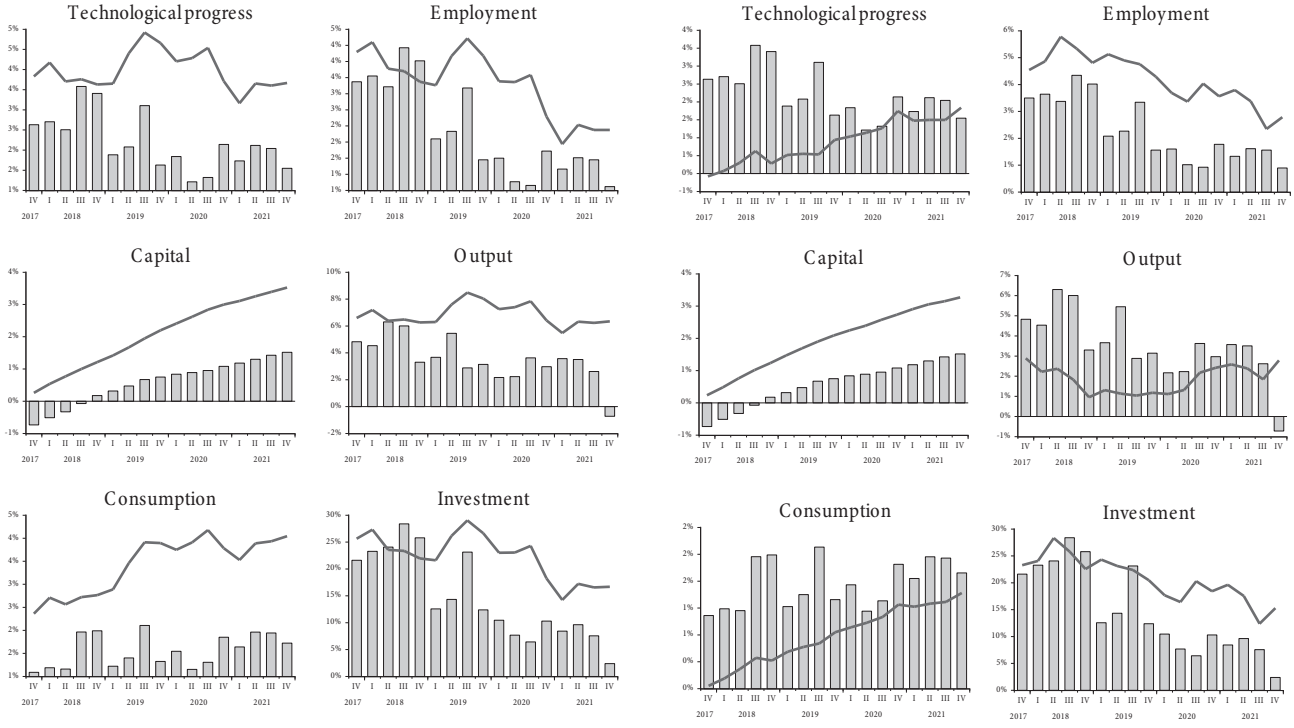
$$\bar{y}_t = g_y \cdot \bar{y}_{t-1} + g_{\varepsilon}^{\bar{y},\hat{\varepsilon}} \cdot \hat{\varepsilon}_t + g_{\varepsilon}^{\bar{y},\bar{\varepsilon}} \cdot \varepsilon_t \quad (18)$$

Putting $y_{ss} = y_0$, where y_0 is the vector of the last observations in the model, the system of equations (18) can be solved algebraically for controlled shocks ($\bar{\varepsilon}_t$). That is the first step of computation. In the second step, the solutions from (18) are plugged into the system of equations (15) in order to calculate the remaining adjustable variables $\tilde{y}_t$ and $\tilde{\varepsilon}_t$ in a recursive way.

Although policy variables are taken as instruments perfectly under the control of the policymaker, they are nevertheless random and considered as unforeseen shocks from the perspective of the households and firms. Households and firms are in each period surprised by the occurrence of the shocks that keep the policy variables at their respective level. They revise their optimal positions in each period according to the new occurrence of shocks and available information. With a conditional forecast, therefore, a DSGE model does not lose its stochastic substance.

What can the Serbian policymakers do with respect to the investment cycle? One option is to prepare the ground for the incoming Industrial Revolution 4.0 to improve human capital and the absorption capacity of the Serbian economy. Improvements in higher education, upgrading curriculum, promoting natural and physical science, as well as information technology at university levels will have a positive effect on TFP. Improving TFP will further generate positive effects across the economy. We have simulated this policy scenario in a) Panel in Figure 4. In the first graph, unconditional forecast of TFP is displayed as bars, while the effect of improved TFP is shown as a solid red line. We assume a rather high and persistent level of improvement in TFP. The resulting outcomes for all other variables are displayed as solid red lines in the remaining graphs. They can be compared with the outcomes without push-up of TFP that are represented as bars. The capital accumulation cycle would immediately benefit from this policy choice. Consumption would also give a remarkable impetus to growth. All the remaining macroeconomic variables would also benefit from a higher TFP.

Figure 4: Unconditional forecasts (blue bars) and conditional forecasts (red solid lines)



a) Panel: Improvements in TFP

b) Panel: Investment promotion

An alternative policy choice is to continue with fiscal incentives for attracting FDIs at a more forceful pace. Strictly speaking, our model is not prepared to handle such a policy option. To do this, we would need at least four additional variables and empirical time series: fiscal expenditure and fiscal revenue, a price level variable and interest rate, including Taylor's monetary policy function. However, we can instead perform an equally interesting exercise. We can plug in the model the same increase in investment as that generated by the improvement of TFP and let all other variables adjust themselves to this initial shock. Then, we will see what the resulting outcomes would be: is it irrelevant where the initial positive shock hits the economy or not, and how the economy reacts to alternative policy shocks?

This scenario is reported in b) Panel in Figure 4. The resulting outcomes are presented as solid red lines. It is obvious that all macroeconomic variables will react positively to this policy stimulus. However, the size of the reaction will be lower than that achieved by the initial improvement in TFP. This information carries a very important message. It really does matter where new policy measures are initiated. Improvements in TFP are a more efficient way to promote GDP growth than state interventions in private decisions on investment.

People usually consider this causality chain to work in the opposite direction, i.e. that investments materialise new technology. In general, this is not an incorrect position, but it is not always true. For instance, Serbia has spent a lot of taxpayers' money on promoting foreign investments based on the technology from the second industrial revolution. What is generally missed is that better education and more efficient institutions, as soft drivers of growth, can facilitate much more investments and, in turn, higher growth than financial or fiscal measures.

Conclusions

In this paper, we have analysed the business cycles in Serbia and its five neighbouring countries from the EU (Bulgaria, Romania, Hungary, Croatia and Slovenia) for the period from the beginning of 2000 up to the third quarter of 2017. This period was long enough to capture two depressions and two business prosperity stages. The analysis was based on an RBC stochastic DSGE model for two reasons. Firstly, this is a simple model which is able to capture the impacts of total factor productivity and accumulation process on growth, ignoring potentially disturbing factors on the monetary side. Secondly, it requires only a small number of time series for macroeconomic variables that can be collected from statistical offices and compared to each other. Those series facilitate a proper comparison of the underlying business cycles in the region.

Business cycles in Serbia are similar to those of the neighbouring countries. All the analysed economies were hit by the Great Recession. They are now out of the depression stage, and the period of prosperity is highly likely to continue for the next four years, except in Slovenia for the fourth year. Some countries, such as Hungary, entered the depression early and the shape of its business cycle had the form of the letter U. Its fall into depression was rapid, and the economy fluctuated for a number of quarters around the bottom of the cycle, and then suddenly and rapidly recovered. The other countries, such as Serbia, had the letter V profile of depression, with different duration and slopes of the letter wings. Serbia was not hit by the depression the hardest; that was Romania, but it has recovered and it is now performing the best in the region.

The problem concerning Serbia was that it stayed in the depression stage for the longest period of time. It is highly likely that the period of prosperity will expire at the end of the four-year horizon, while it will continue beyond that in most other countries. Additionally, the cycle of capital accumulation is at present still in the stage of depression. Therefore, policymakers in Serbia need to do something to improve investment activity.

Usually, the policymakers in Serbia opted for promoting FDIs through fiscal stimulations. We conducted a simulation with conditional forecasts encompassing such a policy and testified that it might bring positive impacts on growth. However, our other simulations clearly indicated that the optimal strategy for promoting growth would stay on the other side. Improving TFP will bring higher growth than direct investment promotions. Improving TFP implies institutional reforms and educational adjustment

to the requirements of the new Industrial Revolution 4.0. However, we are sceptical that the Serbian policymakers will pay due attention to higher education reform and institutional changes as they did for subsidising FDIs.

Annex

Figure A1: Real quarterly GDP in Serbia

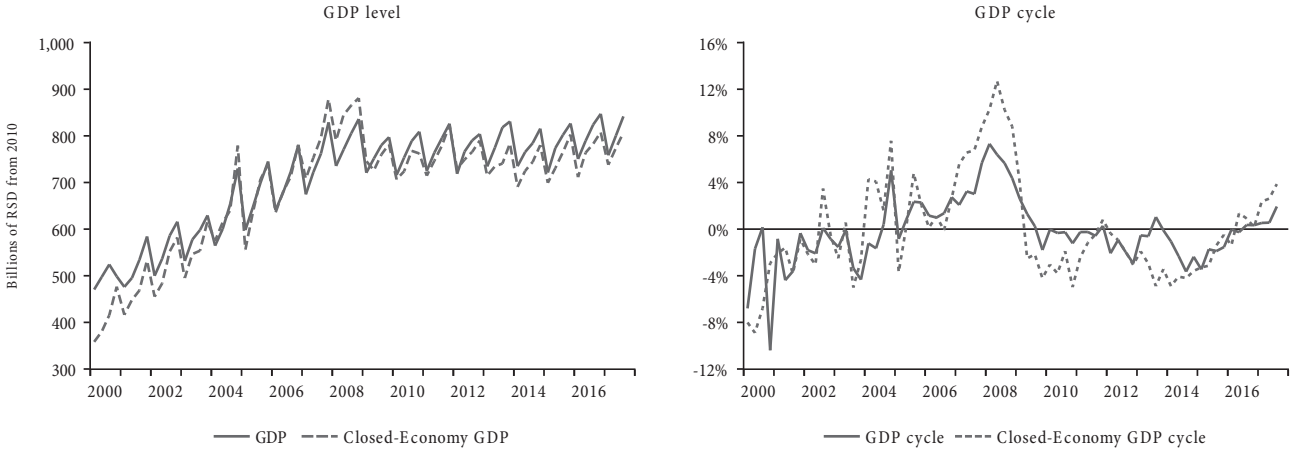


Table 1A: Estimated parameters for the economies in the region

	β	δ	θ	γ	ρ	Σa	Σi
Serbia	0.9910	0.0434	0.3478	0.7806	0.9996	0.0361	0.05385
Slovenia	0.9910	0.0296	0.3480	0.7808	0.9997	0.0147	0.02139
Croatia	0.9909	0.0313	0.3483	0.7806	0.9999	0.0132	0.02439
Bulgaria	0.9910	0.0290	0.3480	0.7806	0.9999	0.0259	0.04237
Romania	0.9909	0.0256	0.3482	0.7813	1.0000	0.0220	0.05176
Hungary	0.9918	0.0171	0.3478	0.7910	1.0000	0.0151	0.04323

Table 2A: Policy functions equ. (17) for economies in the region other than Serbia

Croatia

$$\begin{bmatrix}\hat{a}_t\\ \hat{k}_t\\ \hat{c}_t\\ \hat{h}_t\\ \hat{y}_t\\ \hat{\imath}_t\\ \varepsilon^a_t\\ \varepsilon^i_t\end{bmatrix} = \begin{bmatrix}0.9989 & 0 & 0 & 0 & 0 & 0 & 1 & 0\\ 0.1107 & 0.9294 & 0 & 0 & 0 & 0 & 0.1108 & -0.0298\\ 0.7701 & 0.4931 & 0 & 0 & 0 & 0 & 0.7710 & -0.0158\\ 0.6563 & -0.4145 & 0 & 0 & 0 & 0 & 0.6570 & 0.0454\\ 1.4264 & 0.0786 & 0 & 0 & 0 & 0 & 1.4280 & 0.0296\\ 3.1592 & -1.0158 & 0 & 0 & 0 & 0 & 3.1626 & 0.1493\\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0\\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1\end{bmatrix} \cdot \begin{bmatrix}\hat{a}_{t-1}\\ \hat{k}_{t-1}\\ \hat{c}_{t-1}\\ \hat{h}_{t-1}\\ \hat{y}_{t-1}\\ \hat{\imath}_{t-1}\\ \varepsilon^a_t\\ \varepsilon^i_t\end{bmatrix}$$

Bulgaria

$$\begin{bmatrix}\hat{a}_t\\ \hat{k}_t\\ \hat{c}_t\\ \hat{h}_t\\ \hat{y}_t\\ \hat{\imath}_t\\ \varepsilon^a_t\\ \varepsilon^i_t\end{bmatrix} = \begin{bmatrix}0.9995 & 0 & 0 & 0 & 0 & 0 & 1 & 0\\ 0.0710 & 0.9542 & 0 & 0 & 0 & 0 & 0.0711 & -0.0166\\ 0.7440 & 0.5101 & 0 & 0 & 0 & 0 & 0.7443 & -0.0089\\ 0.7381 & -0.4732 & 0 & 0 & 0 & 0 & 0.7385 & 0.0256\\ 1.4821 & 0.0369 & 0 & 0 & 0 & 0 & 1.4828 & 0.0167\\ 3.8604 & -1.4876 & 0 & 0 & 0 & 0 & 3.8622 & 0.0991\\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0\\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1\end{bmatrix} \cdot \begin{bmatrix}\hat{a}_{t-1}\\ \hat{k}_{t-1}\\ \hat{c}_{t-1}\\ \hat{h}_{t-1}\\ \hat{y}_{t-1}\\ \hat{\imath}_{t-1}\\ \varepsilon^a_t\\ \varepsilon^i_t\end{bmatrix}$$

Slovenia

$$\begin{bmatrix}\hat{a}_t\\ \hat{k}_t\\ \hat{c}_t\\ \hat{h}_t\\ \hat{y}_t\\ \hat{\imath}_t\\ \varepsilon^a_t\\ \varepsilon^i_t\end{bmatrix} = \begin{bmatrix}0.9993 & 0 & 0 & 0 & 0 & 0 & 1 & 0\\ 0.0849 & 0.9456 & 0 & 0 & 0 & 0 & 0.0850 & -0.0209\\ 0.7522 & 0.5045 & 0 & 0 & 0 & 0 & 0.7528 & -0.0112\\ 0.7109 & -0.4519 & 0 & 0 & 0 & 0 & 0.7114 & 0.0322\\ 1.4631 & 0.0527 & 0 & 0 & 0 & 0 & 1.4642 & 0.0209\\ 3.5809 & -1.2934 & 0 & 0 & 0 & 0 & 3.5835 & 0.1168\\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0\\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1\end{bmatrix} \cdot \begin{bmatrix}\hat{a}_{t-1}\\ \hat{k}_{t-1}\\ \hat{c}_{t-1}\\ \hat{h}_{t-1}\\ \hat{y}_{t-1}\\ \hat{\imath}_{t-1}\\ \varepsilon^a_t\\ \varepsilon^i_t\end{bmatrix}$$

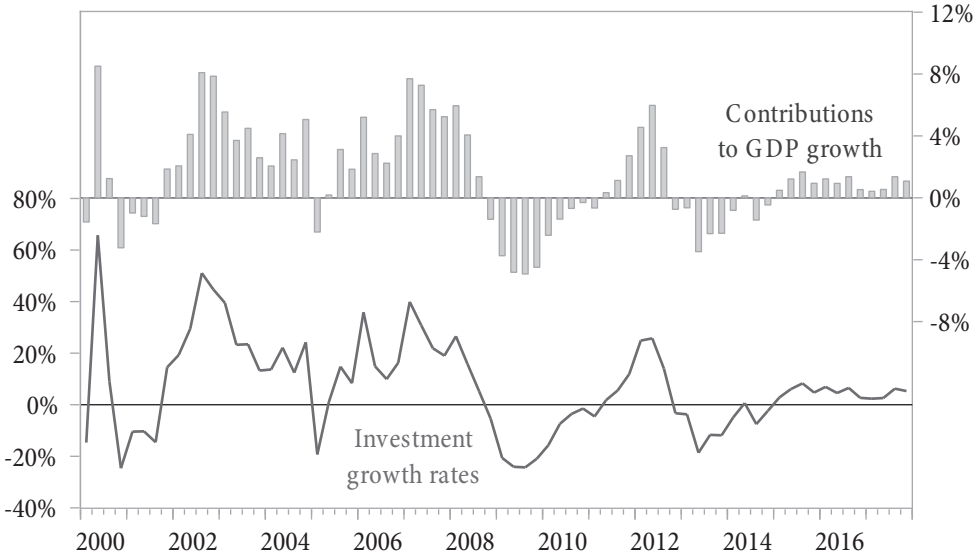
Hungary

$$\begin{bmatrix}\hat{a}_t\\ \hat{k}_t\\ \hat{c}_t\\ \hat{h}_t\\ \hat{y}_t\\ \hat{\imath}_t\\ \varepsilon^a_t\\ \varepsilon^i_t\end{bmatrix} = \begin{bmatrix}0.9993 & 0 & 0 & 0 & 0 & 0 & 1 & 0\\ 0.0729 & 0.9537 & 0 & 0 & 0 & 0 & 0.0730 & -0.0176\\ 0.7407 & 0.5137 & 0 & 0 & 0 & 0 & 0.7413 & -0.0095\\ 0.7370 & -0.4644 & 0 & 0 & 0 & 0 & 0.7375 & 0.0270\\ 1.4777 & 0.0049 & 0 & 0 & 0 & 0 & 1.4788 & 0.0175\\ 3.7335 & -1.3719 & 0 & 0 & 0 & 0 & 3.7362 & 0.1001\\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0\\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1\end{bmatrix} \cdot \begin{bmatrix}\hat{a}_{t-1}\\ \hat{k}_{t-1}\\ \hat{c}_{t-1}\\ \hat{h}_{t-1}\\ \hat{y}_{t-1}\\ \hat{\imath}_{t-1}\\ \varepsilon^a_t\\ \varepsilon^i_t\end{bmatrix}$$

Romania

$$\begin{bmatrix}\hat{a}_t\\ \hat{k}_t\\ \hat{c}_t\\ \hat{h}_t\\ \hat{y}_t\\ \hat{\imath}_t\\ \varepsilon^a_t\\ \varepsilon^i_t\end{bmatrix} = \begin{bmatrix}0.9989 & 0 & 0 & 0 & 0 & 0 & 1 & 0\\ 0.0868 & 0.9450 & 0 & 0 & 0 & 0 & 0.0869 & -0.0212\\ 0.7482 & 0.5058 & 0 & 0 & 0 & 0 & 0.7491 & -0.0113\\ 0.7186 & -0.4502 & 0 & 0 & 0 & 0 & 0.7194 & 0.0325\\ 1.4668 & 0.0556 & 0 & 0 & 0 & 0 & 1.4685 & 0.0212\\ 3.6107 & -1.2874 & 0 & 0 & 0 & 0 & 3.6148 & 0.1182\\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0\\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1\end{bmatrix} \cdot \begin{bmatrix}\hat{a}_{t-1}\\ \hat{k}_{t-1}\\ \hat{c}_{t-1}\\ \hat{h}_{t-1}\\ \hat{y}_{t-1}\\ \hat{\imath}_{t-1}\\ \varepsilon^a_t\\ \varepsilon^i_t\end{bmatrix}$$

Figure A2: Gross investment as a component of the Serbian real quarterly GDP



References

1. Adjemian, S., Bastani, H., Karame, F., Juillard, M., Maih, J., Mihoubi, F., Perendia, G., Pfeifer, J., Ratto, M., & Villemot, S. (2011). *Dynare: Reference manual, version 4*. Dynare Working Papers, CEPREMAP. Retrieved from http://www.dynare.org.
2. Acemoglu, D. (2009*). Introduction to modern economic growth*. Princeton, New Jersey: Princeton University Press. Retrieved from http://press.princeton.edu/titles/8764.html.
3. Dejong, D., & Dave, C. (2007). *Structural macroeconomics*. Princeton, New Jersey: Princeton University Press. Retrieved from http://press.princeton.edu/titles/9622.html.
4. Hansen, G. D. (1985). Indivisible labor and the business cycle. *Journal of Monetary Economics*, *16*(3), 309–327.
5. Kydland, F. E., & Prescott, E. C. (1982). Time to build and aggregate fluctuations. *Econometrica*, *50*, 1345–1370.
6. Labus, M., & Labus, M. (2015). Policy mix for fiscal consolidation in Serbia: Conditional forecast approach. *Ekonomika preduzeća*, *63*(1-2), 17-32.
7. Labus, M., & Labus, M. (2017). Monetary transmission channels in DSGE models: Decomposition of impulse response functions approach. *Computational Economics*, *5*(1), 1-14.
8. McCandless, G. (2008). *The ABCs of RBCs: An introduction to dynamic macroeconomic models*. Cambridge, Massachusetts: Harvard University Press. Retrieved from http://www.hup.harvard.edu/catalog.php?isbn=9780674028142.
9. Torres, J. L. C. (2014). *Introduction to dynamic macroeconomic general equilibrium models* (first edition). Wilmington, DE: Vernon Press. Retrieved from http://www.vernonpress.com/title?id=18#.VrAtGLlrLcd.
10. Wickens, M. (2011). *Macroeconomic theory: A dynamic general equilibrium approach* (second edition). Princeton, New Jersey: Princeton University Press. Retrieved from http://press.princeton.edu/titles/7603.html.

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. He has been since 2010 a senior advisor to the PricewaterhouseCoopers in Belgrade.

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National bank of Serbia

RESOLUTION OF NONPERFORMING LOANS IN SERBIA: STABILITY AS AN IMPERATIV

Rešavanje problematičnih kredita u Srbiji – stabilnost kao uslov

Abstract

The aim of this paper is to identify the factors that led to the rise in nonperforming loans in Serbia with a certain time distance. The paper focuses on measures and activities undertaken by the National Bank of Serbia (NBS) before and after the adoption of the NPL Resolution Strategy (hereinafter: Strategy), and the results of their implementation.

Numerous analyses indicate that the level and structure of nonperforming loans (hereinafter: NPLs) are determined by a combination of macroeconomic and bank-specific factors. The movement of NPLs in Serbia and the surrounding countries in the pre-crisis period was, to a large extent, the consequence of less conservative credit risk assessment models in an environment of robust credit expansion. An additional factor was inadequate collateral valuation. During the crisis, we were faced with a situation where the credit risk, taken in the previous period, materialised. NPLs grew in parallel with the deterioration of macroeconomic conditions. After several attempts to resolve this complex issue by using individual measures, it was confirmed in practice that a permanent resolution of NPLs requires a systemic approach and active involvement of all relevant institutions. Taking into account the factors behind the high level of NPLs, it was clear that a necessary and important component of success was the stabilisation of macroeconomic environment.

As price stability and relative stability of the exchange rate were ensured in Serbia and macroeconomic outlook improved, conditions were created conducive to the accelerated resolution of NPLs through numerous measures and activities, which particularly intensified after the adoption of the Strategy (August 2015). In the environment described above, the NPL stock halved since the Strategy adoption (down by 54%), reducing the share of NPLs in total loans by 12.9 pp to 9.5% (preliminary December 2017 data, final data could be slightly different), thus falling below the pre-crisis level.

Keywords: *nonperforming loans, financial stability, credit activity, economic growth, Strategy*

Sažetak

Cilj rada je da se sa izvesne vremenske distance izdvoje faktori koji su doveli do rasta problematičnih kredita u Srbiji, dok je fokus rada na merama i aktivnostima koje je Narodna banka Srbije preduzimala pre i nakon usvajanja Strategije za rešavanje problematičnih kredita (u daljem tekstu: Strategija), kao i na rezultatima do kojih je njihova primena dovela.

Brojne analize ukazuju na to da su nivo i struktura problematičnih kredita (u daljem tekstu: NPL) proizvod kombinacije makroekonomskih faktora i faktora specifičnih za pojedinačnu banku. Kretanje NPL-a u Srbiji i zemljama u okruženju u pretkriznom periodu je, u velikoj meri, bilo posledica manje konzervativnih modela procene kreditnog rizika u uslovima snažne kreditne ekspanzije. Dodatni faktor bila je i neadekvatna procena vrednosti kolaterala. Tokom krize suočeni smo sa situacijom da se kreditni rizik, preuzet u prethodnom periodu, materijalizovao. Beleži se rast NPL-a, što je proces koji se odvijao paralelno sa pogoršanjem makroekonomskih uslova. Nakon nekoliko pokušaja rešavanja ovog kompleksnog pitanja kroz pojedinačne mere, praksa je potvrdila da trajno rešavanje NPL-a zahteva sistemski pristup i aktivno uključivanje svih relevantnih institucija. Imajući u vidu faktore visokog nivoa NPL-a, bilo je jasno i da nužnu i važnu komponentu uspeha predstavlja i stabilizacija makroekonomskog ambijenta.

U Srbiji su, sa obezbeđenjem cenovne stabilnosti i relativne stabilnosti deviznog kursa, uz bolje makroekonomske perspektive, stvoreni uslovi da brojne preduzete mere i aktivnosti, koje su naročito intenzivirane sa usvajanjem Strategije (avgust 2015), rezultiraju ubrzanim rešavanjem pitanja NPL-a. U takvom ambijentu stok NPL-a je prepolovljen od usvajanja Stretegije (pad za 54%), a njihovo učešće u ukupnim kreditima smanjeno je za 12,9 p.p. na 9,5% (prema preliminarnim podacima za decembar 2017, konačan podatak može malo da se razlikuje), čime je palo ispod pretkriznog nivoa.

Ključne reči: *problematični krediti, finansijska stabilnost, kreditna aktivnost, privredni rast, Strategija*

Introduction

One of the problems the financial crisis opened in some countries and exacerbated in others was, indubitably, the growth in the level and share of NPLs. This phenomenon was particularly pronounced in developing countries that had faced robust credit expansion before the crisis. Hence, it is hardly surprising that in recent years NPLs have been the focal point of economic analysts, with the factors determining their level being targeted by more frequent and detailed empirical analyses, while measures and activities for their resolution have become a priority of central banks [5, pp. 1–26], [7, pp. 48–66], [2, pp. 1–32], [9, pp. 1–26].

In the period before the crisis, economic growth in Central, Eastern and Southeast Europe, including Serbia, was dynamic. Indeed, it was predominantly driven by consumption, which was, in greater share, financed by capital inflows and bank loans. Inflows were, to a large extent, channelled into the financial sector. In fact, it may be said that this period was characterised by the arrival of foreign banks from Western Europe, which brought new and cheaper sources of funding to the market. A period of robust credit expansion ensued. In such an environment, however, many countries experienced unwanted consequences. Inflationary pressures increased, and external imbalances deepened. It was logical and unavoidable to increasingly more often pose the question whether the credit expansion in some countries of that region resulted from the convergence process, or if this was a high-risk credit boom that could potentially jeopardise macroeconomic stability [4, pp. 83–104], [8, pp. 1–34], [1, pp. 201–231]. As the global economic crisis escalated, foreign capital inflow abruptly stopped and credit activity contracted. We may look for the causes of the decline in lending on "two fronts". On the one hand, sources of funding were reduced, while risk aversion of banks increased, i.e. the possibilities and readiness to lend to the private sector fell. On the other hand, in an environment of considerably lower income, loan demand also declined. Unfavourable macroeconomic trends that resulted in a decline in production and investment, unemployment growth, strong depreciation of local currencies in many countries, and lower real wages, also reflected negatively on the ability to repay earlier loans. This, and the fact that, in conditions of considerable inflows of sources of funding before the crisis, assessment of credit by the banks was not cautious enough, resulted in accelerated growth of NPLs. A contraction of high-quality demand for loans and the expansion of NPLs, which started to burden bank balance sheets and their results, led to a significant tightening in banks' standards and conditions for new lending. Without a doubt, this limited the demand for new loans, which, in turn, restricted investment and consumption, economic growth and disposable income. Thus, many economies in the region found themselves in an entangled web of growing NPLs, in part caused by deterioration in macroeconomic performance and a decline in economic activity, and in part by slower economic recovery in the following years that was not supported by bank loans (feedback effect). The negative impact of NPLs on the real economy in countries of that region was also empirically proved in a number of studies [9, pp. 1–26], [7, pp. 48–66], [6, pp. 11–31].

Aware of this complex problem and its consequences, in recent years economic policymakers in the region have made great efforts to intensify activities in terms of resolving NPLs. As expected, it was confirmed that the stabilisation of macroeconomic circumstances was a vital and, perhaps, the most important precondition for the permanent resolution of the accumulated NPLs, but, by itself, it was not enough. This necessary precondition had to be complemented by an additional systemic approach taken by commercial banks, the government and the central bank.

Serbia is a good example of the numerous measures and activities taken to curb the level of NPLs in the last five years. In the overall context, the most important thing was the systemic approach taken to narrow the internal and external imbalances of the country and create a more stimulating investment environment in a sustainable manner. This resulted in the start of the economic and investment cycle, which has reflected positively on credit activity since 2015, with the evident feedback effect from credit to economic activity. Having ensured the necessary macroeconomic preconditions, the field was cleared to take additional activities to "clean up" bad assets from bank balance sheets. As a "predecessor" to the strategy that will follow, in April 2015, the NBS prepared and distributed

to banks a detailed survey on the reasons behind the accumulation of NPLs in bank balance sheets. After analysing banks' responses, key regulatory and practical obstacles in the system that restrict the resolution of NPLs were established, and careful planning of measures for their removal commenced. This entailed efforts to increase bank capacities to efficiently resolve the issue of NPLs, encourage the development of the NPL market and monitor more closely asset quality to enable preventive action. The Strategy adopted in August 2015 [10, p. 16] focused precisely on those activities, while additional focus was placed on promoting and improving out-of-court debt restructuring and enhancing the framework for the mortgage and debt resolution in court. The Strategy was the result of cooperation between the NBS, relevant ministries and the Deposit Insurance Agency, with the participation of representatives from international financial institutions (the IMF, World Bank and EBRD). The complexity of the issue and comprehensiveness of the Strategy also implied interinstitutional coordination in its implementation, which is why two Action Plans were created. One was carefully defined and calibrated by the NBS and the other by the Government. Until end-2016, the NBS implemented all measures envisaged by its Action Plan. In conditions where several processes occur simultaneously – macroeconomic stabilisation, recovery of credit and economic activity, along with the implementation of measures and activities from the Strategy, the level of NPLs was reduced in nominal terms by RSD 232 bn (to RSD 198 bn), or by 54%, while their share in total loans fell by 12.9 pp (preliminary data). Furthermore, taking into account only the last two years (2016 and 2017), the share of NPLs declined by 12.1 pp to 9.5% in December 2017 (preliminary data[1]), meaning that their share in total loans fell below the pre-crisis level, which is still not the case in many countries in the region. The fall, during the last two years, was largely driven by the decline in NPLs of companies (by RSD 102.8 bn, where the share of NPLs declined by 13.5 pp to 10.1%), and companies in bankruptcy (by RSD 72.8 bn). This is the only relevant and practical confirmation that a systemic approach, with full commitment to resolving the existing and preventing further NPLs, may deliver the results also recognised by numerous international institutions that assess the conditions in the domestic banking system, such as the European Commission, European Central Bank, IMF, World Bank, rating agencies, etc.

The paper goes on to elaborate on the factors that precipitated the rise in NPLs in Serbia during crisis and post-crisis periods, the measures and activities taken by the NBS before and after the adoption of the Strategy, and the results achieved in this area, of which I am particularly proud.

The level and structure of NPLs in Serbia in the period before the adoption of the Strategy and the factors contributing to their growth

In the pre-crisis period, high lending activity growth rates were recorded in Serbia, as in other countries in the region. The credit expansion in this period resulted from the low base, dynamic consumption-driven economic growth and the process of real income convergence towards the European Union. One of the foundations of the pre-crisis growth in credit activity was the privatisation of the financial sector, primarily the arrival of foreign banks and their strategy for increasing their market shares. In an environment of higher inflow of sources of funding, the assessment of credit risk and collateral by banks was based on less conservative models than today. Banks approved loans with collateral in the form of real estate whose value was frequently overestimated (at times considerably so).

However, as the process was gaining momentum, the volume of credit expansion entered the territory where it spurred inflationary pressures and aggravated external imbalances, which necessitated the implementation of measures to limit lending, particularly to the household sector. The rise in the required reserve rate and the introduction of a limit on loans approved to households in relation to core capital induced credit expansion to be lower than if those measures had not been implemented. Nevertheless, expansion continued at high growth rates.

However, the process turned around due to global factors. The global economic crisis led to a drop in economic

1 All December NPL data are preliminary, final data could be slightly different.

activity in late 2008, when the environment characterised by global growth and risk aversion recorded a lower inflow and higher price of foreign sources of funding, followed by the outflow of those funds. Contracted loan supply and simultaneous decline in high-quality loan demand led to a contraction in credit activity. At the same time, recession, accompanied by rising unemployment and depreciation of the local currency in an environment with a relatively high share of loans indexed to a foreign currency, made the repayment of existing loans difficult. In such an environment, the high and rising level of NPLs became the source of systemic risk in the financial system of Serbia and countries in the region.

At the onset of the global economic crisis, in late 2008, the share of gross NPLs in Serbia was 11.3%, while in other countries in the region, that share ranged from 2.4% to 7.2%[2] (Figures 1 and 5). The previously dynamic real estate market, driven considerably by housing loans, contracted during the crisis. The decline in turnover and real estate prices, and the resulting drop in the value of collateral, further diminished the possibility of collecting loans using collateral. This, along with adverse macroeconomic trends as the crisis strengthened (decline in economic activity by 2% cumulatively, rise in unemployment by around 10 pp and the dinar's depreciation by over 22% in 2009–2012), led to a significant increase in NPLs. Such trends were recorded in Serbia and other countries in the region in parallel.

In 2009 alone, as the crisis escalated, the stock of NPLs in Serbia increased by over 50% (from around RSD 131 bn at end-2008 to around RSD 202 bn at end-2009), expanding their share in total loans by 4.4 pp to 15.7% at end-2009. As in most other countries, the corporate sector encountered the greatest difficulties in the orderly servicing of its liabilities due to problems of reduced liquidity. For this reason, in late 2009, over 75% of total NPLs related to the corporate sector (Figure 2). The rise in total NPLs continued in the years that followed, their share reaching 21.4% at end-2013. In the same period, the share of corporate[3] NPLs rose to around 24.5% at end-2013.

Based on the NPL structure by economic sectors, it is clear that adverse macroeconomic trends were a considerable factor of NPL growth during the crisis. As expected, the share of NPLs grew the most in sectors that were hit hardest by the crisis. In late 2013, over a half of all loans in construction were classified as nonperforming, in the real estate business – around two-fifths, and in manufacturing, mining and trade – one quarter (Figure 3).

The NPL ratio for households (including entrepreneurs) moved below the average for total loans, but during the period under review it also grew, to 10.7% at end-2013. As regards housing loans, which made up the majority of the banks' household credit portfolios, adverse trends in the labour market and the depreciation of the domestic currency during and after the crisis reflected negatively on households' capacity to settle liabilities.

In 2014, favourable macroeconomic trends, mainly the achieved price stability and relative stability of the exchange rate, coupled with the gradual recovery of economic and lending activity, first helped slow down the growth in the NPL share, and then stopped its growing trajectory in the period that followed. During the preparation and adoption of the Strategy, the share of NPLs in total loans reached 22.4%. Since the adoption and start of gradual implementation of the Strategy, the decline in their share has accelerated, which this paper will analyse in detail.

In the context of financial stability and international comparison, it is important to note that, even when their share exceeded 20%, NPLs did not jeopardise the stability of the Serbian financial system, owing to the high coverage by bank reserves for those purposes, both according to international standards and domestic regulations (Figure 4). In fact, Serbia had the highest coverage of NPLs by loan loss provisions compared to other countries in the region. Further, allowances for impairment of total loans (according to the International Financial Reporting Standards – IFRS) throughout the crisis remained above 50% of gross NPLs.

Also, taking into account the higher initial share of NPLs in Serbia before the crisis, the ensuing NPL growth in Serbia during and after the crisis was not higher than across the region. Quite the contrary. Of the nine countries observed, only Poland and Macedonia recorded slower

2 The analysis included Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Hungary, Macedonia, Albania, Romania and Poland.

3 Includes public enterprises and companies.

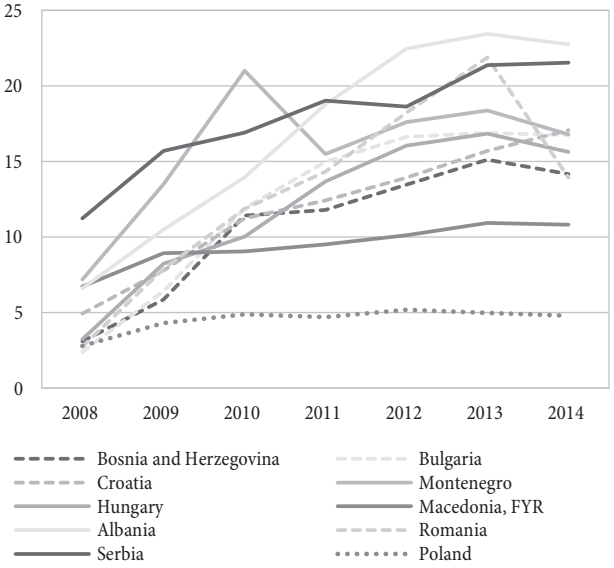
growth, while the rise in the share of NPLs in the remaining seven countries was faster than in Serbia.

Further, the stability of the domestic banking sector and its resilience to the assumed potential macroeconomic shocks were tested on a quarterly basis, and the results of the implemented macroprudential stress tests indicated that our system was stable and resilient even to shocks that did not materialise during the crisis. All of this did not make us passive in our efforts to intensify the resolution of NPLs, being aware that permanent resolution requires decisive action and an active approach, so as to untangle the web of mutual negative effects of economic activity and NPLs.

Activities of the NBS on NPL resolution prior to the Strategy

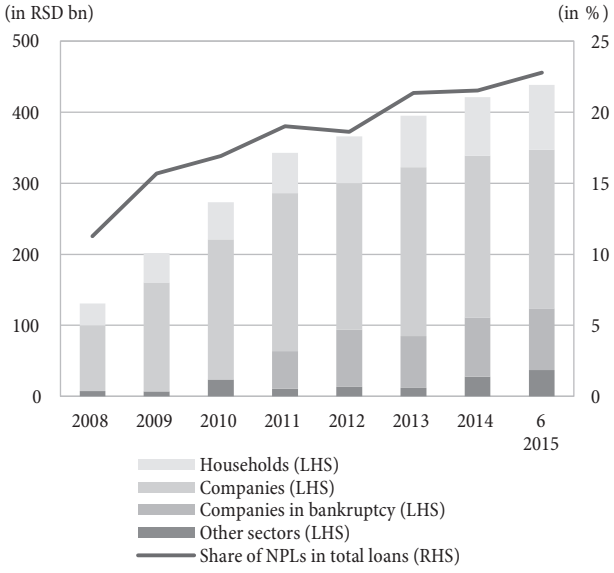
Even before the Strategy was adopted, the NBS undertook numerous measures and activities aimed at reducing the share of NPLs and their restricting impact on lending activity, and in turn on economic growth. Taking into account the importance of macroeconomic variables in

Figure 1: Share of NPLs by country (%)



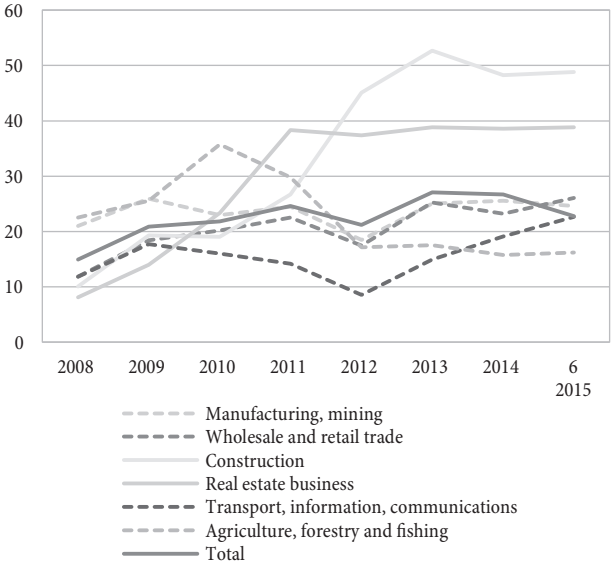
Sources: IMF and NBS.

Figure 2: NPL structure by sector



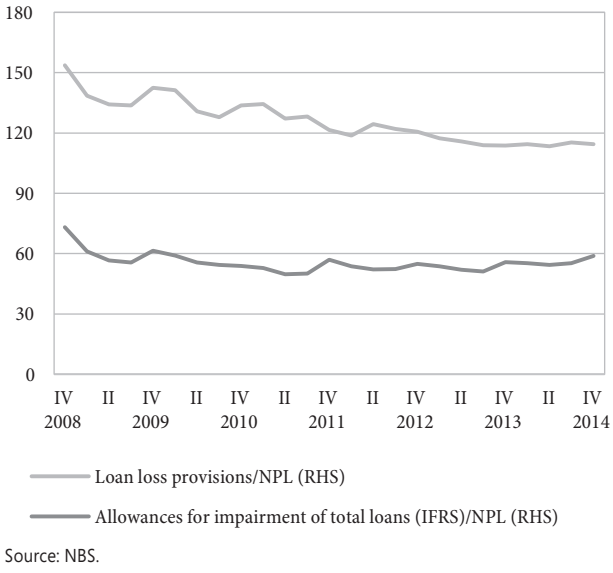
Source: NBS.

Figure 3: Share of corporate NPLs by activity (%)



Source: NBS.

Figure 4: NPL coverage (%)



Source: NBS.

respect of the level of NPLs (also confirmed empirically), it may be rightfully said that, by securing price stability and the relative stability of the exchange rate over the past five years, the NBS created the necessary presumption for NPL reduction in a sustainable way, thus contributing to a more favourable and predictable investment ambience.

Owing to timely and well-calibrated monetary policy measures, inflation was brought down from 12.9% in October 2012 to 2.2% a year later. In the following period, we preserved the stability of prices and ended the past four years with inflation at around 2%. Since mid-2017, y-o-y inflation has moved around the midpoint of the new, lower target tolerance band (at end-2017 it stood right at the central target point), which we trimmed by 1 pp to 3±1.5% as of 2017, owing to the achieved price stability and improved macroeconomic fundamentals. In the coming period, we expect inflation to continue to move within the target tolerance band, as do the corporate and financial sectors, whose expectations are anchored within the bounds of our target.

The lasting suppression of inflationary pressures has allowed us to ease the monetary policy much more than in previous cycles, and, by doing so, to more directly contribute to the recovery of lending and economic growth through this important channel (strong contribution came from the macroeconomic stabilisation, and we also used the reserve requirement instrument). For the sake of reminder, the current cycle of monetary policy easing through the key policy rate reduction began in May 2013. By end-2014 we lowered the key policy rate by 375 bp. In the following period, despite uncertainties in the international commodity and financial markets, additional room was created for easing of the monetary policy by 450 bp, to the level of 3.5% where it currently stands. The reduction was also supported by the adoption of a credible fiscal consolidation programme and its successful realisation. Naturally, both policies are most successful when fully coordinated. Therefore, we can say that the stabilisation of prices and the lowering of the NBS key policy rate by 375 bp in the period May 2013 – December 2014 was, by all means, a timely and adequate support needed to launch the subsequent fiscal consolidation process. The significant trimming of the NBS key policy rate served to pave the way for the sharp fall in rates on dinar loans to both corporates and households. In such macroeconomic conditions, and backed by competition between banks, interest rates on loans recorded an even sharper fall than the NBS key policy rate. Specifically, as of May 2013, rates on new dinar loans were reduced by 11 pp by December 2017 (to 4.8% for corporates and 10.6% for households). In the same period, interest rates on euro-indexed loans were reduced by around 4.5 pp (to 2.8% for corporates and 4.2% for households) which is an effect of the implementation of the ECB's monetary policy and, by all means, the result of the sharp fall in Serbia's risk premium – since August 2017, it has been at its lowest for Serbia (in December 2017 it fell below 100 bp while in January 2018 in some days it went below 90 bp).

Considerably lower costs of borrowing, together with stepped-up economic activity and recovery in the labour market, was the main factor behind the recovery of lending which has been continuously in the positive territory since the start of 2015 and accelerated to 7.4% y-o-y in December 2017. Therefore, in conditions of the country's macroeconomic stabilisation and achieved price stability as an important component of macroeconomic stability, lending struck the path of recovery, as did economic growth prospects. At first, this helped slow down the trend of the rising share of NPLs from 2013 until 2015, and in the case of economy, it resulted also in their fall as of mid-2014.

The importance of the relative stability of the dinar exchange rate in the context of NPLs is also not negligible. On the contrary, it is safe to say that the preserved relative stability of the exchange rate during the past five years is extremely important in this context. Namely, bearing in mind the relatively high share of FX-indexed loans, the depreciation of the dinar during the crisis was one of the generators of NPL growth. That is why the dinarisation of the financial system has rightfully been and remains one of the strategic priorities of the NBS for the purpose of both strengthening the monetary policy's transmission mechanism and reducing the FX risk in the system and, consequently, the NPLs. At the same time, the assortment of measures undertaken in order to encourage dinar lending and limit FX lending to debtors who are not hedged against the FX risk includes lower rates on dinar FX reserves (in

fact, 0% on dinar sources with the maturity longer than two years), introduction of the mandatory 30% deposit on currency-indexed loans to natural persons (except on housing loans), a ban on currency-indexed lending to natural persons except in euros, as well as many other measures. Owing to a blend of macroeconomic stabilisation and the measures undertaken, the share of dinar in total lending edged up to 33% in December 2017, from 28% at end-2012. Growth in the share of dinar loans was primarily recorded in the household sector – to more than 50% in July 2017, from 35% at end-2012. This reduces the FX risk of citizens who mainly earn in dinars, in case they borrow in a foreign currency, and in turn it diminishes the possibility of the occurrence of NPLs on those grounds. In principle, the household sector is by its nature less hedged against the FX risk than the corporate sector (in case of FX borrowing), as, owing to exports, corporates earn a portion of their income in a foreign currency.

In addition, to trigger the reduction of NPLs in the banking sector but also in order to support credit activity at the moment, the NBS adopted several countercyclical regulatory measures in the period prior to the adoption of the Strategy. For instance, in December 2012, amendments to the Decision on Risk Management by Banks eliminated the restrictions that pertained to the assignment of receivables from legal persons. The amendments allowed banks to mitigate credit risk by assigning due receivables from one legal person or entrepreneur to another legal person which needs not be predominantly engaged in the financial activity or have its head office in Serbia; it can also be a person associated with the bank. Naturally, acting as a responsible regulator, the NBS simultaneously established a control mechanism over the entire process of assigning receivables from legal entities. Also, amendments to the Decision on the Classification of Bank Balance Sheet Assets and Off-Balance Sheet Items from December 2012 offered additional incentives to banks for restructuring receivables from corporates. At the same time, mortgage may be accepted as adequate collateral if the borrower is in arrears up to 720 days (the previous period was limited to 360 days). In addition, the Decision on the Classification of Bank Balance Sheet Assets and Off-Balance Sheet Items was amended at end-2014 with the aim of relaxing the policy for funds provisioning for clients who regularly settle their obligations.

These measures yielded some positive effects and a number of banks took the opportunity to sell their NPLs and then use the proceeds to finance new projects, meaning that the goal of imposed countercyclical measures was achieved. The measures were designed taking into account the phase of the business and financial cycle.

In April 2015, the NBS began implementing Special Diagnostic Studies (SDS) of the quality of bank assets. In terms of their characteristics, the SDS were studies that had never been conducted in the domestic banking system before and which, observed by numerous criteria, had the character of an extremely complex and comprehensive procedure. The comprehensive studies were initiated in order to make a detailed assessment of the quality of bank assets based on a single and conservatively established methodology, including the reassessment of collateral in accordance with the internationally recognised assessment standards. The selected methodology relied largely on the methodology used in the assessment of the quality of bank assets in the EU territory, conducted by the ECB in 2014. The SDS of the quality of assets of banks in Serbia were conducted in 14 banks which were selected as systemically important and representative of the banking sector, and accounted for approximately 88% of total assets of the domestic banking sector [12, pp. 1–15]. The SDS enabled the assessment of the alignment of banks' accounting policies with the IFRS and the verification of banks' compliance with NBS regulations in terms of the classification of assets and the calculation of loan loss provisions, as well as their capacity to manage NPLs. Thus, the results of the SDS provided a basis for improving the regulatory and supervisory regulations, especially in the area of the IFRS, and were of great assistance when more concrete activities in the NBS Action Plan for the Implementation of the Strategy were defined.

