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WHY IS SERBIA AN ECONOMIC GROWTH UNDERACHIEVER?

Zašto privredni rast Srbije zaostaje?

Abstract

In a nutshell, Serbia is an economic growth laggard due to deficient institutions, specifically lacking rule of law and control of corruption, and due to low investment, which itself is curbed by corruption and poor rule of law. The gap in education achievement also hinders Serbia's long-term growth. We asses that Serbia is currently growing 2 percentage points below its potential: above 3% instead of around 5%. Roughly one half of the growth gap could be explained by underperforming institutions (1 p.p.), and the other half by low investment (0.7 p.p.) and education (0.2 p.p.). These results are obtained by estimating the empirical growth equation for EU countries and using it as a benchmark to assess growth performance in Serbia. Our findings conclusively point to reforms of social and economic fundamentals if Serbia is to achieve its potential growth and catch-up with comparative countries of Central and Eastern Europe.

Keywords: *economic growth, convergence, empirical growth equation, rule of law, Serbia*

Sažetak

Empirijski rezultati u ovom radu pokazuju da je privredni rast Srbije ispod svog potencijalnog nivoa pre svega zbog slabih institucija – posebno vladavine prava i kontrole korupcije. Sledeći činilac koji koči privredni rast su niske investicije, ali pokazujemo da su i one, naročito privatne, nedovoljne dobrim delom usled slabe vladavine prava i korupcije. Najzad, nedostaci obrazovnog sistema su takođe faktor koji usporava rast privrede Srbije. U radu pokazujemo da privreda Srbije trenutno raste gotovo 2 procentna poena ispod svog potencijala, tj. trenutno nešto iznad 3% umesto potencijalnih 5%. Naši rezultati pokazuju da, grubo, polovina zaostajanja (1 p.p.) može da se objasni slabom vladavinom prava i korupcijom, dok druga polovina potiče od niskih investicija (0.7 p.p.) i nedostataka obrazovnog sistema (0.2 p.p.). Prethodne rezultate smo dobili ocenjujući jednačinu rasta za zemlje članice Evropske Unije. Ovu jednačinu smo onda koristili kao normu da utvrdimo prvo, koliki je potencijalni rast Srbije, a zatim koji faktori i za koliko smanjuju njen stvarni rast ispod potencijalnog. Dobijeni empirijski rezultati nedvosmisleno ukazuju da su reforme u oblasti vladavine prava i obuzdavanja korupcije, kao i reforma obrazovanja, osnovni preduslovi da Srbija ostvari svoj potencijalni rast i počne da sustiže uporedive zemlje Centralne i Istočne Evrope.

Ključne reči: *privredni rast, konvergencija, jednačina rasta, vladavina prava, Srbija*

1. Introduction and main findings

Low economic growth is Serbia's main structural problem. Serbia ranks at the very bottom, when compared to EU countries, with respect to its economic development and living standard. Its GDP *per capita* (in PPP) is half that of Central and Eastern European countries (and a mere third of the developed Western European countries). To start catching up to CEE countries, Serbia needs to have a lasting economic growth that is substantially higher than theirs - but this is not happening. Serbian economic growth has been slower than the growth in CEE countries for many years now, which only increases the gap between Serbia and these countries, instead of decreasing it. In this paper we demonstrate (based on the estimated empirical growth equation in European countries) that the low economic growth in Serbia is not caused by transient factors limited to individual sectors, but by the fundamental economic and social issues: pervasive corruption, gap in rule of law, low level of state and private investments and poor education system quality. What is of particular concern is the fact that these indicators of institutional quality – rule of law and corruption – have deteriorated in the previous four to five years.

To assess and analyse Serbia's economic growth we used long-term empirical growth equations for European countries. Using standard approach (e.g. [17] and [1]) we estimated the economic growth equation on a panel of 26 EU countries with series running from 1995 to 2017 (Section 2). We then plugged in the data for Serbia into the estimated economic growth model (Section 3.1), which yielded two main results: 1) the magnitude of Serbia's economic growth underperformance and 2) the specific determinants driving Serbia's underperformance. In the same section (Section 3.1), we quantified the impact of these drivers on economic growth deceleration and showed that pronounced corruption and inadequate rule of law were the factors that reduced Serbia's economic growth the most. Subsequently (Sections 3.2 - 3.4), we analysed each factor individually, and based on that, proposed advanced crucial reforms and economic policies that could foster long-term growth in Serbia.

We assess that, in terms of the GDP growth rate, Serbia's structural gap amounts to 1.5-2 p.p. This assessment is based on the estimated rate of beta convergence in a panel of EU26 (Section 2). It shows that less developed European countries exhibited faster growth than the more developed countries (see Figure 1), with the catch-up rate of 2% (see eq. 1). The obtained convergence rate of 2% is in line with numerous other empirical studies (e.g. [1], [13], [2]), and is often referred to as "the iron law of convergence" ([1]). Using this "iron law of convergence", i.e. convergence rate of 2%, we found that Serbian long-term economic growth should be by about 1 p.p. higher than that of CEE countries - as Serbia's GDP *per capita* is half that of CEE country average. However, since Serbia's trend growth is by 0.5-1 p.p. lower than that of CEE countries, Serbia's growth is actually lagging 1.5-2 p.p. behind the one in CEE countries.

The estimated empirical growth equation (eq. 1) applied to Serbia shows that the greatest single negative impact on economic growth (almost 1 p.p.) comes from corruption and the rule of law gap, while the rest can be attributed to low investment and the poor educational system (up to 1 p.p.). Thus, these factors almost entirely explain Serbia's economic growth gap identified above, strongly suggesting that these are the factors that obstruct economic growth in Serbia.

Starting with corruption and rule of law, Serbia has scored very low according to the World Bank research (Worldwide Governance Indicators - WGI) measuring different parameters of institution quality. On a scale from -2.5 to +2.5, Serbia is one of the rare European countries that was in the negative zone in 2017, with a score of -0.28. On the other hand, countries surrounding Serbia (Bulgaria, Romania, Hungary and Croatia) have the average score of +0.16 while CEE country average stands at +0.56. Similar negative scores for corruption and the rule of law in Serbia have been reported in other relevant international studies (Transparency International, World Justice Project, World Economic Forum etc). The estimated growth equation (eq. 1, Section 2) shows that Serbia's economic growth would increase by about 0.5 p.p. just by improving the corruption and rule of law indicators only to the level of the surrounding countries (average for Bulgaria, Romania, Hungary and Croatia). However, if Serbia were to reach the average level for all

CEE countries, its economic growth would most probably accelerate by about 0.9 p.p. However, troubling as the lagging behind comparable countries is, it is even more troubling that Serbia reversed the trend since 2014: from gradual improvement in control of corruption and rule of law, to their deterioration. Thus, according to WGI data, Serbia's score in corruption and rule of law deteriorated from 2014 to 2017 from -0.19 to -0.28, while, at the same time, CEE countries achieved a mild improvement from +0.54 to +0.56 (see Section 3.3)

Currently, Serbia is investing about 18% of GDP, which is 5-6 p.p. lower than it should be considering its level of economic development (Figure 2, Section 2) and investments in comparable CEE countries. The estimated growth equation (eq. 1, Section 2) implies that the subdued investment reduces growth rate in Serbia by approximately 0.7 p.p. Both public and private sector in Serbia invest less than required. We have shown that government investment into infrastructure should be increased by at least 1 p.p. of GDP, investment of central-level and local public enterprises should also be raised by a little over 1 p.p. of GDP, and the private sector investment by the remaining 3-4 p.p. of GDP. The Government can directly affect the increase in its own investment and investment of public enterprises. Furthermore, it can stimulate private investments by improving the currently very poor business climate in Serbia, specifically control of corruption and rule of law (see Figure 3). Namely, we found that the latter two have positive, significant impact on private sector investments (eq. 2, Section 2). Government can also boost private investments by improving poor quality of basic infrastructure (roads, railroads, communal infrastructure) in Serbia, and by raising its current low credit rating.

