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INSTITUTIONS AND ECONOMIC GROWTH: AN EXAMINATION OF THEIR CORRELATION IN BOSNIA AND HERZEGOVINA

Abstract

Purpose: Institutions play an important role in stimulating economic growth of the country. They create frameworks for economic activity through restrictions that shape human interaction. Economic growth is a complex process influenced by many factors, including the quality of institutions. The main goal of this paper is to examine the correlation between institutions and economic growth in Bosnia and Herzegovina (hereinafter referred to as B&H).

Methodology: The paper applies both descriptive and inferential statistics, along with various scientific research methods. It examines the correlation between selected indicators and conducts regression analysis to establish the relationship between indicators of economic growth and the institutional quality in Bosnia and Herzegovina during the period from 2002 to 2022. The central research question is: Does institutional quality determine economic growth in B&H? Specifically, which elements of institutional quality have a positive impact, and which have a negative impact on GDP? Additionally, which elements have the strongest correlation with changes in GDP in B&H?

Results: Results show that institutional quality is declining, while economic growth exhibits modest positive trends. Correlation analysis revealed a statistically significant relationship between Voice and Accountability, Regulatory Quality, Rule of Law, and Control of Corruption and Economic Growth in B&H, while regression analysis further determined that Regulatory Quality has the greatest impact on economic growth in B&H.

Conclusion: One of the key challenges for economically, politically, socially, and religiously complex, small, and open countries like Bosnia and Herzegovina is the development of adequate, efficient, transparent, and corruption-free institutions.

Keywords: Institutions, economic growth, economic development, Bosnia and Herzegovina

1. Introduction

Bosnia and Herzegovina is an upper middle-income country struggling with a range of economic issues. The key economic issues can be briefly summarized as follows: high unemployment, low productivity, migration of the working population, foreign trade imbalances, low investments, and weak institutions. In addition, the country faces significant political, social, and, perhaps most importantly, corruption-related issues (both in the private and public sectors). It remains an open question how to accelerate economic growth so that the country could catch up with those making better progress. In this paper, we begin by analyzing institutions, which are one of the key mechanisms for achieving increased economic growth.

Economic growth is related to an increase in the quantitative indicators of an economy's success, i.e. an enhancement in the amount of goods and services produced, or real income in the total or per capita amount in a certain period. It can be simply defined as "an increase in material output per capita" (Van den Berg, 2017, p. 28). The phenomenon of economic growth can only be realistically understood in its historical dimension, considering its long-term stagnant state. Until recently, economic development was considered through the category of economic growth, and even today, they are often treated as synonyms. Nevertheless, the term economic development implies social and economic changes, while economic growth implies improvements in the level of material production within the existing social system. Economic growth is therefore a *sine qua non* for economic development. Both economic growth and economic development are considered as a key goal for every country, including Bosnia and Herzegovina, as they imply improvement in living standards, as well as reduction in inequality and poverty. Besides, the focus of this research is on economic growth.

What was once considered a topic of limited importance in the past, institutions today represent one of the most popular topics in economics. Under the influence of a broader interest in institutions in the economy, which emerged with the rise of New Institutional Economics in the 1980s, institutions began gaining prominence in the early 1990s as a framework for explaining international divergences in economic development, even in a place like the World Bank or the International Monetary Fund.

Already in the 1990s, institutions positioned themselves at the center of debates on economic development (Chang, 2010). In attempting to define institutions, it is perhaps simplest to begin with the definition according to which institutions represent "the rules of the game in society, that is, limitations designed by people that shape interactions between people" (North, 1990, p. 3). According to North, institutions encompass both formal and informal rules and restrictions related to codes, norms of behavior and conventions, which are imposed by individuals or social groups (North, 1990, p. 36). Institutions are a broad term, and the focus of this paper is on economic institutions, which can be defined as "formally determined rules according to which economic interactions between economic subjects take place with the aim of reducing uncertainty in these interactions" (Halebić, 2009, p. 193).

Many factors influence economic growth and institutions-economic growth nexus is increasingly significant in economic analyses. The question of why and how institutions matter for economic growth and development has been examined in the research of Adam Smith, David Landes, Douglass North (a Nobel Prize winner in 1993), and Daron Acemoglu (a Nobel Prize winner in 2024). Their definitions, conceptualization and conclusions have contributed to the recognition that institutions occupy a significant place in the economic sphere. Strong institutions are key to achieving sustainable economic growth and development. This issue is of particular importance for developing countries like Bosnia and Herzegovina.