NBS measures envisaged in the NPL Resolution Strategy

The next logical step in NPL resolution was the adoption of the NPL Resolution Strategy. The goal of drafting and

adopting the Strategy was clear – to provide incentives and eliminate identified obstacles in the system which prevented the timely resolution of NPLs and the establishment of a framework in which the possibility for new NPLs to occur would be reduced. The Strategy is complex and systematic, therefore its implementation also required inter-institutional coordination, which is why two Action Plans were composed. One was carefully defined and calibrated by the NBS, and the other by the Serbian Government. Activities envisaged by the NBS Action Plan (Table 1) primarily aimed to strengthen banks' capacity for NPL resolution, providing incentives for the development of the NPL market and a more adequate assessment of credit risk by banks. All activities envisaged by the NBS Action Plan were implemented within the set timeframe, some even earlier, and their implementation was one of the key factors behind the sharp fall in NPLs that has been present since 2016 [15, p. 98]. Below is a detailed overview with the most important activities envisaged in the Plan.

Important improvements have been implemented in certain areas, such as the accounting standards and practices, as well as collateral assessment. The last one was quite important bearing in mind that the inadequate collateral assessment was one of the factors that helped generate NPLs. A detailed analysis of the NPL market was also carried out. Going into details, activities regarding the improved implementation of IAS 39 were meticulously prepared and carried out. In this context, the Guidelines for the implementation of IAS 39, in the part pertaining to allowances for impairment, were prepared and published, along with listed supervisory expectations regarding the write-off of receivables and recognition of interest on NPLs. The banks' NPL reporting system was improved by prescribing the obligation to submit data regarding collateral, calculated interest, biggest exposures/debtors. A detailed plan was drafted to enhance the capacity of the NBS with respect to IFRS implementation. An analysis was carried out regarding the obstacles and restrictions of the NPL market which had never been done before in such detail. In accordance with the part of the NBS Action Plan regarding the improvement of supervisory requirements in relation to collateral management, additional requirements for banks were introduced in the context of monitoring the quality of collateral instruments and the work of persons assessing these instruments. The NBS established a comprehensive and functional database on valuation of mortgaged real estate and loans secured by mortgage.

In the part on supervisory activities and activities aimed at boosting the banks' capacity for NPL resolution, amendments to the Decision on the Classification of Bank Balance Sheet Assets and Off-Balance Sheet Items improved the regulatory framework for the treatment of restructured receivables to encourage sustainable restructuring practice and prevent the practice of unsustainable refinancing (evergreening) by introducing the concepts of the nonperforming exposure (NPE) and forborne exposure (FBE), which are applied in EU member states through the technical standard of the European Banking Authority. Namely, the conditions under which banks can improve NPL classification were tightened, giving a more precise picture of the quality of banks' portfolios, which at the same time leads to greater motivation of banks to adequately resolve this issue. In addition, the possibility was introduced for the assignment of NPLs of legal entities, entrepreneurs and agriculture producers to non-banking sector entities even before their maturity, which opened additional room for the development of the NPL market. In order to improve the management of distressed assets**,** additional requirements were introduced for banks in the context of strategic planning and the very process of distressed asset management. To increase the transparency of banks' operations in the part relating to asset quality, the Guidelines for Disclosure of Bank Data and Information Related to the Quality of Assets have been prepared.

The NBS has demonstrated its commitment to the preservation and strengthening of stability of the financial system, in accordance with its competences, by continuing to implement regulatory activities that went even beyond the Strategy's framework. In order to encourage banks to more efficiently resolve the NPL issue in their portfolios, in August 2016 the NBS adopted amendments to the Decision on the Classification of Balance Sheet Assets and Off-Balance Sheet Items, enabling the use of the model for the reduction and/or cancellation of the amount of required reserves for estimated losses depending on the decrease in the NPL ratio in banks' portfolios.

Table 1: NBS Action Plan for Implementation of the NPL Resolution Strategy

No	Goal	Activity	Result	Deadline	Deadline	Status
Banking supervision						
1	Enhancement of regulatory treatment of restructured receivables and restructuring process	• Analyse SDS results regarding practice and models banks are using in the process of restructuring, • Conduct a comparative analysis of regulatory solutions regarding the treatment of restructured loans implemented in EU countries, • Identify key regulatory stipulations which should be amended or introduced and analyse the impact of their application on banking sector indicators determining an appropriate model for the implementation of changes (phase-in approach or full approach at one point in time), • Strengthen (in consultation with relevant IFIs) the regulatory framework on the treatment of restructured loans, with the aim of fostering sustainable restructuring practices and counteract evergreening of problem loans • Incorporate the aforementioned supervisory expectations in on-site and off-site supervisory practices of the NBS, allowing for a continuous review of the implementation thereof.	Prepare new or amend existing regulations and additional documents	Q1 2016 [1]	✓	The Decision amending the Decision on the Classification of Bank Balance Sheet Assets and Off-Balance Sheet Items was adopted (RS Official Gazette, No 61/2016)
2	Enhancement of distressed asset management	• Analyse the results of a comprehensive survey on reasons for accumulation of NPLs and their resolution, • Conduct a comparative analysis of regulatory solutions and supervisory practices, • Analyse AQR results regarding distressed loan management in banks, • Develop (in consultation with relevant IFIs) supervisory guidance on distressed loan management, leveraging international best practices, • Incorporate the aforementioned supervisory expectations in on-site and off-site supervisory practices of the NBS, allowing for a continuous review of the implementation thereof.	Prepare new or amend existing regulation	Q1 2016	✓	The Decision amending the Decision on Risk Management by Bank was adopted (RS Official Gazette, No 61/2016)
Accounting standards and practices						
3	Enhancement of IAS 39 implementation	• Conduct a comparative analysis of regulatory solutions and supervisory practices, • Conduct analyses of AQR results regarding IAS 39 practices in banks, • Prepare (in consultation with relevant IFIs) supervisory policies setting forth enhanced expectations for robust loan-loss provisioning under IAS 39, • Scrutinise banks' write-off policies and convey supervisory expectations to Serbian banks, • Encourage prudent interest income recognition practices for NPLs, • Incorporate the aforementioned supervisory expectations in on-site and off-site supervisory practices of the NBS, allowing for a continuous review of the implementation thereof.	Prepare supervisory guidance regarding impairment provisioning under IAS 39, convey supervisory expectations on write-offs and income recognition on NPLs	Q4 2015	✓	Guidelines for the application of IAS 39 published, in part related to allowances for impairments stating the supervisors' expectations concerning the write-off of receivables and recognition of interest for NPLs
4	Strengthen the NBS's capacity in the area of the IAS	• Determine appropriate model for setting up continuous and robust review of classification and impairment practices and write-off policies in banks, • Organise an educational programme for employees of the Bank Supervision Department; • Analyse the need for increasing staff capacity in the Bank Supervision Department, • Continuous engagement with the Serbian audit profession.	Develop plan for capacity building	Q4 2015	✓	NBS capacity building plan prepared
5	Improvement of NPL reporting requirements (prescribe obligation for banks to report to the NBS data on collateral of NPLs, nonaccrual of interest of NPLs, largest NPL exposures/debtors)	• Analyse banks' capacities to deliver reports in demanded forms, • Draft reports and guidelines for filing reports, • Communication with banks with the aim of efficient customisation of their systems for reporting purposes.	Amend the regulation regarding NPL reports	Q4 2015	✓	Adopted Decisions on amendments to the Decision on Reporting aimed at improvement of the NPL reporting system (RS Official Gazette, Nos 111/2015 and 61/2016)
Disclosure requirements for banks						
6	Enhancement of disclosure by banks regarding information on asset quality	• Conduct a comparative analysis of disclosure requirements for banks, • Determine an appropriate model for disclosure requirements regarding content, forms, proportionality and level of information to be disclosed, • Communication of potential solutions to the banking sector.	Prepare amendments to the regulation on disclosure of information	Q1 2016[2]	✓	Published Guidelines for Disclosure of Bank Data and Information Related to the Quality of Assets

[1] Enters into force on 30 June 2016.
[2] Enters into force on 31 December 2016.

Table 1: NBS Action Plan for Implementation of the NPL Resolution Strategy

No	Goal	Activity	Result	Deadline	Deadline	Status
NPL market						
7	Identify and address obstacles to the Serbian distressed debt market	• Contribute to the analysis, overseen by the MoF, of potential obstacles to the emergence of a robust NPL market in accordance with the Action Plan of the Government.	Report on the identification of issues significant for the NPL market which are within the NBS competence – emphasising issues which can be marked as obstacles	Q4 2015	✓	Prepared Report on the opportunities and obstacles for liberalisation of assigning receivables from natural persons and other issues under the NBS mandate relevant for NPL market
8	Analyse the possibilities and obstacles for liberalisation of the assignment of retail receivables	• Analyse a potential market for retail NPLs from the supply side and possible effects of liberalisation, • Analyse comparative regulation and practices, • Analyse possibilities, potential risks, and regulatory impediments for liberalisation and models for establishment of possible infrastructure (licensing, supervision...).	Report on possibilities and obstacles for liberalisation of retail NPLs	Q4 2015	✓	
Collateral valuation						
9	Development of a database on real estate collateral valuations and loans approved based on reported collateral	• Prepare and adopt the decision on data regarding real estate collateral valuations and loans approved based on reported collateral, • Prepare guidelines for electronic submission of data regarding real estate collateral valuations and loans approved based on reported collateral, • Develop a comprehensive database regarding real estate collateral valuations and loans approved based on reported collateral, • Provide access to banks and provide an authorised appraiser with access to relevant data regarding real estate collateral valuation, after an adequate regulatory framework for appraiser profession is put in place, • Develop analytical tools for LTV[3] and DSTI[4] monitoring based on information provided for the database regarding real estate collateral valuations and loans approved based on reported collateral.	Database on real estate collateral valuations and loans approved based on reported collateral will be functional until end-2015	Q4 2015	✓	Established database on real estate collateral valuations and loans approved based on reported collateral
10	Strengthen supervisory requirements on the treatment of collateral	• Analyse SDS results regarding practice and models banks are using for collateral valuation and management, • Conduct a comparative analysis of regulatory solutions regarding the treatment of collateral, leveraging international best practices, • Identify key regulatory stipulations which should be amended or introduced, including regarding the frequency and substantive prudential requirements for collateral valuation and management, • Foster robust collateral management and valuation practices via on-site and off-site supervision.	Report on possibilities for strengthening supervisory requirements on the treatment of collateral	Q4 2015	✓	Prepared Report on the possibility for improvement of supervision requirements concerning the treatment of real estate taken as collateral by banks

[3] Loan to Value.
[4] Debt to Income.

Acting as a responsible regulator, in August 2017 the NBS adopted the Decision on the Accounting Write-Off of Bank Balance Sheet Assets[4], applied as of 30 September 2017. Under the Decision, banks are obliged to transfer NPLs that are fully (100%) impaired to the bank's off-balance sheet records. The direct effect of implementation of the Decision is best reflected in the total amount of direct write-offs which, in September 2017 only, equalled RSD 53.6 bn, with 80% of the write-offs pertaining to corporate exposures. Furthermore, in December 2017 we passed the Decision Amending the Decision on the Classification of Bank Balance Sheet Assets and Off-Balance Sheet Items. The Decision was carefully calibrated, after conducting analyses of certain situations that can emerge in practice. The measure is pre-emptive, i.e. it aims to limit the risk of NPLs "returning" to the banking sector, by discouraging individual transactions of NPL purchases from bank's assets, and the approval of loans whereby the bank's debtor directly or indirectly settles an NPL approved by the same bank. Sanctions have been envisaged for recognised cases in the form of increasing loan loss provisions, i.e. the classification of all receivables from a certain debtor to the most unfavourable classification group. In the coming period, the NBS will remain committed to permanently resolving this issue, by actively monitoring and analysing market developments. Coupled with preservation of macroeconomic stability, these will be important elements of the prevention of new NPLs.

4 https://www.nbs.rs/internet/english/20/kpb/accounting_write_off.pdf.

Results achieved

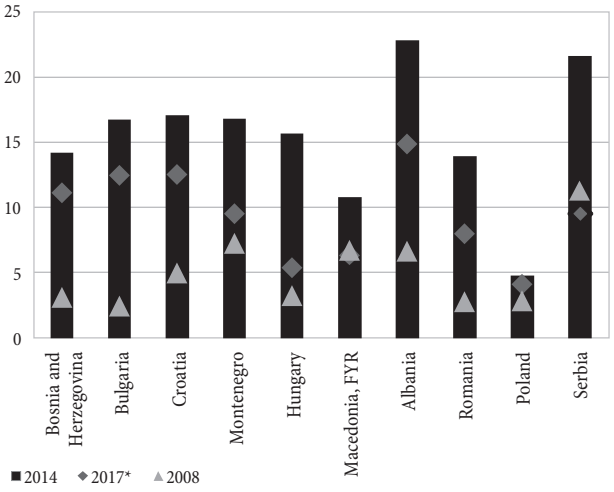
With several processes occurring in parallel – macroeconomic stabilisation, credit and economic activity recovery, along with the implementation of measures and activities stipulated in the Strategy, the level of NPLs was significantly reduced in 2016 and 2017, both in nominal (RSD 227 bn) and relative terms (as much as 53%), according to preliminary December 2017 data. In these two years the NPL ratio dropped by 12.1 pp, to 9.5% in December 2017 (preliminary data). The drop was largely driven by the decrease in corporate NPLs (by RSD 102.8 bn, with a 13.5 pp drop in the NPL ratio to 10.1%) and companies in bankruptcy (by RSD 72.8 bn).

Specifically, in 2016 the amount of these loans was cut by almost one fifth (by 18.6% to RSD 345.8 bn). In the same period, their share in total loans was reduced by 4.6 pp to 17.0%. Honouring the NPL growth factors, and the newly created environment, their reduction was expectedly the most prominent in the case of corporates (down by 6.0 pp to 17.6% in December).

In addition, it is discernible that after the Strategy adoption, banks intensified their activity in terms of NPL collection, restructuring, write-off and sale. Specifically, stimulated by the amendment of the regulations that provided a more favourable tax treatment for loan write-offs (write-off is recognised as expenditure), since the beginning of 2016 banks have written off RSD 45.7 bn worth of NPLs, mostly from corporates (RSD 41.4 bn), up by almost six times relative to a year before (Figure 8). Furthermore, the sale of corporate NPLs to entities outside the banking sector even before the maturity encouraged activity in the market of these loans. The fact that the amount of receivables assigned to entities outside of the banking sector in 2016 (RSD 57.1 bn) was up by 3.5 times compared to 2015 is illustrative of this. Thus, stimulating regulatory amendments encouraged both NPL write-offs and sale. In parallel, this process unfolded in conditions of better growth prospects, affecting also the structure of the NPL decrease by sectors (Figure 9). The fastest reduction is recorded in the sectors affected the most during the crisis and recording the greatest activity growth in the current process (construction, industry, trade). Only in 2016, the NPL ratio in construction was lowered by around 8.0 pp (to 30.2%) and by 3.5 pp (to 20.1%) in manufacturing. In parallel, the recovery of economic activity, accompanied with more favourable labour market trends and credit activity growth at significantly lower interest rates (on new and existing loans), pushed the household NPL ratio down by 1.7 pp (to 10.0% in December 2016).

During the course of 2017, banks and the NBS continued with NPL resolution activities. At the same time, lending activity continued up. The NPL stock declined additionally by RSD 148 bn (by end-December 2017), i.e. down by 43%

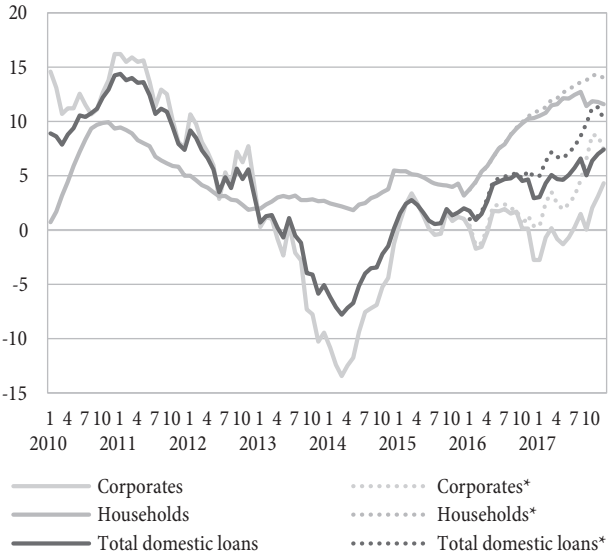
Figure 5: NPL share by country (%)



* Latest available data: Bosnia and Herzegovina, Bulgaria, Montenegro and Hungary - Q2 2017; Croatia, Macedonia, Albania and Romania - Q3 2017; Poland - Q2 2017; **Serbia - Preliminary data for December 2017.**

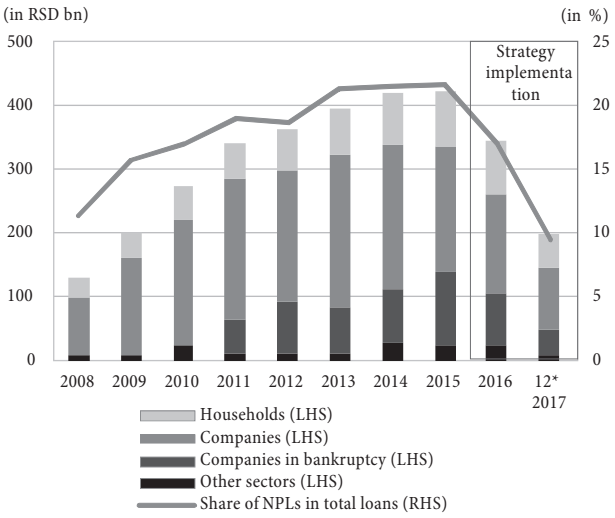
Sources: IMF and NBS.

Figure 6: Effect of NPL write-offs on lending growth (%)



Sources: NBS.

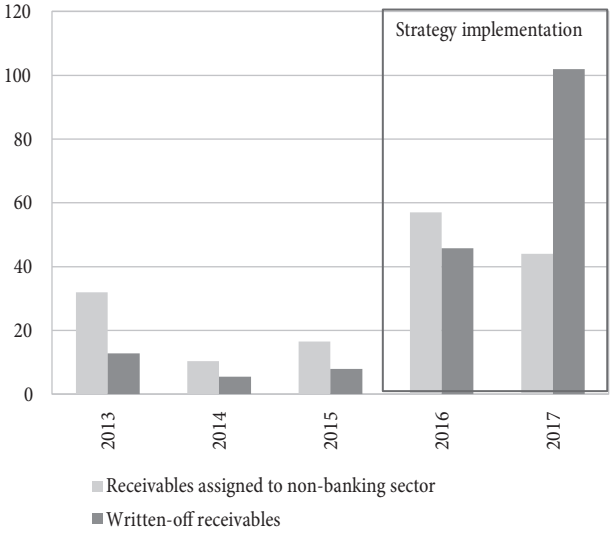
Figure 7: NPL structure by sector



* Preliminary data for December 2017.

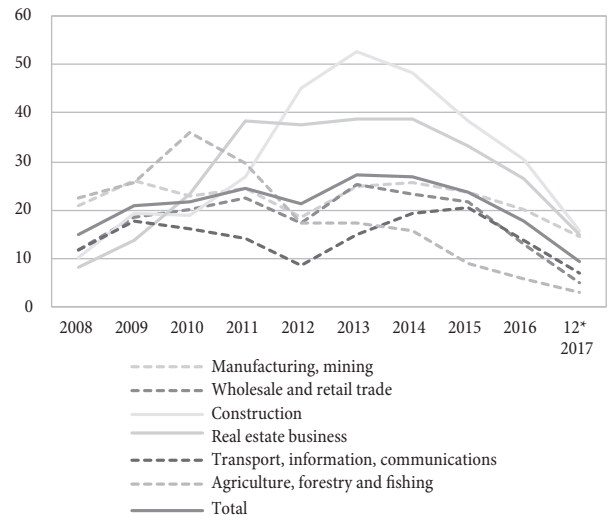
Sources: NBS.

Figure 8: Written-off and assigned receivables (RSD bn)



Sources: NBS.

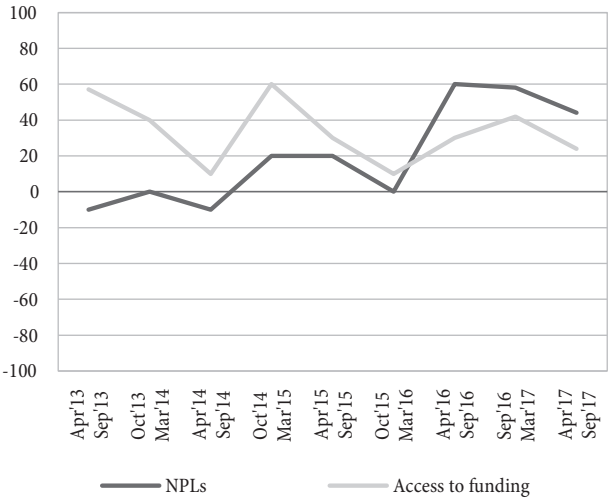
Figure 9: Share of corporate NPLs by activity



* Preliminary data for December 2017.

Source: NBS.

Figure 10: Net percentage of surveyed banks that reduced (%) NPLs and increased funding (%)



Source: EIB-CESEE Bank Lending Survey, H2 2017.

to RSD 198 bn (according to preliminary December 2017 data). The NPL share in total loans fell to 9.5% – bellow its pre-crisis level, which was not always the case with some other countries in the region (Figure 5). In terms of structure, 70% of the decline was recorded regarding companies and companies in bankruptcy (Figure 7).

While 2016 was marked by the write-off and assignment of receivables, the year of 2017 was more affected by write-offs, which were stimulated by regulatory changes. Though practice has shown that the largest write-offs take place late in a year, in the first eight months of 2017, RSD 12.9 bn worth of NPLs was written off, almost twice more than in the same period the year before. Then, after the Decision on the Accounting Write-off of Bank Balance Sheet Assets came into effect, only in September 2017, RSD 53.6 bn worth of NPLs was written off, which is RSD 7.9 bn more than in entire 2016 (Figure 8). Out of this September write-off amount, the major portion concerned corporate loans (RSD 37.8 bn). The amount of household NPL write-offs also increased (RSD 12.6 bn)[5]. During the whole 2017 write-offs amounted to RSD 102 bn, 2.2 times higher than the previous year.

5 The corporate sector includes public enterprises, companies and companies in bankruptcy. The household sector includes households, entrepreneurs, private households with employed persons and registered agricultural producers.

Despite stepped-up efforts to resolve the NPL issue, lending activity did not slow down, but y-o-y growth in total loans accelerated to 7.4% in December 2017, excluding the exchange rate effect (Figure 6). This result is practically more favourable given that it was achieved in the conditions of significant NPL write-offs which, in accounting terms, diminish the stock of bank loan receivables in the short run. Excluding the NPL write-off effect in the past year (the abovementioned RSD 102.0 bn, of which RSD 74.3 bn pertained to the corporate sector and RSD 23.5 bn to households), in December y-o-y growth in total loans equalled 10.2%. Growth, in y-o-y terms, in corporate loans reached 7.4% and in household loans 14.0%.

The fact that NPL resolution efforts have begun to produce a positive feedback effect on lending activity is also signalled by the results of recent bank lending surveys both of the NBS and the European Investment Bank [3, p. 93]. According to survey results, unlike the previous years, as of 2016 NPLs are no longer a factor that largely influences the tightening of credit standards in Serbia (Figure 10). As a matter of fact, according to the NBS bank lending survey [13, p. 2], [14, p. 2] and [11, p. 27], the NPL reduction was one of the factors that enabled the easing of credit standards in H2 2016 and Q1 2017.

Important in the context of financial stability is also the fact that NPLs are still more than fully covered by loan loss provisions. At the same time, the capital adequacy ratio is significantly above the regulatory minimum, currently equalling over 22%, which is its highest level in the past nine years. The high capital adequacy of the Serbian banking sector and its resilience to shocks have also been confirmed by the SDS – none of the 14 banks (with the total share in banking sector assets of 88%) covered by the SDS lacked capital.

As price stability and relative stability of the exchange rate were ensured in Serbia and macroeconomic outlook improved, conditions were created conducive to the accelerated resolution of NPLs through numerous measures and activities, which particularly intensified after the adoption of the Strategy. The results achieved in the period since the adoption and implementation of the Strategy are the following: the NPL share fell below its pre-crisis level (to 9.5% in December 2017, preliminary data), down by 12.9 pp, and the NPL stock contracted by 54%.

Conclusion

Pre-crisis developments in the majority of countries in the region of Central, Eastern and Southeast Europe (CESEE) were marked, among other things, by vigorous credit expansion, reflecting the low base, vibrant consumption-led economic growth and real income convergence to the European Union. However, credit risk assessment and collateral valuation by banks were made on the basis of less conservative models than it is the case today. Banks approved loans with collateral in the form

Table 2: Selected NPL indicators

		STRATEGY					
	Dec-14	July 2015	Dec-15	Dec-16	Dec* 2017	Change (Dec* 2017/July 2015)	
						absolute	relative
NPL (RSD bn)	**421**	**430**	**425**	**346**	**198**	**-232**	**-54%**
Share of NPLs in total	**21.5**	**22.4**	**21.6**	**17.0**	**9.5**	**-12.9**	**-58%**
NPL - companies	26.7	26.7	23.6	17.6	10.1	-16.6	-62%
Manufacturing, mining	25.6	22.9	23.6	20.1	14.8	-8.1	-35%
Wholesale and retail trade	23.2	25.0	21.5	13.1	5.0	-20.0	-80%
Construction	48.3	49.2	38.2	30.3	15.6	-33.6	-68%
Real estate business	38.6	37.9	33.3	26.4	15.0	-22.9	-60%
NPL - households (with entrepreneurs)	11.4	12.1	11.7	10	5.9	-6.2	-51%
Cash credits	10.4	10.6	10.1	7.5	4.3	-6.3	-59%
Credit cards	14.3	14.8	14.2	12.5	7.0	-7.9	-53%
Mortgages	8.2	9.8	9.5	8.7	6.3	-3.6	-36%

*** Preliminary data for December 2017.**

Source: NBS.

of real estate whose value was frequently overestimated (at times considerably so). As the activity moved into the zone of vigorous expansion, the question was posed whether credit growth was the result of the convergence process or it implied a credit boom that could generate inflationary pressures and deepen external imbalances. The latter entailed the application of measures to limit lending activity. What followed was the crisis period. As the crisis escalated, production and investment declined, unemployment soared, local currencies depreciated and real wages sank. At the time, a parallel process unfolded in Serbia and the majority of other countries of the CESEE region – the deterioration of macroeconomic performance and economic downturn fuelled the NPL growth and dented loan demand and supply, whilst on the other hand, the contraction in lending activity slowed down economic recovery. The fast-growing NPLs became the source of a potential systemic risk and one of limiting factors of lending activity and higher economic growth rates.

Aware of this complex problem and its consequences, economic policymakers in the region are making great efforts to intensify activities in terms of resolving NPLs. Serbia is a good example of the numerous measures and activities taken to curb the level of NPLs in the last five years. In the overall context, the most important thing was the systemic approach taken to narrow the internal and external imbalances of the country in a sustainable manner and create a more stimulating investment environment. The economic and investment cycles have been initiated as well, producing positive effects on lending activity since 2015. As expected, it transpired that the stabilisation of macroeconomic circumstances was a necessary and most important precondition for durable resolution of built-up NPLs, but was not sufficient. The strength of this turnabout had to be further reinforced by more efficient NPL resolution. Concretely, an additional systemic approach was needed as well. With this in mind, in August 2015 we adopted the NPL Resolution Strategy, as the outcome of cooperation between the NBS, relevant ministries and the Deposit Insurance Agency, with the participation of representatives from international financial institutions (the IMF, World Bank and EBRD). Two Action Plans were prepared, one of which is the NBS Action Plan. As of 2016, we implemented all measures envisaged by our Action Plan.

The Strategy results achieved so far give the basis to assess their success – since the adoption of the Strategy, the NPL share fell by 12.9 pp to 9.5% in December 2017 (according to preliminary data), below its pre-crisis level, while NPL stock declined by 54%. In terms of activity, the NPL share decreased by 33.6 pp in the construction sector, by 22.9 pp in the real estate sector, by 20 pp in the trade sector, and by 8.1 pp in manufacturing. In the household sector, the NPL share fell by 6.2 pp to 5.9% in December 2017 (according to preliminary data). In addition, we have exceeded the Strategy's framework, continuing to adopt measures even after the implementation of all activities envisaged by the NBS Action Plan.

The results that we have achieved in terms of NPL resolution in Serbia, through macroeconomic stabilisation and a systemic approach, with a focus on both resolving the current and preventing new NPLs, have also been recognised by relevant institutions assessing the situation in our banking sector. In December 2017, two rating agencies, Standard & Poor's and Fitch, upgraded Serbia's credit rating, with stable outlooks. They assessed that the domestic banking sector is liquid, adequately capitalised (as also confirmed through extensive SDS), with a sharp fall in the NPL share and the recovery of lending activity.

Although the results achieved are undeniably excellent, there is room for further improvement – both in terms of wider usage of possibilities opened by the Strategy, especially for the restructuring of receivables, write-off and sale of NPLs, but also in terms of expected acceleration of economic growth and a conservative credit risk assessment by banks. We have the potential and I believe that banks will continue to use the created possibilities.

Finally, in light of all factors of NPL generation and growth, we may say that by ensuring price stability and relative stability of the exchange rate, the NBS has created an indispensable and key assumption for the NPL reduction on sustainable grounds, contributing thus to a more favourable and predictable investment environment. The Strategy was designed and implemented as a logical upgrade, following macroeconomic stabilisation and better future prospects. I believe that ahead of us is a period of

stable growth in lending activity and disposable income, investment and savings, and, by extension, growth in economic activity and the standard of living on more sustainable grounds.

References

1. Backe, P., Egert, B., & Zumer, T. (2007). Private-sector credit in Central and Eastern Europe: New (Over) shooting stars?. *Comparative Economic Studies*, *49*(2), 201-231.
2. Beck, R., Jakubík P., & Piloiu, A. (2013). Non-performing loans: What matters in addition to the economic cycle?. *European Central Bank Working Paper* No. 1515.
3. European Investment Bank (2017). *CESEE bank lending survey H2-2017.* Retrived from http://www.eib.org/infocentre/publications/all/cesee-bls-2017-h2.htm.
4. Cottarelli, C., Dell'Ariccia, G., & Vladkova-Hollar, I. (2005). Early birds, late risers and sleeping beauties: Bank credit growth to the private sector in Central and Eastern Europe and in the Balkans. *Journal of Banking and Finance, 29*(1), 83-104.
5. De Bock, R., & Demyanets, A. (2012). Bank asset quality in emerging markets: Determinants and spillovers. *IMF Working Paper 12/71*.
6. Working group on NPLs in CESEE (2012). *European banking coordination "Vienna" initiative.* Retrived from http://www.imf.org/external/region/eur/pdf/2012/030112.pdf.
7. Jakubík, P., & Reininger , T. (2013). What are the key determinants of nonperforming loans in CESEE?. *Focus on European Economic Integration*, *3*, 48-66.
8. Kiss, G., Nagy, M., & Vonnák, B. (2006). Credit growth in Central and Eastern Europe: Trend, cycle or boom?. *MNB Working Papers, No. 2006/10*.
9. Klein, N. (2013). Non-performing loans in CESEE: Determinants and impact on macroeconomic performance. *IMF Working Paper 13/72*.
10. Ministry of Finance of the Republic of Serbia. *NPL resolution strategy.* Retrieved from http://www.mfin.gov.rs/UserFiles/File/strategija%20krediti/2%20NPL%20Strategija%20(eng).pdf.
11. National Bank of Serbia. (2017). *Inflation report*. Retrieved from http://www.nbs.rs/system/galleries/download/pdf_ioi/inflation_report_05_2017.pdf.
12. National Bank of Serbia. (2015). *Note on special diagnostic studies.* Retrieved from https://www.nbs.rs/internet/english/55/55_0/2015_aqr_izvestaj_e.pdf.
13. National Bank of Serbia. (2016). *Report on the results of the bank lendng survey.* Retrieved from https://www.nbs.rs/internet/english/90/anketa_kab/kab_rep_III_2016.pdf.
14. National Bank of Serbia. (2017). *Report on the results of the bank lending survey.* Retrieved from https://www.nbs.rs/internet/english/90/anketa_kab/kab_rep_IV_2016.pdf.
15. Tabaković, J. (2017). Central bank policy after the crisis: Example of Serbia. *Ekonomika preduzeća*, *65*(1-2), 83-102.

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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.

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DIGITAL TRANSFORMATION AND SERBIA*

Digitalna transformacija i Srbija

Abstract

The new digital economy, as an economic activity resulting from billions of online connections between people, businesses, data, devices and processes, has created extraordinary possibilities for individuals, companies and countries to improve their competitiveness strategies owing to new technologies. This paper presents the digital globalization challenges faced by the companies. It has developed the proposition that companies must adjust/change their business models by empowering their digital assets and reclassifying the items entered on the digital liabilities side. The paper also includes an analysis of Serbia's innovation ecosystem and its preparedness for digital strategy implementation. Under the assumption of more significant government investments in digital infrastructure, support for the necessary legal framework and development of entrepreneurial and digital competencies, the paper presents measures for improving the digital agenda for Serbia on the road toward its social and economic recovery.

Keywords: *new digital economy, digital transformation, innovation ecosystem, digital strategy, Serbia*

Sažetak

Nova digitalna ekonomija, kao ekonomska aktivnost koja proističe iz onlajn povezanosti više milijardi ljudi, biznisa, podataka, uređaja i procesa, kreirala je izuzetne mogućnosti pojedincima, kompanijama i zemljama da unaprede svoje strategije konkurentnosti zahvaljujući novim tehnologijama. Ovaj rad prikazuje izazove digitalne globalizacije sa kojima se kompanije suočavaju. Otuda i propozicija da kompanije moraju prilagoditi/promeniti svoje poslovne modele jačanjem svoje digitalne aktive i reklasiranjem stavki koje se nalaze na strani digitalne pasive. Ovaj rad takođe uključuje analizu inovacionog ekosistema Srbije i njegove pripremljenosti za sprovođenje digitalne transformacije. Pod pretpostavkom da država ostvari mnogo značajnije investicije u digitalnu infrastrukturu i pruži podršku za potreban pravni okvir i razvoj preduzetničkih i digitalnih kompetencija, rad ukazuje na mere koje je potrebno sprovesti u cilju unapređenja digitalne agende Srbije na putu ka svom društvenom i ekonomskom oporavku.

Ključne reči: *nova digitalna ekonomija, digitalna transformacija, inovacioni ekosistem, digitalna strategija, Srbija*

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Introduction

The 2007 crisis caused serious consequences to the world economy and international economic relations. It posed serious questions about the character of the functioning of the capitalist system, quality of financial market regulations, the perception of new political, social and economic risks, economic policy instruments used in fighting against recession, new sources of growth and so forth. However, the world is now more interconnected than ever before. The globalization process, which was characterized by rapidly growing flows of international trade and finance in the 20th century, continued at a fast pace in the 21st century owing to digital flows (used cross-border bandwidth has grown 45 times since 2005, and it is projected to rise another ten times over the next couple of years). Now the data flows have a greater impact on the world's GDP growth than the goods flows. Those flows have become more knowledge-intensive than capital and labor-intensive, which was the case in the last century. The exchange of free contents and services is much greater now. Digital infrastructure has become equally important as traffic infrastructure. A much more important role has been assigned to small businesses (they are becoming "micro-multinationals" by using digital platforms to connect with consumers and suppliers all over the world) and individuals (direct participation in the global world by using digital platforms to learn, showcase their talent or participate in social networks). Prompt access to information at the global level has been enabled. We are witnessing a distinctly rapid increase in the application of the main technologies (mobility, cloud computing, business intelligence, social media, AI), which transform business methods and open new spaces for new value creation. This is the era of global digitalization.

By presenting the concept of the new digital economy (NDE), the paper aims to point to the challenges that companies and countries are facing in the world of global digitalization and, on the basis of the overview of the status of ICT development in Serbia, offer recommendations for improving Serbia's digital agenda, thus increasing its level of competitiveness.

The new digital economy

According to Rose and Schwab [29], [32], the fourth industrial revolution is the "creator" of the NDE, empowered by advanced "cyber-physical" systems spanning "advanced" manufacturing, transportation, services, and even biological systems.

In other words, the NDE is understood to imply the framework of advanced ICT-based technologies and processes:

1) Robotics and automation;
2) New data sources that enable the use of global mobile and Internet connections;
3) Cloud computing (the model that enables ubiquitous, convenient and on-demand network access to a shared pool of adaptable computing services that can be rapidly provided with minimal management effort or service provider interaction);
4) Big data analytics (set of techniques and tools for processing and understanding enormous sets of data obtained by digitizing various contents and expanding the Internet of Things (IoT) (set of devices and objects that can be changed through the Internet, with or without the user's active participation)); and
5) Artificial intelligence.

The factor underlying the rapid growth of the new digital economy (still in accordance with Moore's law) involves ICT improvements, prevalently in microelectronics, at an exponential level. Owing to advanced ICT, three trends have emerged within the NDE. First, the accumulation of huge amounts of data, also on the account of new sources (from smartphone to sensors), has opened up extraordinary advancement possibilities, while at the same time observing serious risks. Second, companies have used these technologies to define new competitiveness strategies and platform-based business models, thus changing the characteristics of business activities of many industries. Third, the exponential development of microelectronics has created the possibility for the development of practical applications for machine learning and the breakthrough of artificial intelligence into cognitive areas, as well.

Owing to the Internet, transformations range from consumer behavior to new business models (many sectors, from telecommunications, media, banking, financial services, health and retail trade to entertainment industry and the like, are undergoing a digital transformation process). Like never before, both individuals and companies can participate in the creation of new value, innovations, exchanges of knowledge and experiences and social interaction on the global level. The Internet has become a part of everyday life and has "given birth" to a new generation of young people having different expectations than the previous one. The new development of the Internet has enabled interactivity and participation. It is now the "Internet of everything" which enables companies to radically change their interaction with consumers and supply chain management.

In essence, the Internet consists of three conceptual clouds constituting the infrastructure of the digital economy and enabling accelerated resource flows and the creation of new markets: connection cloud, which is used for information transfer; resource cloud, which is used for data storage, and social cloud, which is used for connection and cooperation.

The Internet has enabled a growing interconnectivity, thus providing scope for digitization (converting information from an analog signal into a binary bit) and the growth of digital technology ecosystems to initiate the digital transformation processes on a global level, thus changing the ways in which people communicate, companies operate and innovate, and countries define new competitiveness policies and digital agendas.

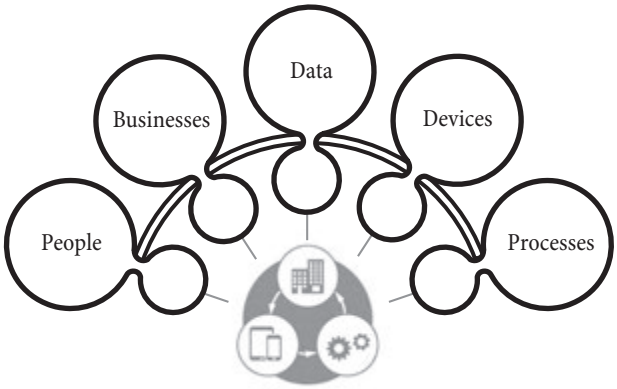
The architecture of the new digital economy is characterized by compatible technologies and production platforms [27].

The NDE has been similarly defined by Van Alstyne et al. [36], using the Amazon platform as an example and all advantages of directly connecting the two sides of the market, maintenance costs and simple possibilities of expansion (and thus extraordinary possibilities for using a rich database).

NDE development generates both opportunities and risks. Using its transformational component, it will create winners and losers. On the basis of the thesis about information accessibility and democratization, some theorists hold that the NDE could lead to a more even and sustainable development rather than to the maximization of profits, and resource extraction and utilization [8]. Rus [30] points out that personal robots may certainly be helpful to the infirm and disabled, and be flexible enough to become well-integrated into everyday life. However, it is more widely held that the NDE will generate new forms of risk and that the differences will be enhanced.

McAfee and Brynjolfsson [13] support the thesis that the development of computerization and artificial intelligence will result in the disappearance of a large

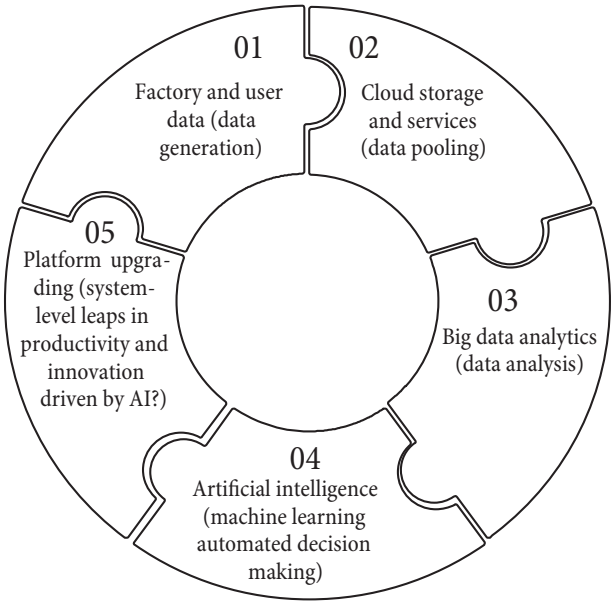
Figure 1. What is the digital economy?



Digital economy is s the economic activity resulting from the billions of online connections.

Izvor: [15].

Figure 2. A cycle of platform upgrading in the new digital economy



Source: [37].

number of jobs, especially in knowledge-based industries and services. On the other hand, Autor [1, pp. 3-30] advances the thesis that developed countries have so far displayed a distinct ability to create new industries and generate demand for new competencies and skills, thus creating jobs.

De Stefano [5] points out that a "gig economy" may be creating a precarious class of "on demand" workers, or "dependent contractors" [34], including knowledge workers, who are part of a broadly emergent "precariat" without any clear institutional means for organizing. Shiller [33] points to the potential jeopardization of the bargaining power of consumers using big data analytics and artificial intelligence in real-time analyses of their buying behavior and projections of their price expectations. On the other hand, however, automation, mass customization and shorter supply lines could lower prices and greatly improve consumer satisfaction [2].

It is evident that, in an attempt to understand the possibilities and risks associated with the NDE, there are different views on numerous topics. Thus, we can expect various debates on widely varied topics, bearing in mind the pace of technological development and its possible consequences.

Business challenges

The nature and pace of technological change have also forced the companies to face serious problems of how to adjust their organizational structures and business models in order to maintain and/or enhance their competitiveness levels. A considerable number of companies, however, face the challenge of surviving in conditions of intensive digital disruption.

Digital transformation has imposed a change in the business model. Abundant data and the possibility of their exploitation have fundamentally changed business-to-customer (B2C) and business-to-business (B2B) relationships. The application of new technologies and the vigorous increase in use of mobile devices have opened up extraordinary opportunities for a more productive development of all economic activities, putting the consumers at its center, where they have set out their demands through the expectations matrix that their needs can be satisfied any time, any place (24/7).

Many companies have redefined their business models and joined various platforms in search of a sustainable, more efficient and competitive business model (under a credible threat of digital disruption in their area of business, as well). Naturally, apart from opening up plenty of business opportunities, these tectonic changes have also generated numerous challenges and topics for discussion.

One question that has become at least as important as the inevitability of joining digital transformation flows is the question of cybersecurity, data protection, privacy and intellectual property. In the labor market, the "war for talent" is evidently ongoing, coupled with the need to change the educational curricula in order to suit the current and future demands of employers.

It should also point to the importance of the impact of digital transformation, as well as of cultural and digital trends, on the work environment and evolution of the traditional work environment into modern collaborative networks where companies rely to a greater extent on performance results, thus providing employees with more flexible and technologically advanced working conditions, and destroying organizational silos. The trend of business model diversification entails the efforts of individual organizations to direct knowledge and skills development toward empowering employees to learn new things and to become "authentic digital companies" regardless of their field of activity or industry.

Companies face a serious demand to first understand, and then strengthen their digital balance sheets. In other words, while searching for an adequate answer in the world of digital challenges, companies must build their own digital assets (big data and advanced business analytics relating to consumers, suppliers, employees, competition; development of leadership and digital culture in companies; building digital infrastructure, etc.) and reduce their own digital liabilities (organizational and cultural restrictions; IT systems, processes and tools limiting flexibility; preservation of inflexible strategies unsuitable for a rapidly changing business environment…). Some kind of digital transformation has been inevitable. The improvement of the innovation culture in companies and strengthening

the human potential by raising levels of digital skills, improvement of processes and organizational structures to meet the demands of the global digitalized world have become a conditio sine qua non for modern business.

In an IBM study [9] based on a representative sample of more than 800 CEOs, we found some answers to the questions of how some companies and their CEOs prepare themselves for new challenges. The survey shows that the highest percentage of respondents understand global developments and focus on strategy and its directions while trying to explore the potential for new and nontraditional sources of growth. To this end, they assume a new or different role in their ecosystem (Figure 3).

Using the examples of new business models (Uber or Airbnb and similar platforms that have eliminated traditional market imperfections because classic intermediaries have disappeared – by directly confronting supply and demand, consumers get promptly what they need), the surveyed CEOs have mostly reported that they intend to use new and emerging technologies and ecosystems to generate new revenues or create new business models. Also, more than two thirds of the respondents predicted personalized approaches to customers, which implies a much better knowledge concerning their needs, habits and lifestyles. This will certainly be contributed by the development of cognitive technologies (instead of limited traditional algorithm-based systems), which will be applied to new tasks and needs owing to experience-based learning.

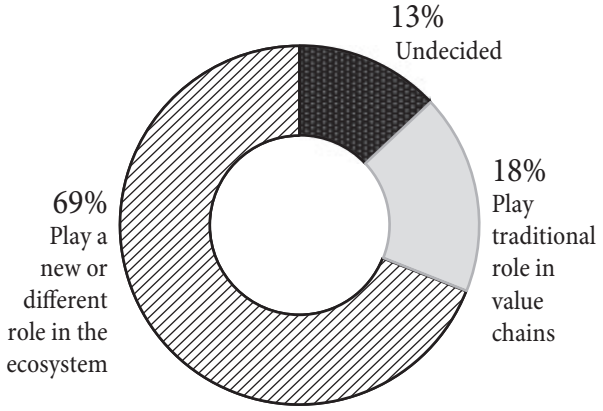
In that context, the demands of the modern consumer and the unprecedented speed of communication and transactions have imposed the need for companies to operate and adjust their models to real-time business. The main factors imposing the need for real-time business include technology, consumers, employees and business networks in the supply chain (Figure 4).

According to a SAP study [31], some technologies, which have determined certain technology trends while simultaneously being developed, impose the need for companies to conduct real-time business and thus increase the level of their agility, which is of the utmost importance for the improvement of their competitiveness in a highly dynamically changing environment, including:

1. Hyperconnectivity, which shapes the way people buy and sell their products, and changes the way technology and other companies conduct their business, owing to the IoT and sensors, Internet and mobile devices;
2. Supercomputing. Enterprise systems are shifting from a single cost-performance approach to two distinct paths: in-memory computing and distributed computing;
3. Cloud computing, which offers software, infrastructure and platform as a service;
4. Smarter world, which uses sensors, various predictive models, augmented reality, 3D printing and the like; and
5. Cybersecurity, which poses one of the greatest risks, and forces the companies to face new security standard challenges.

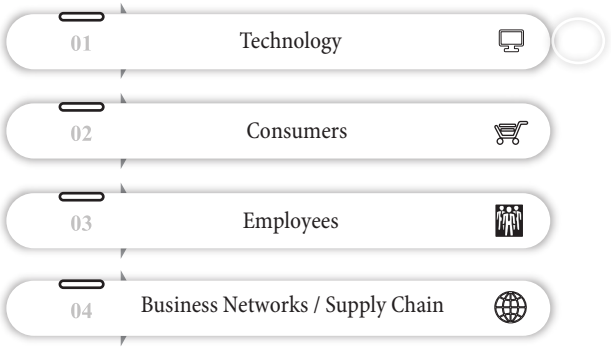
Apart from technologies, consumers also accelerate business responses, since they want personalized services

Figure 3. Business biome: CEOs want to reposition their enterprises in the ecosystems they inhabit



Source: [9].

Figure 4. Real–time business drivers



Source: [31].

and need them right away. Anytime, anything, anywhere! The hitherto dominant focus on the product, material, price and quality also shifts, since the consumers can get what they wish exactly where, how and when they wish to get it. The path of the consumer journey and its dynamics have also changed. It is now interactive and followed in real time.

Company employees are also an important driver toward understanding the need for real-time business. Owing to their customer experience and demands, they can contribute to a large extent to shaping and innovating processes, tools and business organization, thus improving customer service.