To assess education, the mean years of schooling in the population over 25 as reported in UNDP Human Development Reports is used. With regard to this indicator as well, Serbia is an underachiever among CEE countries (Figure 4). According to the data for the previous three years, adult Serbian citizens have, on average, 11.1 years of schooling which is by about a year less than the average in CEE countries (12.2 years). Estimated growth equation (eq. 1, Section 2) indicates that this gap in the years of schooling translates to about 0.2 p.p. lower economic growth in Serbia compared to other CEE countries. It is, however, likely that the impact of better education on growth in Serbia would exceed the obtained 0.2 p.p. Namely, the indicator used (mean years of schooling) doesn't capture the quality of an educational system that may well vary across individual countries considered. An additional problem with this indicator is that it does not vary across the sample of countries used. All CEE countries fall within a very narrow range from 11 to 13 years in mean years of schooling, which can be attributed to the common tradition of a relatively good reach of the educational system, originating from socialist times. Still, in spite of these shortcomings, the estimated equation undoubtedly confirms the relation between human capital and economic growth - and this relationship could only be stronger if a better indicator were to be found to measure education quality of European countries.

2. Framework for assessing Serbia's economic growth performance

In evaluating economic growth in Serbia, we turned to long run empirical growth equations that tend to explain most of the variations in *per capita* GDP growth across countries. We used them to estimate the growth equation for EU countries, employing the latter as a benchmark to asses growth performance in Serbia.

While reviewing empirical growth equations Wolff [17] points out that certain factors systematically appear as statistically significant and with the expected sign in these regressions, explaining the vast majority of long-run variation in economic growth[1]. These "strong forces" of growth are: catch-up effect, investment, education, institutions, and research and development.

Experimenting with different sets of variables explaining variation in economic growth raises the issue of robustness of alternative specifications, leading to attempts to consolidate diverse results (see [8], [14]). Thus, Becker and Olofsgard [3] looking for a parsimonious empirical growth equation that is robust to different permutations of sets of explanatory variables opted for Levine and Renelt

1 See [17, p.2].

[8] equation that encompass catch-up effect, investment, education and population growth[2].

In a series of papers Barro with co-authors (e.g. [1], [2]) examined empirical growth equations focusing on existence and size of catch-up effect, i.e. beta convergence – unconditional and conditional. The latter boils down to growth regression that, in addition to the catch-up effect, includes investment, education, and institutions among other explanatory variables (see [1]).

Against this background we opted for the specification where the growth in *per capita* GDP depends on initial GDP *per capita* level (encompassing catch-up effect or beta convergence), investment rate, education and institutions. The first growth factor listed above is often referred to as 'advantages of backwardness'[3], i.e. countries that are not greatly distant from a leader, can learn substantially from, and catch-up with the latter through the constant transfer of new technology. Thus, a country with a lower initial GDP *per capita* has a higher growth potential via catch-up process. This is also known as beta convergence, implying that coefficient (beta) on initial *per capita* GDP should be statistically significant and negative. If the latter is obtained solely with initial *per capita* GDP in regression, then beta convergence is unconditional, whereas it is conditional when additional explanatory variables are required to obtain a negative and significant beta.

Higher investment drives economic growth through accumulation of physical capital, i.e. via its quantitative increase but also, more importantly, through introduction of new technologies in use. The latter propels the country's productivity growth and competitiveness by boosting technical progress. In the context of economic growth, education could be viewed as investment in human capital, being another important determinant of technical progress that fosters increase in labour productivity and hence economic growth. The role of institutions as economic growth factor is originally investigated in the work of North and Thomas [11], and later empirically assessed. The rule of law, protection of individual property rights etc., turned out to be essential determinants of economic growth[4].

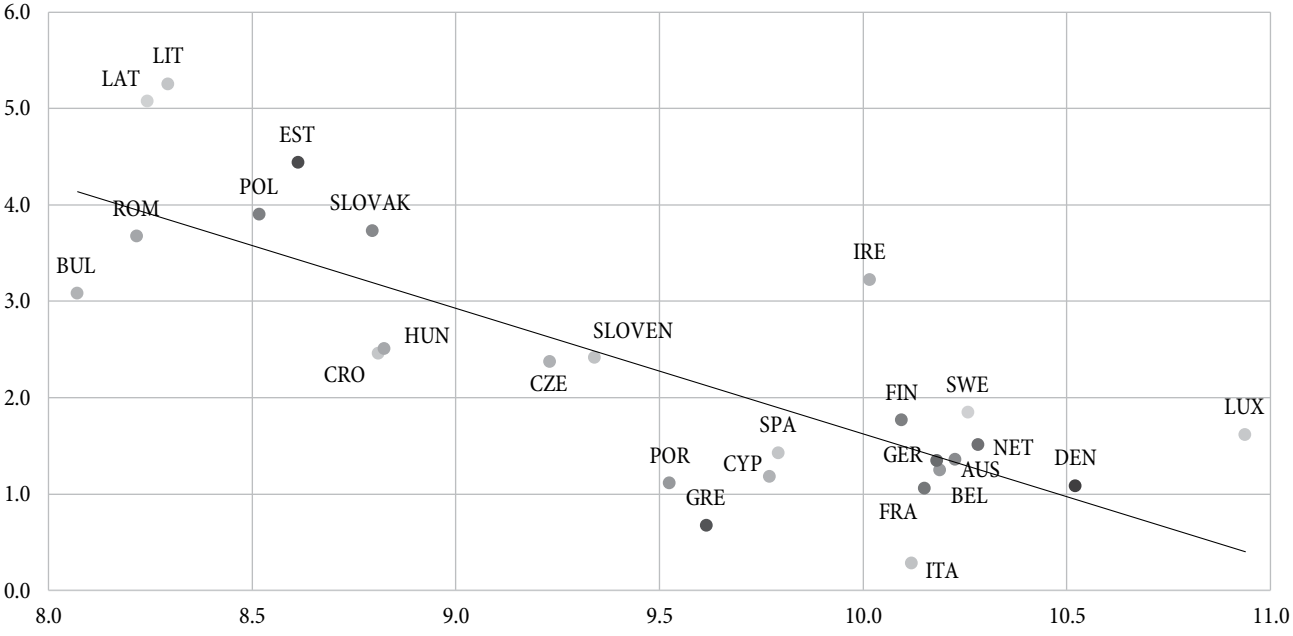
The growth equation explained above is estimated using a panel of EU countries apart from Malta (due data availability) and UK, i.e. EU 26, in the period 1995-2017.

2 [8, p.946], equation 2.

3 Also known as Gerschenkron [7] effect.

4 See [17] section 9.9 for a review.

Figure 1: Dependence of growth rate on initial *per capita* GDP: beta convergence



Source: Authors' own calculation and representation based on Eurostat data.
Note: Average annual growth rate 1995-2017 (Ireland: 1995-2014) is on the y-axis and initial (1995) ln GDP *per capita* on the x-axis.

Standard procedure is followed (e.g. [13], and [1]) where growth rate is taken as average over several (e.g. five) year periods, to capture medium term growth, hence avoiding short-term fluctuations.

The variables used to estimate EU26 growth equation are summarized in the Figures below.