The supply chain, services and distribution partners throughout one's business network are driving the expansion of digital ecosystems. It is of utmost importance to adjust them to consumer experience strategy in order to be able to deliver products and services as promised.

Improving the digital agenda for Serbia

There is no doubt that the development of the Internet and new technologies has also opened up new opportunities for countries to achieve competitive advantage.

Any country has the instruments that should empower the market forces to differentiate winners from losers in the process of digital transformation. Investments in the expansion of digital infrastructure and the widest possible access to the Internet are of utmost importance. By encouraging innovation and entrepreneurship, countries also create the basis for improving productivity and ensuring long-term sustainable economic growth. To this end, priority should be given to education and raising the level of digital literacy.

The general state of the innovation ecosystem and digital transformation readiness

International studies on innovation, competitiveness and digital transformation readiness always present a broader picture of the digital economy than the one we see through the prism of the domestic IT industry. The recently published Global Innovation Index [3] analyzes the relevant data from many studies dealing with education, science, migration, entrepreneurship, rule of law and the like. The Figure 5. shows a diagram (based on the data from the above mentioned study) in which the scores awarded to Serbia's innovation ecosystem are compared with the typical scores in Europe for "lower" and "upper" middle GDP countries in seven index categories: institutions, human capital and research, infrastructure, market sophistication, business sophistication, knowledge and technology outputs and creative outputs. It is evident that Serbia's scores are below the European average in all seven index categories; its scores are almost the same as those typical of upper-middle GDP countries, with the exception of the market sophistication score.

The Readiness for the Future of Production Report [23] enables the comparison with the neighboring countries in several important categories, based on 59 indicators. Two categories refer to current production, while the remaining six refer to the drivers of production or, in other words, the readiness of the economy to respond to future challenges. Serbia scored 5.2 on the structure of production and 4.6 on the drivers of production, due to which it ranks among the "beginner" countries.

When comparing the drivers of production, the indicators show that Serbia has a very modest capacity in terms of the demand for innovative products and services, as well as the adoption and application of new technologies [23].

In all innovation ecosystems, the ICT sector is the "basic element" that brings together different disciplines and makes them more competitive. The OECD Digital Economy Outlook emphasizes that the ICT sector is a key driver of innovation, accounting for the largest share of research and development and one third of total patent applications worldwide [19].

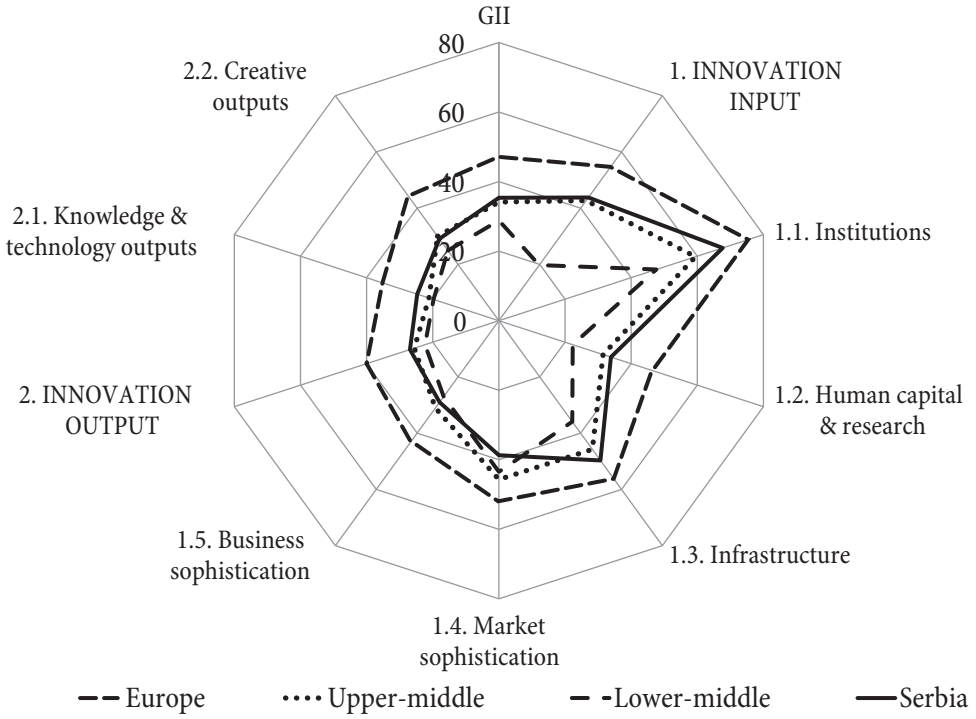
The situation in the ICT sector

IT-related jobs are simply outsourced to other parts of the world via the Internet, which is why the labor market has become global. Big software companies have created a large number of jobs in Serbia, offering much higher salaries than the country's average salary.

At present, the supply of IT specialists is much lower than the demand for them. The limited high-quality human resources are not sufficient to satisfy the needs for the digitization of the government administration, digitization of domestic enterprises, future IT human resources training and export-oriented IT industry. In fact, only the IT industry is able to offer competitive salaries and employ almost the entire available human capacity.

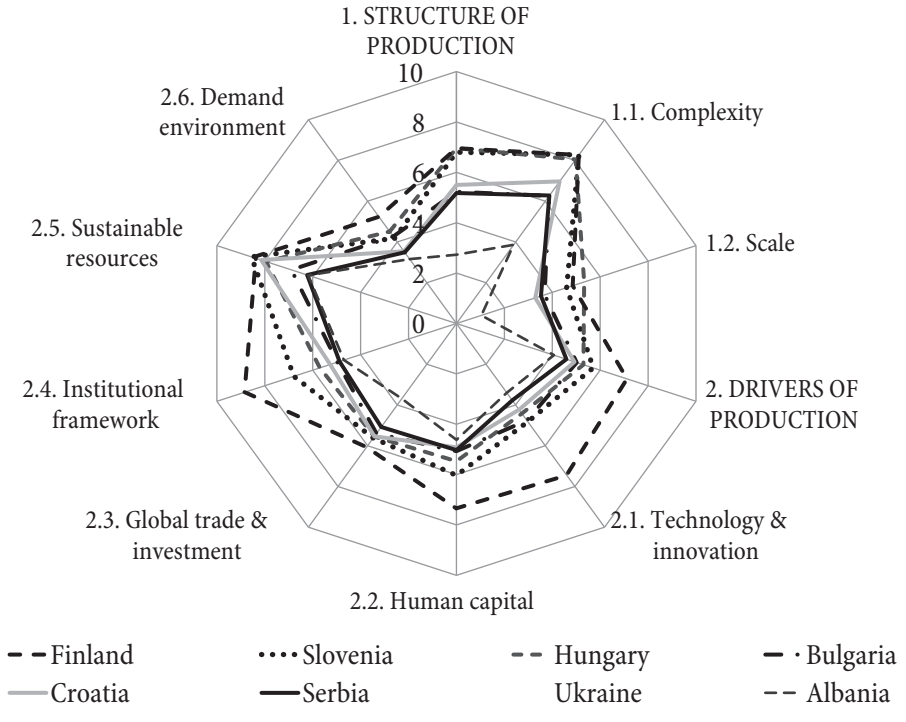
The result of labor market disruption is a large outflow of the most talented people from the part of the IT sector

Figure 5. Global innovation index



Source: [22].

Figure 6. The Readiness for the future



Source: [22].

working for the domestic market toward the part of the IT sector working for foreign employers and exporting software. In most cases, software and intellectual property rights belong to foreign companies.

Foreign IT companies mostly employ programmers, due to which IT is still not the "horizontal sector" that will bring together various sectors and thus become the driver of economic development. Domestic IT companies are few and do not have enough capital to exert greater influence on the economy as a whole.

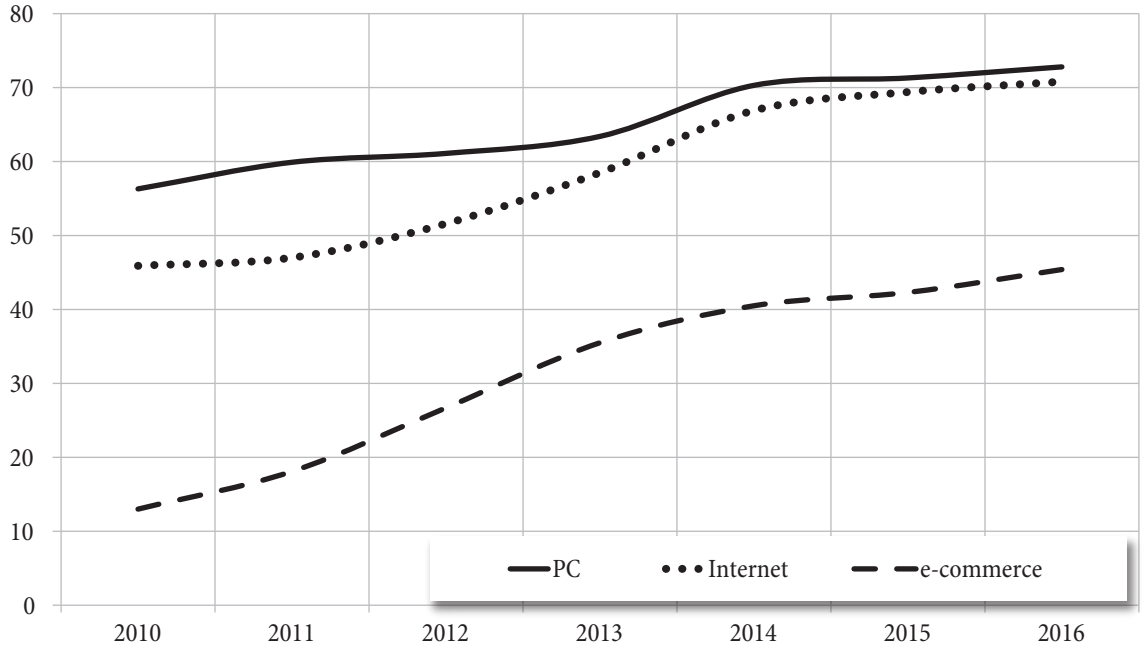
Due to the constant well-paid job offer from abroad and the unfavorable business environment in Serbia (lack of incentive for beginners, difficulties associated with foreign exchange operations, lack of financial instruments for micro and small-sized enterprises, etc.), a great number of programmers work in the informal sector. It is estimated that there are few tens of thousands of freelancers in Serbia whose labor and legal status has not been resolved. Therefore, they rarely decide to set up a company, hire workers and expand their business.

In general, the Republic of Serbia invests little in IT infrastructure and human resources. Although the return on IT investment is evidently the highest, investment in infrastructure (Internet, hardware, software and databases), is far below the EU average [12]. The situation is similar with respect to investment in human resources where, despite the declarative strategic recognition of the necessity of digitization, there is a shortage of as many as 10-20 thousand IT specialists for such a process [11].

The data on the use of ICT products and services during the 2010-2016 period (Statistički godišnjak Republike Srbije 2017/Statistical Yearbook of the Republic of Serbia 2017) show that the upward trend in the number of users has entered the saturation stage, which means that coverage cannot be expanded without significant investments in ICT infrastructure. In 2017, 67.1% of the Serbian population had access to the Internet, in comparison to the European average of 77.9%. According to the data of the International Telecommunication Union, the Internet in Serbia is, on average, much slower than in Europe (26.3 versus 178.0 kbps) and two to three times more expensive per megabyte of data transmission [37].

Serbian IT companies, which achieve the best performance results or, more exactly, the highest value added, and employ the greatest number of new people, mostly provide outsourcing services to foreign companies. Due to a small and insolvent domestic IT market, outsourcing contracts are frequently the only "survival" strategy for some IT companies, especially micro and small-sized enterprises [12].

Figure 7. User of ICT products in Serbia



Source: RZS

Relevant research yields rather poor results on e-commerce. Matijević and Šolaja [12] point out that only 40.2% of companies with access to the Internet were engaged in purchasing goods or services online, and that 20.9% of the companies were approached through the Internet to deliver goods or services.

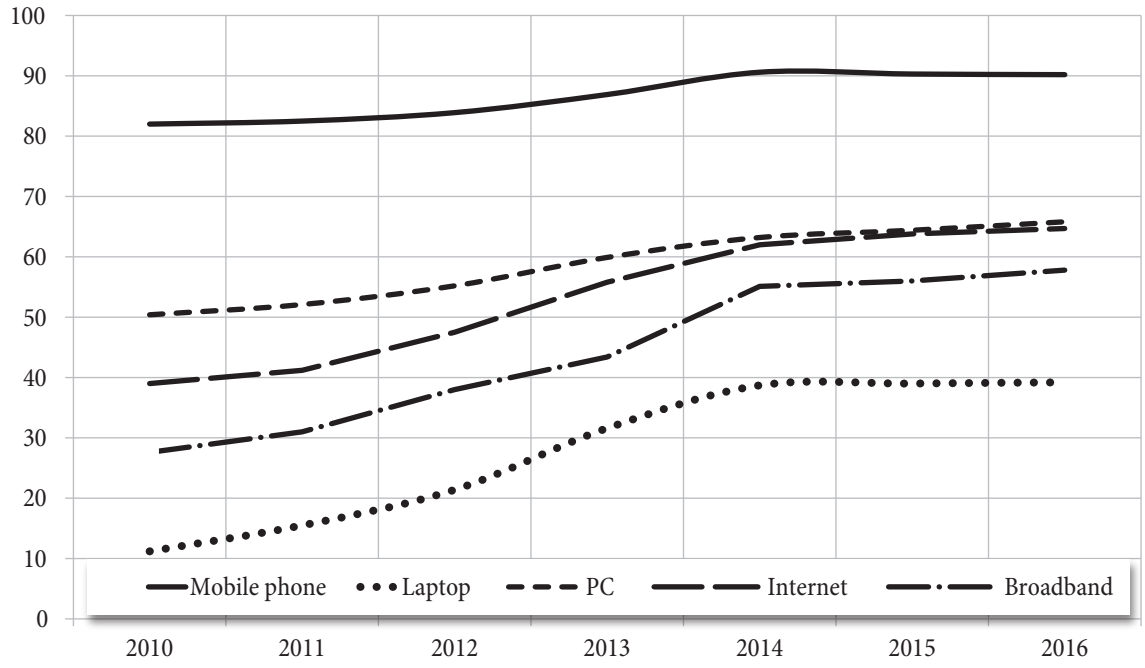
The number of people employed in the digital economy changes dramatically, mainly owing to an increase in the number of programmers, whose number was doubled from 2008 to 2016. Most of the newly employed people are sole proprietors (one-man company). From early 2017 until the end of October, 1,900 new computer programming companies were established and 1,888 are still active. About 90% of new business entities operating in this sector are registered as sole proprietorships [4].

Despite accelerated employment and high earnings of persons employed in the domestic IT industry, a very significant brain drain continues. The recent survey including 1,846 programmers, which was conducted by the StartIT Association, shows that as many as 31% of respondents intend to leave the country [21].

International studies [22] point out that Serbia ranks among the countries with the lowest capacity to attract and retain talent. There are no clear data on the impact of this disadvantage on the loss of capacity in the digital economy, but it seems that the formal education of information literate human resources cannot meet the increased expectations of the Scientific Society of Economists in terms of expansion. The Future of Production Report [23] points to one more alarming finding according to which the current workforce (it ranks 40th on the world's list with a score of 6.8) ranks better than the one we can expect in the future (i.e. 72nd with a score of 3.2).

Finally, there is a very significant regional disproportion in the distribution of ICT companies in Serbia. The data of the Business Registers Agency show that about two thirds of the total number of persons employed in the ICT sector (in programming, in particular) work for companies registered in Belgrade. The seats of the companies employing as much as one fourth of the total number of programmers in Serbia are located in Novi Sad. Up to 90% of the total number of programmers are employed in companies registered in Belgrade, Novi Sad and Niš. The highest disproportion refers to the capital of the companies registered in different regions. About 90% of total capital is held by companies registered in Belgrade. The disproportion between the number of companies and the number of their employees is much lower when it comes to sole proprietorships.

Figure 8. Households and ICT in Serbia (%)



Source: RZS.

Public policies

The most important strategic document setting the development trends of digital economy in Serbia is the Strategy for the Development of Information Technology Industry for the 2017-2020 Period[1]. The prominent strategic priorities in this area are as follows:

- Development of successful information technology companies and related products;
- Improvement of the administrative environment suitable for IT industry development;
- Improvement of human resources potential;
- IT-based modernization of business in all business sectors.

In accordance with the abovementioned strategic priorities, the Strategy anticipates the measures that should be implemented in the following fields:

- Support for IT entrepreneurship and start-up projects;
- Incentive tax policy;
- Support for entry into foreign markets;
- Support for the application of information technologies for the purpose of modernizing business in all business sectors;
- Improvement of the legal framework;
- Improvement of the human resources potential; and
- Promotion of the Serbian information technology industry.

As in the case of the previous strategy for information society development, ambitious goals are not supported by an appropriate action plan, due to which most of the anticipated activities have not yet been carried out. Action plan for the year 2018[2] of the Strategy for the Development of Information Technology Industry for the 2017-2020 Period adopted in January 2018 has quite a modest budget and does not meet the ambitious expectations of the Strategy. IT companies recognize the significance of the announced measures and the government's responsibility for establishing a system that will not only be a partner in digital transformation, but also its active promoter [6].

The Economic Reform Program for the 2017-2019 Period recognizes the significance and needs of the digital economy but, with plenty of reservations, announces more modest measures than the Strategy for the Development of the Information Technology Industry. In early 2017, according to the Economic Reform Program, the work began on a project involving the preparation of the Strategy for Smart Specialization of the Republic of Serbia. The significance of digital economy already became evident after the preliminary statistical analysis conducted by the associates of the Fraunhofer Institute [10] in which computer programming is recognized as the greatest potential of the City of Belgrade, while other digital economy activities such as IT application in agriculture or automation are recognized as an important potential for other regions.

In September 2016, the Ministerial Council for Innovative Entrepreneurship and Information Technologies was established. The Council coordinates the activities related to the implementation of operative tasks, including the improvement of conditions for digital economy development, ranging from supervision over the implementation of large infrastructure projects to solving the specific IT-related problems of entrepreneurs, such as electronic payment and equal access to Internet infrastructure.

Recommendations for improving Serbia's digital economy

After summing up what should be done in Serbia, we recommend the following:

- Fully enable e-business, which implies further harmonization of e-commerce regulations with the relevant EU regulations, abolition of the obligation to keep paper documents, harmonization of foreign exchange business legislation, etc.;
- Prepare the package of measures for freelancers and innovative sole proprietors operating in the grey economy because it is impossible for them to resolve their labor and legal status; this package of measures would enable sole proprietors to register their business in the most favorable way and obtain insurance coverage for themselves and their families, take out loans, compete for tenders, advertise themselves publicly, etc.;

1 "Official Gazette of RS", No. 95/2016.

2 "Official Gazette of RS", No. 007/2018.

- Open up the possibility of tax incentives for firms, especially small and medium-sized enterprises, which digitize their business, invest in research and development, or finance high-tech start-ups;
- Encourage companies to boost the demand for innovations through tax concessions, public procurement of innovative solutions, programs for promoting cooperation with universities and public scientific and research organizations [18];
- Manifold boost of investments in IT infrastructure, from the purchase of hardware and software to capital investments in Internet infrastructure and data centers [12];
- Prepare the package of measures that will encourage the establishment of innovative and high-tech spin-off companies of scientific and research organizations as separate legal entities that will open up the possibility of employing high-skilled human resources and researchers outside academic institutions;
- Formulate the strategy for attracting direct foreign investment to Serbia's high-tech companies, especially scientific and development centers;
- Boost investments in the human resources of the public sector, i.e. ICT competencies of the persons employed in public services and enterprises, since the digitization of the government administration and provision of their services to citizens largely depend on their ability to absorb innovations;
- Invest in all forms of formal and informal education which improve the ICT competencies of students and employed and unemployed citizens through work practice, on-the-job training, distance learning, study visits and various lifetime learning programs;
- Introduce basic registers into the e-government system [17], thus obliging the government bodies to digitize one part of their activities;
- Work systematically on the promotion of Serbian IT products and services;
- Encourage large companies and financial institutions to invest in open innovations, seed capital funds, accelerators and start-ups;
- Increase technology absorption and diffusion [18], specifically by using mobility and international cooperation for the purpose of better absorption of new technologies and exchanges [3];
- Use the existing research and development capacity for the analyses needed for the digital transformation of society, piloting the application of new technologies, public-private partnership in the high-tech field, creation and commercialization of intellectual property, etc.;
- Enable high-tech sole proprietorships and companies to gain insight into the data on the existing equipment and other resources in public scientific and research organizations, facilitate access to laboratories and use of equipment;
- Promote cooperation through clusters and value chain development, which would become Serbia's competitive advantage vis-à-vis the global market;
- Provide a detailed mapping of the scientific and economic potential through the process of smart specialization, thus optimizing investments and possibilities for international assistance and cooperation;
- Ensure technical and mentoring support for beginner sole proprietorships in the field of innovations and high technologies; and
- Ensure a greater availability of investments in the early development stage of innovative companies through alternative investment types and new financial institutions prepared for higher-risk investments.

By offering these numerous recommendations for improving the digitization of the Serbian economy and society, we have pointed out that in building the NDE, as the crucial global process which the Serbian economy is exposed to, Serbia has a great chance to be actively included in this process. At the same time, it is faced with a great challenge – how to complete the task successfully. These recommendations are merely the first step on that road which should be taken as soon as possible.

References

1. Autor, D. (2015). Why are there still so many jobs? The history and future of workplace automation. *Journal of Economic Perspectives*, *29*(3), 3-30.

2. Bhasin, V., & Bodla, M. R. (2014). *Impact of 3D printing on global supply chains by 2020*. Engineering Systems Division Thesis (Advisor: Shardul Phadnis). Massachusetts Institute of Technology. Retrieved from: http://hdl.handle.net/1721.1/92106.
3. Cornell Un., INSEAD, & WIPO. (2017). *The Global Innovation Index 2017: Innovation feeding the world*. Cornell University, INSEAD, WIPO: Ithaca, Fontainebleau and Geneva.
4. CUBE Team. (2017). *Analiza kompanija u delatnosti Računarsko programiranje i ostalim blisko povezanim delatnostima*. Beograd: CUBE Team.
5. De Stefano, V. (2015). *The rise of the 'just-in-time workforce': On-demand work, crowd work, and labour protection in the 'gig economy'*. Bocconi University Legal Studies Research Paper No. 2682602. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2682602.
6. Digital Serbia. (2017). *Digitalni manifest*. Beograd: Digital Serbia.
7. Drašković, D. (2017). *Global Innovation Index 2017 - Building Serbian innovation capacity*. Belgrade: ICT Hub.
8. Ercoskun, O. Y. (ed.) (2011). *Green and ecological technologies for urban planning: Creating smart cities*. IGI-Global. Retrieved from: https://www.igi-global.com/book/green-ecologicaltechnologies-urban-planning/55271.
9. IBM. (2015). *Redefining competition: Insights from the global C-suite study – The CEO perspective*. New York: IBM Institute for Business Value.
10. Kroll, H., Schnabl, E., & Horvat, D. (2017). *Mapping of economic, innovative and scientific potential in Serbia*. JRC. Seville: in printing.
11. Matijević, M. (2017). *IT u Srbiji, 2016-2017*. Beograd: SITO.
12. Matijević, M. and Šolaja, M. (2015). *ICT in Serbia at a glance 2015*. Novi Sad: Vojvodina ICT Cluster.
13. McAfee, A., & Brynjolfsson, E. (2016). Human work in the robotic future: Policy for the age of automation. *Foreign Affairs*, July/August.
14. McAfee, A., & Brynjolfsson, E. (2017). *Machine, platform, crowd: Harnessing our digital future*. New York: W. W. Norton & Company.
15. MIT. (2016). *Infographic: Defining digital economy*. MIT Technology Review Custom in partnership with SAP. Retrieved from: file:///F:/digital%20economy/digital%20economy%20-%20Copy/Defining%20the%20Digital%20Economy%20-%20MIT%20Technology%20Review.html.
16. Mitrović, Đ. (2017). *Na putu ka blagostanju 4.0 – Digitalizacija u Srbiji*. Beograd: Friedrich Ebert Stiftung.
17. NALED. (2017). *NALED Siva knjiga 9 – Preporuke za uklanjanje administrativnih prepreka za poslovanje u Srbiji 2016/2017*. Beograd: NALED.
18. Nyiri, L., Clément, J. L., Genovese, M., Must, Ü., Pascu, A., Remoe, S. O., & Gaál, T. (2017). *Policy mix peer review report on Serbia*. Vienna: Danube-INCO.NET.
19. OECD. (2017). *OECD digital economy outlook 2017*. Paris: OECD.
20. RZS. (2016). *Statistical yearbook*. Belgrade: Republički zavod za statistiku.
21. StartIT. (2017). *Rezultati istraživanja: Domaći programeri zadovoljni poslom, zarađuju još više i žele da uče Python*. Retrieved from: https://startit.rs/rezultati-istrazivanja-domaci-programeri-zadovoljni-poslom-zaraduju-jos-vise-i-zele-da-uce-pajton/ on 1 January 2018.
22. WEF. (2017). *The Global Competitiveness Report 2017-2018*. Geneva: World Economic Forum.
23. WEF. (2018). *Readiness for the future of production report 2018*. Geneva: World Economic Forum.
24. Government of the Republic of Serbia. (2017). *Program ekonomskih reformi za period od 2017. do 2019. godine*. Beograd: Government of the Republic of Serbia.
25. Statistical Office of the Republic of Serbia. (2017). *Statistički godišnjak Republike Srbije 2017*. Beograd: Republican Bureau of Statistics.
26. OECD. (2015). *Data-driven innovation: Big data for growth and well-being*. Paris: OECD Publishing. Retrieved from: http://dx.doi.org/10.1787/9789264229358-en.
27. Parker, G., Van Alstyne, M., & Choudary, S. (2016). *Platform revolution: How networked markets are transforming the economy – And how to make them work for you*. New York: W. W. Norton & Company.
28. Pine, J. P., & Davis, S. (1999). *Mass customization, the new frontier in business competition*. Cambridge, MA: Harvard Business School Press.
29. Rose, G. (Ed.). (2016). *The fourth industrial revolution: A Davos reader*. New York: Council on Foreign Relations.
30. Rus, D. (2015). The robots are coming: How technological breakthroughs will transform everyday life. In G. Rose (Ed.), *The fourth industrial revolution: A Davos reader*. New York: Council on Foreign Relations.
31. SAP. (2017). *The digital economy: Reinventing the business world*. Retrieved from https://ebooks-sap.com/index.php?book=digital-economy.
32. Schwab, K. (2015). The fourth industrial revolution what it means and how to respond. *Foreign Affairs, Science & Technology, December 12*. Retrieved from: https://www.foreignaffairs.com/articles/201512-12/fourth-industrial-revolution.
33. Shiller, B. R. (2014). *First-degree price discrimination using big data*. Brandeis University, Department of Economics Working Paper 58. Retrieved from: http://www.brandeis.edu/departments/economics/RePEc/brd/doc/Brandeis_WP58R.pdf.
34. Smith, R., & Leberstein, S. (2015). *Rights on demand: Ensuring workplace standards and worker security in the on-demand economy*. National Employment Law Project. Retrieved from: http://www.nelp.org/content/uploads/Rights-On-Demand-Report.pdf.
35. UNCTAD. (2017). *The 'new' digital economy and development, division of technology and logistics science*. UNCTAD: New York and Geneva. Retrieved from http://unctad.org/ier.
36. Van Alstyne, M., Parker, G., & Choudary, S. (2016). Pipelines, platforms, and the new rules of strategy. *Harvard Business Review, April*. Retrieved from: https://hbr.org/2016/04/pipelinesplatforms-and-the-new-rules-of-strategy.
37. ITU. (2017). *Measuring the information society report*. Retrieved from: https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2017/MISR2017_Volume1.pdf.

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ACCESS TO FINANCE FOR YOUNG INNOVATIVE ENTERPRISES IN SERBIA: ASSESSMENT AND RECOMMENDATIONS FOR POLICYMAKERS*

Pristup izvorima finansiranja za mlada inovativna preduzeća u Srbiji – ocena i preporuke za kreatore politika

Abstract

We provide new empirical evidence of broader relevance for financing innovation, by assessing access to finance for young, innovative enterprises in Serbia as a transition economy. A relevant data set was analysed using an online survey, building upon a wider literature review, policy documents and related entrepreneurship surveys. Derived results, corroborated by in-depth interviews with stakeholders, suggest that young innovative enterprises are overly reliant on internal sources of financing. When considering external financing, they tend to be mostly interested in grants, subsidised bank loans (and to a lesser extent equity investment), rather than the more traditional bank financing. These results support other studies demonstrating that equity financing is better suited to finance early innovation compared to debt, and that subsidised government programmes are required to bridge the gap to equity financing. Our policy recommendations centre on fostering non-bank sources of financing, while providing support to increasing technology readiness and improving the business climate.

Keywords: *access to finance, innovation, entrepreneurship, start-ups, EU, Serbia*

Sažetak

Proučavajući pristup finansiranju za mlada, inovativna preduzeća u Srbiji kao ekonomiji u tranziciji, autori predstavljaju nove empirijske dokaze sa širim značajem za finansiranje inovacija. Sprovedena je elektronska anketa, kao i pregled odgovarajuće literature, mera politike i povezanih istraživanja u oblasti preduzetništva. Izvedeni nalazi, potkrepljeni intervjuima, ukazuju na to da se mlada inovativna preduzeća preterano oslanjaju na unutrašnje izvore finansiranja. Prilikom razmatranja spoljnog finansiranja, uglavnom su zainteresovani za bespovratna sredstva, subvencionisane bankarske kredite (i u manjoj meri investiciona ulaganja), a ne za tradicionalne bankarske zajmove. Ovi rezultati podržavaju druge studije koje pokazuju da je investicioni kapital primerenije sredstvo za finansiranje ranih inovacija od bankarskog zaduživanja, te da su državne subvencije potrebne kako bi se premostio jaz do finansiranja investicionog kapitala. Stoga se i preporuke za razvoj ranih inovacija usredsređuju na podsticanje nebankarskih izvora finansiranja, uz pružanje podrške povećanju tehnološke spremnosti i poboljšanju poslovne klime.

Ključne reči: *pristup izvorima finansiranja, inovacije, preduzetništvo, novoosnovana preduzeća, EU, Srbija*

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Introduction

This paper aims to provide new empirical evidence of broader relevance for financing innovation, by assessing the state of young, innovative enterprises' access to finance in Serbia. To set the context for this empirical analysis, the current European Union (EU) innovation and access to finance policy for small and medium-sized enterprises (SMEs), and the available surveys on Serbia's entrepreneurial environment are assessed, building upon a wider literature review. Our objective has been to investigate the current state of access to finance for young innovative firms in Serbia, since studies on access to finance for innovative enterprises are generally rare, and none had previously been conducted in Serbia. Given the importance of young innovative enterprises for the overall economy and the country's competitiveness, this paper concludes by providing recommendations for policymakers and relevant institutions in Serbia, with potential applications for other economies in transition.

Ever since the pioneer research of one of the most influential economists of the twentieth century, Schumpeter [39] was published, innovations have been recognised as a key driver of economic development and growth, and a source of improvement of the standard of living. Fostering innovation-driven entrepreneurship has become a priority policy aiming to enhance a country's productivity growth and competitiveness. The European Union acknowledges the central role of innovation and entrepreneurship in job creation and economic development in the Lisbon Strategy [12] and Europe 2020 Strategy [15], as well as in other strategic policy documents including the Small Business Act for Europe [14], Green Paper on Entrepreneurship in Europe [10] and the Entrepreneurship Action Plan [16]. Entrepreneurship renders economies more competitive and innovative, with small and medium-sized enterprises (SMEs) representing the most important source of new employment in Europe, creating 8 out of 10 jobs in the EU since 2008 [46]. Particularly important to economic growth and job creation are young innovative firms. Science, Technology and Industry Scoreboard 2013 [35] concludes that young firms (5 years old or less) created nearly half of all new jobs in the past decade. "During the crisis, most jobs destroyed in most countries reflected the downsizing of mature businesses; net job growth in young firms (five years old or less) remained positive." [35, p. 13].

Access to finance is a vital determinant of entrepreneurship, driving creation, survival and growth of innovative new ventures. Commercialising new ideas improves productivity and creates wealth [4], [2], [43]. Unfortunately, when seeking financing, young innovative firms face many challenges because they lack collateral or a track record. Based on a large EU survey, 79% of Europeans reported access to finance as the most significant obstacle to starting or expanding a business [17]. Even prior to the onset of the global financial crisis, access to finance was recognised as a leading factor adversely affecting innovation and growth [13]. Lack of financial resources limits innovative enterprises from investing in new innovative projects, financing growth and meeting market requirements. Improving access to finance for young, innovative enterprises should enhance their potential to create jobs by increasing the overall number of business start-ups and their ability to grow. To improve innovative and growth capacity, EU and its Member States have developed a series of policy interventions to support new, innovative enterprises. In late 2014, the European Commission launched the COSME programme – EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises, operating until 2020 with a planned budget of EUR 2.3 billion [19]. COSME intends to facilitate access to solutions for credit problems that small businesses currently face, providing better access to finance and markets, as well as to support promotion of entrepreneurship and help create more favourable conditions for business creation and growth.

Innovative firms provide impetus to growth and development of European economies, and are gaining increasing importance in transition economies such as Serbia. Due to their specific characteristics and dedication to development of new products, processes and services, innovative firms are at the centre of attention of researchers globally. Access to finance has been identified as a crucial challenge for young innovative firms. Without proven track record or portfolio, access to finance becomes a survival test for young innovative firms. Firms need to prove to

investors that their idea and new products possess true potential to become commercially successful. Prelipcean and Boscoianu [36] point out that when SMEs have limited access to finance, especially in developing countries, this directly impacts their strategies and investment decisions. Innovation is by definition something new [5], and therefore timing plays a crucial role. Uncertainty of innovation outcomes [24] imposes additional pressure on young innovative firms in comparison to start-ups, more broadly speaking. Mazzucato [29] considers that innovations have uncertain character and that only serious commitment can bring results, which requires specific financing. Mazzucato thus advocates reforming the financial markets to enable support for innovative firms instead of punishing these entrepreneurs with scarce finance [29]. Schneider and Veugelers [38] also consider access to finance to be a highly significant obstacle to commercial innovation.

Another essential research question relates to the impact firm size on imminent financial constraints. Although it is widely believed that small firms encounter obstacles to access finance due to their size, this problem is more complex. Competitive business environment and characteristics and productivity of the SME sector itself are also important factors [7]. Nonetheless, there is an indubitably higher probability that small firms consider access to finance to be a more significant obstacle compared to medium-sized and large firms [7].

Wang [45], for instance, investigated the type of financing used by innovative small and medium-sized enterprises compared to non-innovative SMEs in Canada during 2004 and 2005. He showed that innovative firms sought external financing to a greater extent than non-innovative firms, whilst debt financing was the most frequently used type of external financing overall. An important finding is that innovative firms were more credit-constrained in comparison to non-innovative firms (54.2% of innovative firms obtained the requested loan compared to 83% of non-innovative ones). Furthermore, a higher percentage of innovative firms demanded venture capital (19.5% of innovative firms cf. 5.9% of non-innovative firms) [45]. Freel [23] researched loan applications on a sample of 256 small firms, also concluding that highly innovative firms are more credit-constrained than the less innovative ones.

Aghion et al. [3] stress that attention should be paid to differences in financing patterns of innovative firms compared to those that are less innovative, and to how R&D intensity affects financing choices. In the case of firms that invest in R&D, with increase of investment there is an increase in use of external resources (debt and equity). However, when intensity of R&D investment increases to a certain level, firms reduce debt finance and move to equity financing [3]. Mina, Lahr and Hughes [31] strongly argue that it is necessary to further explore the ratio of application versus approval of external financing. Their research indeed showed that R&D-intensive firms do not seek external financing to a greater extent when compared to less innovative enterprises [31]. Yet these results could be explained by choice of other types of financing, partly due to apprehension of loan rejection and better suitability of alternatives. This leads various authors to consider venture capital to be a sound solution for innovative firms financing [24], [36]. Newer forms of financing such as business angels, private equity or venture capital and crowd-funding can all serve as a good alternative to traditional banking products, especially for highly innovative firms. Our research focuses on Serbia as a transition economy, testing the hypothesis supported by research in more developed countries that access to finance is the main obstacle to growth of innovative enterprises.

Serbia has gone through a period of dramatic changes during the previous decades, transitioning from a planned economy (with elements of a mixed economy) and an autarchy (economic sanctions applied during conflict in 1990s) to a market economy governed by EU standards, while enduring the impact of the global financial crisis at the height of its transition. In 2014, Serbia formally opened the negotiations process for EU membership. It also embarked on a path of structural reforms at a faster pace, urged by fiscal problems and high unemployment rate, which stood at 17.9% in the last quarter of 2015, decreasing to 12.9% in the third quarter of 2017 [41], [42]. According to the World Economic Forum's Global Competitiveness Report, Serbia is categorised as an efficiency-driven economy, lagging behind the innovation-driven economies in introducing

innovations in business. In 2017, Serbia ranked as 78th of 137 countries [48]. Despite the reforms undertaken since 2001, when Serbia initiated its market transition towards EU membership, the economy continues to be burdened by weak infrastructure, low investment, high unemployment, and poor demographics (ageing population and low birth rates), further compounded by brain drain, reflected in the very low, 134th position (of 137 economies) in terms of capacity to retain talent, and 132nd position when it comes to capacity to attract talent [48].

Notably, when the twelfth pillar focused on innovation is taken into account, the ranking is unfavourable, with Serbia attaining 95th place out of 137 countries, with weaknesses pinpointed in capacity for innovation (117th place), company spending on R&D (107th place), and university-industry collaboration (95th place). We have calculated and presented here Serbia's shift in rank for the selected indicators in the Financial Market Development and Innovation pillars of the WEF Global Competitiveness Reports, comparing results in 2008-2009 and 2017-2018 (see Table 1).

As shown in Table 1, Serbia is recording some progress in bank financing, but also an increasing gap in university-industry collaboration and venture capital financing compared to other economies, which is a concern for fostering innovation, especially early innovation.

According to The Global Innovation Index 2017 published by Cornell University, INSEAD and the World Intellectual Property Organisation (WIPO), Serbia is ranked as the 62nd economy of 127 countries for which the index was calculated [11], and as 99th in the Market Sophistication sub-index, demonstrating a weakness in access to finance. Serbia's innovation potential is hampered by market sophistication, determined by the ease of obtaining a loan and obstacles resulting from poor innovation linkages. Finally, according to the Innovation Union Scoreboard 2017 [20], based on the average innovation performance, Serbia falls within the group of moderate innovators with a below-average performance, although innovation performance has been improving rapidly at an average annual growth rate of 17.3%, higher than the EU average of 2% for the 2010-2016 period.

A study conducted on a sample of 3,982 companies in Serbia revealed that the share of companies with at least one (process or another type) innovation is 47.9%; almost 70% of large companies, over one half of medium-sized companies, and over one third of small companies can be called innovative [28]. Innovative activities were found to be more common in manufacturing companies (innovations introduced in more than half of these companies), compared to 40% for service companies. The share of 47.9% of innovative companies in Serbia is just a little below the EU average (according to the Seventh Innovation Survey, 53% of EU enterprises from industry and services reported innovative activity between 2008 and 2010). The structure of different types of innovations for the period from 2014 to 2016 is provided in Table 2 [42, p. 1]. Nevertheless, since the innovation and development

Table 1: Index – Select GCI indicators: Financial Market Development and Innovation Pillars

Select Indicators	2017	2008	Change in rank 2008/2017
Availability of financial services	107	122	15
Affordability of financial services	116	-	-
Financing through local equity market	110	85	25
Ease of access to loans	86	93	7
Venture capital availability	95	85	-10
Soundness of banks	88	110	22
Regulation of securities exchanges	109	105	-4
Legal rights index, 0–10 (best)	49	16	-33
Capacity for innovation	117	92	-25
Quality of scientific research institutions	47	49	2
Company spending on R&D	107	97	-10
University-industry collaboration in R&D	95	62	-33
Availability of scientists and engineers	68	50	-18

Source: [48] and [49].

base in Serbia is lower, these innovations are generally of a more limited scope and quality compared to EU company innovations.

An important factor in fostering entrepreneurship is one of people's attitudes and readiness to engage in an entrepreneurial activity. The World Bank commissioned a survey of the general population's attitudes regarding entrepreneurship, conducted by Ipsos in December 2015. The study found that almost every second unemployed adult in Serbia considers to have what it takes to start a business (this was defined as expertise, funds, perseverance and commitment), and yet just about 30% consider starting a business, while only 8 percent have taken steps to start a business. Insufficient access to finance is noted as the leading impediment to entrepreneurship, followed by market instability and high taxes and charges [27].

These findings can be contrasted to the opinions of the IT industry specialists on the topic, as revealed by the 2015 survey conducted by the Belgrade-based StartIT Centre in partnership with 15 local IT organisations. Out of a total of 1,650 surveyed software developers, 13 percent of them already own a company, and a relatively high 41 percent of those who are not entrepreneurs yet are considering starting their own business, with another 36 percent being open to this idea should a good opportunity arise [40]. This is an important finding, demonstrating a significant increase in the awareness and positive attitudes toward entrepreneurship in Serbia's ICT sector, especially compared to the general population. A high growth of the sector (software exports increased almost twelve-fold, from 62 million in 2007 to 740 million in 2016 [30]) and successful local innovators, such as the gaming company Nordeus or the energy management company DMS-Schneider Electric, contributed to this positive change.

Without adequate funding and liquidity, no business can operate, invest and grow. The financial market in Serbia is underdeveloped. Serbia's financial system continues to be characterised as bank-centred. Public and private equity markets remain shallow. Banking loan services dominate and they tend to be unfavourable due to relatively high interest rates, high collateral demands, inadequate attention to business plans and insufficient availability of long-term loans. This is rooted in high country risk, derived from complicated business environment, inefficient judiciary and relatively frequent political changes. The United States Agency for International Development (USAID) report Financing the Growth of Small and Medium-sized Enterprises – Critical Issues and Recommendation for Serbia [44] highlighted access to finance as one of the main challenges for SME growth in Serbia [44]. According to the USAID report [44], 60% of SMEs in Serbia do not use loans from formal sources, but rely on their own resources, which has a limited growth potential. Those that use bank loans, take on average relatively small amounts and seldom use these for investments, especially in R&D activities. A subsequent report by the European Investment Bank, published in late 2016, continues to stress political and economic uncertainty as a limitation to investment loan demand: "Demand for investment loans is limited by the uncertain political and economic climate in the country, with SMEs showing reluctance to take on additional credit to invest in business expansion." Nonetheless, the report also finds financial conditions for loans to have improved over the last three years, though principally targeting larger Serbian SMEs [21].

Availability of government-guaranteed credit lines in Serbia has improved in the recent period, presently including the European Investment Bank (EIB) Apex line for medium-sized enterprises, the Italian Government's

Table 2: Structure of Types of Innovations in Total Innovation Activities of innovators, 2014-2016 (%)

	Product/service innovations	Process innovations	Ongoing or abandoned innovations	Organisational innovations	Marketing innovations
Republic of Serbia	26.9	21.0	14.3	24.2	22.3
Small	25.3	19.0	13.3	22.1	20.3
Medium-sized	33.0	28.9	17.7	31.8	30.3
Large	45.4	41.7	27.7	47.3	40.9

Source: [43, p.1].

credit line for SMEs older than two years, the European Bank for Reconstruction and Development's (EBRD) credit line for SMEs, the German KfW Development Bank's credit line for SMEs, albeit with the Development Fund of the Republic of Serbia as the sole institution offering credit lines for newly founded enterprises. Credit guarantee schemes as an instrument of financing enterprises are generally underdeveloped in Serbia, as are other sources of financing such as leasing and factoring, with limited but highly valued financing provided by AOFI – Serbian Export Credit and Insurance Agency.

Equity instruments, critical for development of new, fast-growing innovative enterprises, are also rare in Serbia. To provide financial support to young innovative enterprises and technology transfer, enabling new technologies to reach the market, the Government of Serbia established the Innovation Fund in 2011. The Fund finances technological innovations by means of mini and matching grants for early-stage, private, micro and small enterprises, support for technology transfer endeavours and grants for research collaboration between private companies and public research organisations. Since 2011, the funding for these projects has mainly derived from the European Union, with technical assistance provided by the World Bank. The Government of Serbia has financed the Innovation Fund operations, and in 2018 it has also supplied budgetary support for awarding mini and matching grants. The Innovation Fund evaluates proposals by using a process that ensures transparency and efficiency [26], which stands in contrast to the Government of Serbia's Development Fund, frequently criticised for non-transparent and inefficient selection and monitoring procedures.

When Serbia is compared to Slovenia and Croatia, countries in the region that also stem from former Yugoslavia but are now EU members, it is notable that unlike in Serbia, most of the innovative start-up funding there comes from venture capital (over 90%). Public sources, including EU donor support, still dominate in Serbia. Furthermore, the magnitude of investments in innovative companies in 2016 was much larger in Slovenia (around EUR 95 million) and in Croatia (little over EUR 15 million), compared to Serbia (EUR 1-5 million) [1]. This finance gap in Serbia can be explained by the lower level of development, demonstrated both by the GDP gap, but also by specific competitiveness rankings, such as terms of venture capital availability (Serbia ranks as 95th out of 137 countries) or efficiency of corporate boards (85/137 ranking), among other rankings outlined above. According to The Venture Capital & Private Equity Country Attractiveness Index, Slovenia ranked as 50th, while Serbia ranked as 77th of 125 countries, and yet performing better than Croatia, which was ranked as 80th [25].

An important regional initiative is the Western Balkan Enterprise Development and Innovation Facility (WB EDIF), providing financial support to SMEs in the Western Balkans, with a facility aimed at growing companies and implemented by EBRD launched in 2014 and a privately managed venture capital fund initiated in mid-2015 [22]. Enterprise Innovation Fund (ENIF) is dedicated to investments in start-ups, small and medium-sized tech companies in the Western Balkans, implemented through its investment fund vehicle South Central Ventures. Private investment funds (e.g. StartLabs, ICT Hub Venture) and USAID-supported Small Enterprises Assistance Fund (SEAF), the Serbian Business Angels Network (SBAN), Serbian Private Equity Association (SPEA) and the Belgrade Venture Forum, as well as the Belgrade Technology Park and a network of incubators are promoting private equity funding in Serbia with a rising momentum. Interestingly, several Serbian companies are also benefiting from a new form of innovation financing, the Initial Coin Offering (ICO) crowdfunding. Most notably, Game Credits received USD 54 million in the 2017 ICO [50].

Research methodology

As previous empirical studies have demonstrated, equity financing is better suited to finance innovation compared to debt, and we have analysed the state of young innovative enterprises' access to finance in Serbia and how it compares to international findings. Our interest stems from the fact that equity financing in Serbia, especially private equity financing, is not very developed, while there are limitations to traditional access to finance. The assessment was conducted by means of a quantitative and qualitative analysis, employing an online questionnaire as a data-

gathering tool, followed by in-depth interviews. The data were analysed in the context of a wider literature review, as well as in consultation of primary sources and policy documents developed by the European Union and Serbia.

The questionnaire principally relies on the European Commission (EC) and the European Central Bank (ECB) survey on access to finance of SMEs in the European Union. This survey was conducted for the first time in 2009, and then again in 2011 and recently in 2013, across 37 countries, including 28 European Union Member States [18]. The EC questionnaire was modified and tailored to the needs of our research, providing us with comparable data and background on innovative firms and gazelles. A structured questionnaire with closed answers was applied. The questionnaire encompassed three sections of questions, with the first two sections focusing on general characteristics of the firm and firm financing. The third section covers the perspectives and obstacles to company growth.

The target group of respondents included owners/executives of young innovative firms. The characteristics used to identify young, innovative enterprises (YIE) involved the combination of age, size and innovation profile. Innovative companies are defined as those introducing new or significantly improved products, services or processes, a new marketing method or a new organisational method in the business practice. To determine the company's development stage, we followed the EU state aid rules definition where young, innovative enterprises are less than 6 years old. The data set was further defined to include micro and small enterprises with up to 49 employees. The definition that is widely accepted by researchers in this area follows the EU state aid regulations definition, where young innovative companies are defined as small enterprises, less than 6 years old, "certified" by external experts on the basis of a business plan, and capable of developing products or processes which are technologically new or substantially improved and which carry a risk of technological or commercial failure, or have R&D intensity of at least 15% in the last three years or currently (for start-ups). Another related concept used in the literature is the gazelles. These companies are solely defined by their fast growth (more than 20% per year, over a period of three years), and do not necessarily need to be small, young and innovative. In fact, many of the gazelles are not based on innovations [38]. The questionnaire was distributed electronically to 115 firms that have benefited from the Innovation Fund grants and/or are tenants of business incubators, by employing an online survey tool. A total of 52 respondents, amounting to 45.22% of the response rate, completed the questionnaire which is considered to be representative due to the small market segment targeted in the research, conducted in 2015. Since there is no appropriate database that could provide us with the exact number of young innovative firms in Serbia, we took the approach of engaging the Innovation Fund of the Republic of Serbia and business incubators (via STIPNet – Serbian Technology Incubators and Parks Network), which are key institutions that are providing assistance and hence interacting with active young innovative firms, to facilitate our research. Therefore, our sample size, although relatively limited compared to international surveys, is relevant for the study of the Serbian market, which is representative of a moderately sized transition economy with an emerging innovative sector. In data processing and analysis, descriptive statistics were employed by using the SPSS statistical software package. The results are presented in the form of graphics and tables.