Average annual growth rates and initial level of GDP *per capita* across EU26 countries are given in Figure 1, indicating that lower initial (ln) GDP *per capita* correlates with higher growth over the period 1995-2017.

Thus Figure 1 suggests the presence of a catch-up effect, i.e. beta-convergence, even unconditional one in this case. Nevertheless, we shall later include additional explanatory variables to explain variations in growth rates across EU26, thus ending up with conditional convergence.

Figure 2 reviews investment rate across EU26, again placed within a framework of beta convergence. It turns out that at lower level of GDP *per capita* countries tend to invest a larger share of their GDP in order to catch-up. Hence Figure 2 can be seen as the flip side of beta convergence observed in Figure 1, i.e. at lower income levels, countries grow faster (Figure 1) and invest more (in relative terms) (Figure 2) in order to achieve higher growth. This conjecture is confirmed by the estimated equation (eq. 2) below.

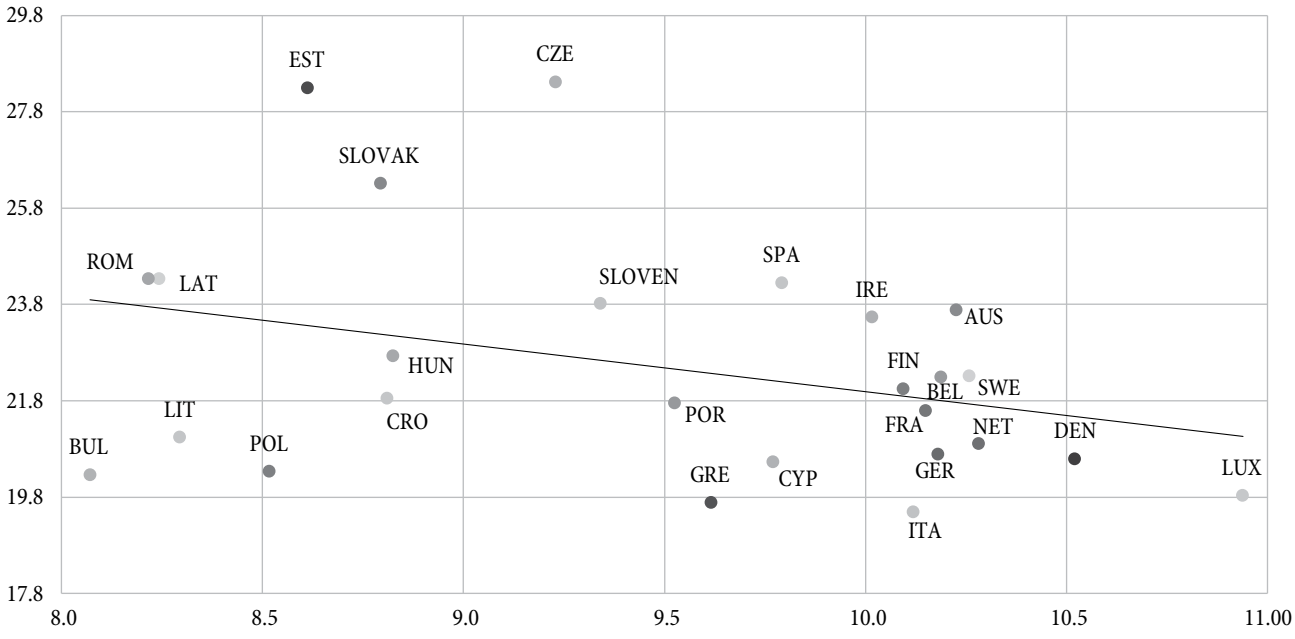
Overall average investment rate in EU26 is 22.4%, and it varies from 19.5% in Italy to 28.4% in Czech Republic, with a number of the Central and Eastern European countries being on the high side (see Figure 2). Against this backdrop, Serbia, with investment rate of 17% in recent years (2015-2017), is tailing well behind.

Quality of institutions, reviewed in Figure 3, is captured by the rule of law and control of corruption, as followed by World Bank's the Worldwide Governance Indicators (WGI). Once more Serbia is underachiever.

Education is captured by mean years of schooling, and Figure 4 reviews it across EU26 and Serbia for the latest period 2013-2017.

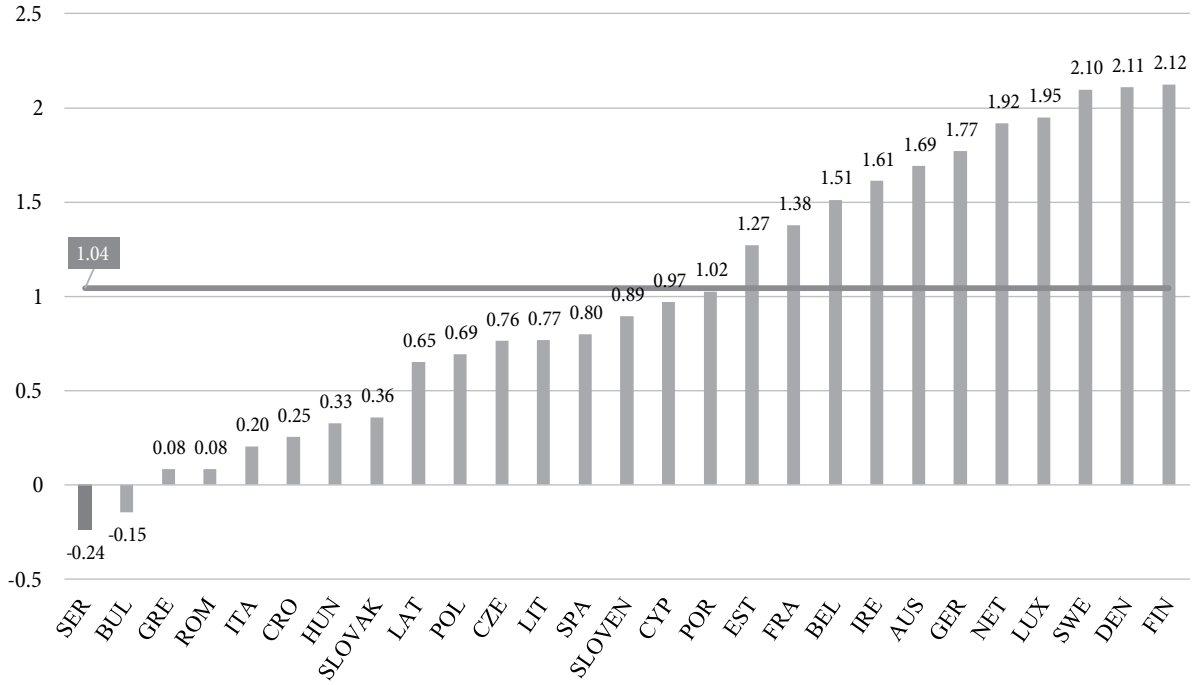
Yet again Serbia is at the lower end, but this time variations across countries are not that large, meaning that this indicator might not discriminate well among the considered countries with respect to education achievement. Although one would like to look also at the quality of education, the long series of the corresponding indicators are unavailable; hence we opted for the 'second best' solution of mean years of schooling.

Figure 2: Dependence of investment rate on initial *per capita* GDP



Source: Authors' own calculation and representation based on Eurostat data.
Note: Average investment rate 1995-2017 is on the y-axis and initial (1995) ln GDP *per capita* on the x-axis.

Figure 3: Rule of Law and Control of Corruption: Mean value of the two

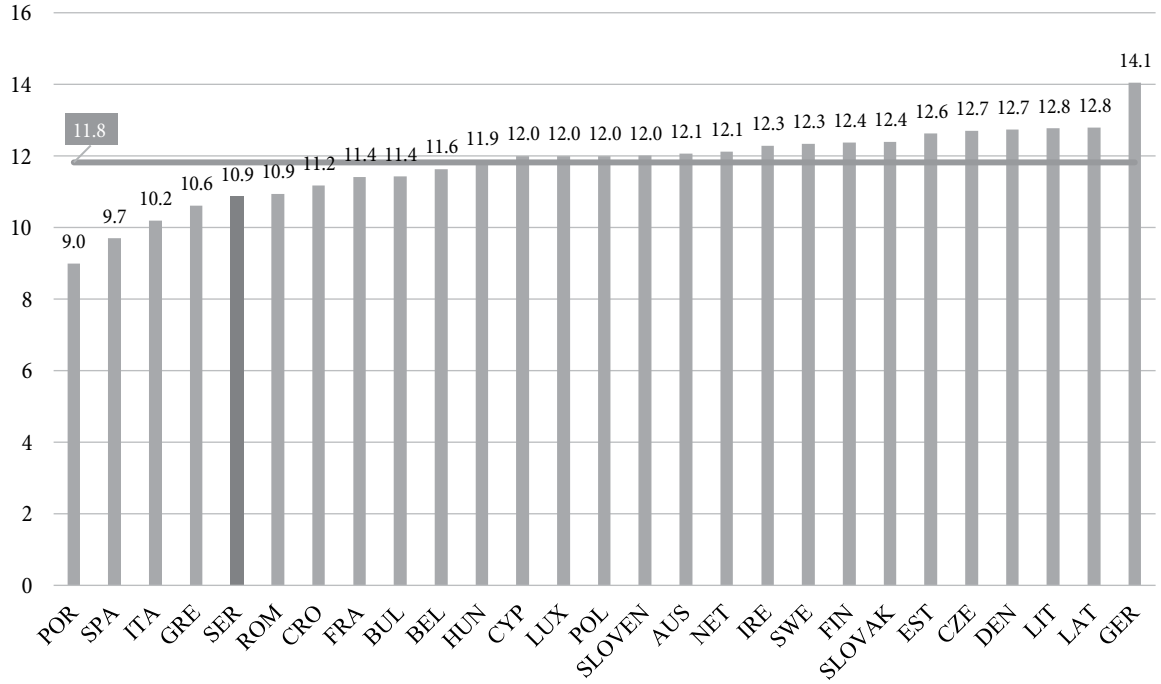


Source: World Bank data, http://info.worldbank.org/governance/wgi/#home

Note:

1) Data are respective 2013-2017 average for each country. Average across all EU26 is 1.04.
2) The Worldwide Governance Indicators (WGI) are a research dataset summarizing the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. These data are gathered from a number of survey institutes, think-tanks, non-government organizations, international organizations, and private sector firms.
3) Estimate of governance (ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance.
4) Rule of Law - Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
5) Control of Corruption - Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

Figure 4: Mean years of schooling



Source: United Nations Development Programme, Human Development Reports, Human Development Data, http://hdr.undp.org/en/data

Note: 11.8 is average for EU26. Mean years of schooling {\displaystyle ({\textrm {MYS}})}is a calculation of the average number of years of education received by people ages 25 and older in their lifetime based on education attainment levels of the population converted into years of schooling based on theoretical duration of each level of education attended. Average 2013-2017.

As explained above the following equation is estimated using OLS:

$$GDP_{pc}\_growth = \underset{(5.331)}{14.72^{***}} - \underset{(0.427)}{2.29^{***}} \cdot Initial\_GDP_{pc} + \underset{(0.046)}{0.13^{***}} \cdot \frac{Inv}{GDP} + \underset{(0.446)}{1.13^{**}} \cdot Institutions + \underset{(1.250)}{2.78^{**}} \cdot Education - \underset{(0.418)}{2.15^{**}} \cdot d \quad (1)$$

R^2=47%

1) GDP_{pc}_growth – average annual growth rate of GDP *per capita*, periods: 1996-2000, 2000-2004, 2004-2008, 2009-2013, and 2013-2017; *Initial_GDPpc* – (ln) level of GDP *per capita* in 1996, 2000, 2004, 2009, and 2013; *Inv/GDP*– share of investments in GDP (in %) and *Education* – (ln) mean years of schooling, averages for periods: 1996-1999, 2000-2003, 2004-2007, 2009-2012, and 2013-2016; *Institutions* – mean value of rule of law and control of corruption estimations, averages of data: 1996 and 1998; 2000, 2002, and 2003; 2004-2007; 2009-2012; and 2013-2016; *d* - time dummy, refers to 2009-2013 period and captures the corresponding recession.
2) ***, ** and * denotes 1%, 5% and 10% significance level respectively.
3) Standard errors in parentheses.

The obtained results (see eq. 1) concur with empirical growth equations previously found (see [17]) and discussed above. As expected, coefficient on initial (ln) level of GDP *per capita*, i.e. beta, is significantly negative, showing the presence of (conditional) beta convergence. Also, it is close to -2, thus concurring with results obtained in other studies (e.g. [1], [13], and [2]), the result often referred to as 'the iron law of convergence' ([1]). Other variables: investment rate, rule of law and control of corruption, and average number of years of schooling have, also as expected, positive and statistically significant effects on economic growth (see eq. 1). Moreover, an estimated regression explains 50% of variations in growth rates across EU26 countries. All this suggests that the obtained empirical growth equation can be taken as a reasonable empirical framework for assessing economic growth in general, and specifically in Serbia in our case.

While hypothesizing that the low rate of investment in Serbia might be due to underperforming institutions, we also estimated an auxiliary, investment rate equation for EU25 (EU26 w/o Croatia, due data availability), where beside the initial level of GDP *per capita* (motivated by Figure 2 above), the rule of law and control of corruption variable (institutions) is also included. We looked at private investment as it should be affected by the quality of institutions; however, similar estimates are obtained for overall investments as well.

$$\frac{Inv\_p}{GDP} = \underset{(6.330)}{40.35^{***}} - \underset{(0.725)}{2.45^{***}} \cdot Initial\_GDP_{pc} + \underset{(0.780)}{1.99^{***}} \cdot Institutions + \underset{(0.728)}{2.34^{***}} \cdot d_1 - \underset{(0.742)}{1.38^{*}} \cdot d_2 \quad (2)$$

R^2=0.21

1) *Inv_p/GDP*– share of private investments in GDP (in %) averages for periods: 1996-1999, 2000-2003, 2004-2007, 2009-2012, and 2013-2016; *Initial GDPpc* – (ln) level of GDP *per capita* in 1996, 2000, 2004, 2009, and 2013; *Institutions* – mean value of rule of law and control of corruption estimations, averages of data: 1996 and 1998; 2000, 2002, and 2003; 2004-2007; 2009-2012; and 2013-2016; *d1* - time dummy, refers to 2004-2007 period and *d2* - time dummy, refers to 2013-2016 period.
2) ***, ** and * denotes 1%, 5% and 10% significance level respectively.
3) Standard errors in parentheses.

Estimated equation (eq. 2) above confirms that the quality of institutions has a statistically significant, positive effect on investment rate. Also, as suggested by Figure 2, the lower the initial of GDP *per capita* level, the higher the investment rate. Thus, our conjectures that institutions and initial level of GDP *per capita* affect the magnitude of relative investment are validated, although there are also other factors affecting investment since the included two variables explain just 21% of its variations.