In order for the research to address the second research objective and provide concrete recommendations for policymakers and relevant institutions, which can be significant for improving financing of young innovative enterprises, we also conducted in-depth interviews with 9 leading representatives of institutions relevant to innovation financing – representatives of investment funds, business angels, policymakers, business incubators and the Intellectual Property Office, inquiring on their perspectives on the current state of access to finance for YIE, and, more importantly, any recommendations for relevant policy interventions. The interview was divided into two segments. The first segment featured closed-ended questions, and respondents were asked to express their opinion on the current state on access to finance. The second part of the interview was based on open-ended questions in relation to recommendations for policy interventions to improve access to finance.

Discussion of the survey results

By variable definition of a young innovative enterprise, we derived the following structure of the respondents with regard to their general characteristics – company size (number of employees), sector, duration of operation (age), ownership, and structure (see Table 3).

To conclude, most of the surveyed companies, with the exception of just two respondents, correspond to our definition of young, innovative enterprises and hence the survey results could be deemed valid for this study. They operate in a variety of sectors, but are focused on services.

Besides the general profiling characteristics, we also wanted to determine the type of innovation. According to the OECD definition, "innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method or a new organisational method in business practice, workplace organisation or external relations." [34, p. 46]. Out of 52 respondents, 80.77% stated to have new or significantly improved product or service, 21.15% to have new or significantly improved process, and 7.69% and 1.92% of respondents stated to have a new marketing method or a new organisational method in their business practice.

When asked if their enterprise is using the services or is otherwise connected to a business incubator, somewhat over 40% of the respondents responded positively. Indeed, 33.33% of the respondents stated that their business has outgrown the incubation stage and that the company currently has its own premises. The alarming finding is that 57.14% of the respondents who are not housed in business incubators are not aware of how business incubators can support start-up companies.

We also inquired on the most pressing problems that young innovative enterprises are facing while doing business in Serbia. When rated on a 10-point scale, the severity of the problem of "obtaining access to finance" was found to be most pressing (6.68 weighted average score), along with the issues of "market regulation" and "functioning of the public administration" (5.72). Pressing issues that were also deemed very important for doing business by these enterprises include "strong entry barriers and high investments required in marketing and logistics" – 5.44, "finding customers" – 5.81 and "availability of skilled staff or experienced managers – 5.43". Compared to EU-28 and other 17 countries in the Eurozone research [18] on access to finance for SMEs, the pressing issues differ. Finding customers and lack of skilled workers and managers rate as top two problems in the Eurozone, along with access to finance, which is ranked third. Yet, it is necessary to stress that this report is dedicated to the analysis of all SMEs and not only those that can also be described as

Table 3: General Characteristics of Surveyed Enterprises - Sample

Number of employees	Responses (percentage)	Responses (number)	Age (duration of operation)	Responses (percentage)	Responses (number)
1 – 9	90.30	47	Less than 2 years	44.23	23
10 – 49	9.62	5	2 years or more but less than 6	55.77	29
50 – 249	0	0	6 years or more but less than 10	0	0
250 employees and more	-	-	10 years or more	0	0
Total		52	Total		52
Sector	**Responses (percentage)**	**Responses**	**Ownership**	**Responses (percentage)**	**Responses**
Agriculture, forestry and fishing	9.62	5	Shareholders	5.77	3
Manufacturing	3.85	2	Limited liability company (owned by 1 or more persons)	94.23	49
Electricity, gas and water supply	1.92	1	Venture capital firms or business angels	3.85	2
Construction	11.54	6			
Transportation, storage and communications	1.92	1	Total		52
Information and communication technology	38.46	20			
Education	5.77	3			
Professional, scientific and technical activities	23.08	12			
Other services	3.85	2			
Total		52			

Source: Authors' calculations.

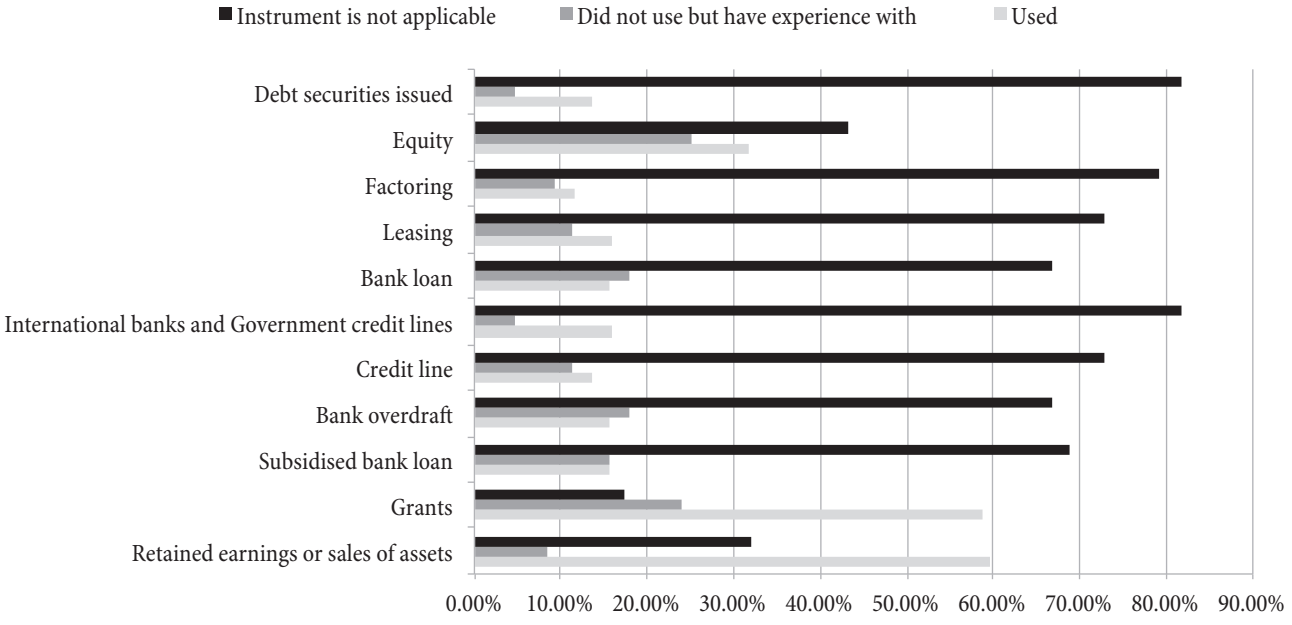
innovative, and that these companies are generally at a higher stage of development.

The second section of our questionnaire examines the use of different types of financing, comparing the ease of use of internal funds, debt financing and equity financing. The first subsection assesses the use of various types of external financing during 2014. The second group of questions focuses on companies' experience when applying for external financing. In the final group of questions, we study the level of financing, purpose and source of funding in the past two years. As shown in Figure 1, we found that internal funds were a primary source of financing, used by 59.57% of the respondents. Among other sources of financing, grants were most commonly used (by 58.703% of the respondents). Subsidised bank loans, supported by the Government, were used by 15.56% of the surveyed firms. An interesting and important result is that 31.82% of the firms used equity (including venture capital or business angels) as a way of financing their growth. The rest of the list is as follows: bank overdraft (15.56%), credit lines (15.91%), bank loans (15.56%) and leasing (also 15.91%). It is significant to note that more than 70% of the respondents stated that bank overdrafts, credit lines, credit lines from international banks, leasing and factoring have never been relevant to their firms. This percentage (81.82%) is even higher for securities. Based on these findings, it can be concluded that young innovative firms are overly reliant on internal sources of financing, and when they do need external financing, they are mostly interested in grants, subsidised bank loans and equity investments, rather than traditional bank financing.

We further inquired whether a need for a specific type of financing increased, remained unchanged or decreased in the past twelve months (see Figure 2). We discovered that the need for many sources of external financing remained unchanged during the last year. However, respondents acknowledged an increased need for grants (25.58%), equity (38.10%) and subsidised bank loan financing (13.33%), which corroborates the findings stemming from the first set of questions. Firms identified investment in research and development (64.44%), inventories and working capital (34.78%) and fixed investments (34.78%) as factors that increased their need for external financing. The ensuing set of questions focused on companies' experience when applying for external financing and on the outcome of the application process.

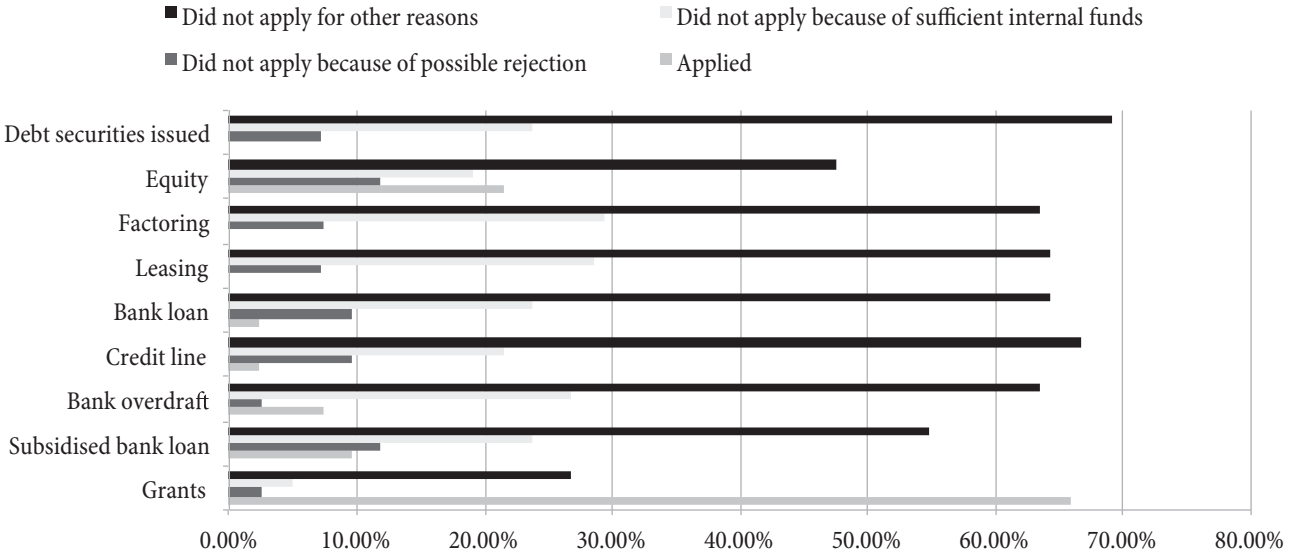
A total of 65.85% of our respondents applied for grants, which could be explained by the data set (respondents recruited in part with the help of the Innovation Fund of the Republic of Serbia that provides grants), but nonetheless should be considered a valid result since the data set is representative of innovative firms in Serbia. Pursuit of

Figure 1: Companies' Use of Internal and External Financing in the Past 12 Months



Source: Authors' calculations.

Figure 2: Types of External Financing for which the Firms applied



Source: Authors' calculations.

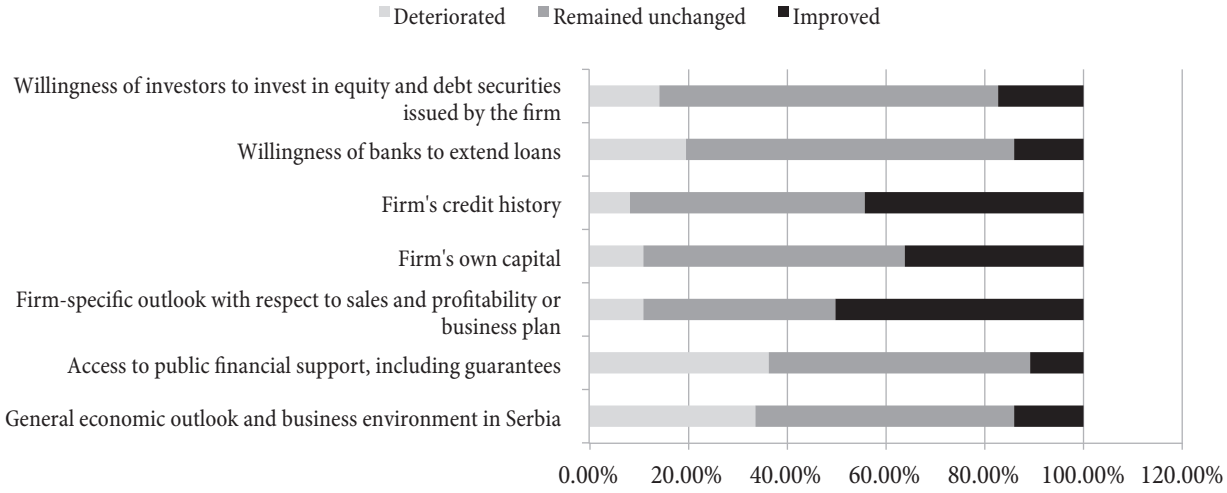
equity capital ranks second, with 21.43%. Third place is held by subsidised bank loans, for which 9.52% of firms applied. The percentage of firms that did not apply out of fear of rejection is not so high. For example, it is 11.90% for subsidised loans, the same for equity financing, 9.52% for bank loans, and 7.14% for leasing. Yet, these results can be viewed as skewed since only the established innovative enterprises were surveyed, with likelihood of apprehension being significantly higher among potential innovators.

If we analyse the outcome of application for external financing, a high 61.29% of the respondents who applied for grants obtained all the funds they requested, and another 19.35% of applicants stated that they have received most of the requested funding (75-99% of the requested funds). A total of 50% of the respondents that asked for a subsidised bank loan received all the funds they requested, and another 33.33% stated to have received most of the funding (between 75% and 99%). 75% of the firms that applied for equity financing obtained the funding they required, with the exception of one firm, which was rejected. Improvement in access to finance was reported for equity investments and grants, while subsidised bank loans were said to be less available (note: the situation has most recently improved).

The study also assessed trends relating to factors that impact the availability of external financing (see Figure 3). More than half of the respondents considered that the general economic outlook and access to public financial support remained unchanged over the past year (52.78%). Similarly, the majority (66.67% of the respondents) perceive the willingness of banks to extend a loan, and 68.57% perceive the willingness of investors to invest in equity or debt securities, as unchanged. If we analyse the firm-specific outlook, 38.89% of firms are optimistic and see improvements in their firm's specific outlook with respect to sales, profitability or business plan, while a total of 47.22% notice improvements in the firm's credit history. It is generally considered that improvement of these two factors can have positive impact on access to finance.

Investigation of the scope of external sources of financing used by young innovative enterprises in Serbia in the last two years showed that 20.51% did not use any external financing, 12.82% obtained funds in amounts less than EUR 25,000, and 2.56% of the firms obtained between EUR 25,000 and 49,999. The highest percentage of the firms (46.15%) obtained between EUR 50,000 and 99,999, and 15.38% obtained between EUR 100,000 and 249,999. Only 2.56% received funds between EUR 250,000 and 1 million, and no company had received funds exceeding 1 million. It was also valuable to determine the most popular providers of external financing. The highest percentage of the respondents – 55.56%, obtained a grant from the Innovation Fund of the Republic of Serbia, which was an expected result, and since all business incubators were contacted, it also confirms that the Innovation Fund is the key source of financing for innovative start-ups in

Figure 3: Changes in Key Access to Finance Factors



Source: Authors' calculations.

Serbia generally. Private individuals – family or friends are also highly ranked as providers of loans, with 25%. Banks provided loans to 5.56% of respondents, with 13.89% of those who borrowed from other private investors or business angels and from the Government through different financial sources (8.33%). The National Agency for Regional Development of Republic of Serbia conducted a survey called Conditions, Needs and Problems of Small and Medium-sized Enterprises and Entrepreneurs 2013, which covered a sample of 795 micro, 638 small and 150 medium-sized enterprises and 972 sole traders. The results showed that commercial bank loans are indeed the foremost important external source of financing (used by 76% of the surveyed companies), followed by loans from relatives and friends that are ranked second (13%) [32].

The last question concerned the purpose of funds. Firms indicated three main reasons. The first reason why financing was required relates to investment in research and development or intellectual property (77.14%), while the other two reasons are: land/buildings/equipment or vehicles (42.86%) and working capital (22.86%). A significant percentage of firms (28.57%) also used the obtained funds for staff training, which is a very good indicator that firms invest in their human capital.

The third part of the questionnaire explored future expectations of young innovative enterprises. We started with firms' projections of annual turnover and employment for the next three years. In terms of expected annual turnover, 78.95% of the respondents stated to expect to grow substantially – over 20% per year. Only one of 38 respondents who answered this question stated to expect a reduction in business activity. The rest of the respondents are expecting to grow moderately – below 20% annually. When compared to EU-28 and 17 Eurozone survey, our sample results correspond to the gazelles and innovators sub-sample where high-growth firms are expected to continue to grow (84%) and at a high pace of over 20% (44%). EU innovators are also confident of growth, with almost two thirds expressing that confidence (63%) [18]. The expected growth of employment is also very optimistic, with around 84.62% of firms expecting to hire new full-time employees, the majority of them (61.54%) at a pace of over 20% annual increase. This corresponds to other studies' finding that high-growth firms are job generators for the national economy [33].

Somewhat over 83% of the respondents confirmed that they would need external financing for growth. Most companies (74.19%) are interested in equity investments, while every fourth respondent is interested in obtaining the required financing from banks. Every seventh respondent is interested in credit financing from sources other than banks (e.g. trade credit, pubic sources, related company). This is in line with the finding that "lenders are less interested in the value of the businesses they are lending to, and more concerned with cash flow and ability to repay the loan, they are unlikely to finance innovative activities" [37, p. 4]. Young innovative enterprises are aware of this and looking for alternative sources of debt financing.

The amount of financing that young innovative firms are hoping to obtain stands between €250,000 and €1 million for 29.41% of the respondents, and between €100,000 and €249,999 for the same percentage of respondents. Others are more interested in smaller amounts of financing, except for two respondents needing over €1 million to finance growth.

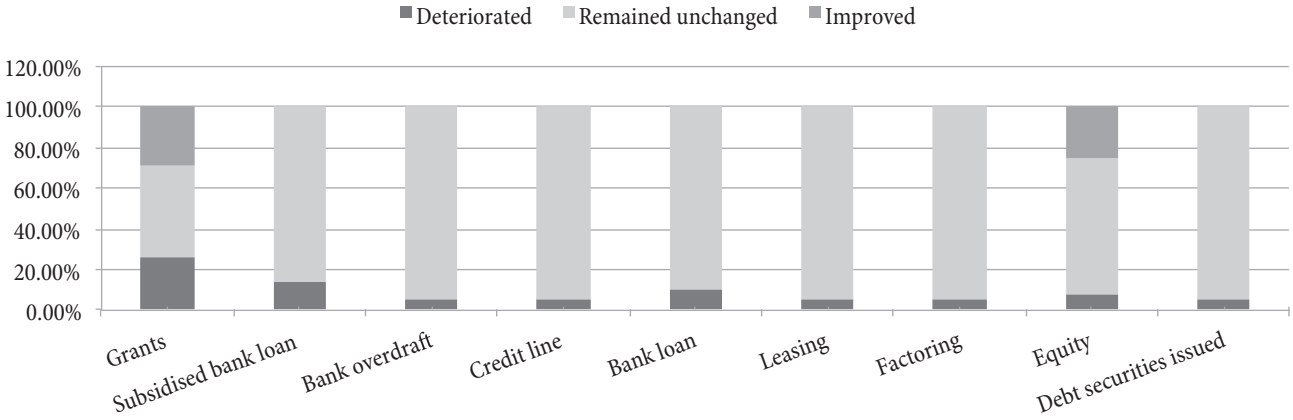
The three largest obstacles to external financing identified by the surveyed young innovative enterprises are the following: inadequate banking credit services with high collateral demands (reported by 24.14% of the companies), high interest rates and insufficient collateral or guarantee (the latter two obstacles reported by somewhat more than 20% respondents). Our survey deduces that the portion of firms finding no obstacles to obtaining financing (24.14%) pertains to those interested in equity investments to finance their R&D activities and staff training. Several respondents provided additional comments, explaining that an important obstacle to their financing lies in "the lack of access to foreign investments, low VC and business angel investments," as well as "the lack of strategic determination of the country to promote innovation as the key source of competitiveness".

Our in-depth interviews with the relevant stakeholders reinforced the findings from the company survey. When asked about the pressing problems that young innovative enterprises are facing while doing business in Serbia, rated on a 10-point scale, the severity of the problem of "obtaining access to finance" was found to be the most pressing (6.68 average weighted score). This coincides with the enterprises' view of this matter. Less pressing, though still relevant concerns, are issues of "product/market fit" (5.81), "market regulation" (5.72), and "the strong entry barriers" (5.44). When asked to select the most useful source of external financing for YIE, the vast majority of respondents indicated equity financing as the most beneficial (74.19%), ranking bank loans as the second, but far less desirable option (nearly 26% of the respondents). In terms of the observed changes in access to different sources of financing, respondents generally agree that there has been no improvement in the last year. As shown in Figure 4, availability of different sources of financing remained unchanged or deteriorated in the past twelve months. This is mainly due to the unfavourable general economic outlook, which projects further stagnation in growth.

Nikola Stefanović, General Director of USAID-supported Small Enterprise Assistance Funds - SEAF in Serbia, succinctly described the state of innovation financing in Serbia:

"In order to support the growth of innovative enterprises, the Government should build an appropriate economic system. The system would nurture innovative enterprises, and the companies would develop as a result of the system, not in spite of it. When building the necessary pillars of this economic system, the Government would need to pay specific attention to access to finance. As the first step, it would need to develop sources of financing that would accelerate growth of innovative enterprises, such as: (research) grants, business angels, crowdfunding, and venture capital. Then, as the second step, the Government would need to focus on developing

Figure 4: Changes in Availability of Different Sources of Financing



Source: Authors' calculations.

stable and sustainable capital markets (both equity and debt), which would provide support not only to innovative companies, but also to all other companies in the country."

Other leading experts we interviewed generally concur with this viewpoint, with several emphasising the business-enabling environment or legal framework as a key precondition to improving access to finance for innovative companies, and businesses in general. Furthermore, promotion of the importance of innovative entrepreneurship in Serbia is critical since there is generally low awareness of possibilities for entrepreneurship and a relatively weak entrepreneurial spirit, with most of the young, educated people aspiring to get "safe employment in the public sector" [9]. Due to limited financial support from the Government, our respondents generally recommend that private or public-private based initiatives should be supported and promoted.

Aleksandar Čabrilo, co-founder of SBAN - Serbian Business Angels Network, further identified tax incentives for innovative enterprises and investors as a means to create an improved access to finance environment for innovative entrepreneurship in Serbia. He also suggested additional Government interventions, such as:

"Opening co-investment funds with private investors ('matching grants') that would match every investment a private investor makes in SMEs in the early stages of development in the areas of interest (high-tech, IT, fast-growing companies)."

These, according to Čabrilo, could be grants or "soft" loans, which would be returned to the fund with a certain interest on income by SMEs, should it succeed in commercialising the developed product.

Conclusions

Access to finance has been identified as a crucial challenge for young innovative firms, especially in a country in transition such as Serbia, with an underdeveloped, bank-dominant financial market. Moreover, the available credit services are generally unfavourable due to high country risk, stemming from complicated business procedures, inefficient judiciary and generally weak rule of law.

Our results suggest that young innovative enterprises in Serbia, i.e. those younger than 6 years, usually of micro and small size, and those introducing new or significantly improved product, services or process, a new marketing method or a new organisational method in their business practice – are overly reliant on internal sources of financing, and when they need external financing, they are mostly interested in grants (including co-financing), subsidised bank loans and equity investments, rather than traditional bank financing. When applying for these sources of financing, they tend to be successful, although this conclusion is also influenced by our sample (companies that have been selected by the Innovation Fund of the Government of Serbia and tenants of predominantly technological business incubators).

These results support other international studies demonstrating that equity financing is better suited to finance early innovation compared to debt, and that subsidised government programmes are required to bridge the gap to equity and venture capital financing [24], [36]. As advocated by a number of researchers [29], [38], a reform of the financial market is required to enable support for innovative firms and commercial innovation. The conducted stakeholder interviews also confirm this finding.

Empirical results of our study affirm that the severity of the problem of "obtaining access to finance" is the most pressing for young innovative enterprises, along with the issue of "market regulation" and the "functioning of the public administration". Although young innovative enterprises are mostly reliant on internal sources of financing (59.57% of the respondents), when requiring external financing, they tend to apply for grants (58.70%), equity financing (31.82%) and subsidised bank loans (15.56%). Debt financing involving bank financing instruments is perceived to be far less attractive due to unfavourable conditions of financing (relatively high interest rates and collateral demands), including strict banking conditions and procedures for loan approval. This is supported by our survey results, where 65.85% of the enterprises state to have applied for grants, in contrast to 21.6% applying for any kind of bank loan in the past twelve months, including those subsidised by the state.

Future prospects are optimistic for young innovative enterprises in Serbia, since 78.95% of the respondents expect to grow by more than 20% annually in the next three years in terms of expected annual turnover, and 61.54% in terms of employment of new full-time employees. This growth is expected to require the support of external financing, and our wider secondary research supports this finding. In this respect, improved SME bank financing instruments, better suited to meet the needs of these enterprises, as well as alternative sources of financing such as equity financing, need to be made available. The former may be resolved by improving banking regulations, as well as by further investment of commercial banks in expertise in business plan valuation that could ease high collateral demands. Our recommendations are aligned with Beck et al. [6] and Bolton et al. [8], deducing that during economic downturns banks should act like relationship lenders – more oriented towards developing long-term lending relationships with SMEs and gathering inside information about companies to assess lending to relatively opaque borrowers.

Our second recommendation relates to the improvement of microfinance instruments, both by facilitating the adoption of the relevant legislation and providing SME training. Third, bank loans and export guarantees, rather than public development banks should be the sole financial market intervention by the state, especially considering the criticism of the Serbia Development Fund operations. Well-designed grants such as those administered by the Innovation Fund still play a vital role in supporting early innovation, as demonstrated by the continued high application rate. Fourth, as underscored by the relevant stakeholders, new sources of financing, which would accelerate growth of innovative enterprises, such as: (research) grants, business angels, crowdfunding, and venture capital, should be fostered. Venture capital financing in particular could be encouraged by using the SME support services provided by the public sector, such as development agencies, to build a pipeline of potential investment projects and train companies in technological readiness. Education reform centred on promoting entrepreneurship and commercialisation of innovation will also play a role in the midterm, especially if leveraged against wider European initiatives such as those led by the European Institute for Innovation and Technology - EIT. Finally, the wider business climate, and rule of law specifically, should be improved to reduce the cost of finance across the available financial instruments.

Note

1. A total of 9 in-depth interviews were held with the following stakeholders: Nikola Stefanović, General Director of USAID-supported Small Enterprise Assistance Funds - SEAF in Serbia, Aleksandra Drecun, the-then Director of the Centre for the Promotion of Science of the Republic of Serbia, Kosta Andrić, Managing Partner of ICT Hub, Đorđe Ćelić, Director of the Business Incubator Novi Sad, Gordana Danilović Grković, Acting Director at Science Technology Park Belgrade, Nikola Radovanović, Member of the Education and Information Centre at the Intellectual Property Office of the Republic of Serbia, Aleksandar Čabrilo, co-founder of SBAN - Serbian Business Angels Network, Katarina Jovanović-Obradović, Assistant Minister in charge of the SME sector and competitiveness at the Government of Serbia's Ministry of Economy, and Natalija Sandić, Programme Director at the Innovation Fund of the Republic of Serbia.

References

1. ABC Accelerator Group, & EIT Digital. (2017). *Southeast Europe start-up report 2017.* Retrieved from https://abc-accelerator.com/wp-content/uploads/2018/01/south_east_startup_report_5.pdf.
2. Acs, Z. J. (2006). How is entrepreneurship good for economic growth?. *Innovations: Technology, Governance, Globalization, 1*(1), 97-107.
3. Aghion, P., Bond, S., Klemm, A., & Marinescu, I. (2004). Technology and financial structure: Are innovative firms different?. *Journal of the European Economic Association, 2* (2-3), 277-288.
4. Audretsch, D. B., & Thurik, R. (2001). Linking entrepreneurship to growth. OECD Science, Technology and Industry STI working paper series, 2001/2. OECD Publishing.
5. Bigliardi, B., Colacino, P., & Dormio, A. I. (2011). Innovative characteristics of small and medium enterprises. *Journal of Technology Management & Innovation*, *6*(2), 83-93. Retrieved from http://dx.doi.org/10.4067/S0718-27242011000200006.
6. Beck, T., Degryse, H., De Haas, R., & Van Horen, N. (2014). *When arm's length is too far: Relationship banking over the business cycle* (working paper No. 169*)*. Retrieved from: http://www.ebrd.com/downloads/research/economics/workingpapers/wp0169.pdf.

7. Beck, T., & Demirguc-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, *30*, 2931-2943.
8. Bolton, P., Freixas, X., Gambacorta, L., & Mistrulli, P. E. (2013). *Relationship and transaction lending in a crisis* (BIS working papers No 417). Retrieved from http://www.bis.org/publ/work417.pdf.
9. Center for Advanced Economic Studies (CEVES). (2014). *Entrepreneurship in Serbia – Necessity or opportunity?*. Retrieved from http://ceves.org.rs/research/publications/.
10. Commission of the European Communities. (2003). *Green paper entrepreneurship in Europe.* Brussels: Commission of the European Communities. Retrieved from http://ec.europa.eu/invest-in-research/pdf/download_en/entrepreneurship_europe.pdf.
11. Cornell University, INSEAD, & World Intellectual Property Organization (WIPO). (2017). *The global innovation index 2017: Innovation feeding the world*. Retrieved from https://www.globalinnovationindex.org/gii-2017-report.
12. European Commission. (2000). *Lisbon European Council 23 and 24 March 2000.* Presidency conclusions. Retrieved from http://www.europarl.europa.eu/summits/lis1_en.htm.
13. European Commission. (2004). *Eurostat - Community innovation survey (CIS)*. Retrieved from http://ec.europa.eu/eurostat/web/microdata/community-innovation-survey.
14. European Commission. (2008). *Small business act for Europe*. Brussels: European Commission. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52008DC0394.
15. European Commission. (2010). *EUROPE 2020: A strategy for smart, sustainable and inclusive growth.* Retrieved from http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf.
16. European Commission. (2010). *Entrepreneurship 2020 action plan: Reigniting the entrepreneurial spirit in Europe.* Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52012DC0795.
17. European Commission. (2012). *Flash Eurobarometer 354: Entrepreneurship in the EU and beyond*. Retrieved from http://ec.europa.eu/public_opinion/flash/fl_354_en.pdf.
18. European Commission. (2013). *2013 SMEs' access to finance survey.* Analytical Report. Retrieved from http://ec.europa.eu/DocsRoom/documents/7864/attachments/1/translations/en/renditions/native.
19. European Commission. (2015a). *Growth, entrepreneurship and SMEs.* COSME. Retrieved from http://ec.europa.eu/growth/smes/cosme/index_en.htm.
20. European Commission. (2017). *The innovation union scoreboard 2017.*
21. European Investment Bank. (2016). *Serbia: Assessment of financing needs of SMEs in the Western Balkans countries.* Retrieved January 12, 2018 from http://www.eib.org/attachments/efs/assessment_of_financing_needs_of_smes_serbia_en.pdf.
22. European Investment Fund. (2016). *Western Balkans enterprise development & innovation facility.* Retrieved April 12, 2016 from http://www.eif.org/what_we_do/resources/wbedif/
23. Freel, M. S. (2007). Are small innovators credit rationed?. *Small Business Economics*, *28*, 23-35.
24. Hall, B. H., & Lerner, J. (2009). The financing of R&D and innovation. National Bureau of Economic Research working paper no. 15325. Retrieved February 7, 2015 from http://www.nber.org/papers/w15325
25. Groh, A., Liechtenstein, H., Lieser, K., & Biesinger, M. (2016). *The venture capital and private equity country attractiveness index, 2016 Annual*. Madrid: IESE Business School, University of Navara. Retrieved from http://blog.iese.edu/vcpeindex/files/2016/06/annual.pdf.
26. Innovation Fund of the Republic of Serbia. (2017). *Supporting companies to foster innovation.* Retrieved from https://ec.europa.eu/jrc/sites/jrcsh/files/20170301-02-tech-transfer-innovation-rakonjac_en.pdf.
27. Ipsos. (2015). *Omnibus Serbia public opinion survey: Citizens perception of entrepreneurship*. Presentation delivered to the World Bank.
28. Kutlača, Đ, Mosurovic-Ružičić, M., & Semenčenko, D. (2012). *Serbia's national innovation system and its performance*. Project innovation policy learning from Norway in Western Balkans (WBinNO), funded by NIFU STEP, 2011-2013, working paper. Retrieved from http://bit.ly/1I6zsBy.
29. Mazzucato, M. (2013). Financing innovation: Creative destruction vs. destructive creation. *Industrial and Corporate Change, 22*(4), 851-867.
30. Mikavica, A. (2017). *Izvezemo IT usluga koliko voća i povrća*. Retrieved from http://www.politika.rs/sr/clanak/377777/Izvezemo-IT-usluga-koliko-voca-i-povrca.
31. Mina, A., Lahr, H., & Hughesy, A. (2013). The demand and supply of external finance for innovative firms. *Industrial and Corporate Change, 22*(4), 869-901.
32. National Agency for Regional Development of Republic of Serbia. (2013). *Conditions, needs and problems of small and medium-sized enterprises and entrepreneurs 2013*. Retrieved from http://www.komoraks.co.rs/Odbori/12-26-13-NARR-Istrazivanje-stanje-potrebe-i-problemi-preduzetnika-Srbija-2013.pdf.
33. NESTA. (2011). *Barriers to growth: The views of high growth and potential high growth businesses*. London: NESTA. Retrieved from http://www.nesta.org.uk/library/documents/ResSumBarrierstoGrowth.pdf.
34. Organisation for Economic Co-operation and Development. (OECD). (2005). *Oslo manual: Guidelines for collecting and interpreting innovation data, 3rd edition.* Paris: OECD Publishing.
35. Organisation for Economic Co-operation and Development. (OECD). (2013). *OECD science, technology and industry scoreboard 2013*. OECD Publishing. Retrieved from http://dx.doi.org/10.1787/sti_scoreboard-2013-en.
36. Prelipcean, G., & Boscoianu, M. (2008). Venture capital strategies for Innovative SME's. *Annals of the University of Oradea, Economic Science Series, 17*(4), 524-529.
37. Sameen, H., & Quested, G. (2013). *Disrupted innovation: Financing small innovative firms in the UK*. London: Big Innovative Centre. Retrieved from https://www.bl.uk/collection-items/disrupted-innovation-financing-small-innovative-firms-in-the-uk#.
38. Schneider, C., & Veugelers, R. (2010). On young highly innovative companies: Why they matter and how (not) to policy support them. *Industrial and Corporate Change, 19*(4), 969-1007.
39. Schumpeter, J. (1934). *Theory of economic development*. Boston: Harvard University Press.

40. Kukić, Z. (2015). *Half of Serbian developers didn't finish faculty, average salary is EUR 1225, and Javascript is the language of the future?*. Retrieved from http://startit.rs/istrazivanje-srpski-programeri-plate-obrazovanje/.
41. Statistical Office of the Republic of Serbia. (2016). *Data – Latest indicators*. Retrieved from
42. http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=2.
43. Statistical Office of the Republic of Serbia. (2017). Science, technology and innovation statistics. *Statistical Release, 197,* 1. Retrieved from http://pod2.stat.gov.rs/ObjavljenePublikacije/G2017/pdfE/G20171197.pdf.
44. Szabo, Z. K., & Hermana, E. (2012). Innovative entrepreneurship for economic development in EU. *Procedia Economics and Finance, 3*, 268-275.
45. United States Agency for International Development (USAID). (2012). *Financing the growth of small and medium sized enterprises: Critical issues and recommendations for Serbia*. Retrieved from http://bep.rs/documents/c3/FINANCING%20THE%20GROWTH%20OF%20SME%20-%20Critical%20Issues%20and%20Recommendations.pdf.
46. Wang, S. (2009). *Financing profile: Financing innovation small and medium-sized enterprises in Canada*. Retrieved February 6, 2015 from https://www.ic.gc.ca/eic/site/061.nsf/vwapj/Profile-Profil_March-Mars2009_eng.pdf/$file/Profile-Profil_March-Mars2009_eng.pdf
47. World Economic Forum. (2014). *Enhancing Europe's competitiveness: Fostering innovation-driven entrepreneurship in Europe*. Geneva: WEF. Retrieved from http://www3.weforum.org/docs/WEF_EuropeCompetitiveness_InnovationDrivenEntrepreneurship_Report_2014.pdf.
48. World Economic Forum. (2007). *The global competitiveness report 2007-2008*. Geneva: WEF. Retrieved from https://www.weforum.org/reports/annual-report-2007-2008.
49. World Economic Forum. (2017). *The global competitiveness report 2017-2018*. Geneva: WEF. Retrieved from https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018.
50. World Bank. (2018). *Doing business 2018: Reforming to create jobs*. Washington, DC: World Bank Group. Retrieved from http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB2018-Full-Report.pdf.
51. Takahashi, D. (August 2017). GameCredits takes on Apple and Google with its blockchain-based app store. *Venturebeat*. Retrieved from https://venturebeat.com/2017/08/17/gamecredits-takes-on-apple-and-google-with-its-blockchain-based-app-store/.

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INNOVATION-DRIVEN ECONOMY AND SERBIA*

Inovacijama vođena privreda i Srbija

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Abstract

The economic strategies aimed at improving the competitiveness of the economy currently also include the creation of systems for supporting the development of innovations and innovation-related activities. Support to the development of innovations is encouraged by the formation of an efficient innovation ecosystem. In this paper, we attempt to present the state of the innovation ecosystem in Serbia. By analyzing each of its segments and building on the conclusions drawn from the survey results, we point to the importance of specified fields and their role in the creation of competitive innovation ecosystems. We present the main results of the survey conducted among high-tech IT companies, which have contributed to the presentation of the current state of Serbia's ecosystem. Bearing in mind that innovativeness is becoming the most significant component of competitive advantage, it is crucial to improve educational and research and development institutions, related infrastructure, as well as the government's involvement at all levels with the aim of supporting the abovementioned issue. In this context, it is also important to ensure the connections of companies with external institutions, accessibility of high-quality personnel, and finance, better protection of intellectual property rights, creation of an entrepreneurial culture among experts and research and development institutions, as well as the level of internationalization and access to the global market.

Key words: *innovations, competitiveness, Canvas matrix, innovation-driven, Serbia*

Sažetak

Ekonomske strategije koje za cilj imaju unapređenje konkurentnosti privrede, u aktuelnom trenutku u svoje programe uključuju i stvaranje sistema podrške razvoju inovacija i inovacionih aktivnosti. Podrška razvoju inovacija podstiče se formiranjem efikasnog inovacionog ekosistema. U ovom radu pokušaćemo da prikažemo stanje inovacionog ekosistema u Srbiji. Analizirajući svaki njegov segment i nadovezujući se na zaključke iz sprovedene ankete, ukazujemo na važnost pojedinih polja i njihovu ulogu u stvaranju konkurentnih inovacionih ekosistema. Predstavljamo glavne rezultate nalaza ankete sprovedene među visokotehnološkim IT kompanijama koji su doprineli oslikavanju trenutnog stanja ekosistema u Srbiji. Imajući u vidu to da najznačajniji elemenat konkurentske prednosti postaje inovativnost, od krucijalne je važnosti unapređenje obrazovnih, istraživačko-razvojnih institucija, infrastrukture i angažovanje države na svim nivoima u cilju podrške ovim procesima. Pored toga, ključnu važnost u postizanju ovog cilja ima i povezivanje kompanija sa eksternim institucijama, dostupnost kvalitetnih kadrova i finansija, unapređenje zaštite prava intelektulane svojine, stvaranje preduzetničke kulture među stručnjacima i istraživačko-razvojnim institucijama, i nivo internacionalizacije i pristup globalnom tržištu.

Ključne reči: *inovacije, konkurentnost, Canvas matrix, inovacijama vođena privreda, Srbija*

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Introduction

Innovativeness is one of the most important drivers and indicators of a country's competitiveness. Innovations are now present in all segments of the economy, from traditional to the most advanced, from agriculture, through medicine and pharmacy, to nanotechnologies, etc. The essence of modern development lies in the creation of innovation ecosystems, which are comprised of stakeholders who are interested in taking an active part in the realization of projects, including demand conditions, quality of education, access to finance, the number of granted patents and the like [11]. Furthermore, just the development of innovation ecosystems is a precondition for *boosting the economy*.

This paper is structured in the following way. In the first section, we present a review of the literature devoted to the innovativeness and competitiveness of the economy. In the second section, we analyze the state of the national competitiveness of the economy applying the New Global Competitiveness Index (NGCI). Thereafter, we analyze the state of the innovation ecosystem in Serbia on the basis of the Canvas matrix and the results of the survey conducted among high-tech IT companies in Serbia. In conclusion, we give our recommendations for improving the innovation ecosystem in Serbia.

Literature review

Successful economic development is the process of successive upgrading and sequencing of stages with a different set of economic challenges. These stages differ just according to the character of competitive advantages. The concept of achieving competitive advantage goes back to Alfred Marshall [8], and in modern economic science is primarily linked to Michael Porter [12, pp. 543-573]. According to Porter, economic development is essentially the process of creating competitive advantages aimed at generating the most productive segments of the economy which support fast productivity growth. According to Porter [12, pp. 543-573], in the process of boosting prosperity (GDPpc PPP growth), which is based on an increase in productivity, countries undergo three stages depending on the sources from which competitive advantages are derived: factor-driven stage, investment-driven stage, and innovation-driven stage.

At the factor-driven stage, as the initial stage, almost all successful firms base their competitive advantage only on the endowments of labor and natural resources. At this stage, relatively low wages are a logical outcome. Considered through the Porter diamond [13, pp. 188-194], such economies achieve some competitive advantages only in one of four diamond components – factor conditions. Such a choice of the sources of competitive advantages represents sharp development restrictions. In those frameworks, firms can compete only on the price dimension, including small-scale production and relatively cheap imported technologies. In a technological sense, some imitation or acquisition based on FDI inflows may sometimes emerge. Under such circumstances, foreign partners can ensure access to foreign markets, while domestic demand is modest or even nonexistent.

The economies stuck in this position are very sensitive to the global economic cycles and fluctuations in the world prices of primary products and, in particular, foreign exchange fluctuations, because just these elements hide the key drivers of demand and relative price movements.

Although at this stage of competitiveness development the possession of abundant natural resources can be the temporary mainstay of sustainable productivity growth, factor-driven economies are characterized by a poor basis for the achievement of sustainable productivity growth, because the exhaustion of one factor is followed by the loss of competitive advantage. If competitive advantage is based on endowments, that is, inherited natural resources and available workforce, prosperity will be slow-paced, while salaries will remain relatively low.

At the investment-driven stage, competitive advantage is based on efficiency in the production of standard products and services; it is necessary to create the best possible conditions for attracting investments, especially those including modern technologies. It is the question of more complex products and technologies which include foreign licenses, joint ventures and the like, and enable competing in more sophisticated industries as well. The crucial characteristic of the investment-driven stage is the ability of a country to absorb and upgrade foreign

technologies. Firms and the government are concentrated on new investments with a view to upgrading the factors from the basic to more advanced ones, coupled with the modernization of infrastructure. At the same time, it is necessary to raise the educational level of the nation, increase the number of technical personnel trained to manage sophisticated facilities and assimilate and improve technology. Firms succeed in establishing international marketing channels and direct contact with buyers. Strong initiatives for cluster formation also emerge. Competitive advantages are derived not only from the improvement of factor conditions but also from upgraded firm strategies, structure, and rivalry. In this case, firms always retain advantages over the basic factor costs, while at the same time expanding their competitive advantage by including the more advanced factors associated with university-trained engineers, educational and research institutions and the like.

Although in this case the competitive advantage is derived from one's investment ability, from which competitive advantages are derived, there is still no ability to offer unique products; firms still compete in the relatively standardized and price-sensitive market segment.

At the investment-driven stage, domestic demand is still not sophisticated, because the standard of living is still modest, despite being on the upward path. The dominant source of competitive advantages at this stage lies in the efficient production of standard products and services, based on a strong emphasis on manufacturing and outsourcing.

This stage is characterized by a rapid increase in employment, salaries and factor costs. The competitive position in the most price-sensitive industries vanishes. The economy becomes less vulnerable to global shocks and exchange rate movements than at the factor-driven stage, but still remains fragile. The success at this stage depends on whether there is a social consensus in favor of investments and long-term economic development, while at the same time cutting current spending.

At the innovation-driven stage, the source of the competitive position is linked to the production of innovative products and services on the global technology frontier using the most advanced methods. All four components of the Porter diamond must be developed and in interaction. There are more and more domestic firms competing at the global level, while the economy is characterized by strongly developed clusters. Consumer demand is becoming increasingly more meaningful because earnings are also increasing; the level of educational attainment is significantly increasing and enhancing rivalry in the domestic market. The competitive power of firms is strengthening, while industry clients are becoming increasingly sophisticated. New entrants are enhancing domestic rivalry by accelerating improvements and innovativeness. In important clusters, supporting industries are developing at the world level. New competitive industries are created from related industries.

Innovativeness is becoming the most important element of competitive advantage. Upgrading existing universities, research capacity and infrastructure is of greatest significance. New mechanisms create advanced and specialized factors that are continuously upgraded. The diamond of such industries becomes self-reinforcing, as is done by all clusters.

This stage is called innovation-driven because firms not only appropriate and improve the technology and methods of foreign firms, but also create them. The leading firms in such economies become state-of-the-art in product and process technology, marketing and other competition aspects. Favorable demand conditions, supplier base, specialized factors and the presence of supporting and related industries in the economy enable firms to innovate. Innovation capacities open spaces for new industries.

The dominant source of competitive advantage is the ability of an economy to produce innovative goods and services at the global technological frontier using the most advanced methods. The clusters here are a basis for generating competitiveness; companies compete with unique strategies and make abundant investments in skills, state-of-the-art technology, and innovation capacities.

At this stage, firms compete in more differentiated industry segments. They continue to compete on cost where this depends not on factor costs, but on productivity due to high skill levels and advanced technology. At the same time, price-sensitive and less sophisticated segments are being gradually surrendered to foreign firms.

At the innovation-driven stage, firms are most resistant to macroeconomic fluctuations and exogenous events, especially if they succeed in developing strong clusters. Such an economy is less vulnerable to external shocks and foreign exchange movements, because they compete on the basis of technology and differentiation.

The described model of stages of competitive advantages enables the correct setting of the transition points of upgrading the competitiveness of every country.

There remain numerous incomplete factor condition components, primarily those relating to the development of logistic and administrative infrastructure, which represents both a heavy legacy and an obstacle to exponential growth. In order to successfully round off Serbia's current state of competitiveness development, it is crucial to raise the level of factor conditions constituting the Porter diamond to the highest efficiency level, and significantly intensify the context for firm strategy and rivalry, primarily by reducing market monopolization, that is, strengthening rivalry and corporate structure.

However, one must bear in mind that Serbia also has the accessible islands of excellence, which represent modest yet promising achievements for the transition to the innovation-driven economy in the future, once the necessary conditions are fulfilled. The strengthening of these mainstays and the expansion of innovation zones are of utmost importance for success in this area.

The Competitiveness of Serbia

By applying the method for calculating NGCI – New Global Competitiveness Index [1] to the competitiveness rankings achieved by Serbia in 2017 according to the Global Competitiveness Report [27], we analyzed Serbia's competitive position in 2017; its competitive position in the earlier periods was analyzed in N. Savić [14], while the comparative analysis of Serbia's position relative to the countries of Central and Southeast Europe can be found in Nebojša Savić, Goran Pitić and Snežana Konjikušić [15, pp. 36-48] and [16, pp. 264-280].

In 2017, Serbia essentially improved its competitiveness ranking – it ranked 78th (in 2013, it ranked 101st). Despite this improvement, which certainly is a good tendency, other ranks are less favorable than the rank achieved by Serbia in terms of GDPpc PPP (it ranked 75th out of 144 countries). This difference between the competitiveness ranks and the rank based on GDPpc PPP shows that Serbia is unable to make productive use of available resources. The reasons lie in the fact that Serbia generates much more competitive disadvantages relative to competitive advantages.