3. Social and economic fundamentals are behind low economic growth in Serbia

Subdued economic growth in Serbia is its main issue, as it prevents a substantial increase of the living standard of its citizens and catching up to the economically more developed European countries. In this section, we estimate the extent

of Serbia's underachievement in terms of economic growth and identify and assess the main causes that lead to it. For this analysis, we used the estimated economic growth equation for 26 EU countries presented in Section 2. In the remainder of this chapter, we analyse individually each of the identified fundamental elements that are slowing down Serbia's economic growth. Based on latter we shall then point to the crucial reforms and economic policies that could facilitate a permanent acceleration of Serbia's economic growth.

We assess that the growth rate gap in Serbia amounts to 1.5-2 p.p. as it is currently growing at rate of 3-3.5%, while its medium-term GDP growth potential is about 5%. The latter is obtained using estimated growth equation for EU26 (eq. 1, Section 2) which points to presence of conditional beta convergence. Consequently, less developed European countries, such as Serbia, should systemically grow faster than more developed economies, catching-up at an estimated annual convergence rate of about 2%. The convergence rate of 2% has come up as a result of several previous empirical studies, which is why it is also referred to as "the iron law of convergence"[5]; in our research, we have obtained it as well (eq. 1, Section 2). Hence, it is pointless to compare Serbia's current economic growth rate of 3 to 3.5% with that of rich European countries, such as Germany or the Netherlands, whose GDP growth rate currently amounts to about 2%, as it has been often done in politically motivated discourse in Serbia. It is only relevant to compare Serbia with the more similar, CEE countries. However, even compared to CEE countries, Serbia's economic growth is lagging. Serbia's GDP *per capita* is half that of CEE average, thus (applying the obtained convergence rate of 2% per year), Serbia's GDP growth should outpace theirs by about 1 p.p. Since the medium-term growth of CEE countries currently amounts to about 4%, it follows that Serbia's economic growth should be 5%, instead of the current 3-3.5%.

The main factors preventing faster economic growth in Serbia, i.e. lowering GDP growth by 1.5-2 p.p. pertain to pervasive corruption, weak rule of law, low level of state and private investment and poor quality of the educational system. The estimated growth equation for 26 EU countries (eq.1, Section 2) shows, that in addition to the catch-up effect, these factors have also statistically significant effect on growth. The worse off the aforementioned variables in a given country, the lower its economic growth. When data for Serbia are run through the estimated growth model (with Serbia being practically at the very bottom of the European ranking order for each of these indicators), it transpires that these fundamental factors can almost completely account for Serbia's estimated growth rate gap of 1.5-2 p.p. The estimated equation shows that the largest impact on slowing down economic growth in Serbia (by almost 1 p.p.) comes from the observed gap in corruption and the rule of law, while the remainder of Serbia's estimated underachievement can be explained by the insufficient share of investments in GDP and the disadvantage in educational system.

3.1 Just how far is Serbia lagging in economic growth and why?

To assess Serbia's underachievement in economic growth, it is first necessary to accurately determine the current growth trend. Namely, one of the characteristics of Serbia's economic growth is its significant year-on-year oscillation, noticeably larger than those of other comparable countries. For example, 2018 GDP growth, which we estimate at 4.3%, is over double the one achieved in 2017 (2%). On the other hand, the economic growth in 2017 was 1.3 p.p. lower than that in 2016 (3.3%). A more detailed analysis, however, shows that there were no lasting changes in GDP growth trends behind such large oscillations in annual GDP growth - they were rather the result of temporary factors, primarily varying agricultural seasons.[6]

Thus, for the proper estimation of underlying trends in economic activity in Serbia, one needs to correct for one-off factors in previous years which temporarily increased or decreased the annual GDP growth rate leaving no permanent effect on its trend in the medium term. We

5 See [1].

6 Agriculture takes up 8% of Serbian GDP, whereas in other CEE countries its share is, on average, below 4%. This is why the impact of varying agricultural seasons (drought, flood, extremely good seasons) on Serbian GDP growth is so significant, having twice as much effect on GDP growth as in comparable countries.

Table 1: Serbia: GDP growth trend, 2014-2019

	2014	2015	2016	2017	2018[1)]	2019[2)]
GDP growth (%)	-1.6	1.8	3.3	2.0	4.3	3.5
Impact of one-time factors on GDP growth (p.p.)	-0.6	0.8	-0.4	-1.2	1.0	0.0
GDP growth trend	-1.0	1.0	2.9	3.2	3.3	3.5

Source: SORS, Fiscal Strategy.
1) Authors' assessment based on the official data on GDP growth in the first three quarters and the flash estimate of GDP growth in Q4 published by the SORS.
2) Authors' assessment based on the official GDP growth forecast for 2019 from the Fiscal Strategy.

especially emphasize this due to public debates being prevalent with over-optimistic and unfounded assessments of the relatively high headline GDP growth of over 4% in 2018. In Table 1, in addition to the headline growth rates in Serbia since 2014, we depicted the contributions of one-off factors and based on these, in the last row of the Table 1, the true trend of economic growth, "cleaned" from one-offs. It can be inferred from the Table 1 that there has been no substantial acceleration of economic activity in 2018 compared to the previous year, despite the fact that the overall GDP growth amounted to 4.3%, which is over twice as high as that from 2017. An additional argument to support the claim that acceleration of growth in 2018 was temporary comes from the (credible) government GDP growth forecast for 2019 that currently amounts to 3.5%, which is markedly lower than the growth achieved in 2018 and in line with the estimated medium-term economic activity growth rate.

Table 1 shows two different periods in the GDP growth trends in the previous five years. The period prior to 2016, when economic activity was practically stagnant, even at times, in recession[7] - and the period after 2016. The subject of this analysis is the second (currently relevant) period following 2016 when, with the stabilization of public finance, a relatively stable economic growth trend ranging from 3 to 3.5% was established (even though the overall GDP growth rate oscillated under the influence of the aforementioned one-time factors).

As per the convergence (catch-up) process, less developed countries should have a consistently faster economic growth than the developed countries - proportional to the difference in their development. The catch-up effect is the consequence of the fact that the undeveloped countries can get a significant portion of their economic growth from the transfer of technologies and know-how from the developed countries, whereas the economic growth of the developed countries depends, to a greater extent, on their own innovation and technological advancement, which is significantly slower. In simple terms, it is easier and quicker to learn from others, adopt ready-made, contemporary technological processes and purchase contemporary equipment that already exists - than to discover and develop these on your own.

Several empirical studies have shown that the gap between the lesser developed countries and the developed countries (as measured by GDP *per capita*) decreases with their convergence at a rate of about 2% per year, on average. Since the 2% convergence has been confirmed in different empirical studies, due to its constancy it is frequently also referred to as "the iron law of convergence". The econometric analysis we conducted in this paper has also confirmed this result on a sample of 26 (current) EU countries, with the data from 1995 to 2017.[8]

The relationship between the level of economic development and the rate of economic growth for the different groups of European countries is illustrated in Table 2, using data for the last three years.[9] We selected two groups of EU countries with the largest difference between them (in terms of GDP *per capita* measured in PPP) – Western Europe[10] and CEE. In the first column of the Table, the GDP *per capita* is expressed in PPP Eur. In

7 Serbian economy was practically stagnating since the end of the first wave of global economic crisis in 2009, but in this paper, we look at the present, currently relevant economic growth trend in Serbia, in the macroeconomic environment in which there is no explicit threat of a public debt crisis.

8 Our sample yields a statistically significant convergence coefficient of 2.29, which is fully in line with the findings in other studies reporting the coefficient being around 2 (see Section 2).

9 This relationship can be seen in Figure 1 for each EU26 country in the period of 1995-2017.

10 The following countries have been included as Western European countries: Austria, Belgium, Denmark, Germany, Spain, Ireland, France, Italy, Luxembourg, the Netherlands, Finland and Sweden.

Table 2: Western European countries, CEE countries and Serbia: GDP *per capita* and GDP growth, average 2016-2018

	GDP *per capita* (in PPP EUR)	GDP growth
Western Europe (weighted average)	33.400	2.1
Central and Eastern Europe (weighted average)	20.500	4.0
Serbia	11.400	3.2

Source: Authors' calculation based on Eurostat data.
Note: Since there are still no data for GDP *per capita* for 2018, data in the first column are calculated as an average for 2015-2017.

addition, in the second column of the Table, we present the average growth rates for these groups of countries in the period 2016-2018. Below this data, we also present the values for GDP *per capita* and the achieved economic growth in Serbia - which does not fit the expected pattern, as will be discussed in greater detail later.

Data on the level of economic development (GDP *per capita*) from Table 2 show major discrepancies that should reflect on the economic growth rate, as well. Level of economic development in CEE countries is currently at the level of about 60% of that in the Western European countries, which, applying the convergence rule should mean that CEE countries should have a significantly faster economic growth. On the other hand, in terms of the level of economic development, Serbia is significantly lagging behind not only Western European countries, but also behind CEE countries. Serbian GDP *per capita* is at 55% of CEE country average, and compared to Western European countries, Serbian GDP *per capita* is at a mere 35% (Table 2).

From the Table 2, it can be seen that, in line with theoretical expectations, economic growth in CEE countries significantly outpaced the growth of developed Western European countries in the previous three years.[11] The issue, as we have already mentioned, is that Serbia completely diverges from this rule. According to the convergence law, Serbia should have significantly higher economic growth rates compared not just to the developed Western European countries, but also compared to the CEE countries, since it is lagging far behind in economic development. If we were to apply this "catch-up" rule, i.e. convergence rate of 2%, Serbia's economic growth should be approximately 1 p.p. higher than the average growth in CEE countries, due to the current gap in economic development. This means that when CEE countries are achieving 4% growth, the average Serbian growth should be about 5%. However, average economic growth in Serbia in the period 2016-2018 was at a mere 3.2% (Table 2), i.e. it was approximately 1.8 p.p. lower than the growth forecast using economic convergence.[12] Therefore, Serbia is not only failing to catch up to the economically more developed CEE countries - it is actually increasing its gap.

The main question raised in this paper is why Serbia is failing to catch up to the more developed countries, even though it should be doing so, i.e. why is its trend growth significantly lower than that of CEE countries, even though convergence dictates otherwise? In answering this question, we should first point out that there are not any major exogenous reasons why Serbia is failing to converge to CEE countries. Despite the fact that it is still not formally an EU member state, Serbia practically has a free access to the Union's economy and market, which should be a sufficient precondition for economic integration and convergence. Other CEE countries converged towards the more developed EU countries in their pre-accession periods (prior to 2003), exactly in line with expected catching-up process, even though they had not yet been members of the Union. Thus, in conditions similar to those Serbia faces today, these countries did show a catch-up effect. All this clearly indicates that the reasons for the absence of Serbia's expected convergence should be sought primarily among the internal, not the external factors.

Our empirical analysis on a sample of 26 EU countries (Section 2) showed that, in addition to the convergence

11 In the observed period, CEE countries even had a somewhat faster growth than that implied by estimated rate of convergence i.e. 2%, but still within the expected range.

12 This effect relates directly to the increase of GDP *per capita*, so the results for GDP growth are obtained after adjustments for different demographic trends.

effect, the following factors play a major role in the economic growth of the observed country: corruption and rule of law, level of investment and education achievements. The worse off the aforementioned indicators in a given country, the lower its economic growth. In extreme cases, the negative impact of the aforementioned factors on GDP can completely stall the expected economic convergence of the less developed country towards the more developed countries. In simpler terms, since the catch-up effect is realized through the transfer of technology and know-how from the more developed to the less developed countries, it depends on the ability of the less developed country to absorb this technology and know-how, i.e. on its level of investment and on its human capital (education). If, in addition to these barriers, there is also an issue of pronounced corruption and deficient rule of law (which also obstruct the possibility of fast economic growth), the underdeveloped country can easily move in the opposite direction than expected, i.e. instead of catching up, it can fall even further behind.

The estimated growth equation (Section 2) applied to Serbia yields exactly this result, i.e. that Serbia falls behind. By indicators used to quantify corruption, rule of law, share of investments in GDP and the achievement of the education system, Serbia is at the very bottom of the European ranking lists. When these indicators for Serbia are put into the estimated growth equation, the result is a jointly yielded negative effect on the country's economic growth amounting to 1.5-2 p.p., i.e. exactly the magnitude of Serbia's estimated underachievement gap. In other words, these factors are most to blame for the fact that Serbian economic growth, in the long run, is lower than that of CEE countries, even though it should be the opposite.

The estimated equation also shows that among individual factors, the greatest negative impact on Serbian economic growth comes from corruption and poor rule of law. If Serbia were to decrease the level of corruption and improve the rule of law to the level of CEE country average, its economic growth would accelerate by 0.9 p.p. based on estimated growth equation. Increase in investments from the current 18% of GDP to 23% of GDP would add another 0.7 p.p. to economic growth, while the increase in educational achievement to the level of CEE average would add another 0.2 p.p.[13] The estimated impact of each of these indicators should, of course, be taken as an indication and not as exact numbers. In continuation, we shall look into each of these factors impeding Serbia's economic growth in detail.

3.2 Investments

Investment increases quantity of physical capital, but also introduce technical progress, all together leading to increased economic growth. Relation between the magnitude of investment and economic growth is as direct as it can be. Countries with lower investments, as a rule, achieve lower economic growth rates. In line with the theoretical expectations, we statistically confirmed the positive relation between the level of investment and GDP growth (see Section 2). Since Serbia stands out in terms of its low share of investment in GDP relative to other CEE countries, it is one of the major reasons why Serbia's economic growth is so low. Starting from the estimated relation between investments and the level of economic development (see eq. 2, Section 2), we shall now estimate the level of warranted investment in Serbia. In addition, based on the estimated economic growth equation (eq. 1, Section 2), we shall provide an estimate on the deceleration of Serbia's economic growth due to the fact that the investment is not at the necessary level. Finally, by analysing individual components of investment (government investment, public enterprise investment and private sector investment), we identified the main reasons why the current level of investment in Serbia is insufficient, and advance the measures and reforms that can be implemented by the Government to increase investment in the medium term.

Magnitude of investment, similar to the GDP growth rate, depends on the level of economic development of the observed country. Less developed countries, as a rule, set aside a greater share of their GDP for investment. We

13 The indicator for education that we used in the equation is actually the mean years of schooling among persons over the age of 25. Although it is proved to be statistically significant for GDP growth, some other indicators are probably better descriptors of education quality. This will be analyzed further in a separate section in this paper.

Table 3: Western European countries, CEE countries and Serbia: GDP *per capita* and share of investments in GDP, average for 2015-2017

	GDP per capita (in PPP EUR)	Share of investments in GDP (%)
Western Europe (weighted average)	33400	20.4
Central and Eastern Europe (weighted average)	20500	21.0
Serbia	11400	17.1

Source: Eurostat.
Note: In 2018, Serbia achieved a significantly faster investment growth than GDP growth, which is why its current share of investments in GDP is probably somewhat over 18%.

tested this conjecture by exploring whether the share of investments in GDP depends on GDP *per capita*, as well as on rule of law and corruption. Using a sample of EU countries (with data from 1995 to 2017) the estimates show statistically significant of GDP *per capita* level on the size of relative investments (see eq. 2, Section 2). We then combine the estimated equation, with the current level of GDP *per capita* in Serbia and obtained that investments in Serbia should be about 2 p.p. of GDP higher than those in CEE countries.