By analyzing the NGCI for 2017 in terms of the determinants of competitiveness, we found out:

- that the microeconomic determinant of competitiveness is still in the zone of competitive disadvantages (rank 87);
- that within the microeconomic determinants of competitiveness there are competitive disadvantages in company operations and strategy (94), and modest disadvantages in the subindex National Business Environment – the Porter diamond of the Serbian economy (85);
- that within the four components of the Porter diamond, Serbia has competitive neutrality only in one part of factor conditions (79), and that it has competitive disadvantages in all three remaining components: context for strategy and rivalry (rank 93), supporting and related industries (rank 92) and demand conditions (rank 117); this means that Serbia has no competitive advantage in any of the four components of the Porter diamond, and
- within factor conditions whose rank is neutral (79), Serbia achieved competitive advantages in communications (60) and administrative infrastructure (68), competitive disadvantages in capital market infrastructure (94) and logistic infrastructure (88), and competitive neutrality in innovation infrastructure (78).

Since the issue of innovation infrastructure is very important for this paper, it should be noted that behind this neutral position according to the WEF data (rank 78), competitive advantages in skills (63) and competitive disadvantages in innovations (88) are hidden. Behind these two subindices, both competitive advantages and disadvantages are hidden. This will be illustrated with the following examples: we achieve competitive advantages

in the quality of math and science education (29), tertiary education enrolment (45), quality of scientific research institutions (47) and PCT utility patents (50). At the same time, we have dramatic competitive disadvantages in country capacity to retain talents (134), country capacity to attract talents (132), university-industry collaboration in R&D (95) and quality of educational system (93).

It has been empirically determined that Serbia is at the investment-driven stage, but in its lower segment. There are still many incomplete components in factor conditions, primarily those relating to the development of logistic and administrative infrastructure, which represents a heavy legacy and an obstacle to accelerated growth. In order to successfully complete the investment-driven stage, it is necessary to eliminate disadvantages in factor conditions as soon as possible, while at the same time improving the other two components of the Porter diamond – context for strategy and rivalry (by reducing market monopolization and enhancing rivalry and corporate structure), and demand conditions (primarily consumer protection).

Despite such a relatively low level at this stage of development, Serbia has the islands of excellence, which represent modest yet promising achievements for the transition to the innovation-driven stage in the future, when the relevant conditions are fulfilled. The strengthening of these mainstays and expansion of innovation zones are of utmost importance for success in this area.

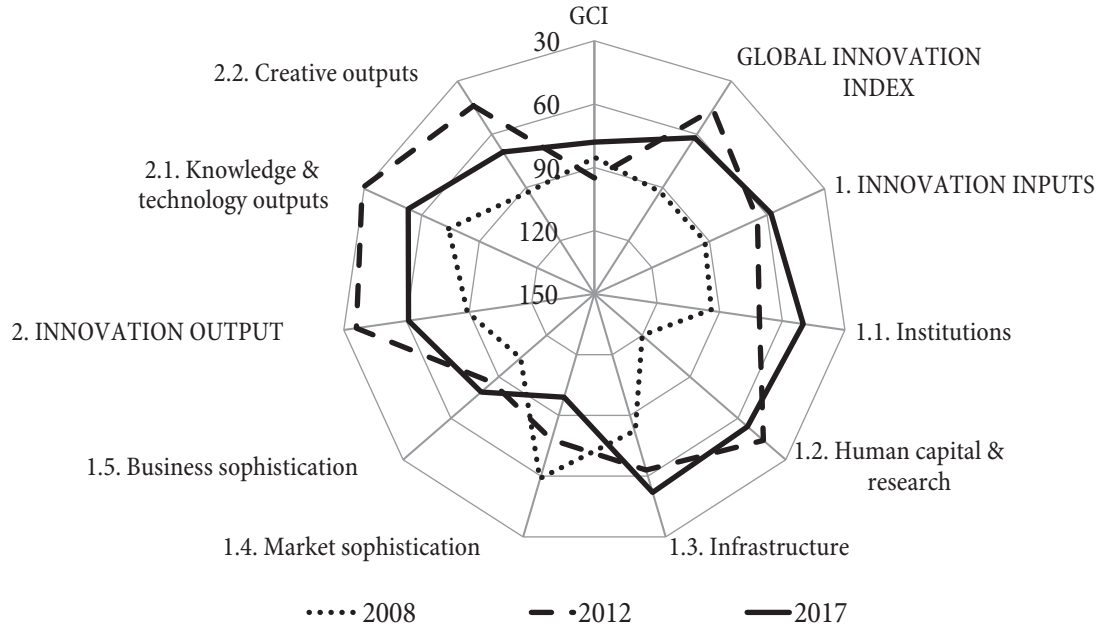
There are still incomplete components in factor conditions, primarily those relating to the development of logistic and administrative structure, which represents a heavy legacy and an obstacle to exponential growth. In order to successfully round off the competitiveness development stage in Serbia, it is crucial to raise the factor conditions from the Porter diamond to the highest efficiency level, significantly intensify the context for firm strategy and rivalry, primarily by reducing market monopolization or, in other words, by strengthening rivalry and corporate structure.

This is clearly shown in Figure 1: there are important advantages in innovation inputs, but there are also disadvantages in creative outputs.

Innovation ecosystem and Canvas matrix

In continuation we will assess the quality of the conditions in the innovation ecosystem using the CANVAS matrix of the innovation ecosystem, based on the ITU methodology [7, p. 19], which enables us to gain insight in the situation in the market, market needs and necessary collaborative

Figure 1: Global Innovation Index (GII)



Source: [27].

processes among market participants in order to establish the ecosystem that will support the development of innovations. In addition, the ecosystem quality was also assessed on the basis of the results of the survey conducted among 18 high-tech IT companies whose outputs include innovative products and solutions[1]. The questionnaire is given in the annex in this paper. The aim of the survey was to determine the basic mainstays of these firms in the development of innovativeness and then identify the bottlenecks that should be eliminated.

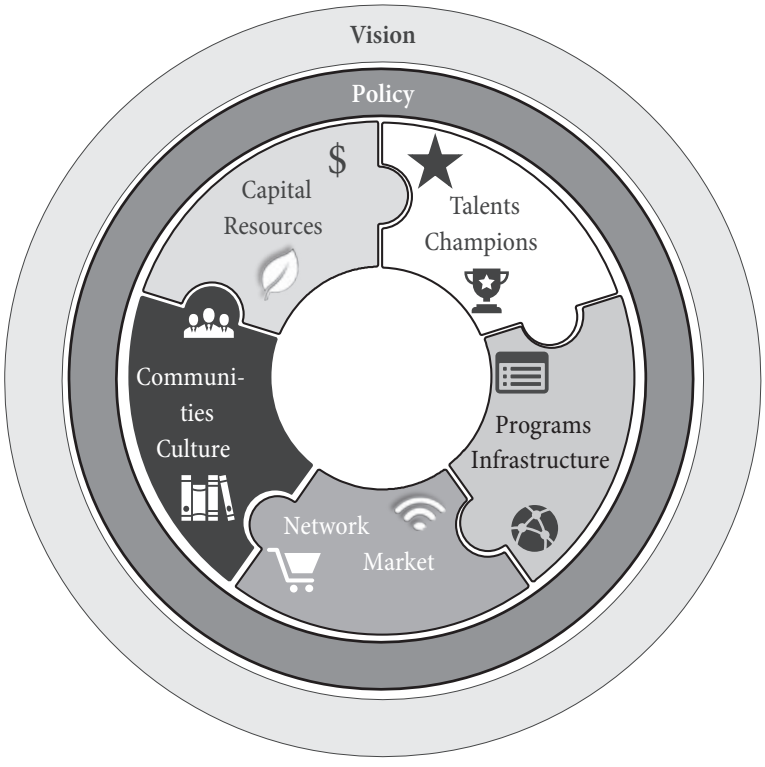
James F. Moore [10] defined the business ecosystem as an economic community supported by a foundation of interacting organizations and individuals – the organisms of the business world. The economic community produces goods and services of value to customers, who are themselves members of the ecosystem. The member organisms also include suppliers, lead producers, competitors, and other stakeholders. Those companies holding leadership roles may change over time, but the function of ecosystem leader is valued by the community because it enables members to move toward shared visions to align their investments and to find mutually supportive roles.

Figure 2 shows the determinants of efficiency in the innovation ecosystem matrix: capital and resources, talents and champions, infrastructure and support programs, market and support networks, culture and communities, policy and regulations, visions and strategy.

According to the ITU methodology, the participants in the innovation ecosystem are: (i) the state sector with a great number of government institutions, (ii) entrepreneurs, whose business model is based on the creation of innovative solutions, (iii) educational and research and development institutions, which contribute to the development of human capital and research in the innovation ecosystem, (iv) support measures, which provide specialized services and expert innovation support, including incubators, accelerators, business associations and mentors, (v) private sector, and (vi) financial institutions, which include banks, seed funds, investors and others who finance innovations in the ecosystem. The description of the role of individual stakeholders and the efficiency of the Serbian ecosystem were obtained on the basis of an analysis of the survey results. Most surveyed companies are domestically owned.

1 The FEFA survey was conducted thanks to the Startit Centre and SAM - Serbian Association of Managers, whose support was of great importance.

Figure 2: Innovation ecosystem and Canvas matrix



Source: Adapted by authors based on ITU-D Innovation.

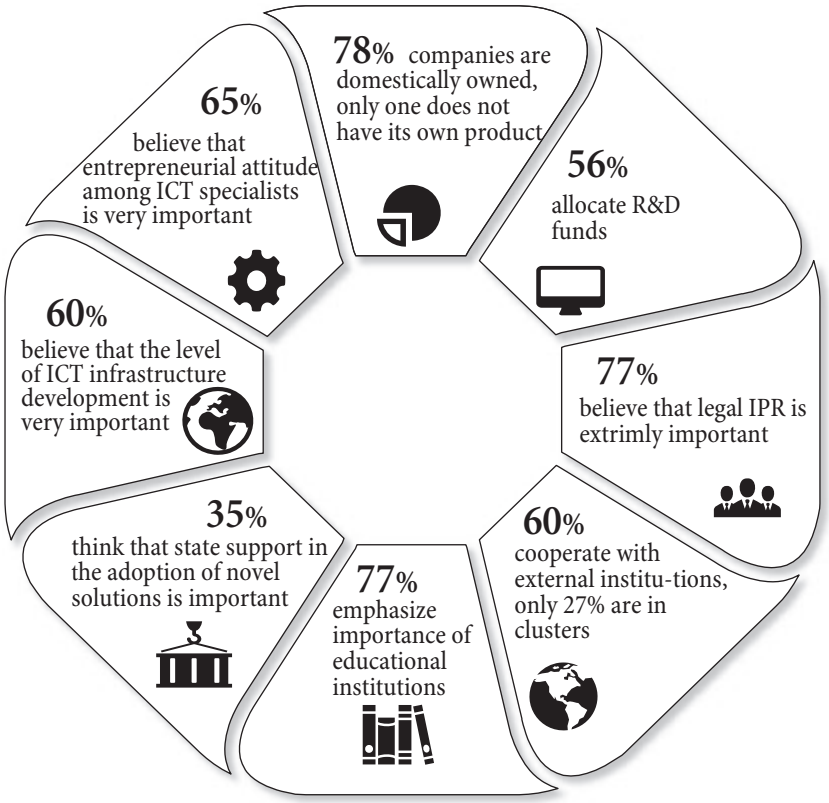
The greatest importance to the development of innovations is attached by the surveyed companies to the role of both the private and public sectors in the gradual and committed building of the innovation ecosystem. At the same time, they consider the availability of personnel, allocation of funds for research and development, and development of entrepreneurial culture as an important component of development.

Visions and strategies. The vision and strategies of support are necessary for forming the knowledge and expectations of all stakeholders concerning the lines of development. In Serbia, initiatives are being launched to support the development and establishment of an efficient ecosystem. The Digital Serbia Initiative is conducted by a group of leading IT companies with a view to building and strengthening of all parts of an efficient and digital high-tech innovation ecosystem.

The state adopted the Strategy for e-Government Development [21, p. 1] that was expected to spur the development of information society at all levels. The significance of its role in the implementation of this strategy was also confirmed by the survey results. In fact, 44% of all surveyed firms hold that the state initiative for raising awareness about digitization development is important for market transformation. Serbia also adopted the Strategy for the Development of Information Technology Industry for the Period 2017-2020 [20, p. 1] with a view to spurring the development of this sector. Bearing in mind the importance of educational and R&D institutions in the process of creating an innovation ecosystem, the Strategy for the Scientific and Technological Development of the Republic of Serbia for the Period 2016-2010 – Research for Innovation was also adopted [22, p. 1]. This Strategy anticipates the measures and programs for raising excellence in science and research, thus improving the economy. Although these initiatives exist, it is also necessary to implement them in such a way as to maximize the value for all interested parties in the innovation ecosystem.

Infrastructure and support programs. Innovation infrastructure is an important component of the development of an efficient ecosystem, which was also confirmed by about 60% surveyed companies. One significant

Figure 3: FEFA survey results



Source: FEFA survey, 2018.

innovation support program, which is initiated by the state is the Innovation Fund. It encourages the formation of new companies and the development of existing ones, promotes the transfer of technology from the academic to the commercial sector, and provides financial support to innovative projects, which are jointly developed by scientific research institutions and SMEs. In addition to the Innovation Fund, transfer of knowledge, development of new technologies and innovation commercialization in the partnership of the Government, University of Belgrade and City of Belgrade, there is also the Science-Technology Park in Belgrade.

Apart from "hard" infrastructure in Serbia, there is also "soft" infrastructure. Thanks to the existence of isolated islands of excellence, "soft" infrastructure was emerging parallel to it. Such infrastructure supports the development of innovations and start-ups in Serbia. It has also been supported by hubs, garages, accelerators, training and mentoring programs with the aim of upholding innovative ideas, from formation to implementation, development, and commercialization. Such initiatives empower the start-up community. According to the survey, companies agree that the initiatives launched in the previous period were of utmost importance for support to innovations and the start-up community.

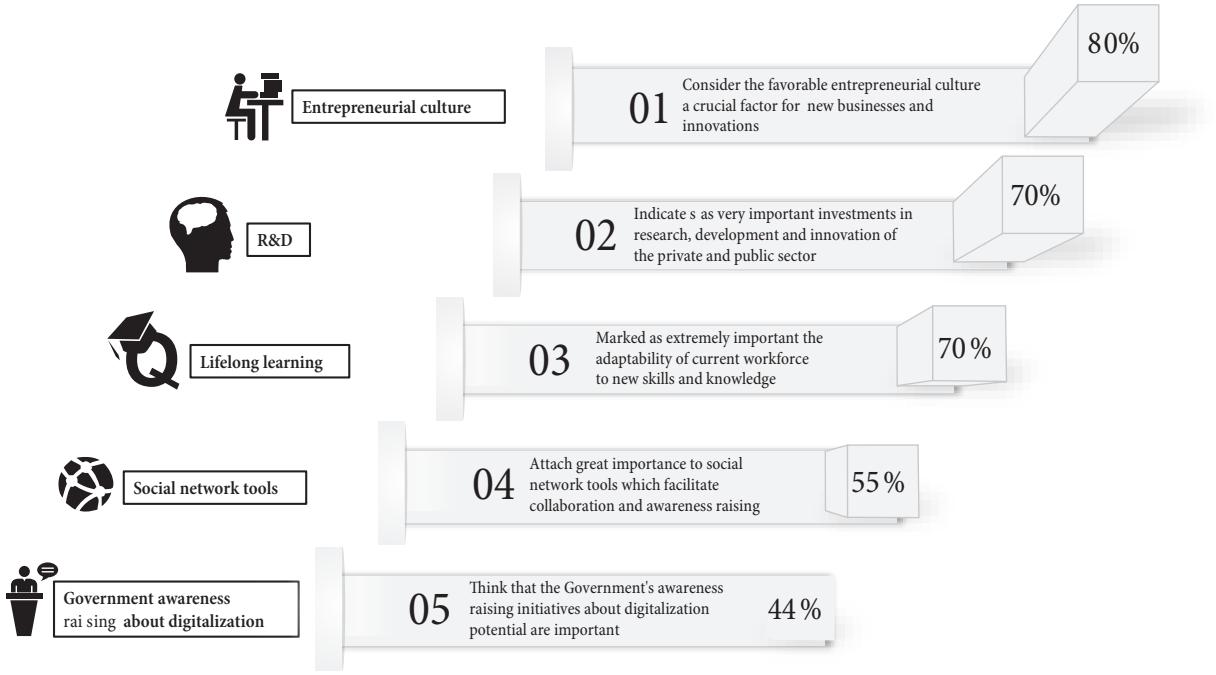
Regulations and policies. Regulation frameworks and policies are important components, which contribute to the efficiency of an innovation ecosystem. According to the Doing Business report published by the World Bank, Serbia significantly improved its ranking in 2017, and now ranks 43rd. Although the situation improved in most areas and remained unchanged in some of them, there is still room for improving the efficiency of the business environment. One such area is tax payment. According to NALED's research [3, p. 6], fiscal and parafiscal burdens pose one of the major obstacles to starting a business. According to the WEF, this also includes access to finance, complicated bureaucratic procedures and corruption. In order to empower the innovation ecosystem, it is necessary to improve the protection of intellectual property rights. More than 70% of surveyed companies hold that this kind of security is extremely important for encouraging innovativeness. It is assumed that research and development investments would also be increased (at present, half of the surveyed companies does not earmark funds for those purposes).

Talents and champions. According to the Human Development Index (HDI), Serbia ranks 66th in the world. In the region, it only ranks better than Albania and FYR Macedonia [26, p. 199]. The ability of the country to retain or attract talent is at an extremely low level. According to the indicators, Serbia was ranked above the 130th place in the group of 137 countries. Human capital provides an important basis for the development of innovative ideas and products. It is also one of the crucial drivers of the development of an innovation system. This has also been confirmed by our survey – about 90% of surveyed companies hold that the accessibility of personnel with necessary technical and creative skills is the crucial factor of knowledge and skills. At the same time, nearly 80% of surveyed companies hold that the accessibility of educational institutions provides a basis for learning knowledge and skills that are of utmost importance for the emerging sectors.

Capital. More than 75% of companies hold that access to public financing represents important support for the growth of companies. Equal importance is attached to investments in R&D and innovation by the private sector. The initiatives for financial support for start-up firms that create innovative solutions and products in Serbia are at the emerging stage. So far, the following firms have been established:

- ICT HUB Venture [4] – a private investment fund focused on early-stage technology start-ups in the SEE region and providing up to €30,000 investment;
- Start Labs [24] – the first Serbian accelerator providing up to €50,000 seed investment for innovative entrepreneurs;
- Serbian Business Angels Network [9] (established as early as 2009) is one of the first organizations of this type; it was modeled after such organizations in the Silicon Valley; this network consists of exceptional individuals who invest their capital and knowledge in firms with high development potential;
- The government provides financial support to innovative companies through the Innovation Fund according to the following two programs: (i) early-

Figure 4: FEFA survey results on knowledge and entrepreneurship



Source: FEFA survey, 2018.

stage program [5, p. 3], which is intended for emerging companies that develop technology innovations (the Fund covers 85% of the project budget that cannot exceed €80,000) and (ii) innovation co-financing program [6, p. 3], which is intended for existing firms that develop technology innovations (the Fund covers 60-70% of the project budget that cannot exceed € 300,000).

Despite the presence of the mentioned initiatives in Serbia, it is important to improve this segment of the ecosystem in order to intensify innovativeness development.

Market and market networks. The market and market networks are an important determinant of the success of an innovation ecosystem. Almost 60% of surveyed companies cooperate with external institutions for the purposes of achieving common goals, but only 27% of them are members of the cluster. If innovations emerge and develop in an ecosystem, it is necessary to implement successful commercialization strategies for innovative products and services through cooperation with market participants.

Serbia is a medium-sized country in terms of both its population (7.04 million) and GDP (37.7 billion US dollars). As for the size of the domestic market, Serbia ranks 74th out of 137 countries. Apart from satisfying the domestic demand, Serbian firms are mostly oriented to export markets. The import-export coverage in Serbia is about 78% (Statistical Office of the Republic of Serbia).

Small and medium-sized enterprises account for 66% of the total number of employees and 30% of gross value added in Serbia [19, p. 2], which is not sufficient to ensure the high flexibility and adaptability of the economy. According to the Herfindahl-Hirschman Index (HHI), the structure of almost every fifth sector in Serbia is monopolistic or oligopolistic [25, p. 13]. Therefore, it is very important to increase the participation of SMEs.

As its initiative to support the development of SMEs in Serbia, the Government adopted the strategy for support to the development of small and medium-sized enterprises, entrepreneurship and competitiveness for the period 2015-2020 [23, p. 1]. It was aimed at building the long-term competitiveness of the economy on the basis of entrepreneurial initiatives, knowledge, and application of new technologies and innovativeness. In addition to the strategies sending a signal to ecosystem participants that there is a clear vision about the competitiveness-related development of the economy, Serbia also has the networks of public actors aimed at supporting the development of

the private sector, establishing links with foreign markets, and developing new ideas and solutions. Apart from the mentioned Fund and the Science Technology Park in Belgrade, there are also the chamber systems headed by the Chamber of Commerce and Industry of Serbia, regional development agencies and Development Agency of Serbia, offices for the youth, and other initiatives at the local and regional levels.

Culture and community. In Serbia, there is increasing awareness about the need for the development of innovativeness and entrepreneurship. About 80% of companies hold that the development of entrepreneurial culture is very significant for the development of new businesses and innovations. The initiatives launched by the government, IT community and civil sector exert influence on the promotion and development of an innovation system as one of the most significant mainstays of economic and social development.

In the creation and development of innovativeness culture, an important role is played by both the government and the civil sector. The survey shows that even 65% of companies hold that the existence of the entrepreneurial spirit among ICT experts is very important, while 61% of them attach the same importance to the existence of the entrepreneurial spirit in the research sector. The organization of forums, festivals and educational workshops, as well as the general formation of the community, rallied around this issue have a favorable impact on the creation of the network of the interested parties.

Conclusion

This research was conducted in order to present the innovation ecosystem in Serbia. To this end, we identified the main steps in its development and, on the basis of the survey of 18 high-tech IT companies, presented the most important conclusions that can guide further work on the improvement of this area. It can be concluded in general that there is increasing awareness about the importance of innovations development in Serbia. For their more intensive development, however, it is necessary to additionally upgrade the innovation ecosystem. In order to achieve this goal, it is extremely important to have an efficient legislative framework, improve access to financing, implement the initiatives that raise awareness about innovations and digitization, investments in research and development, and innovations by the private and public sectors, create an efficient ICT infrastructure, and allocate funds for innovations through institutions such as the Innovation Fund. In addition, for the efficient development of the innovation system, it is crucial to ensure personnel accessibility, cooperation with educational and research and development institutions, as well as the accessibility of educational institutions that provide the basis of knowledge for the emerging sectors. The creation of an efficient innovation ecosystem that will connect all stakeholders in order to achieve the common goal is a prerequisite for the improvement of competitiveness at the micro and macro levels.

References

1. Delgado, M., C. Ketels, Porter, M. E., & Stern, S. (2012). *The determinants of national competitiveness* (NBER Working Papers Series, No. 18249, July 2012). Cambridge, MA: National Bureau of Economic Reserach.
2. Digital Serbia Initiative. (2017). *Digital manifest*. Retrieved from http://www.dsi.rs/wp-content/uploads/2017/05/DSI-Digitalni-manifest-srpski.pdf.
3. Đidić, I. (2017). *Analysis of tax and non-tax load for business beginners*. Retrieved from http://naled.rs/images/preuzmite/ANALIZA-PORESKOG-I-NEPORESKOG-OPTERECENJA.pdf.
4. ICT HUB Venture. (2017). Retrieved from http://icthubventure.com/how-it-works/.
5. Innovation Fund. (2017). MINI-GRANTS Program. Retrieved from http://www.innovationfund.rs/documents/Mini_Grants_2017/MINI_Program_Manual_ENG_5.2.pdf.
6. Innovation Fund. (2017). MATCHING GRANTS Program. Retrieved from http://www.innovationfund.rs/documents/Matching_Grants_2017/MATCHING_Manual_ENG_4.3.pdf.
7. International Telecommunication Union ITU. (2016). *ICT Centric innovation ecosystem, Country review Albania* 2016. Retrieved from https://www.itu.int/en/ITU-D/Innovation/Documents/Publications/Albania%20Country%20Review%20Innovation%20June%202016.pdf.
8. Marshall, A. (1890). *Principles of Economics*. London: Macmillan and Co.
9. Mentors and Network, Serbian Business Angels Network. (2016). Retrieved from http://mentorsandfounders.com/.
10. Moore, J. F. (1996). *The death of competition: Leadership & strategy in the age of business ecosystems*. New York: Harper Business.
11. Pflantz, K., & Griniece, E. (2015*). Framework conditions to support emerging industries in the area of digital-based services.* European Commission, European Cluster Observatory.

12. Porter, M. (1990). The competitive development of national economies. In Porter Michael (2nd Eds), *The Competitive advantage of nations* (pp. 543-573). New York: The Free Press.
13. Porter, M. (2008). *On competition*. Boston, MA: The Harvard Business Review Book.
14. Savić, N. (2012). Comparative analysis based on new competitiveness index. *Panoeconomicus*, 59(1), 105-115.
15. Savić, N., Pitić, G., & Konjikušić, S. (2013). Relative competitive position of East European countries in 2011. *Journal of Competitiveness and Strategy*, *3*, 36-48.
16. Savić, N., Pitić, G., & Konjikušić, S. (2014). Microeconomic and macroeconomic determinants of competitiveness of East European countries in 2012. I*nternational Journal of Economic Policy in Emerging Economies*, *7*(3), 264-280.
17. Savić, N., Pitić, G., & Trbović A. S. (2015). Innovation and creative industries as a basis for Serbian reindustrialization. *SAE Journal of Business Economics and Management*, *Ekonomika preduzeća*. *63*(1-2), 67-81.
18. Savić, N., Pitić, G., & Trbović, A. S. (2016). Smart, connected products as a new competitive advantage: challenges for Serbia. *Ekonomika preduzeća*, *64*(1-2), 143-15.
19. Serbian Chamber of Commerce. (2016). Information about Serbian SME sector. Retrieved from http://www.pks.rs/SADRZAJ/Files/Informacija%20o%20MSPP%20sektoru%20u%20Srbiji%20oktobar%202016%20(1).pdf.
20. Serbian Government. (2016). *Strategy for the development of the information technology industry for the period 2017-2020*. Retrieved from http://mtt.gov.rs/download/3/strategija_industrija_informacione_tehnologije2017-20_018_cyr.pdf.
21. Serbian Government. (2015). *Electronic development in the Republic of Serbia 2015-2018 and action plan for strategy implementation 2015-2016*. Retrieved from http://aler.rs/files/STRATEGIJA_razvoja_elektronske_uprave_u_Republici_Srbiji_za_period_od_2015_2018_godine_i_Akcioni_plan_za_sprovodjenje_strategije_za_peiod_2015_2016_godine_Sl_gl_RS_br_107_2015.pdf.
22. Serbian Government. (2016). *The strategy of scientific and technological development 2016-2020 of the Republic of Serbia - research for innovation.* Retrieved from http://aler.rs/files/STRATEGIJA_naucnog_i_tehnoloskog_razvoja_Republike_Srbije_za_period_od_2016_do_2020_godine_Istrazivanja_za_inovacije_Sl_gl_RS_br_25_2016.pdf.
23. Serbian Government. (2015). *Strategy to support the development of small and medium enterprises, entrepreneurship and competitiveness*. Retrieved from http://www.privreda.gov.rs/wp-content/uploads/2015/06/Strategija-mala-i-srednja-preduzeca.pdf.
24. Start Labs. (2016). Retrieved from http://startlabs.co/.
25. Udovički, K., Šormaz, N., Bobić, D., & Božović, B. (2015). *Serbia's real sector performance: Exhibited competitiveness by size, industry, and regions*. Retrieved from http://ceves.org.rs/wp-content/uploads/2015/03/CEVES-Serbia-Real-Sector-Performance.pdf.
26. UNDP. (2016). Human Development Report 2016. Retrieved from http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf.
27. WEF. (2017). Global Competitiveness Report 2017-2018, World Economic Forum, Geneva. Retrieved from http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf.

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Ulaganja u novu snagu EPS-a

Pokretanje velikog investicionog ciklusa za modernizaciju i izgradnju proizvodnih kapaciteta, u okviru kojeg ulaganja samo u tri projekta dostižu milijardu evra, jedan su od važnijih rezultata koje je „Elektroprivreda Srbije“ postigla u 2017. godini. Kao vodeća energetska kompanija u Srbiji, EPS je posvećen realizaciji velikih, strateških projekata koji se odnose na primenu najsavremenijih tehnologija, povećanje energetske efikasnosti, izgradnju novih, modernih postrojenja i unapređenje postojećih kapaciteta.

Jedan od najznačajnijih projekata je novi blok „Kostolac B3“ snage 350 megavata, prvi veliki termo kapacitet koji se u Srbiji gradi posle gotovo tri decenije. Pokrenuta je i realizacija projekta izgradnje vetroparka u Kostolcu, kojim EPS, ceo srpski energetski sistem i Srbija sigurnim koracima idu ka ispunjavanju obaveza o povećanju udela obnovljivih izvora energije. Počela je realizacija projekta izgradnje sistema za odsumporavanje dimnih gasova na četiri bloka TENT A, vrednog oko 167 miliona evra.

Da bi rudnici i termoelektrane, koji osiguravaju energetsku nezavisnost nastavili da rade, EPS ulaže u unapređenje zaštite životne sredine i ispunjava ekološke kriterijume EU.

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DIGITAL ECONOMY AND (NON) INCREMENTAL CHANGES IN TOURISM AND RETAIL BUSINESS MODEL

Digitalna ekonomija i (ne)inkrementalne promene poslovnog modela u turizmu i maloprodaji

Abstract

Digitalization of business changes producers, intermediaries, service providers and consumers. There is a vast quantity of data available. Furthermore, new algorithms providing answers from these data are also more and more available. Finally, devices possessed by an average citizen enable choice and pattern of shopping to be shaped by these answers. So, the question is whether the businesses are facing the evolution or revolution of the existing business model? Tourism industry and retail industry are analyzed in this paper in order to search for an answer to this research question.

Keywords: *digitalization, retail, tourism, industrial revolution, artificial intelligence*

Sažetak

Digitalizacija poslovanja menja proizvođače, posrednike, uslužne organizacije i potrošače. Ogromna količina podataka je na raspolaganju. Štaviše, i novi algoritmi koji obezbeđuju odgovore na osnovu ovih podataka su na raspolaganju. Konačno, uređaji koje poseduje prosečan građanin omogućavaju izbor i način kupovine koji je oblikovan upravo ovim odgovorima. Dakle, pitanje je da li se privrednici suočavaju sa evolutivnim ili revolucionarnim promenama modela poslovanja? U ovom tekstu, analizirani su turizam i maloprodaja u traženju odgovora na ovo istraživačko pitanje.

Ključne reči: *digitalizacija, maloprodaja, turizam, industrijska revolucija, veštačka inteligencija*

Introduction

Industrial revolution, being precisely understood "as concept of development that fundamentally changed our society and economy" [3, p. 11] radically turns standard business models into new areas for building competitive advantages. The fourth industrial revolution's main tools (or consequences) are new IoT devices, cloud computing, artificial intelligence, automation. Main fuel (or the main cause of the new industrial revolution) are data. According to Max Wessel, Vice President of Sapphire Ventures [29], the biggest beneficiaries in the fourth industrial revolution would be companies "with data that have access to consumers' underlying desire or sentiment about any particular subject, and build intelligent applications on top of that". There is a radical change in marketing approach.

While budget for traditional marketing media decreased on average by -1.3% in the period of 2012-2017, digital marketing budgets increased on average by 12.4% in the same period [35]. According to Gartner research [28, p. 4], digital marketing budgets have broken the three-percent ceiling and in 2014 reached 3.1% of the total revenue of surveyed companies in the US. Digital marketing has different components and all of them show strong development trends, changing the way of

value adding. Digital environment can be considered as an enabler, but also the cause of changes in many areas of marketing and marketing channels.

One of the most influenced areas is supply chain management. Efficient customer response is strongly improved with new approach to the inventory, enabling strategic categorization on promotional, capacity-driven, demand-driven, regular items and phase in/phase out items. For each of these categories different method of inventory re-ordering should be installed, stressing, for example, price elasticity and agreements with suppliers when promotional products are in question, and extrapolation and optimization when regular items are re-ordered [43]. Process of optimization, with access to precise POS information, enables change even in the size of transportation box for a particular store in a particular shipment. Moreover, development of Vehicle Routing Systems (VRS) plugged in ERP platform, enabled connection of front-end interface in the vehicle and back-end system integrating wireless connection sub-system and robust back-end data base containing static data (customers, geographical information, road network) and dynamic data (orders, prices, quantities, etc.). These developments support fleet management in real time, decreasing cost and increasing at the same time level of service [50].

Mobile marketing, as the star digital marketing activity of the second decade of XXI century is, by far, the strongest contributor to the media advertising spending worldwide [8]. Shankar [34] emphasizes four dimensions of mobile promotion: a) social effects (shares, clicks, purchase) depend heavily on interconnection of many elements like marketing strategy, firm, consumer and context factors; b) gamification elements (story, esthetics, mechanics) support strongly social effects; c) effectiveness of mobile promotion depends on good insight in consumers' tradeoff between privacy and value, reaction when proximity of buying emerges, spatial and temporal targeting and multichannel behavior; d) mobile marketing may influence customers during all stages of "path-to-purchase" and after that. Research results show that behavior of mobile users is different and more pro-active (up-loading and particularly during travel down-loading). Knowing also that males and youth are more frequently mobile, the content and triggers may and need to be differently developed [14].

Digitalization of the economy caused complex changes in marketing. Analysis of five leading scientific marketing journals for the period 2000-2015 revealed that in 160 analyzed articles actually three areas were most frequently covered: digital, social media and mobile marketing (DSMM). In these articles, three directions of DSMM technology influence were most frequently analyzed: a) on consumer self-expression and communication; b) on decision-making process as a powerful tool; c) on market intelligence as an increasing source of confident data [24].

Customer conversion and customer development (loyalty building) are marketing areas strongly enhanced by digital marketing [26, p. 7]. Tools for customer attraction and conversion like content co-creation, website design and comfort in searching, comparing and filtering vast number of offerings, make shopping easier and smarter. On the other side, emailing (newsletter, special offers, reminders) and involvement in social media make it easier and less expensive (three to five times comparing with traditional retailing) to make e-customers loyal. Development of e-CRM gave impetus to the development of CRM in total.

Market research could be significantly enhanced in the world of digital marketing: all transactional data are tracked in digital form, whether a web search is in question, or just comparison of products and terms of sale, real purchase or reclamation of a purchased product. Experts say that web analytics (WA) of browsing history is more confident than public opinion research, since nobody shows the socially desirable reactions during Internet searches, as it may happen when responding to a survey. However, some researches warn that the use of WA in measuring digital marketing performance is limited by the content, processes and context in different companies [21]. Only in the companies that clearly define digital marketing goals connected with the web activities, and after that install clear indicators that are automatically recorded and presented to the persons in charge, performance measurement can show correlation between digital marketing budgets and marketing performances. As expected, there is also

correlation between measurement of the digital marketing performances and employees' qualifications.

Digital environment

Today there are around 7 billion people living on Earth, and in every single moment there are over 12.5 billion devices connected to the Internet. The estimates are saying that until 2020, this number will be increased to 50 billion devices or 6.58 devices per person, on average [10, p. 3]. Everything that surrounds us slowly, but surely, becomes "smart". Telephones, automobiles, TV sets, books, watches, roads, houses and all other appliances. The world learns how to communicate in a completely new language, and if somebody won't be able to understand it, they will be outcast. Digital evolution, as all the other evolutions, is "rewarding" the ones that have managed to adjust but not the ones that didn't do so – they won't stand a chance to "survive". The occupations that are in high demand now were almost non-existent 10 years ago, while we cannot fully comprehend what would be the most sought occupations in 10 years. Technology is not the occupation. Technology is a tool, way, or means to realize a goal. The role of digitalization has been changing over years: from the point that it was a drive to achieve marginal efficiency to the point of becoming the main input and basis for application of innovative solutions and changes in the ways how companies are operating.

Digitalization is the cause of large-scale and sweeping transformations across multiple aspects of business, providing unparalleled opportunities for value creation, while also representing a major source of risk [46, p. 10]. Overall online sales in the UK, US, Germany and China are forecast to grow by £320 billion by 2018, expanding the size of the online market to £645 billion, according to the latest research by OC&C Strategy Consultants [30, p. 6]. The increasing power of mobile shopping via smartphone is driving much of the growth – with the UK in the forefront with 59 % of online sales made through smartphones or tablet devices, ahead of the 45 % in the US and 24 % in Germany [27, p. 3]. Between 2013 and 2017, mobile phone penetration has risen from 61.1% to 72% of the global population [49].

Contemporary digital environment is characterized by strong flow of digital data, coming from everyday activities which are now digitized. As the consequence, each activity leaves a digital track behind, causing phenomenon called "big data" denoting massive data growth [47, pp. 36-37]. Analysts recognized opportunity in this wealth of data, with simple intention to transform this data to information, then knowledge and deep insights in observed phenomena at the end. This intention is, however, heavily burdened with three V characteristics of big data stream [5]. Volume of data is increasing thanks to the fact that digital technologies quickly replace analogue technologies in each segment of human activity, generating more and more data. Variety of data also increase, containing not only numerical data, but also the so-called unstructured data, like text (social networks), images, audio and video digital records and streams. Velocity denotes a move from static to dynamic data and intention to analyze streams of incoming data in real time. These three Vs request investments in technology resources (memory, processing), but also in knowledge and new approach to the use of available data.

Digital environment relies on three infrastructures enabling modern interconnected world: technological infrastructure, service infrastructure and policies infrastructure [11]. Technology is typical enabler, making possible that different things and processes interact, enabling different services, which in turn requests rules and processes so that service users feel comfortable while using the service:

- Technology infrastructure is characterized by many new different concepts, like cloud / grid computing, with many computers networked, or pervasive / ubiquitous computing meaning that computers are everywhere and all the time. Calm technology [45] is IT present everywhere around us, in the periphery of our sight, liberating our attention to be focused on some other important things, but always present if necessary to warn and transfer information.
- Service infrastructure is represented by numerous digital agents (software) performing different services, creating number of small markets offering and using services, evaluating services, choosing the

best offer (price, quality standard, etc.). As foreseen a decade ago, it is already possible to have multiple agents (multi-agent) working on one task, and even evolutionary agents that adapt using evolutionary algorithm according to the changing environment [13, p. 6].

- Policies infrastructure is necessary to secure "trust" in digital world where it is obvious that asymmetry of information exists. Majority of our activities are digitally recorded, and access to these data provides superior advantage to the digital supplier. If users do not have a "trust" that this advantage will not be misused, they will not be willing to accept services offered. Legislators (like EU with its Regulation EU 910/2014) are aware and strive to meet this rising need of digital service consumers for safe and secure use of digital products [2].

Digital economy, particularly social networks, websites and emailing might have been seen as suitable for the SME sector, being perceived as low-budget channels of communication with target public. Yet, it is noticed that the SME sector uses digital marketing tools rather poorly [36]. Key barrier for digital marketing implementation in the SME sector is a lack of (human) resources, particularly lack of skills and knowledge to deal with this component of marketing. The second important barrier is resistance of the business owner / manager. With the growth of business, the implementation of digital marketing becomes more successful too, denying the expected assumption that digital marketing is suitable for micro companies and start-ups.

Further development of digital services depends on security and safety. This caused strong and coordinated legal activity in the EU, striving to support further development of electronic identification and trust services [2]. Electronic identification (eID) already exists in several countries and private networks, but with no mutual recognition and joined standard. The idea is to impose a standard eID procedure so that public services can be offered to EU citizens in all countries, across Europe. Depending on the type of service, there are three levels of assurance - low, substantial and high - requiring different procedures and elements involved. Availability of the services will require further trust instruments, besides electronic signature, that showed not to be reliable, since each EU country transposed differently the Directive 1999/93/EC in its legislation system. New trust instruments to be introduced are: electronic seal (to ensure origin of the document for legal persons); electronic time stamps (to ensure time linked with document); electronic delivery registers service (to ensure data on document transmission); website authentication (to ensure recognition of website owner); validation service (to provide confidence during the use of previous instruments); and preservation service (to secure the use of previous instruments).

Understanding that digitalization of the economy and total social environment is a necessary ingredient in further development, EU Commission installed a useful instrument, dashboard with key indicators showing level of digitalization in member countries, decomposed in major components [7]. This decomposition shows that countries have almost equal level of connectivity. Differences, however, came from different level of other components: human capital, integration of digital technologies and, particularly, availability of digital public services. Differences can also be tracked in the evolution of different digital services. Looking in sub-component of business digitalization, for instance, the development of social media is strong and permanent and development of electronic information sharing, achieved very high level. However, the development of RFID technology was very eruptive during 2015 to later stagnate, being at the bottom of the change during 2017. These indicators are useful for business community as well as for the public policy decision makers. Very illustrative is the comparison of countries by two dimensions: level of connectivity and digital public services. Comparing observed countries, it is obvious that some very developed countries (the Netherlands, Denmark and Sweden) have been developing both dimensions strongly. However, some countries, like Estonia, achieved high level of digital public services with rather low level of connectivity. Unequal development of different pillars of digitalization is important warning and/or chance, for both business and public sector. Moreover, differences in industrial sectors, like tourism and retail, and evolution in customer and consumer behavior, suggest that some of the

known jobs will disappear, the demand for critical skills and knowledge will transform and also that the structure of supply and demand may significantly evolve. All above listed arguments make it reasonable to analyze important research question – *Q1: Does digitalization cause evolution in business?* Alternative is that digitalization actually causes strategic, non-incremental changes and discontinuity of known business patterns. Arguments in favor of both options will be considered in the rest of the paper.

Digital economy in tourism

Digital traveler

Unlike other industries, tourism, or, to be more precise, hospitality industry, or more specifically, accommodation services cannot be replaced with some virtual reality. However, it was the use of digital technology that changed the habits of modern consumers and their interest in tourism and hotel industry. Almost 50% of all global tour-activities bookings are being made online [1]; 59% of Asian leisure travelers want to book travel products "whenever they can" and "wherever they can" [38]; Internet travel booking revenue has grown by more than 73% over the past 5 years [1]; 20% of Google searches being for local destination information [37]; over 50% of today's travelers prefer PC rather than the smartphone to make their travel bookings [40], but, 30% of all direct online bookings worldwide are made on mobile devices (tablets and smartphones) at increasing rate of 1% per quarter [1]; 38% of leisure travelers and 57% of business travelers use mobiles for travel information [1]; 31% of smartphone users claim they research travel on their mobile devices [37]; 87% of global and 85% of US travelers use mobile devices while traveling [40].

On the other hand, 51% out of the reservations are executed online, out of which 22.5% via online tourist agencies – OTA [20]. Furthermore, 18% of reservations are done in "motion" (usually via mobile phones or tablets). Around 2/3 hoteliers are systematically gathering data on guests' preferences, but still less than 50% of them are using these data for creating individual offers [33]. It is expected that the millennials and generations Y and Z that are born and raised with the digitalization would comprise 44% of the world's population by 2020 and 2/3 of world's working force by 2025. It is estimated that the future changes in the tourism market will be under strong influence of new technologies, regardless of the types of products or services that are offered to the guests.

Internet has to a great extent influenced changes in the ways of searching for new destinations, booking accommodation as well as in experience of the journey itself. Online booking platforms have taken over very important part of the marketing efforts. Applying new technologies has influenced creation of the so-called sharing economy that has, after accommodation services, found its practical use in the domain of transport, catering, etc. We can undoubtedly discuss about digital transformation of how business is done in tourism. Airbnb has transformed accommodation services while Uber has entirely innovated transportation and taxi services.

Table 1: The influence of the sharing economy to the travel experiences

Share rides	Stay overnight in someone's home	Share a meal with someone	Meet someone
• BlaBlaCar • Uber • Sidecar • Getaround	• Airbnb • 9flats.com • Wimdu	• OpenTable • EatWith	• Womago • Withlocals • Advlo • Vayable • Tinder

Source: Roland Berger, adapted by the authors [32]

Application of new technologies influenced development of a new culture of media: Information available in real-time are facilitating comparison of offers for leisure and accommodation. Current market condition in tourism industry and air transport is that since the mid 80s until today, the volume of the air transport has been doubled every 15 years, with the expectation of the continuation of this trend. According to the UNWTO data [42, p. 5], it is estimated that until 2030 there will be more than 1.8 billion of international tourists. Besides, trips have become less costly: the prices of the airplane carriers were in 2016 on average lower by 4% in comparison to 2015 [9, p. 1]. Additionally, changes, when it comes to security issues (geo-political tensions and terrorism), have and will continue to have influence on realization of trips in some parts of the world, as well as in modern conditions. Security issues are not only relevant for the

physical surrounding (e.g. border crossings and tourism destination centers), but also in digital world (e.g. data privacy). Security breaches (in physical and digital world) and accidents can create serious financial and reputation damages to the companies operating in tourism industry.

Economy of experience and personalized consumers' approach

According to the study performed by Fundación Orange [12] on digital transformation in tourism, there is an extensive use of information and transaction data in every phase of the value chain in tourism and travel sector. Consumers look for information before the trip, compare and check the opinion of other tourists, and then book tickets for the transportation, hotels and even tickets for sport and cultural events. While travelling, consumers have numerous questions regarding restaurants, events and other activities on the destination while, after travelling, they provide to online users insight and grading of their experience. Leisure travelers spend on average 30 minutes reading reviews before booking, while 10% of travelers spend more than one hour for it [38]; 88% of consumers trust online reviews as much as personal recommendations [38]; 81% of all reviews are positive [1]; 85% of consumers trust online reviews as much as personal recommendations – this is an increase of 12% compared to 2012; 32% of consumers read reviews on mobile apps in 2017 (a growth of 14% from 2016) [25], etc.

Having all this in mind, many tourist and hotel companies are not only changing their web and offline functions with new mobile formats, but are also creating new experiences and new business models specially designed for mobile chains of communications. Numerous facts are indicating the potential of the digitalization in the tourism sector:

- Search for information before the trip: it is the most widespread use of the Internet, because today more than 90% of users check information before booking the trip or hotel; 95% of respondents read reviews before booking [38]; leisure travelers read an average of 6-7 reviews before booking; business travelers read an average of 5 [38]. As a result, there is a creation of the interactive web places that can be accessed via mobile devices (e.g. blog NH hotel group).
- Crosscheck on references: although it is a part of searching for the information before the journey process, in many cases, the search is done via other channels and not on the company's website. Consequently, hotel company needs to provide answers, especially to negative comments and critics and to manage this process.
- Online booking and cancelling of the guests in the accommodation facilities: amongst the most pragmatic functions, especially for the hotel and airplane ticket reservations; possibility of online checking saves time for the future guests and enhances internal managing of the company. Lately, certain companies insist on free check-in online except for the Loyalty Card holders.
- Safe process of the reservation and purchasing: increase in the number of the online reservations and purchasing has resulted in the increased level of concern by the users for the security of their personal and financial data. One of the main challenges for every company is the implementation of the solutions that provide high level of security in the data management process.
- Developing of the applications: users, modern tourists, are seeking information before and during the trip, initiating development of the general and specialized applications and platforms. There are different applications that can be used for providing information about places and activities in and outside the hotel, with mobile services adjusted to the customers' preferences.
- Smart cities: some cities have made a step forward in development of applications, starting implementation of the geo-location smart systems with signals that provide useful information for tourists: weather forecast, accommodation facilities, cultural and natural heritage, possibility of transport, and even additional services like systems for children monitoring.
- Connection possibilities: free mobile connection is of the essence for most of the users. Although Wi-Fi

and 4G Internet connection sometimes are not offered in the hotels, restaurants or airports, there are open spaces with free Wi-Fi in some destinations.

- Access to mobile devices: some hotel chains are offering to their clients devices like tablets or smartphones during their stay at the hotel as a courtesy sign for free or for a very small remuneration and thereby facilitate easy access to tourist information and amusement activities.
- Development of new business models: high availability for the users and possibilities offered for their geo-location are facilitating more adjusted tailor-made services, even new services such as reservation at destination. This trend is more present in young generation (especially millennial generation) assuming travelling without predetermined itinerary and booking hotels once at destination. The trend is also present in the business trips that are subject to last minute changes.
- Applications that are created for certain industries give fantastic results in entertainment and tourism industry, because they are fulfilling very specific needs of particular market segments, like families with children, seniors, single people, even some special interests such as ornithology, mountain hiking, scuba diving, literature tours, gastronomy and wine tours, etc.
- Improved virtual reality: in addition to mobile devices, nowadays are offered additional experiences and virtual reality, like the digital observatory Barcelona Skyline in the 83.3 Terrace that offers information on monuments thanks to the technology of the augmented virtual reality enabling "site seeing" of the cultural heritage with the virtual reality tools.

Beside the sharing economy, new technologies have also affected the development of the experience that stimulates and appraises the experience beyond material values. Economy of the experience is based on the exchange rather than owning, gives advantage to the meaning rather than brands, to community over borders [31]. The exchange of the experience is done in real time and on a very high technological level. Sharing of tourism experiences online and offline with family, friends and publicly, with other users, has become integral part of every journey and is a very important segment of the development and business policy of the companies that are doing business in tourist sector. Feedback from tourist is the essential, because over 95% of those that are travelling for the vacation read at least 7 comments (reviews) before making reservations, while business travelers read 5 comments on average [38]. Consequently, providers of tourism services have the possibility to use the authentic experiences of their clients for marketing purposes and to perform necessary amendments of their services if the need is recognized.

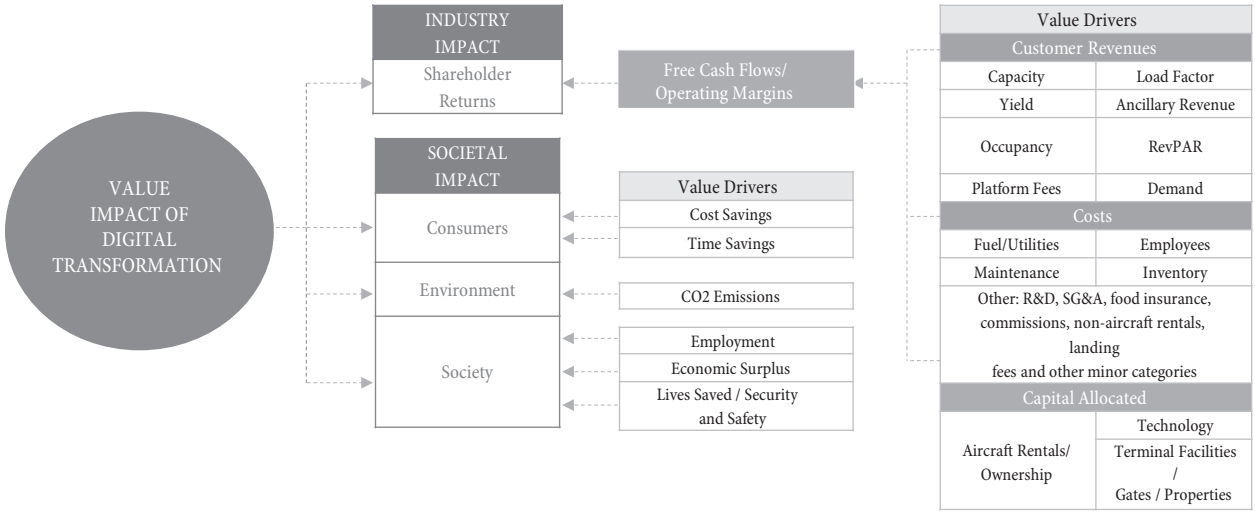
Consequently, digitalization has changed the business policy in tourism: the user is expecting more and more personalized experiences and customer-centered offer, which improves comfort of the modern user. Implementation of new technologies supports transition from organized to individual tourism. ICT allowed creation of two different sub-networks: one is created by individual tourism and is increasing in importance, and the second one by the organized tourism [17]. This especially affects hoteliers. In spite of systematic gathering of data, less than 50% of hoteliers use these data in personalizing their services, while rarely cooperating with start-ups in the tourist and leisure industry. Nonetheless, some of the big players have realized advantages of the new technological solutions. Accor Hotels Group has presented revolutionary concept, by far better than any other concept in this segment, named Jo & Joe. It entirely redefines the approach to the members of generation X and Z (millennials) in accommodation segment. During development of the concept, in parallel with Accor team, there has been organized a team of future guests and experts in order to define the concept together. Aforementioned concept redefines the role of management. The hotel manager is now being followed by community manager and event manager that are responsible for successful operating of the business. The second successful example is Marriot company that has started with its own high-tech accelerating program for the start-ups in the catering industry. The program is called Marriot Test Bed and it will secure strategic advantage in comparison to competitors. TestBED is a unique 10-week accelerator program that gives start-ups an invaluable

opportunity to test their products within an operating Marriott Hotel in major European cities.

Digitalization has affected the millennial generation born in the period from 1980 to 2000. This generation is characterized with its presence in the social media, loans taking, lack of cash, different priorities, postponing the marriage and purchase of household, postponing of parenting, longer duration of stay in parents' home, etc. They are dedicated to wellness and spend time and money to exercise and consume healthy nutrition. Their active way of living is affecting the trends in every industry, from food and beverage to fashion. Millennial generation does not prefer to purchase cars, musical devices and luxurious items. Instead, they turn to a new set of services that offer access to the products that are not necessarily owned, introducing the sharing economy. With the information on products, read reviews and price comparison, millennial generation is giving advantage to the brands that can offer maximum of comfort and the lowest price. Majority (57%) of them compare prices at the store [15]. A well-known brand is not sufficient for the millennials to purchase certain product. On the contrary, there is an increased importance of social media. Millennial generation emerged in the period of great technological changes, globalization, but also frequent economic turmoil. They are more likely to choose a destination based on recommendations and value, whilst older generations are more habitual. Millennials have reshaped the economy: their unique experiences have changed the way of purchase and sale.

Digitalization brings advantages to the tourism industry. Tour operators, hoteliers and service providers (air-carriers, travel agents and other participants) can achieve lower marketing expenses as well as increase of turnover. Regardless of who the future infrastructure providers are, the cost of distributing travel services will continue to fall with the constant emergence of new solutions [49]. Customers are benefiting strongly from personalized, tailor-made services. The extent to which consumers will benefit from digitalization depends on their willingness to share their data and experiences with unknown users and service providers. As long as it concerns social influences and environmental protection, digitalization is characterized by low pollution level, creating therefore positive effect to the society. The sharing economy has led to creation of new sources of revenues and new business opportunities, although some jobs and business models will become obsolete. However, the huge potential of digital economy is still underexploited. That has been confirmed in Europe by the report of the Strategic Policy Forum on Digital Entrepreneurship. The report reveals that 41% of EU companies still have not adopted any of four advanced technologies (mobile, social media, cloud computing and big data). Moreover, less than 2% take full advantage of these digital opportunities [33]. Businesses that fail to get digitally connected will become excluded from the global market. Progress is uneven across sectors and company size: the smaller the company, the lower the use of the latest digital technologies [33].

Figure 1: Value impact of digital transformation



Source: [46].

Digitalization of Serbian tourism

Serbia seeks to streamline and modernize the country through digitalization and improvement of the IT sector, and create a more competitive business environment introducing the latest information technologies. A framework for the improvement of electronic business and electronic communications in the tourism sector is being created by adopting regulations related to electronic commerce, electronic communications, electronic documents, electronic identification, as well as the information security. According to the research carried out by the Tourist Organization of Serbia, entitled Attitudes and Behavior of Foreign Tourists in Serbia 2016 [40, pp. 19-25], the following data were obtained:

a) The way foreign tourists heard about Serbia as a tourism destination: 63.9 % by the Internet, 10% from newspapers, magazines, travel guides and other printed materials, 4.1% on TV, 4.3% through a travel agency, etc.
b) The most frequently used websites (multiple answers were possible): 42.8% of catering sites and other accommodation facilities, 37.1% of sites that are not specialized in tourism, 34.2% of tourism-related sites, 20.4% social networks, 17% websites of TOS and LTOs, 5.9% Internet tourism blogs, 4.2% Travel agencies websites, 2.5% Internet tourism forums.
c) The most frequently used websites in the category of hospitality and other accommodation facilities: 73% booking.com, 16.3% airbnb.com, 3.2% hostelworld.com, 0.9% trivago.com.

Research of domestic tourists carried out by the Tourist Organization of Serbia in 2015 [39, pp. 19-20] shows that they prefer personal experience (40%) and recommendations from friends and relatives (38%), while only 18% of them are informed via Internet and 2% of them contact travel organizers. Online information came most frequently from websites of local tourist organizations (40%), catering and hospitality facilities websites (20%), social networks (19%) and travel organizer sites (12%).

The most frequently used tourism-related sites are: tripadvisor.com (66.7%), lonelyplanet.com (7.4%) and wikitravel.org (2.5%), while the most commonly used social networks are: Facebook (45.3%), Instagram (12.7%) and Google (4.1%). According to a survey carried out by HORES in 2017 [19], only 12.03% of all accommodation reservations in Belgrade were made through travel agencies. On the opposite, 41.09% were made through different booking systems (websites), while 46.96% were made online directly on the hotel's (accommodation) websites. When it comes to hotel accommodation in Belgrade, 15.45% of reservations were made through travel agencies, 34.03% directly via hotels websites, and 50.52% through search engines, specialized booking websites.

Although some tourists prefer to consult a travel agent directly, the fact is that the majority of domestic travel organizers do not offer the possibility of online bookings on their websites. According to the survey, most websites offer only possibility to send a query for individual arrangements. As a reason as to why it is not possible to make a direct booking or purchase of a hotel arrangement, frequent response was that travel organizers do not have sufficient IT support to provide information on occupancy, sales track through an intermediary, current information on their website and inability to implement online billing.

Presented facts indicate that all players in Serbian tourism need to invest more time and resources (especially financial) in online sales channels and promotions. This is something that foreign tourists, as well as technologically more vigorous domestic tourists, definitely expect. While domestic customers may be accustomed to place their booking through travel organizers, the rise of foreign guests seeking additional web content should encourage local travel agencies and tour operators to invest heavily in online sales and sales support platforms such as Viator, TripAdvisor, GetYourGuide or TourRadar, etc.

Digital economy in retail and customer behavior

Retailers, consumers and shoppers: the fourth industrial revolution

What is the place of retail in new industrial revolution? Retailers, in last several decades, have been taking over

the power from producers. Their favorable position was primarily based on concentration of power. Throughout the years, retailers extended their roles in cooperation with producers: from classical "Customers" (classical buyers) retailers extended to "Competitors" with their private label offers, and "Suppliers" that are selling shelf space and promo activation [6]. Unfortunately for producers, the new industrial revolution will just strengthen retailers' power, primarily as "suppliers".

Retailers own "the fuel" of new industrial revolution: direct access and ownership over data about "consumers' underlying desire or sentiment", expressed in behavioral data collected through primarily transactions and loyalty cards personal purchase history. Industry will just witness changes in this area: retailers are gradually transforming into data & technology businesses. New revolution and specific position of retail as owner of powerful data pushed PWC experts to propose new definition of the retail, instead of traditional Oxford English Dictionary definition that "Retail is the sale of goods to the public in relatively small quantities for use or consumption rather than for resale". PWC experts say that "Retail is the temporary or permanent transfer of the possession of goods, and/or access to services, to the public in quantities targeted at the individual, for use or consumption" [23, p. 7].

As long as there are humans, there are also their needs. As long as they keep fulfilling consumption and/or shopping needs, companies will keep being successful. Conflicts between mass market offers and needs fulfillment appear in the area of customization: what is good for everybody cannot be fully relevant for the individual. Fourth industrial revolution's data driven solutions allow to serve individual customers according to their individual preferences and, at the same time, to build direct relationships without intermediaries: significant personalization of the offer is made possible.

Personalization and customization are not added value any longer. Customers and shoppers easily embrace all solutions that offer better value to them personally. Serbia is not different to the world in that sense. Although development is lagging behind most developed economies, Serbian shoppers also embrace solutions which simplify their purchase process. Massive usage of mobile devices while shopping and significant changes just in 2 years are reported in GfK Consumer Life for 2015 and 2017.

Customers and shoppers easily embrace new smart (connected) gadgets. No doubt, they want and reward lean, consistent experience and delivery over all touchpoints. However, they pay the experience and value they get by loss of privacy. They are tracked and monitored, they leave traces (data) about their behavior and preferences whatever they do. Those who collect and properly analyze these traces can adjust to individual needs even before they appear. Retailers are just at the right place at the right moment.

How to fulfill shopper needs: Examples of new opportunities opened by new industrial revolution

Retailers are in a privileged position, being the owners of customer's digital traces (data about individual preferences and choices). They have longitudinal data of individual

Figure 2: Usage of mobile phone while shopping

purchases collected primarily through loyalty cards and transactional data. By knowing these, companies can adjust to individual needs and preferences and be much more relevant to shoppers than in the past. There are many examples of business improvements based on usage of big data as a fuel of growth. Two of them will be described in details.

SO1, Germany

Company was founded in Berlin few years ago with the main task to solve the problem of unselective, and thus, less efficient large investments into promo offers and discounts by using most advanced artificial intelligence approach. Companies (both producers and retailers) were investing millions without fully being aware what was working and what was not working with their promo offer and industry-standard price actions: products are pushed into the market with assigned discounts without taking into account individual buyer preferences [22]. Such promo activities were unselective, sometimes given in situations when large number of shoppers would anyway pay the full price.

Just using data that retailers collect, combined with state-of-the-art algorithms, SO1 (Segment of 1) revolutionized the system of promo and discount offers in the food retail sector. The efficiency of the approach is based on individually tailored offers: Artificial Intelligence first analyzes shopping carts and identifies types of connections between different products, then preferences of an individual customer (from loyalty cards data base), in particular his individual willingness to pay for a particular product and calculated purchase probability. Artificial Intelligence formula, then, determines which combination of products, at what time, should be offered on discount to each individual customer. When the purchase is made, model is self-correcting, improving accuracy of prediction taking in consideration current customer's reaction. All offers are completely individualized in order to increase basket size, so that the products that are offered on promo are relevant to consumer, but at the same time complementing, not substituting products that would be anyway bought. As a result, a retailer can not only increase their revenues and earnings, but also strengthen long-term, emotional customer loyalty [22]. According to SO1, their algorithms save 50% of the promo budgets to brand managers and increase overall retailers' turnover by minimum 10%. German retailers, like Edeka and Budni, already use SO1's solution.

Delhaize Serbia

Through the years, Delhaize Serbia was organizing extensive NPS studies (Net Promoter Score: type of customer satisfaction studies) interested to measure if their overall service and offer was up to customer's expectations and if it outperformed competitors. During managerial meetings, there was always a question if and how NPS (customers' satisfaction) was connected with basket content. This question initiated series of basket analysis, conducted by GfK, first only on customers covered by NPS studies. By mere understanding of what people usually combine together when they go shopping, Delhaize understood, for the first time with such details, why people were coming to their stores. For example, it was very evident that there was a certain percentage of Maxi baskets with similar content: fresh products needed to prepare next meal (lunch). By looking into basket content and understanding shopping missions from one side and connecting it with customer satisfaction (NPS study) from the other, Delhaize was able to discover in which shopping missions it underperformed and made their customers less happy.

After the initial phase, Delhaize clearly understood that data were a valuable asset for optimization of many processes, not only from their side, but for their suppliers, too. Thus, Delhaize decided to open and sell detailed data to its suppliers in the same manner as it sells shelf and communication space. Now, producers (Delhaize's suppliers) can learn who their customer that comes to Delhaize stores is (customer profile), to track success of their innovation benchmarked with other innovations (new product tracker), to understand category scorecard (growth, decline, place in baskets…), brand scorecard, or to analyze which promo activities worked or not. Above all, they can learn about market basket content and shopping missions, similar to Amazon's success driver: to understand probabilities in details and form the offer on acknowledging which products drive

sales of other products and which are the substitutes. Furthermore, probabilities of purchase are connected to shopper needs (missions). This means that shopper may have different priorities in different shopping trips. For instance, a shopper that buys for regular purchase has different priorities than a shopper that buys for special occasions, like birthdays. Future steps of analyses go into predictive analytics: for example, to predict success of certain in-store efforts and suggest improvements of the offer to achieve targeted sales.

Future expectations are towards improvements in decision automation which would allow to tailor activities to render them more precise in fulfilling needs of their customers. Integration of Internet of Things, more advanced usage of predictive analytics and deep learning is what Delhaize needs to embrace in days to come to stay ahead of competitors.

2017 and beyond: Is there market existence without data utilization?

The truth is: "no one actually wants data, what people want are answers which may be extracted from data, so data are only half the answer. The other half is statistics, data mining, machine learning, and other data analytic disciplines" [48]. Without any doubt, retail development will go into direction of better and more precise adaptation of their offer to a single customer (1 on 1 marketing) based on big data usage. However, this is reality for just a few retailers in the world. For majority, their performance in customer journey is suboptimal and they struggle to connect the dots. It can be expected that retailers massively invest into the area of better utilization of owned data. Visarius [44] from SO1 clearly emphasizes what would shape the future of retail:

1. Further enhanced customer recognition and adjustment to it: not only through loyalty cards and shopping apps but also through facial recognition.
2. Personal product recommendation: not only suggestion what individual likes, but also into direction of suggesting completely new products.
3. Personalized offers: exactly what SO1 created, promotion tailored to individual specifics.
4. Seamless checkout, as in Amazon Go: removing the pain of checkout bottle neck in retail.
5. Voice based shopping: intensive development of voice recognition and communication with machine like Siri or Alexa.
6. Smart products: Internet of Things – products communicating among each other and with individual customer.
7. Automated shopping lists: there are already plenty solutions, however there is significant space for further adjustments.

Case studies and facts presented in this paper indicate that the answer to our research question is closer to the digital revolution than digital evolution of business model in tourism and retail industries. Unforeseen changes in consumer attitudes towards ownership (no possession), comfort (now and everywhere) and many other aspects of shopping indicate discontinuity rather than evolution. Further research of the business executives' attitudes in this respect would be useful to understand perceived intensity of changes.

Conclusion

Further technology development and digitalization will continue to bring many new challenges, as well as the opportunities in the coming period. Future usage and development of cognitive technologies will simplify and automatize purchasing process further. Tourism is awaiting major changes, not only in the process of making consumer decisions, their research and interaction with well-known hotel brands and attractions, but also on further developing patterns of purchase behavior. Managers responsible for revenue in hotels must review existing business models in order to maintain and improve it. Generations of tourists who will grow in the next ten years will have radically different expectations and demands comparing with today's generations.

The same conclusion relates to retail. It can be expected that retail will soon be faced with a situation to have devices as customers, replacing real end-customers to the same extent [23]. It can be expected that devices will have some power (for example through applications

which manage household expenditures) to recommend certain solutions, pre-select and even buy FMCG products without direct involvement of customer on behalf of them. Furthermore, it can be expected that supply chains between retailer and producer be, due to higher productivity, connected into one system: automatized and optimized by cognitive technologies. It would be valuable to investigate further how the overall retailers' value chain flow should be organized when there is a need to organize two business flows: one with humans and other, separate, with different logic, with machines (devices).

Business model in both sectors faces evident discontinuity. It is justifiable nowadays to talk about a revolution rather than the evolution of business model in these two sectors. Examples from both sectors indicate even a more general hypothesis that there is a revolution in the overall service industry.

References

1. *A compilation of statistics for the tours & activities sector.* (2017). Retrieved December 20, 2017 from https://www.rezdy.com/resource/travel-statistics-for-tour-operators/.
2. Bastin R., Hedea I., & Cisse I. (2014). A big step toward the European Digital Single Market. *Deloitte Inside Magazine*, *13*(3). Retrieved January 5, 2018 from https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/technology/lu-a-big-step-forward-the-european-digital-single-market.pdf.
3. Bloem, J., Doorn, M.V., Duivestein, S., Excoffier, D., Maas, R., & Ommeren, E. V. (2014). *The fourth industrial revolution - things to tighten the link between IT and OT*. Groningen: Sogeti VINT.
4. Chaffey D. (2010). Applying organizational capability models to assess the maturity of digital-marketing governance. *Journal of Marketing Management*, *26*(3), 187-196.
5. Chroneos Krasavac B., Soldić-Aleksić J., & Petković G. (2016). The big data phenomenon – the business and public impact. *Industrija*, *44*(2), 117-144.
6. Dobson, P. W. (2005). Exploiting buyer power: Lessons from the British grocery trade. *Antitrust Law Journal, 2*, 529-562.
7. EC DESI. *Digital Economy and Society Index*. Retrieved January 5, 2018 from http://digital-agenda-data.eu/datasets/desi/visualizations.
8. eMarketer.com, accessed January 5, 2018.
9. Ernest Young. (2015). *Global generations: A global study on work-life challenges across generations.* Retrieved January 5, 2018 from http://www.ey.com/Publication/vwLUAssets/EY-global-generations-a-global-study-on-work-life-challenges-across-generations/$FILE/EY-global-generations-a-global-study-on-work-life-challenges-across-generations.pdf.
10. Evans D. (2011). *The Internet of things: How the next evolution of the Internet is changing everything*. San Jose. Ca: Cisco IBSG.
11. Eymann T. (2016). The uncertainty of information systems: Cause or effect of VUCA? In O. Mack, A. Khare, A. Krämer, & T. Burgartz (Eds.), *Managing in a VUCA World,* (pp. 227-240). Switzerland: Springer International Publishing.
12. Fundación Orange. (2016). *Study on digital transformation in the tourism and hospitality sector*. Spain: EVOCA.
13. Gerding, E. H. (2004). *Autonomous agents in bargaining games: An evolutionary investigation of fundamentals, strategies, and business applications*. Eindhoven: Technische Universiteit Eindhoven.
14. Ghose A., & Han Sang P. (2011). User content generation and usage behavior on the mobile Internet. *Management Science 57*(9), 1671–1691.
15. Goldman Sachs. (2017). *Millennials coming of age*. New York: Global Investment Research.
16. *Google urges travel brands to make it simple, personal and mobile*. (2016). Retrieved December 20, 2017 from https://www.tnooz.com/article/google-travel-study-asia.
17. Hajime E. (2015). *New business opportunities in the growing e – tourism industry*. Hershey PA: IGI Global.
18. *Holiday retail search strategies 2017.* (2017). Retrieved January 9, 2018 from https://searchengineland.com/sel-top-10-news-stories-of-2014-211443.
19. HORES. (2017). *Research of guests' attitudes about Belgrade as a tourist destination*. Center for Hospitality and Tourism Research, HORES.
20. HOTREC. (2017). *Embracing innovation: What makes the hospitality industry tech-savvy and innovative?* Brussels: Hotrec. Retrieved January 9, 2018 from http://www.hotrec.eu/Documents/Document/20171116111102-HOTREC_FACTSHEET_INNOVATION.pdf
21. Järvinen J., & Karjaluoto H. (2015). The use of Web analytics for digital marketing performance measurement. *Industrial Marketing Management, 50*, 117–127.
22. Kny S. (2017). *Microsoft Accelerator-Serie (3) So1*. Berlin: Gruender Metropole. Retrieved January 19, 2018 from http://gruendermetropole-berlin.de/microsoft-accelerator-serie-3-so1#%20
23. Kowalkiewicz, M., Rosemann, & M., Dootson, P. (2017). *Retail 5.0: Check out the future*. QUT PwC Chair in Digital Economy.
24. Lamberton C., & Stephen A.T. (2016). A thematic exploration of digital, social media, and mobile marketing: Research evolution from 2000 to 2015 and an agenda for future inquiry. *Journal of Marketing.* AMA/MSI Special Issue, *80*, 146–172.
25. *Local consumer review survey.* (2017). Bright Local. Retrieved January 6, 2018 from https://www.brightlocal.com/learn/local-consumer-review-survey/.
26. Merisavo M. (2008). *The interaction between digital marketing communication and customer loyalty.* Helsinki: Helsinki School of Economics.
27. McCann M. (2017). *Travel sector running to catch the digital transformation train*. Boston, MA: Acquia.
28. McLellan L. (2014). *Digital marketing budgets increase, reflecting focus on customer experience*. Gartner, published 9 January 2014. Retrieved January 5, 2018 from http://www.gartner.com/imagesrv/marketing/offers/255396.pdf.

29. *Machine learning: How technology advances human intelligence*. Retrieved November 14, 2017 from https://resources.office.com/en-us-thankyou-modern-workplace-ep208-webinar.html.
30. OC&C. (2016). *Bits and bytes: FMCG's shift to e-commerce in China*. New York: OC&C Strategy Consultants.
31. Pine II B. J., & Gilmore J.H. (1998). Welcome to the experience economy. *Harvard Business Review*, *July–August*, 97-105.
32. Preveden, V. (2016). *Think act: Beyond mainstream, Hotel industry 4.0,* Wien Roland Berger Gmbh*:*
33. *Report of the strategic policy forum on digital entrepreneurship*. (2016). Retrieved December 10, 2017 from http://ec.europa.eu/growth/sectors/digital-economy/entrepreneurship/strategic-policy-forum/index_en.htm.
34. Shankar V. (2016). Mobile marketing: The way forward. *Journal of Interactive Marketing, 34 (1-2)*.
35. Statista. (2017). *Change in digital marketing spending and traditional advertising according to CMOs in the United States from 2012 to 2017*. Retrieved January 5, 2018 fromhttps://www.statista.com/statistics/693449/digital-vs-traditional-marketing-budget-change-according-to-cmos-usa/
36. Taiminen H. M., & Karjaluoto H. (2015). The usage of digital marketing channels in SMEs. *Journal of Small Business and Enterprise Development*, *22*(4), 633-651.
37. *The ultimate list of marketing statistics*. (2017). Retrieved December 15, 2017 from https://www.hubspot.com/marketing-statistics.
38. Tnooz. (2017). Retrieved December 20, 2017 from https://www.tnooz.com/article/google-travel-study-asia.
39. Tourist Organization of Serbia (2015). *Attitudes and behavior of domestic tourists in Serbia in 2015*. Belgrade: NTOS.
40. Tourist Organization of Serbia. (2016). *Attitudes and behavior of foreign tourists in Serbia in 2016*. Belgrade: NTOS.
41. TripBarometer (2016). *Traveler trends & motivations global findings*. Retrieved December 22, 2017 from https://www.tripadvisor.com/TripAdvisorInsights/n2750/four-booking-behaviors-driving-travelers.
42. UNWTO. (2017). *Barometer, 15*.
43. van Donselaar K., van Woensel T., Broekmeulen R., & Fransoo J. (2005). Improvement opportunities in retail logistics. In Doukidis J.G., & Vrechopoulos A.P. (Eds.), *Consumer driven electronic transformation* (pp. 839-849). Berlin – Heidelberg: Springer.
44. Visarius, S. (2017). *The future is "human" retail - the top 7 trends for customer centric retailers*. Retrieved January 19, 2008 from http://blog.so1.net/author/stephanvisarius/.
45. Weiser M., & Brown S.J. (1995). *Designing calm technology*. Xerox PARC, December 21. Retrieved January 5, 2018 from http://www.ubiq.com/weiser/calmtech/calmtech.htm.
46. World Economic Forum. (2017). *Digital transformation initiative aviation, travel and tourism industry*. CH-1223 Cologny/Geneva. Switzerland: WEF.
47. World Economic Forum. (2014). Rewards and risks of big data. In B. Bilbao-Osorio, S. Dutta, & B. Lanvin (Eds.), *The Global Information Technology Report*. Retrieved January 5, 2018 from http://www3.weforum.org/docs/WEF_GlobalInformationTechnology_Report_2014.pdf.
48. Wu X., Zhu X., Wu G.Q., & Ding W. (2014). Data mining with big data. *IEEE Transactions on Knowledge and Data Engineering, 26*(1), 97-107.
49. *Year 2017: The most important year for travel tech since 1994?* (2017), Retrieved December 15, 2017 from https://www.eyefortravel.com/events/eyefortravel-europe-2018.
50. Zeimpekis V., & Giaglis G. M. (2005), A dynamic real-time vehicle routing system for distribution operations. In Doukidis J.G. & Vrechopoulos A.P. (Eds.), *Consumer Driven Electronic Transformation*, (pp. 23-38). Berlin - Heidelberg : Springer.

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ELECTRONIC CONSTRUCTION PERMITS AS A PREREQUISITE OF INVESTMENT GROWTH AND GLOBAL LEADERSHIP OF SERBIA IN THE ISSUANCE OF CONSTRUCTION PERMITS: ANALYSIS OF EFFECTS AND CRITICAL POINTS OF PROGRESS

Elektronske građevinske dozvole kao uslov rasta investicija i globalno liderstvo Srbije u izdavanju građevinskih dozvola – analiza efekata i kritične tačke budućeg napretka

Abstract

To a great extent, economic development depends on the possibilities of a country to attract investments and stimulate a better business climate within the country. One of the substantial and deciding factors that influence the achievement of this strategic goal, given that the infrastructural sector is the largest sector of a country, is a faster and more efficient issuance of construction permits. A long-lasting problem of construction permits issuance, a problem that the Republic of Serbia was faced with, resulted in the deterioration of micro and macroeconomic factors and thus the decrease of GDP, poor business climate and lack of investments. After the reform of the issuance of construction permits and a substantial reduction of the procedure owing to the electronic system introduced, the construction and infrastructure sectors are recovering, investments are increasing and Serbia is becoming a leader in terms of the duration and manner of construction permit issuance.

This paper analyzes the performance, results and the overall impact of the reform of construction permits issuance on the development of the country, and states a clear goal of the Republic of Serbia to pursue further reforms in the sector of infrastructure and to enhance business climate, attract foreign investments, all of which leads to a faster and more efficient growth and development. The paper also reflects on possible bottlenecks in achieving the aforementioned goal, which need to be overcome as a long-term or possibly short-term goal.

Keywords: *construction permits, economic growth, economic environment, electronic issuance of construction permits, investments*

Sažetak

Ekonomski razvoj umnogome zavisi od mogućnosti države da privuče investicije i stimuliše bolju poslovnu klimu unutar države. Jedan od važnih i presudnih faktora koji utiču na ostvarivanje ovog strateškog cilja, imajući u vidu da je sektor infrastrukture najveći sektor jedne države, jeste efikasnije izdavanje građevinskih dozvola. Višedecenijski problem izdavanja građevinskih dozvola sa kojim se suočavala Republika Srbija doveo je do deterioracije mikro i makroekonomskih faktora, a samim tim i do pada BDP-a, loše poslovne klime i nedostatka investicija. Nakon reforme izdavanja građevinskih dozvola i značajnog skraćenja procedure zahvaljujući elektronskom sistemu izdavanja dozvola, građevinski i infrastrukturni sektor se oporavljaju, investicije rastu, a Srbija postaje lider u smislu trajanja procedure i načina izdavanja dozvola.

U ovom radu se pored analize učinka, rezultata i sveopšteg uticaja reforme građevinskih dozvola i njenog uticaja na razvoj države i jasnog opredeljenja Republike Srbije ka daljim reformama u infrastrukturnom sektoru države, te unapređenju poslovne klime i privlačenju stranih investicija, što sve vodi ka bržem i efikasnijem rastu i razvoju, daju i moguće tačke stagnacije u omogućavanju svega navedenog koje je potrebno prevazići u kraćem ili dužem vremenskom periodu.

Ključne reči: *građevinske dozvole, ekonomski rast, ekonomsko okruženje, elektronsko izdavanje građevinskih dozvola, investicije*

Introduction

Economic development can be put on solid ground through a strategic approach to investments and creating a stimulating business environment attractive to private, domestic and foreign investors [1]. The country needs stable and clear domestic and foreign policies if it is to master its future. Unstable countries, or those in constant crisis, are not attractive for investments, regardless of the type of capital in question or investors' intentions as determined by the speed of making a profit. The quality of a selected policy lies in its ability to determine, in a multitude of tactical decisions, the real, long-term interests of the country, as well as to contain a strategy for their actualization. Therefore, awareness that a lack of investments affects a country's economy in a negative manner is the starting point in defining economic policy. For Serbia, as with all other national economies, there is a clear link between the business environment and investment inflows.

Long-standing stagnation after a decade of recession, industrial devastation and disinvestment, and an ongoing two-decades-long political transition, uneven economic development and depopulation resulted in Serbia's isolation and a low rate of economic growth. In the years when GDP growth was negative (-3.1% in 2009), coupled with export growth (-16.1% in 2009) and a high unemployment rate (20% in 2009), Serbia's macroeconomics suffered severe consequences. Disinvestment, along with low levels of private investment inflow, had an even more devastating effect on total public and private investment in all areas of life, from healthcare, energy and transportation infrastructure, to culture and sports.

The goal is to achieve long-term sustainable and risk-resistant growth, not only to address citizens' well-being, but also to support the economic stability of the region. Boosting the degree of attractiveness of the investment climate, i.e. the business environment, potentially reduces the risk of inadequate growth. Every investor seeks to minimize risk. Whether an investor opts to enter a market is determined not only by economic variables, but also by the degree of the country's political stability, legal framework and social developments. Political stability directly correlates with the reduction of corruption and a higher degree of institutional stability. Stability that attracts investment not only means institutional stability, as reflected in the rule of law and law enforcement, responsible and effective bureaucracy, laws against corruption, but also predictability of the political environment. Political and economic environments are in direct interaction. Regardless of investment amounts, it is necessary to predict the behavior of the power structures and to understand the role and status of state-owned enterprises. A clear vision of the government's position in the existing – and potential – local, regional or international conflicts is an important determinant of the ultimate commitment to invest. Stability is the only safe road in turbulent times and environments, a road leading to job creation, poverty reduction, regional development, state revenue growth and investment in the welfare of the state.

In the 1990s, economists and business people stressed that political instability and a poor investment climate limited investment growth. The basic framework for attracting investments relies on competition, privatization, tax administration, customs, cohesive financial systems, as well as a capable workforce and a high-quality, reliable and safe transportation, energy and communal infrastructure.

The economic environment determines a country's market barriers. The nature of the economic system and its institutions, the duration of bureaucratic and administrative procedures, the degree of market openness, the process of starting a business, obtaining land and premises, the time necessary for obtaining permits and licenses, the amount of fiscal and parafiscal charges, gray economy activity and the level of labor force education and migration all contribute to investment viability. Assessment of all the indicators places a country on the list of those attractive for investment or, unfortunately, on the list of unattractive ones.

The World Bank defines business and investment climate as opportunities and incentives for companies to invest productively, create jobs and expand [8] and [9]. Investments need a predictable and acceptable investment environment, since money is a coward. When determining where to invest, an investor will avoid increased costs, risks and delay. Therefore, the main indicators to measure business conditions in a country, according to the World

Bank's list monitoring business conditions in 190 economies, are those related to starting a business (time and administration, and those related to the reform of the labor market), access to land and premises (obtaining construction permits, connecting to the electrical power distribution system and property registration), access to finance (in obtaining loans and protecting minority shareholders), providing daily operational work (efficient tax and cross-border trade), and operations that ensure the security of the investment environment (execution of the contract and settlement of bankruptcy).

Progress on the Doing Business list means that laws that regulate the business environment are now of higher quality, but more importantly, that they are more efficiently implemented and enforced, which favors the development of domestic economy and foreign investment, which in turn, enables economic growth.

Strengthening the investment environment in Serbia (case study)

The main obstacle to investment growth in Serbia was the decade-long unresolved challenge of construction and exploitation permit issuance. In addition to very complicated, lengthy procedures, disjointed administrative response procedures, there was also the endemic corruption and illegal construction. This resulted not only in 2.3 million illegally erected structures in Serbia, but also in an average time necessary for issuing construction permits being 300 days and, in some extreme cases, seven years or more. This directly retarded GDP growth and contributed to the negative growth rates of Serbia's GDP. When Serbia experienced a negative economic growth rate of -3.1% in 2009, it was ranked as 171st out of 186 countries in terms of the indicator of promptness in issuing construction permits.

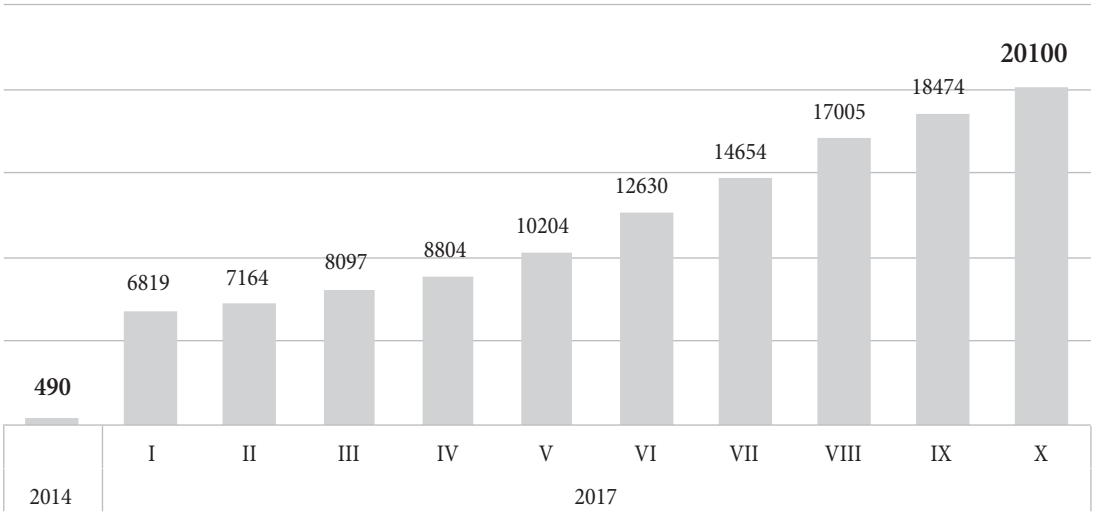
Table 1: Changes in GDP and ranking in issuing construction permits in Serbia

	GDP	WB ranking
2009	-3.1	171
2010	0.6	174
2012	-1	175
2014	-1.8	182
2015	0.8	186
2016	2.8	139
2017*	2.5	36
2018*	3	10

In addition, the issuance was in paper form, the form that was obtained by the party itself, and required the attachment of extensive documentation, which was never "sufficient". Such procedures were expensive, ineffective and resulted in a direct drop in investors' interest in investing, i.e. a 4.3%, decline in the share of construction in GDP. Serbia held 186th place on the World Bank's list in 2015.

The four countries ranked poorer than Serbia in 2015 were those in which civil war was taking place. The inefficient and arduous process of issuance of permits resulted in a very small number of construction sites in

Figure 1: Changes in the number of construction sites in 2014 and during 2017



the territory of Serbia – 490 sites in 2014, and led to job cuts in the field of construction.

It was necessary to launch a comprehensive reform of the entire construction sector, which implied a new legislative framework for construction permit issuance and the introduction of a consolidated procedure, which was finally introduced and carried out in paper form from March 2015 until January 1st 2016, before the introduction of the electronic issuance procedure. Implementing deep reform processes means not only defining and adopting laws but it also requires full support from both the expert public and the Government.

Since the beginning of 2016, a system for electronic issuance of construction permits has been introduced throughout the territory of Serbia. At the same time, a register of electronic construction permits was established.

Unlike all other previous legal proposals, the Law on Planning and Construction [12], along with 28 by-laws, was the first draft law proposed to the Parliament of Serbia for adoption. At the same time, a Working Group in the Government of Serbia was established to improve Serbia's position on the World Bank's ranking list of business conditions – Doing Business (hereinafter DB) – that year Serbia was ranked as 93rd on the list. This Governmental group included not only the members of the Government of Serbia, but also the Business Registers Agency, the Building Directorate, the Republic Geodetic Authority, the Public Policy Secretariat, private sector representatives, organizations such as NALED, USAID, GIZ, Bar Association, Employers' Associations, the European Delegation and the World Bank.

In the process of drafting the text of the program, NALED, USAID and the Public Policy Secretariat conducted a survey of the current situation in areas included in the WB methodology and, with a comprehensive consultation process, devised a substantial basis for the preparation of this program with all the stakeholders.

Figure 2: The number of issued permits in Serbia from 2012 until October 2017

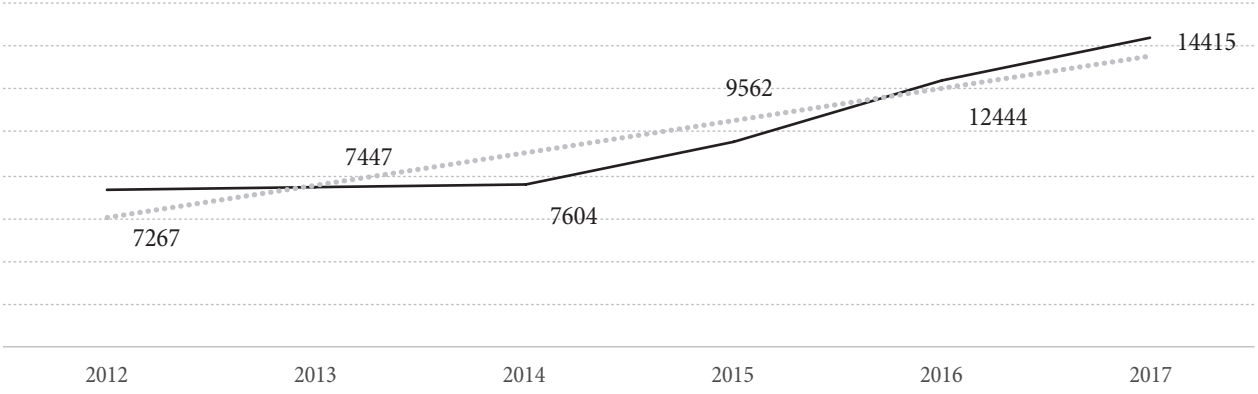
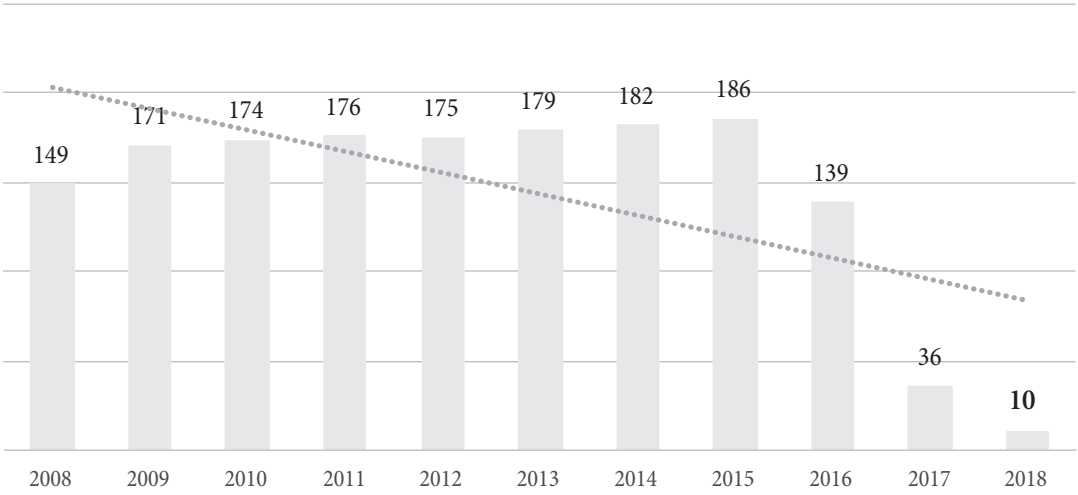


Figure 3: Serbia's ranking in the field of construction permit issuance



Since the World Bank's annual Doing Business report is a rating report that allows a 190-country comparison of business conditions across ten categories, it is crucial for Serbia not only to produce results in global terms, but for the results to directly affect the investment inflow and contribute to the reduction of unemployment.

Observed by areas, in 2016 Serbia made steps forward in all areas:

1. Starting a business: when filing a registration application with the Business Registers Agency, the procedure for opening a tax file is simultaneous, which resulted in the reduction of the number of procedures (by one) and the reduction in the number of days (by five), as noted in the DB Report 2017;
2. Obtaining a construction permit: the electronic system for issuing permits has been in use since January 1st 2016, thus reducing the number of procedures (by six), and the number of days (by 116) for the completion of the process;
3. Obtaining a connection to the electrical power distribution system: the connection is obtained within a consolidated procedure and as part of the electronic system for issuing permits, with a reduced number of days for obtaining a connection (by six) and a significantly cheaper procedure then the amount shown in the report for 2016 (from 448% to 235.8% per capita income). Nevertheless, in this area, Serbia has recorded a decline in ranking, and the number of procedures has increased by one in the report for 2018.
4. Registration of property: the Law on State Survey and Cadaster, which came into force in December 2015, stipulates the acceleration of the procedure for registering real estate, thereby reducing the number of days necessary for registering real estate by 33 compared to the number of days stated in the report for 2017.
5. Obtaining loans: although Serbia has improved its ranking, no progress has been made in this area in the 2018 report. Therefore, a priority for improvement is the expansion of the coverage of the information of the credit bureaus; that is, the inclusion of data on utility services and mobile operators, as well as the establishment of a single legal framework regarding the deposit.

Table 2: Macroeconomic indicators in Serbia in the period from 2005 to 2016, with forecast for 2017

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 forecast
Realistic growth GDP % (1)	5.5	4.9	5.9	5.4	-3.1	0.6	1.4	-1	2.6	-1.8	0.8	2.8	2.5
% export growth (2)	19.1	30.4		18.2	-16.1	18.3	17.1	2.9	21.5	3.7	8.2	11.2	17
% unemployment (3)	20.8	20.9	18.1	13.6	16.1	19.2	23	23.9	22.1	19.2	17.7	15.3	11.6
Public debt % GDP (4)	50.2	35.9	29.9	28.3	32.8	41.6	45.4	56.2	59.6	70.4	74.7	71.9	64.6

Table 3: Trends in Serbia's ranking according to the areas under review in the Doing Business report

Area of Doing Business	Ranking DB 2018, published in October 2017	Ranking DB 2017, published in October 2016	Ranking DB 2016, published in October 2015	Change in ranking 2017/2016	Change in ranking 2018/2017	Change in ranking 2018/2016
Starting a business	32	47	65	+ 18	+ 15	+33
Obtaining a construction permit	**10**	**36**	**1**	**+ 103**	**+26**	**+129**
Obtaining a connection to the electrical power distribution system	96	92	63	-27	-4	-33
Property registration	57	56	73	+ 17	-1	+16
Obtaining a loan	55	44	59	+ 15	-9	+4
The protection of minority shareholders	76	70	81	+ 11	-6	+5
Tax payment	82	78	143	+65	-4	+61
Cross-border trade	23	23	23	0	0	0
Execution of contracts	60	61	73	+ 12	+1	+13
Bankruptcy settlement	48	47	50	+ 3	-1	+2
Overall ranking of Serbia	**43**	**47**	**59**	**+ 12**	**+4**	**+16**

Source: Author's own data.

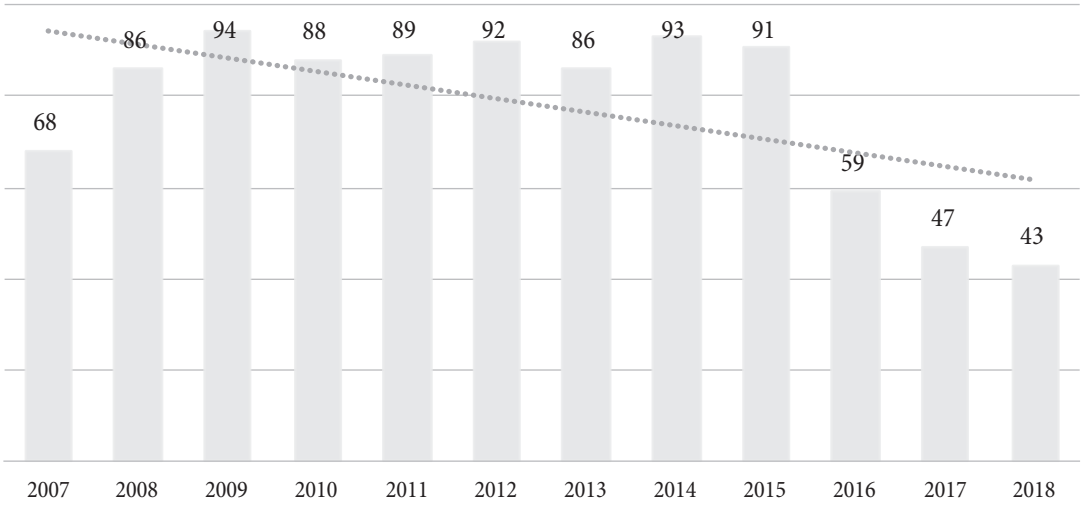
6. Protection of minority shareholders: Serbia has improved its ranking in this area through the change of the methodology employed, although in reality there was virtually no progress in this area. This is one of the areas where the worst results are recorded and Serbia lags behind international practice, as much as 43.5 points behind the leader in this area. Transparency of information in the securities market, transparency and availability of data on the management bodies of the joint stock companies, or more rights for owners is an imperative for further progress;
7. Tax payments: Serbia has improved its rank in this area through the system of electronic tax collection, as stated in the DB report for 2017. The number of payments has been reduced (by nine), as well as the time necessary to make payments (annually by 19 hours).
8. Cross-border trade: Serbia is closest to good international practice in this field, with only 3.5 points behind the leader in this area. A major contribution to this is the application of the new customs transit system (NCTC) from February 1st 2016, with the submission of electronic transit declarations;
9. Execution of contracts: although according to the 2017 report, Serbia had improved its ranking, there was an increase in the costs of court proceedings (from 30% to 40.8% – for different tax fees), but Serbia also increased the quality of court proceedings by two points. Serbia lags behind international practice, with 38.5 points behind the leader in this field. Without improving the infrastructure of the judicial network and the insistence on compliance with the prescribed deadlines, there will be no further progress in this area.
10. Tackling bankruptcy: Serbia has improved its ranking in this area, but it still lags behind international practice, 40.5 points behind the leader in this area. It is necessary to grant more power to the trustees in the selection of liquidators at the beginning of the bankruptcy procedure, as well as to introduce greater transparency of information on bankruptcy proceedings among all stakeholders. Although amendments to the Law on Bankruptcy were adopted in the Parliament of Serbia in December 2017, the necessary changes were not touched upon.