In Table 3, we report GDP *per capita* and the share of investments in GDP for the period 2015-2017 for the different groups of EU countries (Western Europe and CEE) and for Serbia. Table 3 shows that, as expected, the 21% share of investment in GDP in CEE countries was higher than in more developed Western European countries (20.4%). Serbia, however, diverges from this rule completely, as its investments share was even lower than that in the developed Western European countries. According to the estimated model (eq. 2, Section 2), for a country at Serbia's level of development, the share of investment should be around 23% of GDP - i.e. about 2 p.p. higher than in CEE countries. However, the average share of investment in Serbian GDP in the period of 2015-2017 was at a mere 17.1%, i.e. about 6 p.p. lower than necessary. Due to such a low share of investment in GDP, we estimate that Serbia is losing between 0.5 and 1 p.p. of annual GDP growth.

Total investment represents the sum of a number of heterogeneous components (government investment, investment of public enterprises, investment of the domestic private sector and foreign direct investment). Hence, to assess total investment in Serbia, each of these segments must be analysed separately. Such analyses have shown that foreign investment is the only investment segment that is currently at a satisfactory level (and shall not be discussed further in this paper). Of the remaining components, we estimate the necessary increase of public (government) investment in infrastructure to be at least 1 p.p. of GDP, investment of central and local public enterprises also somewhat over 1 p.p. of GDP and the investment of the domestic private sector 3-4 p.p. of GDP.

Government investment in Serbia in 2018 amounted to about 3.8% of GDP which is insufficient, as it is significantly lower than the corresponding public investment level in other CEE countries (amounting to about 4.5% of GDP). To make matters worse, the current public investment structure in Serbia is not satisfactory either, since an unusually high share of public investments pertains to the purchase of equipment for the military and the police, which have no significant positive effect on economic growth, while too little is spent on investment into infrastructure - especially in environment protection, education and healthcare. Serbia allocates only a third of the funds allocated by CEE countries for environment protection, education and healthcare (Table 4).

Comparative analysis shows that Serbia should increase public investment (excluding the security sector) by at least 1 p.p. of GDP i.e. investment into roads, railroads, environment protection, education, health care etc.[14] In the upcoming years there is fiscal space for such an increase, provided the Government (and Local governments) reform their loss-making public enterprises and change their economic policy priorities. More specifically, this

14 Although Table 4 shows that Serbia has already reached the average share of investments in road and railroad infrastructure in CEE countries, we would also note that these countries, unlike Serbia, already have the basic infrastructure developed. At the time of the increased development of road and railroad infrastructure, as is the case in Serbia at the moment, investments for these purposes significantly exceed the usual level of about 1.5% of GDP.

Table 4: Serbia and CEE countries: share of pubic investments in GDP and their structure (in % of GDP)

	CEE average: 2006-2016	Serbia: Estimated budget execution in 2018	Serbia: Budget proposal for 2019
Total general government public investments	4.6	3.8	4
Defence and police	0.3	0.7	0.9
Public investments excluding the security sector	4.3	3.1	3.1
Road and railroad infrastructure	1.5	1.6	1.6
Health care, education and environment	1.3	0.4	0.4
Other	1.5	1.1	1.1

Source: Author's calculation based on Eurostat and Serbian Ministry of Finance data and Fiscal Council of Serbia reports.

means that the reforms should: cut down subsidies for local and national public enterprises (GSP – Belgrade public transport company, Resavica coal mine, etc), end excessive (economically unjustified) salary increases for the employees in general government (which had been the practice in the previous two years) and revise the unusually high government expenditures for the security sector.

As a rule, central and local public enterprises, even when they are not a direct cost to the budget, perform poorly and invest less than they should. Thus, for example, by far the largest of all public enterprises, EPS – electrical power company, has been investing less than its depreciation for years; therefore, not only has it failed to increase its production capacities, it has been decreasing them for years. Current estimates indicate that EPS should increase its investments by over 200 million Euros per year (about 0.5% of GDP) to increase production capacities and to reach EU environmental standards.[15] At that, there are also estimates that show that local public enterprises should increase their investments by over 100 million Euros (0.25% of GDP).[16] Since EPS and the local public enterprises (which employ about two-thirds of the overall number of employees in public enterprises in Serbia) should increase their investment by about 0.75% of GDP in total, we estimate that the total investment increase from all central and local public enterprises should amount to about 1 p.p. of GDP (and this estimate is probably conservative, as well).

Funds for the increase of investment of central and local public enterprises can be obtained through structural reforms which have been put off for years. These reforms are: downsizing the number of employees, increasing the collection rate for provided services (GSP), decreasing technical losses in production and distribution (EPS and water supply companies), shutting down the non-viable departments (Resavica, EPS), decreasing corruption, in some cases increasing the prices for products and services etc. Public enterprise reforms are, therefore, an extremely important factor in accelerating the country's economic growth and the Government should finally put serious effort into this issue, instead of merely announcing reforms for years.

The largest investment gap (3 to 4 p.p. of GDP) in Serbia pertains to the domestic private sector. Although the private sector decides on its investment independently, the Government can have a significant positive effect by improving the currently very poor business climate. The business climate is comprised of a large number of different factors. For the purposes of this research, we tested via the impact of rule of law and corruption on the magnitude of private investment, and that proved to be statistically significant (eq. 2, Section 2). This means that the private sector in Serbia would be investing far more if there were less corruption and if the rule of law were to improve. The estimated equation for private investment explains just part of its variations indicating that, in addition to corruption and the rule of law, there is a whole range of other factors influencing the level of private investment. The obvious candidates are the country's low credit rating, poor quality of basic infrastructure etc.

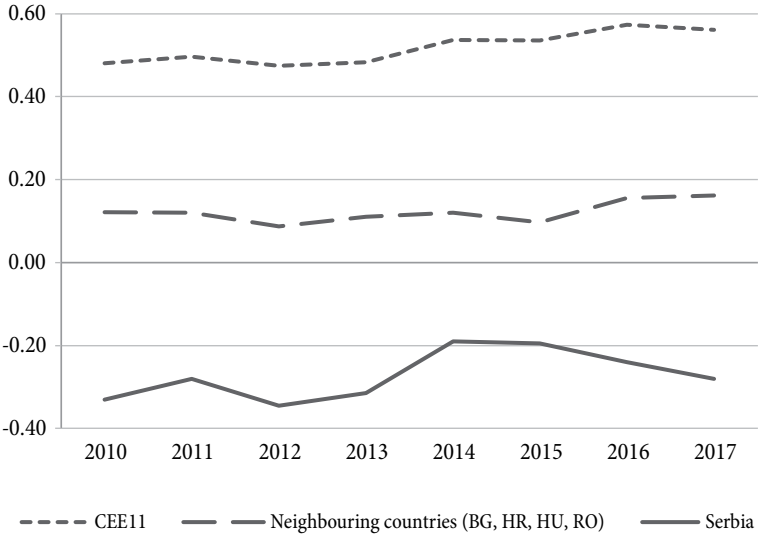
3.3 Corruption and the rule of law

The high prevalence of corruption and low level of the rule of law significantly lowers economic growth. Corruption distorts the level playing field, encourages rent-seeking behaviour etc., leading to inefficient use of resources. In addition, the insufficiently efficient and independent judicial

15 [12].