In the DB report for 2018, Serbia showed continuous progress and holds 43rd place in the world when it comes to ease of doing business, which is the best result in the last 11 years. From 2014 to 2018, Serbia recorded continuous growth for the first time, with a cumulative climb of as many as 50 positions.

When summing up the results at the end of 2017, it is clear that Serbia joined the top ten countries of the world in the field of permit issuance, the best result and the greatest progress being achieved in the respective year.

From 2015 to the end of 2017, Serbia "skipped" as many as 173 countries and moved from the bottom to the

Figure 4: Serbia's ranking on the Ease of Doing Business list



very top of the world list. Progress is especially evident in the field of establishing business entities, which now takes only 5.5 days in Serbia. An equally positive result was recorded in the area of cross-border trade (23rd place); according to the WB, it now takes six hours to go through the export customs procedure and seven hours for import.

Compared to the countries in the region, it is ahead of Bosnia and Herzegovina (86), Albania (65), Croatia (51), Hungary (48) and Romania (45), but it has not yet reached the ranking of Montenegro (42), Slovenia (37) and Macedonia (11).

How to proceed?

All of the above does not suffice to say that Serbia is one of the best countries to invest in. Problems with connecting to the electrical power distribution system, which takes 125 days, land Serbia in 96th place, and the 225.5 hours that investors spent annually on paying taxes led to 82nd place ranking. Additionally, Serbia holds 76th place in terms of protection of minority shareholders. It is unreasonable to expect investors to feel safe when it takes 635 days to execute a contract, and resolving bankruptcy takes 2–2.5 years.

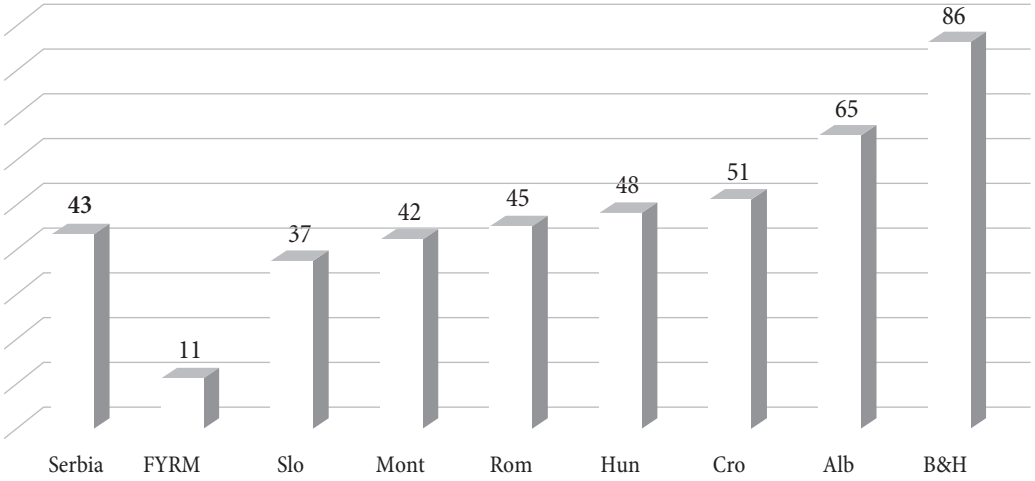
There is room for progress, from the establishment of business entities through electronic registration in the Business Registers Agency and, with the abolition of seals, the simplification of the process of opening a bank account, to the issuance of construction permits, where the e-licensing system will connect with notaries, tax administration and cadaster.

The introduction of the e-cadaster will enable real-time updates and online submissions of applications for registration. The priority today is to reduce the costs and deadlines for connecting to the electrical power distribution system and to abolish all overlapping procedures. In addition, there will be an increase of volume of information available to the credit bureau, electronic registration for property tax and introduction of a service for a one-time payment of this tax.

It is necessary to note that, from 2007 to 2014, Serbia moved in its ranking both up and down the list, advancing one year and declining in others. With the establishment of the joint Working Group of the Government of Serbia and clear political will from 2014 to 2017, Serbia recorded a continuous growth trend, with a cumulative advancement of as many as 48 positions, thus creating a predictable investment environment.

In 2015, construction industry growth contributed with 0.5% to GDP growth (in the 2nd quarter of 2015, GDP growth of 1% was recorded as a result of the growth of the construction industry by 12.6%). At that time, the number of employees in the field of construction increased by 3.8%, the number of hours worked by 5.8%, the number of issued construction permits by 2.3%, cement production by 12.4%, the value of construction works delivered by 22.5%, while the value of newly contracted works increased by 0.7%. In November 2015, the number of issued construction

Figure 5: Serbia compared to the region on the 2018 Ease of Doing Business list



permits increased by 45% compared to the same month of the previous year. Since the establishment of the unified procedure (March 1st - November 2015), the number of construction permits was 30% higher than in the same period of the previous year, and 35% higher in relation to the March-November in the 2010-2014 period. The predicted value of construction in the period of January-November 2015 was 84% higher compared to the same period in 2014!

The result is especially reflected in the increase of the construction sector's share in GDP, from 4.5% in 2014 to 5.1% in the second quarter of 2015.

The implementation of such an important reform process was driven by political support, clear enforcement and implementation of legislative solutions, and a broad consensus, especially on the level of local self-government units – the main actors in taking such demanding steps.

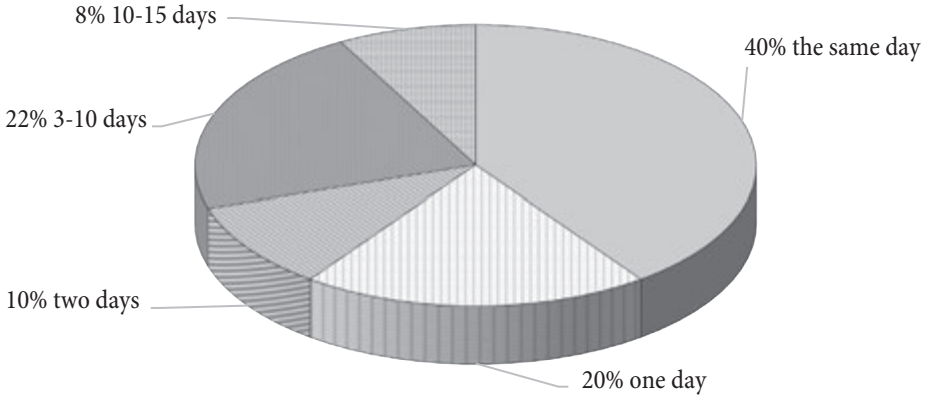
Electronic issuance of construction permits was introduced on January 1st 2016, and, accordingly, all units of local self-government entered their user accounts into the systems for issuing e-construction permits, at which moment Serbia began full licensing. For example, since March 2016, the total number of requests submitted was 2,423, while the total number of the resolved ones was 1,235 (out of which 532 were positive, and 793 negative). A positive trend was reflected in the reduced proportion of the number of positively and negatively addressed requests. There were 40% positively resolved requests and 60% negative.

The implemented reform process resulted in growth of the construction share in GDP in 2015 of 11.1% compared to 2014. In terms of gross value added, share of construction grew from 6.5% in 2014 to 6.9% in 2015. At the end of 2015, it was noted that the number of issued construction permits increased by 45% compared to 2014.

The reform processes must never stop. Therefore, new amendments to the laws adopted in December 2017 abolished the parafiscal charge for issuing a permit. An example of a warehouse (used by the World Bank for the Doing Business report) shows that the fee was reduced from more than 53,000 dinars to 9,000 dinars. In this way, the calculation based on the estimated cost of a building was replaced with the calculation according to the estimated cost of the competent authority, which is based on the average time required to process the application for the issuance of an exploitation permit for the respective category of facility. A particular benefit of this reduction is that it enables citizens to obtain exploitation permits and register their property rights, which many had previously failed to do because of the high costs.

The extent to which the system of electronic issuance of construction permits enabled an increase in investments is also shown in the data published by the Statistical Office of the Republic of Serbia on the number of issued permits for August 2017. This was the highest monthly number of issued permits since statistics started being collected in 2007. With 1,878 issued building permits, August 2017 was by 48.7% better than August 2016. The number of construction permits issued in the first eight months of 2017 was 58.3% higher than in the same period of the previous year, while the projected value of construction works increased by 51.2%. The largest construction activity was recorded in the regions of Belgrade, Srem and South Bačka.

Figure 6: Time of resolving applications in the system of e-permit by the Republic Geodetic Authority



Another significant fact is that industries that rely on construction, such as cement production, grew by more than 10% in the first quarter compared to the first quarter of last year.

The need for further reforms is especially pressing for the cadaster, since the procedure for registering property remains extensive, with frequent non-compliance with legal deadlines (from lengthy decision-making on appeal in the second instance procedure, inconsistency, to the incompetence of the cadaster staff).

The new legal solution stipulates a special procedure in the cadaster, which shortens the deadlines for registering property – without the examination of the documents that a public notary and other holders of public authorizations already declared eligible for the registration process. The ultimate goal is to make documentation submittal easier and simpler.

Today, anyone who buys a real estate is obliged to certify the contract with the notary, i.e. to compile a notary record. In order to do this, the purchaser should obtain an extract from the cadaster and present it to the notary, after which the purchaser submits the same contract to the Republic Geodetic Authority for the purpose of registration, and then to the Tax Administration in order to determine the amount of tax on the transfer of absolute rights. In addition, the purchaser is obliged to submit a certified contract to the local tax administration for registration of property tax.

It is clear that a tour of at least five offices/institutions slows down the real estate registration process, increases the time necessary to complete it and opens up a huge space for corruption. According to the latest WB report, the period of reaching a decision on registration in the real estate register is 15 days.

The new draft law on registration with the cadaster achieves the goal that a notary public, instead of the entity purchasing the real estate, inspects the real estate cadaster, authenticates the purchase agreement and then digitizes it, authenticates it with electronic signature and sends it to the cadaster electronically, ex officio. Thereby, registration is completed. When the contract is received from a notary, the cadaster forwards it ex officio to the Tax Administration and the local tax administration.

In this way, the obligatory tour of the five institutional offices is reduced to one visit to the notary public. The duration of the period for reaching a registration decision is reduced to 10 days, and the number of procedures is reduced from six to two.

Instead of a conclusion – The way forward for Serbia to become the most desirable destination for investment

Not only is the continuation of the reforms, particularly structural reforms, an imperative of economic development, but continuing the reform of legislative frameworks and the simplification of administrative bureaucratic procedures advances the goal of progressive investment growth in Serbia.

Certainly, economic policy indicators can be interpreted from different theoretical and ideological political perspectives. History and practice have unambiguously demonstrated the correlation between the industrial and economic development of countries and democracy itself. Therefore, the ability of countries to develop economically over longer periods of time is important for their ability to create and maintain free societies.

The results of the implementation of laws should put Serbia in the top five when it comes to construction permits issuance and in the top twenty ranking overall in the world. By intensifying work to accelerate the bankruptcy process, eliminating the obligation to create seals, by increasing

Table 4: Assessment of the situation and possible advancement on the WB list when registering real estate with the cadaster

	The number of procedures	The number of days	Ranking
Current DB ranking 2018	6	21	57
Ranking expected in October 2018-DB 2019	3	15	32
When the overall reform is accepted	2	10	17

Source: [8], Ministry analyses.

the protection of minority shareholders, in particular by regulating electronic archiving, and by further reducing parafiscal charges, Serbia will become the most desirable destination for investment.

References

1. Worthington, I., & Britton, C. (2009). *The business environment*. Upper Saddle River, New Jersey: Prentice Hall.
2. NBS. (2017). *Statistički bilten*. Retrieved from https://www.nbs.rs/static/nbs_site/gen/latinica/90/statisticki/sb_11_17.pdf.
3. NBS. (2017). *Analiza duga Republike Srbije*. Retrieved from https://www.nbs.rs/static/nbs_site/gen/latinica/90/statisticki/sb_11_17.pdf.
4. NBS. (2016). *Statistički bilten*. Retrieved from https://www.nbs.rs/internet/latinica/80/index.html.
5. RZS. (2017). *Statistički godišnjak Srbije 2017*. Retrieved from http://pod2.stat.gov.rs/ObjavljenePublikacije/G2017/pdf/G20172022.pdf.
6. RZS. (2017). *Mesečni statistički bilten 09/2017*. Retrieved from http://pod2.stat.gov.rs/ObjavljenePublikacije/G2017/pdf/G20173012.pdf.
7. RZS. (2017). *Mesečni statistički bilten 12/2016*. Retrieved from http://pod2.stat.gov.rs/ObjavljenePublikacije/G2017/pdf/G20173003.pdf.
8. World Bank. (2017). *Doing business 2018*: *Reforming to create jobs*. Retrieved from http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB2018-Full-Report.pdf.
9. World Bank. (2016). *Doing business 2017: Equal opportunity for all*. Retrieved from http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB17-Report.pdf.
10. World Bank Group, & PwC. (2017). *Paying Taxes 2018*. Retrieved from http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Special- Reports/2018-Paying-Taxes.pdf.
11. World Bank Group. (2015). *How innovations in land administration reform improve on doing business*. Retrieved from http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Special-Reports/Innovations-in-land-administration.pdf.
12. *Zakon o planiranju i izgradnji*, Službeni glasnik RS, 72/2009, 81/2009 - ispravka, 64/2010 – odluka US, 24/2011, 121/2012, 42/2013 – odluka US, 50/2013 – odluka US, 98/2013 - odluka US, 132/2014 and 145/2014). Retrieved from www.mgsi.gov.rs.
13. *Zakon o pretvaranju prava korišćenja u pravo svojine nad građevinskim zemljištem uz naknadu*, Službeni glasnik RS, 72/2009, 81/2009 - ispr., 64/2010 –odluka US, 24/2011, 121/2012, 42/2013 - odluka US, 50/2013 - odluka US, 98/2013 - odluka US, 132/2014 and 145/2014). Retrieved from www.mgsi.gov.rs.
14. *Zakon o ozakonjenju objekata*, Službeni glasnik RS, 96/2015. Retrieved from www.mgsi.gov.rs.

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THE LAW AND ECONOMY OF THE ABUSE OF A DOMINANT POSITION

Pravo i ekonomija zloupotrebe dominantnog položaja

Abstract

Fair market conditions are a precondition for the existence of a developed and free market, and the object of this paper is the protection of competition, i.e. the abuse of a dominant market position from the legal and economic points of view. Particular focus is placed on considering the objectives of prohibiting abuse of a dominant position by an enterprise, defining the relevant market as a key element in the process of determining competition rules violation and determining the dominant position. Particularly explained are examples from business practice that analyze various practices of abuse of a dominant position: refusal and termination of cooperation, predatory behavior, tying and bundling, defining excessive prices, inadequate rebate policy, imposing exclusivity and discriminating customers. In addition, the measures, which are available to the Commission for Protection of Competition, are presented in the paper with the aim of eliminating competition rules violations.

Keywords: *protection of competition, abuse of a dominant position, prohibited practices*

Sažetak

Fer tržišni uslovi su preduslov postojanja razvijenog i slobodnog tržišta, te je predmet ovog rada zaštita konkurencije, odnosno zloupotreba dominantnog tržišnog položaja iz pravno-ekonomskog ugla. Poseban fokus je na razmatranju ciljeva zabrane zloupotrebe dominantnog položaja od strane preduzeća, definisanju relevnantnog tržišta kao ključnog elementa u procesu utvrđivanja povrede konkurencije i utvrđivanju dominantnog položaja. Posebno su obrazloženi primeri iz poslovne prakse u kojima su analizirane različite prakse zloupotrebe dominantnog položaja: odbijanje i prekid saradnje, predatorsko ponašanje, individualno i asortimansko vezivanje proizvoda, definisanje prekomernih cena, neadekvatna rabatna politika, nametanje ekskluzive i diskriminacija kupaca. Pored toga u radu su predstavljene i mere, koje stoje na raspolaganju Komisiji za zaštitu konkurencije, za otklanjanje povreda konkurencije.

Ključne reči: *zaštita konkurencije, zlouporeba dominantnog položaja, zabranjene prakse*

Introduction

The development of a market mechanism is the main institutional choice of market economies. It supports efficiency of market participants, encourages innovation, stimulates economic development and provides the highest level of perceived value for customers. Protection of competition becomes the dominant external factor in creating, improving and maintaining competitive dynamics in the market.

The universal idea behind protecting competition is to prevent unwanted behavior of market participants that leads to the restriction, prevention and/or distortion of competition. The result of anticompetitive practices are market inefficiencies, which cause direct damage to consumers in the form of higher prices, lower quality and a wider range of products. Relying on the above idea, the Law on Protection of Competition prohibits any behavior of business entities that brings about (consequence) or can lead to (intent) a reduction in the level of competition in the relevant market. Restriction of competition can be exercised by mutual agreements with competitors (horizontal agreements – cartels), by mutual agreements with buyers or suppliers (prohibited vertical agreements in both directions) or by the efforts of companies with a dominant market position to expel their competitors from the relevant market (abuse of a dominant position).

The Law on Protection of Competition of the Republic of Serbia relies heavily on the legal framework and the best practice of the European Union. It prohibits three groups of activities: 1) abuse of a dominant position, 2) restrictive agreements, and 3) excessive concentration of market power.

Certain practices used by companies may be allowed depending on whether the company has a dominant market position. Based on the practice of the European Commission and Serbian Commission for the Protection of Competition, the following abuses of a dominant position can occur, which will be explained in more detail later in the paper: 1) refusal and termination of cooperation, 2) predatory behavior, 3) tying and bundling, 4) defining excessive prices, 5) inadequate rebate policy, 6) imposing exclusivity, and 7) discriminating against customers.

In addition to the aforementioned abuses of a dominant position, this paper focuses on the goal of banning abuse of a dominant position, defining the relevant market as a very important component of the detection of abuse and remedying the violation of competition rules.

The aim of prohibiting abuse of a dominant position

The main goal of the ban on the abuse of a dominant position (ADP) is to set standards of behavior for companies that have economic strength, based on which they have a certain degree of immunity in relation to the pressure of competition and other market conditions. In markets characterized by the presence of one or more enterprises with this type of economic power, ADP ban should prevent the use or abuse of market power and provide conditions in the market that would exist in the case of a high level of competition. ADP is prohibited in order to: 1) exert pressure to lower prices to the level that would exist in the conditions of a competitive market; 2) increase prices in a situation where low prices are part of the intention to expel competitors from the market and subsequently increase prices well above the competitive level, as well as 3) require companies with dominant market share to share key non-renewable assets with their competitors in certain situations. In addition, the prohibition of ADP requires companies with a dominant market position to refrain from specific actions and business practices that would be completely legal if they were carried out by companies that do not have a dominant position. This requirement imposed by the ban of ADP is also called "special responsibility" of dominant companies [8].

In order to determine the existence of ADP it is necessary to cumulatively fulfill the following conditions:

1) the company is a market participant in the sense of the Law on Protection of Competition, that is, a legal or natural person that directly or indirectly, permanently, occasionally or partially participates in the circulation of goods or services, irrespective of their legal status, form of ownership or citizenship or nationality,

2) the market participant must have a dominant position in a properly designated relevant market, which allows it to operate, to a significant degree, independently of actual or potential competitors, customers, suppliers or consumers,
3) an action, that is, the implementation of a practice by market participants with a dominant position constitutes an abuse.

According to Article 16 of the Law on Protection of Competition, the abuse of a dominant position in the market is prohibited, and the abuse of a dominant position shall be considered:

1) directly or indirectly imposing an unfair purchase or selling price or other unfair terms of business,
2) limitation of production, market or technical development,
3) application of unequal business conditions to the same deals with different market participants, which puts some market participants in a more unfavorable position than competitors,
4) conditioning the conclusion of a contract by the other party's acceptance of additional obligations which, by their nature or according to trade practices, are not related to the subject of the contract.

It can be concluded that the focus of the previous provision is the welfare of consumers and economic efficiency. In line with this, it promotes equitable business conditions for all market participants and ensures that small and medium-sized businesses are not unfairly hindered by others who have market power. If the market is not monopolized and if it is open and competitive, there will be more opportunities for small producers and workers. Broadly speaking, when a market is competitive, it has strong macroeconomic growth [16].

Theoretical competition models can be classified into following groups [1]: markets with conditions of perfect competition and markets with conditions of imperfect competition.

Perfect competition is the measure of an optimally competitive market. It is a theoretical model that presupposes the existence of homogeneous products, a large number of companies on the supply side, perfectly informed consumers and excludes the existence of transport costs. Within the model of perfect competition, prices and production are at an optimal level.

Theoretically, it is possible to measure the degree of market power in relation to the state of perfect competition [17]. All companies that seek to maximize the profit function have a certain degree of market power in the short term to prevent the immediate departure of consumers from another supplier. This form of market power does not create anxiety from the point of view of competition protection policy. However, if market power is so significant and great that a company can, in the long run, profitably maintain the price above a competitive level or in some way limit or reduce production, innovation or product quality, such behavior can create anxiety from the aspect of competition policy. Market power should always be viewed as a function of the performance of an individual market.

Increasing prices above the competitive level, as a result of using market power, has a double negative effect on the welfare of consumers:

1) the wealth is transferred from consumers to enterprises through the purchase of offered products and services for which consumers pay more than they would pay under the conditions of effective competition,
2) consumers who are not ready to pay the price above the one that would exist in conditions of effective competition are expelled from the market.

These effects are presented in Figure 1. The first effect is presented in surface A, while the other effect is shown in the area marked with B. The sum of areas A and B measures the loss of consumer well-being caused by the placement of prices above the competitive level. In economic theory, area B is known as "monopoly loss". It represents the loss of total well-being, which includes consumer welfare and company profit, as the result of market prices set above the competitive level. Due to the existence of perfect competition, i.e. competitive prices in the market, there is also allocative efficiency, i.e. optimal allocation of resources so that all potential trade gains are maximized (the surface of the triangle PcCP is the largest). In that case, monopoly loss does not exist. One of

the goals of the modern competition policy is to encourage efficient resource allocation and economic growth which contributes to increasing the usefulness of all participants in the economic process and creating a new value [16].

The Law on Protection of Competition does not prohibit the dominant position per se. It is forbidden to abuse it in a way that companies holding a dominant position would carry out strategic actions aimed at excluding competition from the market in order to maintain or further strengthen their dominant position [12]. Companies that do not have a dominant position can legitimately carry out such strategic actions, since the effects of such practices cannot significantly affect the well-being of consumers over a long period of time. Therefore, it is of paramount importance to correctly determine the boundaries of the relevant market, as well as the dominant position of market participants.

Defining the relevant market

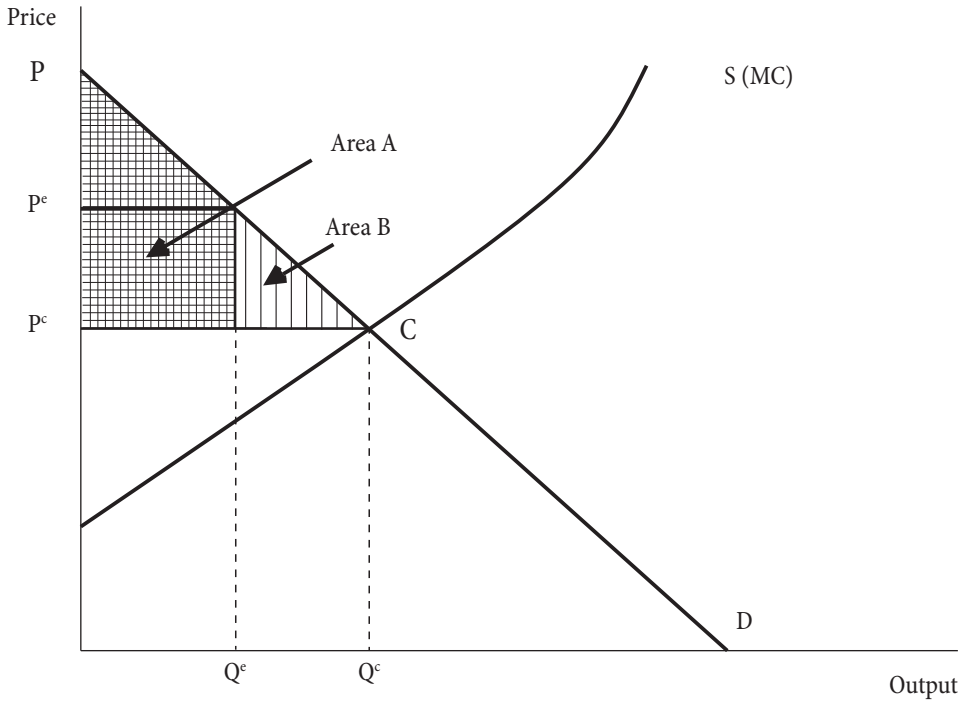
Defining the relevant market is the first and key step in revealing abuse of a dominant position [18]. A wrongly defined relevant market leads to wrong conclusions about the abuse of a dominant position.

The concept of relevant market can be viewed from two angles: from the angle of the relevant geographic market and relevant product market. The relevant market is determined by the type of product and/or service being sold in it and by the geographical area in which these products and/or services are sold and purchased.

In determining the relevant market, a decisive element is consumer's assessment of whether the products in question are substitutable. A formal test to verify this is called SSNIP (Small but Significant and Non-transitory Increase in Prices), or a hypothetical monopolist test [10]. This test originally came from American competition protection practice, and is today widely accepted in Europe. It consists of determining the closest product market in which the supposed monopolist could profitably apply a small, but significant increase in prices (ranging from 5% to 10%) within a year. If this increase in prices, in combination with product types and geographical area, does not cause significant loss of profit due to the shifting of demand to relatively cheaper products or distant markets, a relevant market with a seller who possesses hypothetical monopoly power is revealed.

If, however, there is significant loss of profit, it is necessary to expand the product or area range and to

Figure 1: Monopoly loss



Source: [17].

see whether consumers can avoid the effect of relative price increase in a wider market. The procedure is of iterative nature and is carried out until a relevant market is determined, in which the increase in relative prices does not lead to a fall in profit. Hence, it starts from the narrowest market definition (both geographically and objectively) and in subsequent iterations extends in the form of concentric circles until the condition set by the hypothetical monopolist test is satisfied.

The relevant market, in terms of the Law on Protection of Competition of the Republic of Serbia, is the market that includes the relevant product market in the relevant geographic market. The relevant product market is a set of goods or services that consumers and other users consider substitutable in terms of their properties, common purpose and prices.

The relevant geographic market is a territory in which market participants are involved in supply and demand and where the same or similar conditions of competition exist, differing substantially from the conditions of competition in the neighboring territories.

Determining the dominant position

After determining the relevant market in which a market participant is assumed to have a dominant position, it is necessary to approach the assessment of existence of domination. According to Article 15 of the Law on Protection of Competition, a dominant position is held by a market participant that, because of their market power, can operate in the relevant market to a significant extent in relation to actual or potential competitors, customers, suppliers or consumers. The market power of participants in the market is determined in relation to the relevant economic and other indicators, and in particular:

1) the structure of the relevant market;
2) the market share of market participants whose dominant position is being determined, in particular if it exceeds 40% in the relevant market;
3) real and potential competitors;
4) economic and financial strength;
5) degree of vertical integration;
6) advantages in access to supply and distribution markets;
7) legal or factual barriers to access of other market participants;
8) the power of the buyer;
9) technological advantages, intellectual property rights.

Two or more legally independent market participants may have a dominant position if they are linked by economic relationships so that in the relevant market they act together or act as one participant (collective dominance). The burden of proving the dominant position in the relevant market is borne by the Commission for Protection of Competition.

Determination of domination is essential [13]. If the existence of a dominant position has not been established, its abuse cannot be ascertained, even though the existence of anticompetitive practices carried out by an undertaking that is presumed to have a dominant position is not debatable. This is a fundamental issue in the process of determining the abuse of a dominant position, since there are jurisdictions in which, unlike Serbia and the EU, it is possible to punish companies that have applied anticompetitive practices, even in situations where they do not have a dominant position. For example, according to Section 2 of the Sherman Act of 1890 [19], if an enterprise that does not currently have a dominant position conducts anticompetitive actions and if it is likely that the effect of these anticompetitive practices will be to create a dominant position for that enterprise, in that situation the company can be sanctioned even if it does not hold a dominant position at that moment.

In economic terms, domination is broadly related to the concept of market power [17, p. 142]. A company has a dominant position if it has significant market power. Possession of significant market power in theory means that a company can set prices above a competitive level or limit production over a longer period of time. A company can have significant market power even when it cannot behave independently in relation to consumers, competitors and other stakeholders. This is the case where companies operate in an oligopolistic market. Their prices are, on the one hand, limited by the behavior of current

and potential competitors, and, on the other hand, in the event of increase in prices, customers could reduce consumption and stop purchasing their products. Strictly speaking, only companies operating in a market protected by instrumental entry barriers, where there is inelastic demand, can behave independently in relation to their competitors, customers and other stakeholders.

However, there are also situations in the market where a company that has market power competes with a larger number of smaller companies. These smaller companies act as followers and take over the prices set by the dominant player. The significance of market power for a dominant undertaking in that situation and the extent to which it can behave independently of its competitors and consumers depends on the ability of these small businesses to satisfy demand in the market [2, p. 111]. If their capacities are not sufficient to satisfy the overall market demand, there will always be a residual demand that will necessarily have to be supplied from a dominant undertaking [11, p. 10]. It is precisely the size of residual demand that determines the strength of market power, that is, the importance of the dominance of the observed participant in the market.

There are different types of domination: dominant position of one participant in the market and collective dominance. Dominant position of market participants cannot be assessed on the basis of one criterion. A comprehensive analysis of the specific market needs to be carried out. The degree of market power cannot always be determined in the same way, nor can a standard be established in this respect, because it depends on the circumstances of each individual case. Dominant market position is usually the result of a combination of several factors which individually do not have to directly determine domination [9].

Measuring the domination of a particular participant in the market cannot be done only mechanically. It is necessary to go through a few steps in detail [17, p. 143]. First, it is necessary to measure the relative strength of the observed participant in the relevant market. Relative strength is measured on the basis of market share. In the second step, it is necessary to evaluate the conditions in which the entry or expansion of competing companies in the relevant market is simple and easy so that they can take over the market share from the leading company. Also, it is necessary to analyze the ability of customers to neutralize the power of the dominant seller. Finally, all these elements must be cross-analyzed with real evidence of competition in the market.

For the purpose of Article 14 of the Law on Protection of Competition, two or more independent participants in the relevant market may be dominant in the market, so that they act together as a single participant (collective dominance), taking into account shares of their competitors in this market, obstacles to entering the relevant market, the power of their potential competitors, and the possible dominant position of the buyer. Given that, in case of collective dominance, market participants act as one participant, dominant position is determined in a manner analogous to the determination of the dominant position of one market participant [3].

Basic forms of abuse of a dominant position

As previously mentioned, perfect competition or pure monopoly are more theoretical cases that are rarely encountered in commercial practice. Until a participant in the market is guaranteed legal possession of monopoly power (natural monopoly), they face the threat of potential competitors' entering the market. Their entry would reduce the profit of such a market participant below the level of monopoly. Therefore, it is profitable for dominant market participants to implement business strategies and practices that increase the costs of potential competitors' entry into the market [15, p. 70]. Such practices can present abuse of a dominant position. These practices include [14]: refusal of cooperation, predatory behavior, product linkage, excessive pricing, imposing exclusivity, inadequate rebate policy and customer discrimination.

In Europe, there have been a number of cases where the European Commission suspected the abuse of a dominant position. Among the suspected practices was the unjustifiable refusal of cooperation with existing and current business partners. For example, chemical company Commercial Solvents (CS) produced chemical substance A and sold it to Zoya, which used that substance as an input for the production of chemical substance E.

When CS started producing chemical substance E, they were no longer willing to sell substance A to Zoya. The European Commission established that CS had a dominant position in the relevant market and concluded that the implementation of such a practice constituted abuse of a dominant position.

Predatory behavior presents the sale of products to customers at net selling prices below the cost price, with the aim of retaining or further increasing market share. The practice of predatory pricing, formation of prices below average variable costs, constitutes abuse of a dominant position. The dominant company, in principle, has no other business interest in employing price dumping, except to eliminate competitors from the market and subsequently raise its prices using the acquired monopolistic position in the market. The sale of products by the dominant undertaking at prices below the average total cost (total cost price) and above the average variable costs may also be considered abuse of a dominant position, if there is a visible intention to expel competition from the relevant market.

For example, the European Commission found that company Wanadoo charged ADSL services at prices below the average total cost. The analysis of the business found that from 1999 to 2001 prices were below variable costs, while in the period from 2001 to 2002 they were at the level of variable costs, but far below the total cost. The European Commission concluded that the above practice constituted abuse of a dominant position and imposed a fine in the amount of EUR 10.35 million.

Tying and bundling are prohibited practices for companies with a dominant market position. Tying products represents the sale of one product under the condition of purchasing another product. An example of tying could be the case of TetraPak, in which the European Commission found that the company sold its packing machines under contractual terms which included linking its other products and services to the sale of machines. Specifically, they required their customers to also buy cardboard. Additionally, TetraPak set out the condition for its customers that only TetraPak can service and maintain packing machines. The Commission imposed a fine of EUR 75 million for the abuse of a dominant position.

Bundling is very similar to tying. The difference is that the buyer is required to buy a precisely defined product assortment. As an example of bundling, the Microsoft case is highlighted. In one package, Microsoft sold two of its products – the operating system and Windows Media Player. The European Commission considered that the competition rules had been violated because the customers who purchased the Microsoft operating system were forced to buy the Microsoft Media Player without the possibility to choose. The Commission imposed a massive fine on Microsoft in the amount of EUR 497 million for abuse of a dominant position.

Tying of products and bundling are forbidden for companies with a dominant market position, while for other ones these practices are allowed.

The prohibited practices which lead to abuse of a dominant position also include excessive pricing. This practice is prohibited for companies with dominant market share, because its implementation leads to achieving enormously high profit rates. In the case of Napier Brown - British Sugar, the European Commission found that over a longer period this sugar producer applied prices that were not a real reflection of costs to bulk sugar in wholesale market and to packaged sugar in retail market. In this case, the Commission imposed a fine in the total amount of EUR 50.2 million.

Within the abuse of a dominant position, rebate policy is a very prominent topic. The principles on which the rebate policy of companies with dominant market share must be based are: transparency (buyers have an insight into seller's rebate policy), economic justification for the allocation of rebates and such allocation of rebates that does not cause customer loyalty. Transparency is achieved by securing that buyers have insight into sales policy so that they know in advance the conditions of cooperation and qualification for a certain level of rebates. Economic justification of rebates is achieved by a financial and factual justification of assigning a certain rebate to customers, i.e. avoiding arbitrary determination of rebates for customers. Customer loyalty is usually achieved by requiring that most or all of their needs are satisfied solely by the supplier who approves such a type of rebate. This type of rebate is approved in order to limit the opportunity of the buyer to

change the supplier, which ultimately leads to closing the market for competitive suppliers. In addition, it should be noted that excessive rebate is not allowed. Namely, approving rebates to the level in which the net selling price falls below the cost price leads to predatory pricing.

The case most commonly cited with regard to abusing rebate policy is the case of Michelin, a French tire manufacturer. The European Commission found that Michelin abused its dominant position by granting its dealers year-end rebates based on the realization of a predetermined sales plan. There was no economic justification for the amount of approved benefits. Due to the implementation of this commercial practice, Michelin was fined EUR 20 million by the Commission.

The abuse of a dominant position includes imposition of exclusivity. The classic form of imposing exclusivity is outlet exclusivity, i.e. imposing an obligation on the buyer to sell only the products of the dominant supplier within a particular product category in its retail facility. As an example of exclusivity, the European Commission identified abuse of a dominant position in the case of Unilever because it provided its customers with refrigeration appliances provided that only freezer exclusivity products are exhibited in them. The Commission determined, by conducting market research, that many retailers cannot or do not want to install another refrigeration appliance in their retail facility. When Uniliver installs its cooling unit in one facility, there is little possibility that some other manufacturer will also install its cooling device in the same facility. For this reason, the Commission concluded that freezer exclusivity is at the same time outlet exclusivity, which leads to closing the market for other competitors.

Abuse of a dominant position also includes discrimination of customers manifested when an enterprise with a dominant market position applies different sales conditions to different customers, in case of the same or equivalent transactions, without a clear economic justification. It occurs when individual buyers are offered better sales conditions than other customers of the same category that, from the company's perspective, have the same commercial position, i.e. belong to the same category of customers in sales policy. By analyzing the operations of Proplin, the Croatian Agency found that the company limited competition in the relevant natural gas distribution market by unequal application of rebate policy to its customers, or discretionary approval of rebates.

The Commission for Protection of Competition issued a decision stating that Inter Turs Plus d.o.o., as the manager of the only bus station in Topola, abused its dominant position. The Commission found that Inter Turs Plus abused its dominant position by imposing and charging an unfairly high price for the reception and dispatch of buses in intercity traffic at the bus station in Topola. Increasing the costs for all carriers that use the bus station in Topola led to the increase in the price of passenger transport in certain lines that run through the bus station in Topola and even to the cancellation of certain lines. The negative effects of imposing higher costs on carriers were also passed on to passengers as end users of transport services, in the form of the increase in the price of the bus ticket and of a reduction in the possibility of selecting departures and carriers to or from the bus station in Topola. This market participant was imposed with a measure for protection of competition in the amount of two hundred and thirty two thousand dinars that it was obliged to pay to the budget of the Republic of Serbia, as well as behavioral measures requiring the harmonization of its operations with the Law [7].

The Commission for Protection of Competition issued a decision stating that the Distribution System Operator EPS Distribucija d.o.o. Belgrade, as the only operator in the electricity distribution market of Serbia, abused its dominant position. This market participant was also imposed a measure for protection of competition in the amount of 330 million dinars, as well as behavioral measures aimed at equalization of business conditions in the market. During the proceedings, the Commission found that the aforementioned company abused its dominant position by placing certain commercial electricity suppliers, and in particular EPS Snabdevanje, in a more favorable position than other competitors. This behavior is, among other things, a consequence of the nontransparent business policy of EPS Distribucija. When contracting access to the electricity distribution system, EPS Distribucija imposed the obligation of depositing collateral on all commercial suppliers, with the exception of EPS Snabdevanje. At the

same time, the company EPS Distribucija made a difference in terms of the amount of collateral, since for some system users the amount was calculated on a monthly basis, and for others it was based on the quarterly value of the services provided. In addition, almost all commercial suppliers of electricity could deposit collateral only in one business bank chosen by EPS Distribucija. EPS Snabdevanje had, in a shorter period of time, significantly longer deadlines for payment of due debts, compared to all other commercial suppliers. All these actions resulted in the increase in the cost of electricity supplied by commercial suppliers to end consumers [6].

The Commission for Protection of Competition issued a decision finding that PUE "Pogrebne usluge" Belgrade abused its dominant position. The said public company restricted competition by charging an unjust price for the control of the installation of tombstones in cemeteries run by this company. The users of the cemetery, as consumers, were left no choice since the installation of a tombstone by stonecutters was only possible after the payment of the stated obligation, in which way they were harmed [5].

The Commission for Protection of Competition issued a decision establishing that the company Frozen Food Industry Frikom AD from Belgrade abused its dominant position in the relevant wholesale market of industrial ice cream in the territory of the Republic of Serbia. After the procedure had been initiated ex officio, it was established that this company committed violation of competition rules in such a way that, in its standard contracts realized in the 2008-2010 period, and in a number of contracts after 2010, concluded with customers – retailers, it imposed an obligation on retailers to fully and consistently apply the retail prices set out in Frikom pricelists in their further sale of Frikom products to end users - consumers. This company also imposed an obligation of exclusive purchase of the relevant product from Frikom, directly and/or indirectly prohibiting the sale of competing products, whereby exclusivity regarding refrigeration units and retail facilities was contracted. A developed system of incentives and stimulations for retailers decisively influenced their business decisions to choose Frikom as the only supplier of the relevant product. Furthermore, Frikom imposed an obligation on customers to pay to Frikom unjustifiably high amounts as compensation of damage in case they do not comply with all contractual obligations, whereby the provisions regarding resale prices, the exclusivity of goods in refrigeration units and the retail facility are essential provisions of the contract whose breach results in such an obligation to Frikom. The company also contracted unsuitable and unjustifiably short deadlines in which Frikom could exercise its right to unilaterally terminate the contract in the event that the buyer-retailer fails to perform its contractual obligations, in particular those defined by the relevant provisions regarding the application of the prices in resale and exclusivity in refrigeration units and retail objects. Moreover, Frikom contracted and applied different business conditions to the same deals with different buyers-retailers, especially with regard to payment deadlines, return of goods in the event of poor sales results and the expiry date, as well as deadlines for termination of the contract. In accordance with the law, a measure for protection of competition was determined, in the form of the obligation to pay the amount of 4% of the total annual income realized in 2009, which amounts to 301,950,520.00 RSD. In addition to the measures for protection of competition, the same decision also imposed appropriate measures for elimination of the breach of competition rules in the form of behavioral measures, as well as the deadlines within which this company was obliged to implement all the imposed measures [4].

Remedies related to abuse

The Commission for Protection of Competition, after determining the existence of abuse of a dominant position, imposes on the market participant a measure for protection of competition and/or a measure of elimination of infringement of competition rules. The measure for protection of competition is an integral part of the Commission's decision establishing abuse of a dominant position. The right of the Commission to impose this type of measure is stipulated by Article 68 of the Law on Protection of Competition. According to this article, a market participant that abuses a dominant position in the relevant market will be imposed a measure for protection of competition in the form of payment of an

amount of up to 10% of the total annual income realized in the territory of the Republic of Serbia.

The measure for protection of competition cannot be determined upon the expiry of five years after the day of committing abuse of a dominant position. However, this statute of limitations is interrupted by each action of the Commission undertaken to determine the abuse of a dominant position by a particular participant in the relevant market. After each interruption, statute of limitations starts running again, but the procedure for examining the existence of abuse of a dominant position cannot be maintained for more than ten years.

By means of a decision establishing abuse of a dominant position, the Commission may also determine measures to eliminate the identified abuse of a dominant position, or to prevent the possibility of occurrence of the same or similar violation of competition rules. Measures for elimination of the identified abuse of a dominant position shall be carried out by issuing orders to undertake certain behavior or prohibit certain behavior. These measures are called behavioral measures and should be proportionate to the importance and severity of the identified abuse of a dominant position and in direct relation to acts that led to such abuse.

If, in the proceedings before the Commission, it is determined that there is a significant danger of repeating abuse of a dominant position as a direct consequence of the structure of the dominant market participant, the Commission may determine a measure whose aim would be to change that structure in order to eliminate such a danger, or to establish the structure that existed before the occurrence of the identified abuse. These measures are called structural measures and are determined if there is no possibility of determining an equally or approximately effective behavioral measure, i.e. if determining a behavioral measure would represent a greater burden for market participants than a concrete structural measure or if the previously imposed behavioral measure for the same abuse of a dominant position has not been implemented fully. The structural measure may stipulate the obligation to decompose the resulting structure of participants in the market, in particular through the sale of some of its parts or assets to other parties not affiliated to the market participant.

In addition to the previously described possibilities for imposing fines and determining structural and behavioral measures, the Commission may also issue a conclusion on the termination of the procedure for examining the existence of abuse of a dominant position. In order to terminate the procedure, it is necessary for the company against which the procedure is being conducted to submit a proposal of obligations, which it is willing to fulfill voluntarily, in order to eliminate possible violations of competition rules, along with the conditions and deadlines for the execution of these measures. The company under procedure proposes obligations based on the conclusion of the initation phase of the procedure for examination of the potential dominant position abuse. The company may file the Statement of Objection no later than before the receipt of the notice regarding important facts, evidence and other elements on which the Decision will be based.

The Commission publishes the notice on the submission of proposals containing a brief description of proposals and important elements of the case on its website, inviting all interested parties to submit written comments, views and opinions within 20 days from the date of publication of this notice. If, on the basis of the market situation, the Commission determines that it is likely that the objective of remedying competition rules violation will be achieved based on the proposed obligations, , it shall issue a conclusion that will terminate the procedure and determine the deadline for performing the obligations and delivering the evidence. A suspended procedure may be continued within a period of no more than three years from the date of the conclusion on termination in case: of essential change in the circumstances on which the conclusion on termination of the procedure was based, the party fails to fulfill the obligations within the deadline set for fulfillment or does not furnish relevant evidence and in case the Commission finds that the conclusion on termination of the proceedings has been issued on the basis of incorrect, false, incomplete or misleading information provided by the party in the proceedings.

Conclusion

Ensuring fair market conditions for all market participants, on the one hand, depends on the activities of the Commission

for Protection of Competition and its human resource and financial capacities. The Commission is responsible for active monitoring of undertaken business practices and application of adequate anticompetitive measures. On the other hand, we must bear in mind that competition is a dynamic category based on innovation and permanent search for sources of competitive advantage. Therefore, an excessive level of intervention of regulatory bodies can lead to excessive regulation, and consequently have a partially negative impact on the freedom of market players.

Abuse of a dominant position by the company affects not only the market freedom of direct competitors, but also all participants in the chain and value system. Anticompetitive practices lead to lesser market disturbances, such as gaining a mild advantage in the market, or even substantially greater consequences, such as a market structure disorder. Therefore, the protection of competitive practices must at the same time be directed to the protection of all market participants – producers, suppliers, intermediaries and end consumers. Comprehensive functioning of the legal framework leads to prosperity for all stakeholders.

Regardless of whether the abuse of a dominant position is manifested through the elimination of competitors or the reduction of customers' welfare, in order to be qualified as abuse it must meet some fundamental requirements. Namely, anticompetitive behavior and proving thereof, or proving abuse of a dominant position, depend directly on the defined relevant market. If anticompetitive action does not appear in the relevant market, there is no abuse of the dominant market position. This means that the definition of the relevant market is the starting point, and at the same time a key precondition for proving the abuse of a dominant position.

It is often encountered in practice that companies commit violation of competition rules due to ignorance and lack of information. Although the right to competition has been institutionalized for more than ten years in the Republic of Serbia, additional efforts are needed in economics education and raising awareness of (un)allowed activities from the aspect of protection of competition. This way, all economic players become an additional barrier to abuse of a dominant position by companies with dominant market share.

References

1. Begović, B., Labus, M., & Jovanović, A. (2017). *Ekonomija za pravnike*. Osmo izdanje. Univerzitet u Beogradu, Pravni fakultet: Centar za izdavaštvo i informisanje.
2. Carlton, D., & Perloff, J. (2005). *Modern industrial organisation*. Pearson Addison Wesley.
3. Commission for Protection of Competition. (2010). *Eki Transfers and Tenfore, decision 5/0-02-10/10-1 of 12.01.2010*. Retrieved from http://www.kzk.gov.rs/kzk/wp-content/uploads/2012/03/Resenje-EKI-Transfers-12.01.2010.pdf.
4. Commission for Protection of Competition. (2012). *Frikom, announcement 2012/12*. Retrieved from http://www.kzk.org.rs/kzk/wp-content/uploads/2012/12/Saopstenje-Frikom.pdf.
5. Commission for Protection of Competition. (2014). *JKP Pogrebne usluge, decision5/0-02-27/12-15 of 27.11.2014*. Retrieved from http://www.kzk.gov.rs/kzk/wp-content/uploads/2014/12/JKP-Pogrebne-usluge-Resenje-27.11.2014.pdf.
6. Commission for Protection of Competition. (2016). *EPS Distribucija, decision5/0-02-563/2016-60 of 23.12.2016*. Retrieved from http://www.kzk.gov.rs/kzk/wp-content/uploads/2017/01/RESENJE-EPS-Distribucija1.pdf.
7. Commission for Protection of Competition. (2017). *Inter Turs Plus, decision5/0-02-90/2017-131 of 23.10.2017*. Retrieved from http://www.kzk.gov.rs/kzk/wp-content/uploads/2017/11/Resenje-InterTursPlus1.pdf.
8. European Commission. (1973). *Europemballage and Continental Can Company, judgment of 21.02.1973 – Case 6/72*. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:61972CJ0006&from=EN.
9. European Commission. (1978). *United Brands v Commission, judgment of 14. 2. 1978 — CASE 27/76*. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:61976CJ0027&from=EN.
10. Petit, N., & Neyrinck, N. (2010). Behavioral economics and abuse of dominance: A proposed alternative reading of the Article 102 TFEU case-law, *The Global Competition Law Centre Working Papers Series, 02/10*.
11. Lianos, I., & Geradin, D. (2013). *Handbook on European competition law: Enforcement and procedure*. Edward Elgar Publishing Limited.
12. Lončar, D., & Milošević, S. (2013). Antitrust compliance program as a basic competence of companies. In Janićijević, N. & Lovreta, S. (Eds.), *Konkurentnost preduzeća u Srbiji* (261-280), Belgrade: CID Ekonomskog fakulteta.
13. Lončar D., & Milošević S. (2015). Antitrust policy in Serbia: Regulatory framework and enforcement mechanism, *Journal of Contemporary Economic and Business Issues*, 2(2), 75/92.
14. Lončar, D., Rajić, V., & Milošević, S. (2015). Characteristic antimonopoly risks for enterprises operating in Serbia: Identification, appraisal and treatment, *Ekonomika preduzeća*, 63(7-8), 413-424
15. Martin, S. (2006). *Industrial organization: A European perspective*. Oxford University Press.
16. Obradović, M., & Milošević, S. (2017). Competition policy as a driver of economic growth and development in the Republic of Serbia. *Institutional Changes as Determinants for Economic Growth in the Republic of Serbia, Faculty of Economics, University of Kragujevac,* 141-154.

17. O'Donoghue, R., & Padilla, J. (2013). *The law and economics of Article 102 TFEU*. Second Edition. Oxford: Hart Publishing Ltd.
18. OECD. (1996). *Abuse of dominance and monopolisation.* Paris
19. Sherman Act (1890). ch. 708, 26 Stat. 289. U.S.C.

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KEY CHALLENGES FOR THE SERBIAN EDUCATION

Ključni izazovi pred sistemom obrazovanja u Srbiji

Abstract

The Fourth Industrial Revolution is causing an accelerated transformation of economies and societies globally. Ways of production, consumption, service delivery and communication are changing. Labor market demands are changing dramatically. New occupations emerge and existing ones disappear. This opens up new opportunities, raises productivity, enables higher consumption, encourages growth, yet to reap the benefits from the positive effects of change, significant investment in human capital and knowledge and skills development of the population is essential. Such rapid changes result in high uncertainty as to the skills needed for the future. It is already obvious that even at lower education levels, preparing individuals to cope with a complex, digital environment becomes important.

The emphasis in education is moving from memorization to developing analytical and critical thinking, problem solving, creativity, adaptability, team work, skills for lifelong learning. The education system needs to ensure people are equipped with the skills to adapt to technological changes to avoid the widening social gaps. The required knowledge and skills need to be developed before entering the labor market, and updated throughout the working life.

Analysis of the Serbian education system outcomes at different levels shows that it fails to fulfill its social task. Students' results in international testing are below average, graduates are inadequately prepared for their first job requirements, the profile structure from secondary school level upwards is notably mismatched to the labor market needs. What is required is a radical, consistent reform of the education system at all levels. Solutions exist, what we need is to acknowledge the world around us.

Keywords: *education, skills, labor market, Fourth Industrial Revolution, Serbia*

Sažetak

Četvrta industrijska revolucija dovodi do ubrzane transformacije ekonomija i društava na globalnom nivou. Menjaju se načini proizvodnje, potrošnje, pružanja usluga, komunikacija. Zahtevi tržišta rada se dramatično menjaju. Nastaju nova zanimanja i nestaju postojeća. Sve to otvara nove mogućnosti, podiže produktivnost rada, podstiče rast, ali da bi se iskoristili pozitivni efekti promena, neophodno je značajno investiranje u humani kapital, u razvoj znanja i veština populacije.

Imajući u vidu dinamiku promena, postoji visok stepen neizvesnosti o tome koja će sve znanja biti potrebna u budućnosti. Ali, danas je već jasno da će i na nižim nivoima obrazovanja biti potrebno razvijati znanja i veštine koje će osposobljavati pojedince da se snalaze u kompleksnom, digitalnom okruženju.

Akcenat se u obrazovanju pomera sa memorisanja na razvijanje analitičkog i kritičkog mišljenja, rešavanje problema, razvijanje kreativnosti, adaptibilnosti, timskog rada, razvijanje sposobnosti za celo životno učenje. Obrazovni sistem ima zadatak da osposobi članove društva da se mogu prilagoditi tehnološkim promenama, i izbeći sudbinu žrtve. Potrebna znanja i veštine neophodno je razviti kod učenika pre njihovog uključivanja na tržište rada i nastaviti sa usavršavanjem tokom radnog veka.

Analiza efekata rada obrazovnog sistema u Srbiji, po nivoima obrazovanja, pokazuje da on ne uspeva da ostvari svoj društveni zadatak. Naši učenici postižu ispodprosečne rezultate na međunarodnim ispitivanjima, diplomirani studenti nisu adekvatno pripremljeni za zahteve svog prvog radnog mesta, struktura i broj diplomaca od srednjoškolskog nivoa nadalje je u značajnom disbalansu sa potrebama tržišta rada. Očigledno je neophodno preduzeti korenitu, konsistentnu reformu sistema obrazovanja na svim nivoima. Rešenja postoje, potrebno je sagledati svet oko nas.

Ključne reči: *obrazovanje, veštine, tržište rada, Četvrta industrijska revolucija, Srbija*

Introduction

The world is profoundly changing. Precipitated by the impact of synergistic effects of the digital, physical and biological technologies' developments, the ways of production, consumption, and provision of communication services are being transformed. There is a growing degree of general mobility, from the movement of capital, over knowledge to people. The ways of what and how things are being done are changing, as well as the ways how we interact with one another, our cultural patterns and value systems. All these changes have created and are creating a wide specter of new opportunities in all areas of human activity.

The size, speed and scope of changes on the global scale are such that these times are called the times of the Fourth Industrial Revolution. Like any revolution, this one also causes breakdowns of the existing systems and demands adaptation. One of the first areas that have been affected is the labor market, with new jobs emerging and the existing ones disappearing. Imbalances emerge at short notice, with armies of the unemployed being created, on the one hand, the youth population being particularly vulnerable, whereas, on the other hand, companies cannot fill in their needs for people with certain competences and skills. These processes have far-reaching socio-economic effects.

Bearing in mind that one of the crucial missions of the education system is to prime the population for embarking on economic and social trends, a serious task is set before education systems worldwide, and the task is as follows: based on the anticipation of the trends of change in the forthcoming decades, with changes going ahead of predictions, to foresee the necessary knowledge and skills for the future, to devise and apply new methods and techniques of learning, pertinent to the times of explosive growth of online communications and education, globalization in education, increasing intercultural contacts and migration.

The education system in Serbia is facing the same task, yet our task is even more complex. Our education system is lagging behind in terms of requirements of the times. It is necessary that the system, which has been self-serving for decades, isolated from the environment, and under the strong influence of commercial goals, be opened and adapted to global flows. On several occasions, certain steps have been taken with the aim of raising the quality of education, yet they may be characterized as "remedies" rather than consistent reforms.

Furthermore, there are other problems as well, a seriously distorted system of values in a society that has been undergoing transition for almost three decades, negative demographic trends, outflow of young qualified personnel, poor economy, shaken credibility of the education system.

However, we have no choice. The solution to our economic problems lies in raising competitiveness, and competitiveness relies on the development of education, science and innovation. It is important to develop the awareness among economic policy makers that in the times of a knowledge-based economy, it is the education system that takes on the role of the key development factor, as it is the well-educated population that is a fundamental resource for both the use of existing resources and the development of new ones that will be based on the advancement of science and technology.

In seeking a solution, it is necessary to perceive the changes around us. Adaptation needs to be carried out consistently at all levels from pre-school education to doctoral studies.

The impact of new technologies on the global labor market trends

Powerful new technologies are reshaping our world, improving lives and increasing productivity, yet affecting our jobs as well.

In January 2017, McKinsey Global Institute published the results of a research that assesses the number and types of jobs that might be created under different scenarios through 2030, and compares that to the work that could be displaced by automation [8]. The analysis covers 46 countries comprising almost 90% of global GDP, with focus on six countries that span income levels (China, Germany, India, Japan, Mexico, and the United States). For each, they modeled potential net employment changes for more than 800 occupations,

based on different scenarios for the pace of automation adoption and for future labor demand. The intent of the research was to present a set of scenarios (as they say necessarily incomplete) to serve as a guide, as we anticipate and prepare for the future of work.

The results reveal a rich mosaic of potential shifts in occupations in the years ahead, with important implications for workforce skills and wages. The key finding is that while there may be enough work to maintain full employment to 2030 under most scenarios, the transitions will be very challenging — matching or even exceeding the scale of shifts out of agriculture and manufacturing we have seen in the past.

The survey states that:

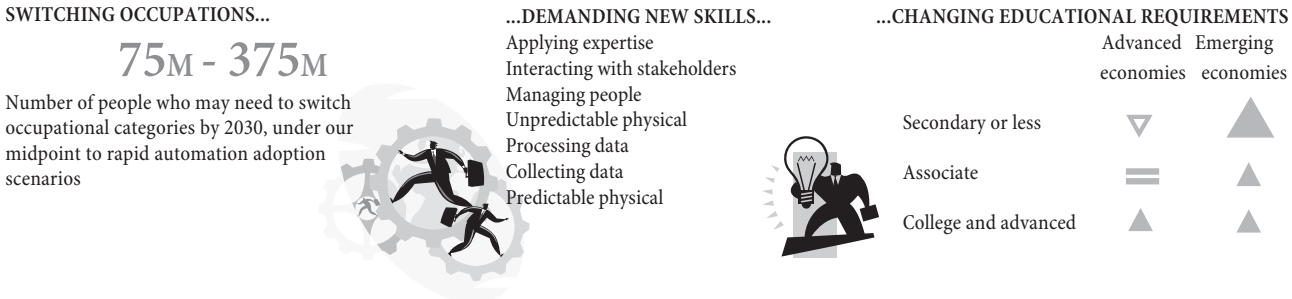
- 6 of 10 current occupations have more than 30% of activities that are technically automatable.
- About 50% of all work activities globally have the technical potential to be automated by adapting currently demonstrated technologies. The proportion of work actually displaced by 2030 will likely be lower because of technical, economic, and social factors that affect adoption.
- 75 million to 375 million workers globally (14% of the global workforce) will likely need to transition to new occupational categories and learn new skills, in the event of rapid automation adoption (Figure 1). Moreover, all workers will need to adapt, as their occupations evolve alongside increasingly capable machines. Some of that adaptation will require higher educational attainment, or spending more time on activities that require social and emotional skills, creativity, high-level cognitive capabilities and other skills relatively hard to automate.
- Scenarios across 46 countries suggest that between almost zero and one-third of work activities could be displaced by 2030, with a midpoint of 15%. The proportion varies widely across countries, with advanced economies more affected by automation than developing ones.
- The findings suggest that several trends that may serve as catalysts of future labor needs could create demand for millions of jobs by 2030. These trends include caring for others in aging societies, raising energy efficiency and meeting climate challenges, producing goods and services for the expanding consuming class, especially in developing countries, not to mention the investment in technology, infrastructure, and buildings needed in all countries (Figure 2).

It may be observed that these jobs gained could more than offset the jobs lost to automation. None of this will happen by itself — it will require businesses and governments to seize opportunities to boost job creation and for labor markets to function well.

On many dimensions, we may find similarities between the scope and effects of automation today compared with earlier waves of technology disruption, going back to the Industrial Revolution.

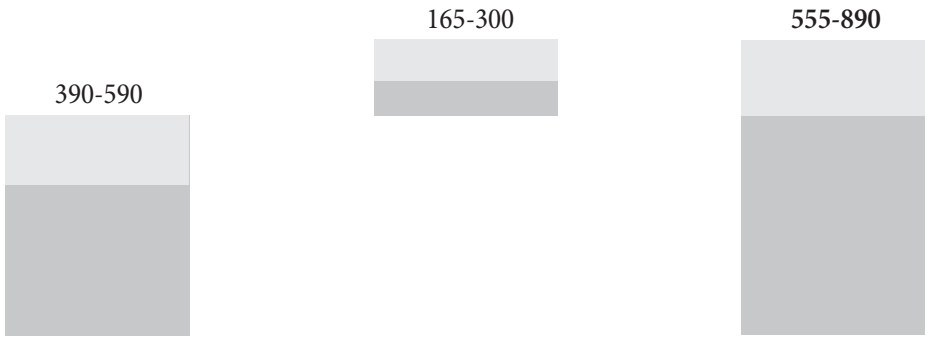
However, automation going forward might prove to be more disruptive than in recent decades — and on par with the most rapid changes in the past — in two ways. First, if technological advances continue apace and are adopted rapidly, the rate of worker displacement could be faster. Second, if many sectors adopt automation simultaneously, the percentage of the workforce affected by it could be higher.

Figure 1: Workforce transitions



Source: [8, p. 5].

Figure 2: Scenarios for labor demand from selected catalysts, 2016-30



Selected catalysts						
Rising incomes	Health care for aging populations	Investment in infrastructure	Investment in buildings	Investment in energy	Technology development	Market for previously unpaid work

Source: [8].

In the past, all advanced economies have experienced profound sectoral shifts in employment, first in agriculture and more recently in manufacturing, even as overall employment has grown. In the United States, the agricultural share of total employment declined from 60% in 1850 to less than 5% by 1970, while manufacturing fell from 26% of total US employment in 1960 to below 10% today. Other countries have experienced even faster declines: one-third of China's workforce moved out of agriculture between 1990 and 2015 [7]. Throughout these large shifts of workers across occupations and sectors, overall employment as a share of the population has continued to grow.

According to the estimates for Europe, between 2015 and 2025 opportunities will grow for highly-skilled people (+21%), while stagnating for medium-skill levels and declining for the low skilled (-17%). Depending on the country and occupation, 25-45% of jobs will be subject to automation. This is why upskilling and reskilling are indispensable [3].

History tells us that in the long run, technology is a net creator of jobs. New industries and occupations have emerged to absorb workers displaced by technology[1]. In their article *Five lessons from history on AI, automation, and employment* [7], Susan Lund and James Manyika outlined the following conclusions: Employment in some sectors can decline sharply, but jobs created elsewhere have absorbed those that have been displaced; Employment shifts can be painful; Technology creates more jobs than it destroys, including some you can't imagine at the outset; Technology raises productivity growth, which in turn boosts demand and creates jobs; Thanks to technology we all work less and play more.

Most jobs created by technology are outside the technology-producing sector itself. There are estimates that the introduction of the personal computer, for instance, has enabled the creation of 15.8 million net new jobs in the United States since 1980, even after accounting for jobs displaced. About 90 percent of these are in occupations that use the PC in other industries, such as call-centre representatives, financial analysts, and inventory managers.

New technologies have raised productivity growth. Rising productivity is usually accompanied by employment growth: it raises incomes, which are then spent, creating demand for goods and services across the economy. This stimulates demand across the economy, boosting job creation.

Furthermore, over the long term, productivity growth enabled by technology has reduced the average hours worked per week and allowed people to enjoy more leisure time. Across advanced economies, the length of the average workweek has fallen by nearly 50% since the early 1900s, reflecting shorter working hours, more paid days off for personal time and vacations, and the recent rise of part-time work [7], [9]. This

1 In the United States, 0.56 % of new jobs created each year are in new occupations [7].

growth in leisure has led to the creation of new industries, from golf to video games to home improvement.

We may conclude that technological changes will cause significant changes in the labor market, with millions of jobs lost and millions of new ones gained. In the long run, employment will increase. These changes will challenge current educational and workforce training models, as well as business approaches to skill-building.

At the end of 2017, The McKinsey Global Institute launched a survey with the aim of assessing attitudes about the need for retraining and reskilling workers in the age of automation [6]. The survey polled more than 1,500 respondents from businesses, the public sector, and not for profits across regions, industries and sectors. At the beginning of 2018, they published response results from roughly 300 executives at companies with more than $100 million in annual revenues. To the question "How important is addressing potential gaps related to automation and/or digitization within your organization's workforce?", 62% of executives replied that they believed they would need to retrain or replace more than a quarter of their workforce between now and 2023 due to advancing automation and digitization. Over 70% of executives in Europe and 64% in the United States put that issue in the top 10 priorities [6, p. 3].

The question "How can your organization best resolve its potential skills gaps related to automation and/or digitization over the next five years?" yielded the following answers. In terms of solutions, 82% of executives at companies with more than $100 million in annual revenues believe that retraining and reskilling must be at least half of the answer to addressing their skills gap. Within that consensus, though, there were clear regional differences. Fully 94% of those surveyed in Europe insisted that the answer would either be an equal mix of hiring and retraining or mainly retraining versus a strong but less resounding 62% in this camp in the United States. By contrast, 35% of Americans thought the challenge would have to be met mainly or exclusively by hiring new talent, compared to just 7% in this camp in Europe.

It is interesting to note that to the question "Which of the following groups or institutions (governments, individual workers, corporations, higher education institutions, primary and secondary schools, other) should take the lead in addressing any potential skills gaps related to automation and /or digitization over the next five years?", 64% of executives in the United States and 59% in Europe replied that it should be the corporations that should take the lead.

About one-third of executives feel an urgent need to rethink and upgrade their current HR infrastructure. Many companies are also struggling to figure out how job roles will change and what kind of talent they will require over the next five to ten years. Some executives who saw this as a top priority — 42% in the United States, 24% in Europe, and 31% in the rest of the world — admit they currently lack a "good understanding of how automation and/or digitization will affect our future skills needs."

Such a high degree of anxiety is understandable. In our experience, too much traditional training and retraining goes off the rails, because it delivers no clear pathway to new work, relies too heavily on theory versus practice, and fails to show a return on investment (ROI).

Workers of the future will spend more time on activities that machines are less capable of, such as managing people, applying expertise, and communicating with others. They will spend less time on predictable physical activities and on collecting and processing data, where machines already exceed human performance. The skills and capabilities required will also shift, requiring more social and emotional skills and more advanced cognitive capabilities, such as logical reasoning and creativity [6], [9].

The education system in Serbia

An overview of the trends dominating the global labor market is a good indicator of the dynamics underlying the creation of new professions and the loss of the existing ones. This process puts serious demands before the education system. The currently prevailing models that offer profiled "knowledge sets" for specific professions will not be able to respond to the demands of the times. Having in mind that, according to the estimates, current students will have to make several occupational shifts by the end of their working career in order to adapt to the labor market demands [8], that there are no longer clear boundaries between professions, and that the dynamics

of technological development progressively create new occupations[2], it is evident that changes are necessary in the very concept of education.

The question arises as to how good our education system is and how ready it is for it.

The education system encompasses all levels of education, from pre-school education and care, through primary, secondary, academic and professional studies, to masters and doctorates. It also incorporates adult education as well as teacher training.

Pre-school education

Numerous studies (UNESCO, UNICEF, OSCE) suggest that investing in early education and care provides the foundation for an overall whole-person development, ensures more successful participation in the following stages of education, and leads to significant cost savings in later education, as well. It is estimated that the rates of return on investments are greatest at the pre-school level[3]. Pre-school age is considered to be from 0.5 to 6 years old.

Intensive efforts are being made in terms of development of pre-school education in Serbia. At present, there are 334 institutions (162 state and 172 private) [11] operating in the field of pre-school education in Serbia. The number has doubled compared to 2010 [13, p. 16]; however, it still cannot meet the real needs[4] of the population, and unfortunately it is least accessible to children from rural areas and families from socially and economically vulnerable categories.

The goal in this area should be to achieve the full coverage of children in pre-school education. According to the data from 2015, approximately 66% of children in Serbia under the age of 5 were covered by pre-school education, whereas European Union has a coverage of 85% [16]. When the coverage is observed by age groups, it can be seen that in five-year-olds it is 51%, in three-year-olds about 46%, and in the younger age groups even lower. The best results have been achieved in the pre-school preparatory program that is compulsory and free and is intended for children one year prior to their entering primary school. The average coverage of children in this program in 2017 was 97% (the highest percentage in Vojvodina at 99%, and the lowest in the Belgrade region at 93%) [11].

It is evident that the state is making significant endeavors in the development of pre-school education through: participation in costs (it formally covers 80% of costs, yet realistically this percentage is estimated to be 33% [16], through legal regulation in enabling priority status for the enrolment of children from vulnerable social groups, and a number of other measures at the national and local levels. However, the coverage is still not at a satisfactory level, and a particular problem is, in fact, the deep inequity of the system since the least represented are the children from marginal social groups where early incentives are indeed most needed. Indicators say that the largest coverage is represented in children from educated families with a higher socio-economic status. Bearing in mind how limited the resources are, with only 0.43% of GDP being allocated for pre-school education, a question may be raised as to the justification of the linear coverage of costs as a social measure at this level of education.

Primary and secondary education

If we take a look at the primary education in Serbia, according to The Global Competitiveness Reports (GCR) from 2011 to 2018[5], based on the Quality of primary education indicator, we may observe that our rankings ranged from the lowest 83rd place (out of 144 countries) in 2012, up to the 64th place (out of 137 countries) in 2018 (Table 1).

The score is defined upon the Executive Opinion Survey, where respondents provide an answer to the question: "In your country, how do you assess the quality of primary education?", rating it on a scale from 1 to 7, where 1 represents the lowest grade, meaning extremely poor - among the worst in the world, and 7 the highest one, meaning excellent - among the best in the world.

2 At the World Economic Forum in Davos in 2017, it was stated that three out of five six-year-olds today cannot even envisage what they will be doing in the future.

3 Unfortunately, there have not been any evaluational studies in our country that would show the positive effects of pre-school education on a better start in primary school, higher rate of social inclusion, higher rate of women employment, poverty reduction, etc.

4 This year, 4,500 children have remained on waiting lists. Most of them in the south of Serbia, over 3,000.

5 There are no complete data for Serbia for the previous years.

Table 1: Primary education - ranking

Indicator	Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
4.09: Quality of primary education	Score	3.7	3.5	3.7	3.8	3.7	3.7	4.1
	Rank	74	83	81	78	81	81	64
4.10: Primary education enrollment rate, net %	Score	94.20%	92.70%	93.20%	91.40%	94.80%	94.80%	96.30%
	Rank	58	77	82	94	66	66	60

Source: [24], [23], [22], [21], [20], [19], [18].

According to another, far more exact indicator, Primary education enrollment rate, net%, in terms of rankings, Serbia ranged from the 94th place in 2014-2015, with the enrolment rate of 91.4% to the 60th position in 2017, with the enrolment rate of 96.3%.

The goal set by the Strategy for the Development of Education in Serbia by 2020 [13] is to achieve the enrollment rate in primary education of at least 98%, with the dropout rate not exceeding 5%. In order to achieve this goal, it is necessary to increase the coverage of children from rural areas. In the past ten years, their coverage was about 80%, with a negative trend and a significantly higher dropout rate compared to urban areas [13, p. 30]. The most vulnerable are Roma children. There are no precise data on their number, but according to estimates, their coverage is about 75%. The total dropout rate of students in primary education is determined based on the number of children who do not enroll in primary school, who do not pass to the fifth grade and who do not complete primary school. According to existing analyses and estimates, dropout ranges between 10-15% in a generation, with the percentage being significantly higher in children from vulnerable groups. The European documents emphasize that the dropout rate for children during primary education should be below 10%.

In addition to the quantitative data, the question of the quality of education is subject to debate as well.

In international assessment studies, the achievements of our students indicate that the quality of our education is below the international average[6].

According to the results of the PISA test, which determines the applicability of the acquired knowledge and skills, if we imagined two identical children, one being educated in Serbia, and the other in the OECD countries, the difference in their achievements in the field of mathematical, reading and scientific literacy would be between 50 and 60 points, in favor of the OECD countries. This difference corresponds to the effect of 1.5 years of schooling [1, p. 113]. When compared to Finland, which is a champion in this field, the difference would be equivalent to the effect of 2-2.5 years of schooling [1, p. 115].

The analysis of the achievements of our students in terms of the attained levels[7] in all the three domains shows that two-thirds of students are placed in the two lowest levels. The testing has shown that in Serbia, one-third of students (33%) are reading-illiterate, meaning that every third student in the Republic of Serbia has difficulties in reading and understanding more complex texts; this certainly poses a significant obstacle to their further education. If we add about 10% of the children outside the education system, we get a result of almost 50% of children who are functionally illiterate in terms of reading literacy. In the domain of mathematical literacy, 40% are functionally illiterate, and in the domain of scientific literacy, the result is 34%[8]. In other countries covered by this testing, these percentages range from 10% to 20%, whereas in Finland it is only 6-8%.

It is extremely important to acknowledge the consequences of the fact that 40-50% of students in Serbia are functionally illiterate. The consequences are reflected both on the individual and on the social level.

6 The exception are the results of the TIMSS study (Trends in International Mathematics and Science Study) in 2017, which included 57 countries from around the world, where fourth-grade primary school students were tested. Our primary school students showed results above the average. They scored 518 points in mathematics (the average being 500), Finland and Poland had 535, and the best was Singapore with 618 points. As for natural sciences, 525 points were scored (the ranking of Denmark, Germany, and Canada).

7 Achievements are ranked in six levels.

8 It is interesting to compare these data with the fact that the grade point average in primary school is over 4. According to the data, 3/4 of the students have achieved excellent or very good school results at the end of the primary school education. This speaks enough about the prevailing assessment criteria.

On an individual level, the opportunities for inclusion of these young people in the labor market are very limited. They can only apply for jobs that require lower skills, and such jobs are increasingly in decline. Young people who are functionally illiterate today can only expect further difficulties in the future. They can hardly be included in the lifelong learning system and thus get a second chance. Society-wise, the negative consequences are reflected in an increase of unemployment, an increase in the costs of social programs, an increase in the costs for additional coaching and training, and a decline in the interest of foreign investors as a result of an insufficient availability of skilled workers or the necessary additional costs of training workers.

The fact that "nine years of education for this third of students has not provided sufficient motivation suggests that it is unlikely that, with two or three years of additional education of the same type, they will succeed in developing competencies to the extent necessary for continuing education, employability and lifelong education" [1, p. 95].

Furthermore, another negative aspect is evidenced in the fact that a very small number of students in Serbia is to be found in the highest achievement levels (in the two highest levels, it is very low, below 1% in the domain of reading, about 1% in science and 3% in mathematics). For example, only 10 out of 1,000 students in Serbia were ranked in the two highest levels of scientific literacy in the 2009 PISA testing, whereas there were 26 students in Bulgaria, 76 in Poland, 99 in Slovenia, and 187 in Finland. It is important to emphasize that it is from this very segment of students that the future bearers of innovative developments in the economy and society are recruited [1, p. 94].

The question arises as to why our results are so poor. The reasons may be sought in the curricula and the dominant teaching styles. The curricula place emphasis on academic knowledge, thus giving the impression of quality, yet neglecting the aspects of its practical application. Another important factor is certainly the poor financial status of our education which has a detrimental effect on the working conditions, the professional development of teachers who are coming close to becoming members of an existentially endangered social group, which certainly has ramifications on their motivation. It is important to add that, due to the poor financial position of employees in education at all levels, the best graduates choose other careers. This leads to the downgrading of the education workforce in the long run. The success of the Finnish education model can, inter alia, be attributed to the strict selection process for candidates who can work in education, which is passed only by the best, thus ensuring a distinguished social reputation for this profession, though not one accompanied by high earnings.

Higher education

According to the GCR assessment for the period from 2011 to 2018[9], the rankings of the higher education (HE) in Serbia ranged from the lowest 85th place in 2012 to a solid 59th position in 2017 (Table 2). A more in-depth analysis of these rankings shows that our coming closer to the middle of the list of the countries analyzed was mostly contributed by the subindicators: Quality of math and science education, Secondary education enrollment rate gross % and Tertiary education enrollment rate gross %.

It is a matter of concern that according to the subindicator Quality of the education system, our average position in the observed period was at the 110th place, with modest progress being recorded in the past two years. The score in this field is defined upon the Executive Opinion Survey based on the response to the question: "How well does the education system meet the needs of a competitive economy?" (1 = not well at all; 7 = extremely well). The score value, being about 3.3 points on an average, indicates that graduates do not leave universities and colleges adequately qualified to respond to the demands of their first job.

Such an assessment is confirmed by the research study carried out in 2016 by the European Commission in Serbia and the SEE countries [14]. This study explored the position of the higher education institutions' graduates in the labor market. On a 1-10 point scale, the employers surveyed assessed their satisfaction with the skills of the new graduates with a mean score of 5.9 (foreign employers' score being 7.0, and domestic 5.5). The opinion that HE graduates only bring "some" added-value compared to

9 The data for Serbia for the previous years are incomplete.

Table 2: Higher education and training – ranking

Indicator	Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
5th pillar: Higher education and training	Score	4	4	4	4.3	4.3	4.4	4.6
	Rank	81	85	83	74	71	69	59
5.01: Secondary educational enrollment rate gross %	Score	91.5	91.4	91.5	91.7	94.4	94.3	96.7
	Rank	57	58	62	66	58	64	58
5.02: Tertiary education enrollment rate gross %	Score	49.8	49.1	50.04	52.4	56.4	58.1	58.3
	Rank	50	52	50	52	45	46	45
5.03: Quality of education system	Score	3.1	3.1	3.1	3.1	3.1	3.2	3.3
	Rank	111	111	111	106	110	103	93
5.04: Quality of math and science education	Score	4.2	4.1	4.3	4.3	4.4	4.6	4.8
	Rank	58	60	55	53	48	46	29
5.05: Quality of management schools	Score	3.5	3.5	3.6	3.6	3.4	3.7	4
	Rank	114	116	114	114	116	105	85
5.06: Internet access in schools	Score	3.8	3.6	3.9	4.2	3.9	3.6	3.9
	Rank	83	125	121	106	107	102	85
5.07: Local availability of specialized training services	Score	3.2	3.2	3.4	3.5	3.6	3.9	4.1
	Rank	113	125	121	106	107	102	87
5.08: Extent of staff training	Score	2.9	2.9	3	3.1	3	3.2	3.4
	Rank	132	138	140	134	135	127	113

Source: [24], [23], [22], [21], [20], [19], [18].

non-graduates is held by 55% of employers. It is noticeable that employers in hi-tech sectors were less satisfied with the skills of new graduates compared to others.

It has been observed that 82% of employers organize additional training for their new employees, with as many as 92% of employers in high technology fields achieving this through formal training[10].

Rapid economic changes in the period of transition and global trends have led to new demands for skills. Higher education institutions have not adapted fast enough, so employers perceive graduates as having skill gaps. Figure 3 shows these skill gaps measured by the difference between skills that graduates need, and skills that graduates possess, on a range of skill dimensions (employer survey). Employers think that graduates lack interactive skills (e.g. adaptability, analytical and problem-solving skills, team working,) more than cognitive skills (e.g. reading, writing, numeracy). It is obvious that, although in varying degrees, there is a gap in almost all the skills, and what is yet more alarming is that the estimates predict that this gap, with the present state of HE, will grow even more in the forthcoming period (Figure 3).

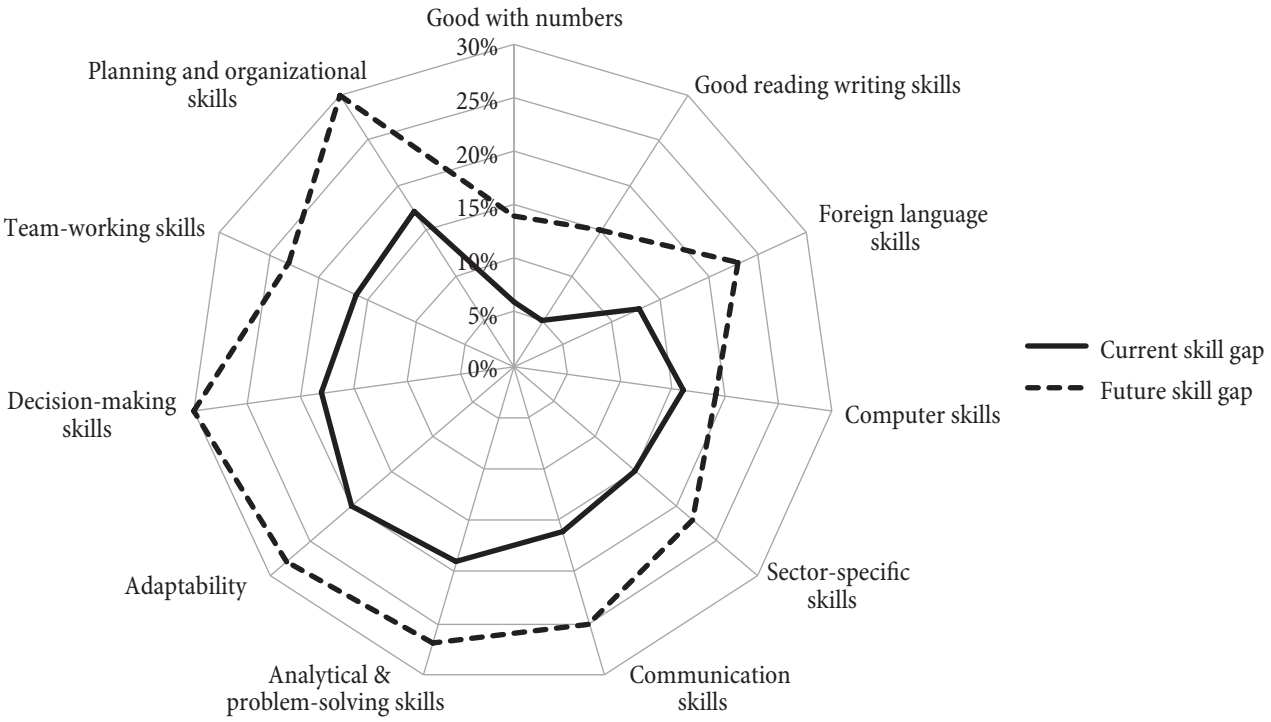
One of the reasons for the existence of such gaps certainly lies in the lack of cooperation between the higher education institutions and the economy. In most countries of the European Union, cooperation among employers and higher education institutions is commonplace. The study has shown that in Serbia, 47% of employers have never cooperated over curricula design with higher education institutions, 36% have rarely done it, and only 17% often. Yet, 71% say that such cooperation would be desirable and would improve the matching of graduates to the needs of the employer. It is obvious that there are many ways as well as a lot of reasons to improve the situation in our higher education.

This study has shown that, where Serbia is concerned, there are significant discrepancies between the workplace requirements and the types and levels of graduates' education in their first jobs. Almost a third of the employed graduates do not have the type of education in line with their job requirements, and 54% have an inadequate level of education (39% have higher qualifications than job requirements, 15% lower).

These data are not surprising. The output of graduates churned out from HEIs is not harmonized with the needs of the labor market neither by structure nor by number. This leads to an excess supply of certain profiles and high unemployment rates. In the given circumstances, even a job mismatched with the educational level or profile is a solution. The enrollment policy at HEIs does not follow

10 According to unofficial data, our companies have spent 3.5 billion Euros for additional training for their employees in the last ten years.

Figure 3: Graduate skill gaps – current and future



Source: [14, p. 41].

the trends of socio-economic development; on the one hand, as a result of inertia, it follows the principle of maintaining the existing capacities, and on the other hand, it is led by commercial interests. For years, the majority of students have enrolled at faculties that provide qualifications for occupations with the highest numbers of registered unemployed at the National Employment Service (NES). For example, for the school year 2015-16, there were 39,741 students enrolled at the faculties in the field of social sciences and humanities, out of which 13,419 were budget students, accounting for 47.9% of the total number of budget-financed students. At the same time, there were 42,274 persons with higher education qualifications for these profiles on the records of the National Employment Service (66.3% of the total number registered at the NES). The detrimental effects of such a policy are manifold.

These data point to the extent to which the functional link between the education system and the economy has been lost. Another additionally confusing fact is the inertia shown by the appropriate institutions in solving the problem. Limited resources of a poor economy are being spent ineffectively, thousands of highly educated unemployed are being churned out, thus creating new social problems and costs, while the country is losing competitiveness.

The Global Competitiveness Report 2016-17 introduced an updated GCI framework. One of the four major subindexes being observed is Human Capital, which measures how the health and skills of the labor force contribute to a country's competitiveness [18, pp. 51-62]. The education and skills pillar measures both the quantity and quality of skills and the training that today's workers possess, as well as the level of education and skills of tomorrow's workforce, with particular emphasis on the use of ICTs in school and the style of teaching. Measuring the skills of the current and future workforce together captures the dynamics of the workforce's skill set in each country, tracking whether the level of human capital is increasing or declining [18, p. 57].

According to the preliminary rankings performed in accordance with the new methodology, Serbia was ranked 53rd by Skills of the current workforce (with 135 countries being observed), and according to the estimates of the Skills of the future workforce, it held the 70th position [18, pp. 58-59]. In terms of the dynamics of our workforce development, it has been estimated that our future potential in this field will decrease by more than 10% (Table 3).

In comparison to the countries of the former Yugoslav republics, whose education systems have the same roots as ours, we can see that we are currently better positioned only compared to Bosnia and Herzegovina and Macedonia, and according to the development forecasts, it is expected that Bosnia and Herzegovina will achieve better ranks in the future. In the given group, we are the only ones where a significant further decline in the quality of workforce is expected.

It might be interesting to look at the estimates of changes in the currently top ranking countries (Table 4).

Denmark has the most sustainable system, with the skills of the current and future workforce both ranking in the top five. Denmark is one of the first countries to include computer science in its primary-school curriculum, together with the United Kingdom, Israel, New Zealand, and Australia. Finland and Iceland are among the advanced countries where the future workforce is expected to be better equipped than current workers, whereas Switzerland, Israel, and Japan are among those that may see their currently high level of human capital diminish going forward.

In the era of the Fourth Industrial Revolution, the education system takes over the role of the principal development factor. Bearing in mind the extent to which our education system does not fulfill its task of providing high-quality, efficient, and timely education of the population consistent with the development of knowledge and global trends, the question of our future might be rightly raised.

Conclusion

The hallmarks of this new industrial age are the accelerated pace of economic, societal and environmental transformations as well as technological breakthroughs in areas like robotics, Internet of Things, artificial intelligence, energy systems and bio-economy. Automation, enabled by information technologies, is transforming traditional manufacturing

Table 3: Estimation of the current and future workforce skills

Economy	5th pillar: Education and skills		A. Skills of the current workforce		B. Skills of the future workforce		Dynamics*
	Rank	Value	Rank	Value	Rank	Value	
Serbia	**58**	**4.33**	**53**	**4.57**	**70**	**4.09**	▼
Slovenia	19	5.49	20	5.38	17	5.59	
Montenegro	48	4.61	45	4.7	51	4.51	
Croatia	53	5.54	48	4.63	55	4.45	
Bosnia and Herzegovina	75	3.97	85	3.56	58	4.39	▲

Source: [18].

*The dynamics column shows the change vis-a-vis the current pillar of the Global Competitiveness Index.▲= The score of the Skills of the future workforce subpillar is higher than the score of the Skills of the current workforce by 15% or more. ▼ = The score of the Skills of the future workforce subpillar is lower than the score of the Skills of the current workforce by 10% or more.

Table 4: Top eleven ranking countries: Education and skills pillar

Economy	5th pillar: Education and skills		A. Skills of the current workforce		B. Skills of the future workforce		Dynamics
	Rank	Value	Rank	Value	Rank	Value	
Denmark	1	6.18	3	6.13	5	6.22	
Switzerland	2	6.17	1	6.56	12	5.79	▼
Norway	3	6.12	4	6.13	9	6.12	
Netherlands	4	6.11	9	5.92	2	6.29	
Sweden	4	6.09	6	5.97	6	6.22	
Australia	6	6.04	10	5.89	7	6.18	
United Kingdom	7	6.00	8	5.93	10	6.07	
Germany	8	5.93	2	6.20	15	5.67	
New Zealand	9	5.92	17	5.57	4	6.27	
Belgium	10	5.89	13	5.63	8	6.15	
Finland	11	5.88	23	5.33	1	6.43	▲

Source: [18].

processes and the nature of work. Emerging business models disrupt traditional markets [3, p. 2].

The industrial transformation provides enormous opportunities, but reaping them will require substantial investment in people's skills and talents, as well as intangible assets like research and innovation.

To cope with the significant pressure the ongoing industrial transformation is putting on industry and its workforce to adapt, particular attention needs to be given to build resilience and help people and communities to seize the opportunities of change. Education and training systems need to ensure that people are equipped with the right set of skills to drive such change and avoid widening social gaps. These skills need to be developed well before entering the labor market and updated throughout the working life [4].

At every level of schooling, the education system needs to teach competences that are relevant to the modern economy. Even lower-skilled jobs increasingly require talent and knowledge, so vocational training and secondary education need to equip people with the ability to work in a complex, digital environment. "Because change occurs so quickly, there is a high level of uncertainty regarding the skills needed for the future. However, at all skill levels, individuals will be rewarded for the capacity to think critically, solve problems, and take advantage of new technologies. Schools will therefore need to teach flexible thinking rather than emphasizing memorization; they will need to show students how to cooperate and work with individuals with different backgrounds as well as to compete, and will need to nurture the ability to challenge, confront, and critically appraise differing ideas"[18, p. 57].

Even the most advanced countries today could quickly lose their human capital advantage if their education systems fail to increase the quantity and quality of skills of their future professionals and entrepreneurs. Similarly, developing countries could see their investments in education generate decreasing returns if they do not manage to update curricula and teaching styles [17].

In this light, it was important to take a close look at our education system to get a clear picture of what it is like and how much we are working on its development.

The analysis of the effects of the education system in Serbia, by levels of schooling, has shown that it fails to fulfill its social task. Our students achieve below-average results in international testing, graduates are not adequately prepared for the requirements of their first job, the structure of the educational profiles starting from secondary school level upwards is notably mismatched to the needs of the labor market, lifelong learning has not been developed to a satisfactory degree. Such results may be interpreted as outcomes of an academic approach espoused in curricula design as well as obsolete teaching methods. The curricula do not correspond to the requirements of the times.

There were several attempts made at reforming certain levels and segments of education in the past, but they could be thought of more as "remedies", rather than comprehensive and meaningful changes throughout the entire education system.

When it comes to education in this country, the problem most often stated as principal is the low investment in education. State investments are indeed low[11], which has an effect on quality, but our problem is much more serious and cannot be solved by merely increasing investments.

We may say that the position of the education system in Serbia is anachronistic. The education system has been set up as if it were an end in itself, instead of being a pillar for the development of the entire society. In the times of intensive growth and exchange of new knowledge at the global level, and the development of a knowledge-based economy, the collaboration of our education system with other segments of the society is inexcusably low. The curricula and syllabi should evolve as a result of the interaction among the education system, the industry, the public sector, and other segments of the society. In the analysis of the state of education in the Strategy for the Development of Education by 2020, it has been stated that "the system of education is self-serving, isolated from the environment, highly shaped by commercial interests, exposed to political parties' influences, characterized by short-lived amendments whose main purpose was to satisfy all the interested parties, without taking into consideration the long-term consequences of such an

11 State investment is only a part of investment in education. Significant investments are made by parents and the industry.

approach to solving the problem. The emergence of private educational institutions, publicly advocated as a contribution to improving the quality of education by strengthening the competition mechanism, has in the majority of cases mainly been inspired and guided by profit interests and marked by an absence of public or any other requirements in terms of the quality of education. A sharp antinomy has unfolded in the education system between short-term economic interests on the one hand and the education missions aimed at development, on the other. The tensions arising from this polarity are one of the biggest obstacles to the further well-founded development of education" [13, p. 2].

There is an urgent need for expanding the reach, accessibility, affordability and quality education at all levels. But multiplying the existing model is not sufficient. Indeed, it is likely to aggravate rather than alleviate many problems due to the time warp and gap between education offered today and that which is so urgently needed. We not only need more education, but education that is qualitatively different – a new paradigm. Updating course content is not enough. We need an education that equips youth to adapt to future innovations and challenges that cannot be anticipated now. Many other countries are facing the same challenge.

The steps to be taken and the things to be done have been well defined in the Strategy for the Development of Education by 2020. Unfortunately, since its adoption to this very day, there have scarcely been any serious attempts towards its implementation. However, although more than five years have elapsed since its publication, it has not lost its actuality and it may serve as a sound guideline. We are hoping for a social consensus to be reached for the transformation of the education system in Serbia, empowering it to take on its rightful place and role.

References

1. Baucal, A. (2012). *Ključne kompetencije mladih u Srbiji u PISA 2009 ogledalu*. Beograd: Institut za psihologiju, Filozofski fakultet u Beogradu. Retrieved from *http://researchrepository.ucd.je/bitstream/handle/10197/2035/Lynch% 20and% 20Baker, 20*(282005), 29.
2. EBRD. (2017). *Dijagnostika Srbije: Procena napretka i izazova u razvoju održive tržišne ekonomije 2017.* Retrieved from https://www.ekapija.com/news/2006782/ebrd-ekonomija-srbije-ispod-standarda-eu.
3. European Commission, COM. (2017). *Investing in a smart, innovative and sustainable industry: A renewed EU industrial policy strategy*. Retrieved from https://ec.europa.eu/growth/industry/policy/skills_en.
4. European Commission. *The new skills agenda for Europe*. Retrieved from https://ec.europa.eu/growth/industry/policy/skills_en.
5. Laboissiere, M., & Mourshed, M. (2017). *Closing the skills gap: Creating workforce-development programs that work for everyone.* McKinsey Retrieved from https://www.mckinsey.com/industries/social-sector/our-insights/closing-the-skills-gap-creating-workforce-development-programs-that-work-for-everyone?cid=other-emil-alt-mip-mck-oth-1702.
6. Lund, S., Mourshed, M., Rutherford, S., & Tyreman, M. (2018). *Retraining and reskilling workers in the age of automation*. Retrieved from https://www.mckinsey.com/global-themes/future-of-organizations-and-work/retraining-and-reskilling-workers-in-the-age-of-automation?cid=other-eml-alt-mgi-mgi-oth-1801&hlkid=3fd28775fc8645cda3c027a1e54fe158&hctky=10018290&hdpid=15560729-b393-4c60-8833-c5a11363b2d9.
7. Lund, S., & Manyika, J. (2017). *Five lessons from history on AI, automation and employment.* Retrieved from https://www.mckinsey.com/global-themes/future-of-organizations-and-work/five-lessons-from-history-on-ai-automation-and-employment.
8. Manyika, J., Lund, S., Chui, M., Bughin, J., Woetzel, J., Batra, P., Ko, R., & Sanghvi, S. (2017). *Job lost, jobs gained: Workforce transitions in a time of automation*. Retrieved fromhttps://www.mckinsey.com/~/media/McKinsey/Global%20Themes/Future%20of%20Organizations/What%20the%20future%20of%20work%20will%20mean%20for%20jobs%20skills%20and%20wages/MGI-Jobs-Lost-Jobs-Gained-Report-December-6-2017.ashx.
9. McKinsey Global Institute. (2017). *What the future of work will mean for jobs skills and wages*. Retrieved from https://www.mckinsey.com/global-themes/future-of-organizations-and-work/what-the-future-of-work-will-mean-for-jobs-skills-and-wages.
10. Official Gazette of RS No. 107/12. (2012). *Strategija razvoja obrazovanja u Srbiji do 2020. godine*. Beograd: Službeni glasnik Republike Srbije.
11. Republički zavod za statistiku. (2017). *Ustanove za decu predškolskog uzrasta 2016/2017. školska godina – Republika Srbija, po regionima*. Retrieved from http://www.stat.gov.rs/WebSite/repository/documents/00/02/46/35/dd20042017.pdf.
12. Schwab, K. (2017). *The fourth industrial revolution*. Crown Business.
13. Strategija razvoja obrazovanja u Srbiji do 2020. godine. (Sl. glasnik RS, br. 107/12).
14. Uvalić, M., Bartlett, W., Durazzi, N., Monastiriotis. V., & Sene, T. (2016). *From university to employment: Higher education provision and labor market needs in the Western Balkans (Synthesis Report)*. Luxembourg: Publications Office of the European Union.
15. Vuković, D. *Ko i kakvu šansu ima da se obrazuje u Srbiji?* Retrieved from http://mons.rs/#/ko-i-kakvu-sansu-ima-da-se-obrazuje-u-srbiji.

16. Vuković, D. *Da li obrazovni sistem u Srbiji radi za neku decu, a protiv druge?* Retrieved from http://mons.rs/#/ko-i-kakvu-sansu-ima-da-se-obrazuje-u-srbiji.
17. World Economic Forum. (2018). *The Global Competitiveness Report 2017-2018*. Retrieved from http://www3.weforum.org/docs/gcr/2016-2017/Global_Competitiveness_Report_2016-2017.pdf.
18. World Economic Forum. (2017). *The Global Competitiveness Report 2016-2017*. Retrieved from http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf.
19. World Economic Forum. (2016). *The Global Competitiveness Report 2015-2016*. Retrieved from http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf.
20. World Economic Forum. (2015). *The Global Competitiveness Report 2015-2014*. Retrieved from http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf.
21. World Economic Forum. (2014). *The Global Competitiveness Report 2014-2013*. Retrieved from http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf.
22. World Economic Forum. (2013). *The Global Competitiveness Report 2013-2012*. Retrieved from http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf
23. World Economic Forum. (2012). *The Global Competitiveness Report 2012-2011*. Retrieved from http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf
24. World Economic Forum. (2011). *The Global Competitiveness Report 2011-2010*. Retrieved from http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf
25. World Economic Forum. (2010). *The Global Competitiveness Report 2010-2009*. Retrieved from http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf
26. World Economic Forum. (2009). *The Global Competitiveness Report 2009-2008*. Retrieved from http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf

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