16 [5].

Figure 5: Serbia and CEE countries: World Governance Indicators (mean value of the Control of Corruption and Rule of Law), 2010-2017



Source: World Bank, World Governance Indicators.

system places a major obstacle to businesses. If the legal protection of signed contracts isn't completely reliable and the collection on outstanding receivables through courts is inefficient, economic activity is stifled. Corruption and the rule of law variable[17] proves to be significant in our estimated growth equation (eq. 1, Section 2).

By its pronounced corruption and poor rule of law, Serbia ranks at the very bottom among European countries. This is indicated not only in the World Bank reports that we used for our quantitative analyses, but also in a whole range of other relevant international research (Transparency International, World Justice Project, World Economic Forum etc). Combining the estimated model (eq. 1, Section 2) and the corresponding indicator for Serbia, Serbia's economic growth would accelerate by about 0.5 p.p. just by improving the corruption and rule of law indicators to the level of the surrounding countries (average for Bulgaria, Romania, Hungary and Croatia). Let us stress that these four countries have practically the lowest scores for these indicators in the entire EU. If Serbia were to reach the average level for all CEE countries, its economic growth would most probably accelerate by an entire percent point.

In Figure 5 we have shown WGI indicators for corruption and rule of law for Serbia, EU countries surrounding Serbia (Bulgaria, Romania, Hungary and Croatia) and CEE11 countries. In addition to Serbia's significant lag behind comparable countries, a particular concern when it comes to corruption and the rule of law, is the fact that the previous trend of their gradual improvement in Serbia was interrupted in 2014, when they started deteriorating. According to WGI data, Serbia's score in corruption and rule of law deteriorated from 2014 to 2017 from -0.19 to -0.28, while, at the same time, CEE countries achieved a mild improvement from +0.54 to +0.56 (Figure 5)[18] Other relevant international indicators measuring corruption and the rule of law show almost identical trends. Thus, according to Corruption Perceptions Index, published by Transparency International, Serbian score decreased from 41 to 39 from 2014 to 2018,[19] while in terms of relative ranking compared to other countries, Serbia fell from rank 78 (out of 174) to rank 87 (out of 180 countries). Similarly, according to the World Justice Project research, the total rule of law score in Serbia decreased from 2014 to 2018 from 0.51 to 0.50[20], while Serbia's standing decreased from rank 54 (out of 99 countries) to rank 76 (out of 113 countries).

17 To assess corruption and rule of law, we used the World Bank data – Worldwide Governance Indicators (WGI).

18 WGI scores are estimates of governance: ranges from -2.5 (weak) to 2.5 (strong) governance performance.

19 Corruption perception is measured in the range from 0 to 100, wherein lower scores indicate higher corruption.

20 Overall Scores of the WJP Rule of Law Index are measured from 0 to 1, wherein countries with poorer rule of law show lower scores.

Finally, we would like to emphasize that the World Bank dataset (WGI), which we used for our analysis and econometric assessments (Section 2) practically consists of six individual indicators: 1) Voice and Accountability, 2) Political Stability and Absence of Violence, 3) Government Effectiveness, 4) Regulatory Quality, 5) Rule of Law and 6) Control of Corruption. Overall WGI score for a given country can be calculated as the average of these six indicators. However, in our research, we tested not just the impact of overall WGI score on GDP growth, but also the impact of its individual components. We got the best results using only the indicators of corruption and the rule of law in the estimated equation, i.e. out of the six individual governance indicators, these two have the greatest and the most direct impact on GDP growth.[21] The result we got is quite indicative as it shows that the decrease of corruption and improvement of the rule of law are fundamental channels through which the Government can influence the acceleration of economic growth. For example, adopting good EU regulations to improve the country score by the Regulatory Quality indicator cannot have a major impact on economic growth acceleration on its own, if the adherence to such regulations is not satisfactory (i.e. if there is pronounced corruption in the country and the rule of law is at a low level). Therefore, our analysis shows that, in order to accelerate economic growth, it is insufficient to simply copy the good laws and regulations from the EU (which is relatively easy to do), but that a progress in the fundamental indicators - decrease of corruption and the rule of law - is also needed in order to ensure efficient and consistent implementation of the good legislation.

3.4 Education

Economic theory recognizes at least three channels through which education impacts economic growth. First, better education increases labour productivity, leading to a greater value added per employee (classic growth theory). Second, education contributes to a greater innovative capacity of the economy, leading to faster economic growth (endogenous growth theory). Third, improved education facilitates the transfer of know-how and of new technologies from the more developed to the less developed countries (convergence theory). In line with such theoretical expectations, we included the education parameter in the estimated equation of economic growth for 26 EU countries, which revealed a statistically significant relation - i.e. better education increased the economic growth of the analysed countries (eq. 1, Section 2).

As for the education indicator per country, in the estimated equation we used the "mean years of schooling" as reported by UNDP within their Human Development Reports. Mean years of schooling is the average number of years of schooling among the population older than 25. In terms of this indicator, Serbia performs worse than other CEE countries. According to the data from the previous three years, adult Serbian citizens have, on average, 11.1 years of schooling which is by about a year less than the average in CEE countries (12.2 years). Estimated economic growth equation (eq. 1, Section 2) indicates that this gap in the years of schooling among the population translates to about 0.2 p.p. lower economic growth compared to other CEE countries.

The results for the effects of education on GDP should, however, be viewed with a certain reserve. Namely, the use of the indicator "mean years of schooling" in the estimated equation has its advantages, but it also has certain disadvantages. The advantages are that there are reliable annual series for this indicator coming from the same source (UNDP) for all countries included in the sample for the observed period since 1995. In addition, this indicator is simple and hasn't changed over time, i.e. it had always been measured using the same, completely comparable methodology in previous decades.[22] Finally, the estimated equation confirms that there is a statistically significant relation between the mean years of schooling and economic growth - implying that this indicator can somewhat approximate the human capital. Still, there are

21 With the increase in the number of indicators, the relation with GDP growth became somewhat less clear - which is why our estimated equation only uses these two indicators and not the overall WGI score.

22 For the use of some other indicators in the estimated economic growth equation, which probably better reflect the quality of education than the Mean years of schooling (e.g. the PISA tests implemented by OECD), there is insufficient comparable annual data by countries in the last 25 years.

two important disadvantages of this indicator, which are important to note as, we believe, they affect the results derived from the econometric analysis.

First of all, the time spent in schooling, by definition, is not the best reflection of the quality of the educational system. The quality of a single year of schooling in Finland and Bulgaria are quite different (as indicated by other relevant research), which means that two countries with the same mean years of schooling do not necessarily have identical human capital quality. In simpler terms, it is not very likely that Serbia will accelerate its economic growth to a significant degree by having its population spend more time in school, without the improvement of the educational system. The second issue with the used indicator is the fact that data shows that CEE countries actually do not differ much in the mean years of schooling of their population. All CEE countries fall within a very narrow range from 11 to 13 years, and this small range can be attributed to the common legacy of a relatively good reach of the educational system, originating from socialist times.

Because this indicator, which we used in our model, fails to capture all quality characteristics of educational systems in individual countries, and because the data does not vary significantly, the estimated impact of education on the economic growth is probably somewhat underestimated. In other words, the relation between the quality of education and the economic growth is indisputable and we have confirmed it in our model. However, since we have not managed to capture all of the properties of a good educational system in a single indicator, the coefficient in our model is probably somewhat underestimated, i.e. the impact of education improvement on acceleration of Serbia's economic growth is probably somewhat higher than the 0.2 p.p. resulting from the estimated model.

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