Bosnia and Herzegovina has a complex political and institutional structure, which presents a significant challenge in the context of achieving economic growth. This complexity can have a considerable impact on the country's economic performance and may slow down economic growth. Through this research, we aim to examine in more detail the relationship between the institutional quality and economic growth of Bosnia and Herzegovina. The aforementioned analysis of the quality of institutions and economic growth covers the period from 2002 to 2022. The main research question is: Does institutional quality determine economic growth of Bosnia and Herzegovina? Specifically, which elements of institutional quality have a positive impact and which have a negative impact on GDP, and which are most strongly correlated with changes in GDP in B&H?

The results of this research will contribute to a better understanding of the relationship between institutions and economic growth, and can serve as a starting point for future policies aimed at improving institutional quality and economic growth in Bosnia and Herzegovina. Furthermore, it may complement the existing body of research on this topic and help fill gaps in the current literature.

2. Previous research

There is increasing empirical and theoretical literature related to institutions and economic growth, particularly due to the growing disparities observed between countries, which highlight the fact that some nations grow much faster than others. Throughout history, for example, divergent growth is visible between North and South Korea, China and Taiwan, West and East Germany, and so on. These examples prompt us to consider the role and significance of institutions in economic growth. A common question is whether strong institutions can facilitate more efficient economic growth and development. Currently, the prevailing view is that institutions determine economic performance. According to North (1990, 2003, 2005), institutions (both formal and informal) create the conditions necessary for economic growth, with their primary purpose being to reduce uncertainty. They represent incentive systems that shape human interaction. In addition to reducing uncertainty, institutions enable individuals to engage in various activities and solve problems effectively on a daily basis. When structuring human interaction is discussed, it refers to providing incentives and disincentives for people's behavior. A wealth of evidence supporting the strong link between institutions and economic growth has been documented in the works of the 2024 Nobel Prize laureates. Acemoglu conducted extensive theoretical and empirical analysis with a significant number of historical facts about how institutions shape economic performance. The main reason for differences in economic growth and development, he found, lies in the divergence of economic institutions. He concluded that successful economies grow faster than others due to their strong institutions (Acemoglu et al., 2005). Similarly, Acemoglu et al. (2004) emphasize the importance of institutions in accelerating economic growth focusing primarily on how they shape the structure of economic activities in society. They argue that only with corresponding property rights can individuals be motivated to invest or develop new technologies.

One of the most-cited papers in the WoS database, (Urbano et al., 2019), points out that institutions indirectly influence economic growth through entrepreneurship. It raises questions as to which institutional factors stimulate entrepreneurial initiatives and ultimately lead to economic growth. The dominance of the institutional approach to economic growth was established, particularly during the period 2012-2016.

Recent research confirms the positive correlation between institutions and economic growth. For example, Góes (2016) showed that "on average, a 1% increase in institutional quality leads to an increase in GDP per capita of 1.7% after six years" (Góes, 2016, p. 85). Acquah et al. (2023) assessed the influence of institutions on the level and growth rate of GDP per capita in the period 1980-2015. They documented the positive and statistically significant impact of increasing the quality of institutions on the rate of economic growth. One of the main conclusions relates to the fact that institutions are especially important in low- and middle-income countries, and that not all institutions are equally important for economic development. Radulović (2020) investigated the influence of institutional quality countries in Southeastern Europe during the period from 1996 to 2017. He pointed out that a long-term institutional quality - an economic growth nexus has been established in EU member states, but for non-EU member states, the most significant factors include government efficiency, political stability, the absence of violent behavior or actions, regulation quality, and voice and responsibility. Similarly, Naudé (2011) emphasized that institutions matter more for long-term economic development. The same author also stated that it is still unclear how institutions determine economic growth.

Similarly to the research by Acquah et al. (2023), many authors have investigated the influence of institutions on economic growth in less developed countries. For example, Iqbal and Ali (2024) examined the influence of financial, economic, social, and political institutions on economic growth during the period 2000-2014. They concluded that institutions have a strong influence on economic growth and that for developing countries institutions are "the most important factor for an economy's growth" (Iqbal & Ali, 2024, p. 102).

Similarly, Liaqat et al. (2018) investigated the influence of institutional quality on economic growth in both developing and developed countries during the period from 1996 to 2013. They found a significant and positive impact on economic growth for both groups of countries. They also found that human capital and a reduction in corruption are major institutional tools for accelerating economic growth in developing countries. On the other hand, Chomen (2022) explored the relationship between institutions and economic growth in Sub-Saharan African countries using the System Generalized Method of Moments for 43 countries over a period of 13 years. The author found no significant relationship between institutions and economic growth in these countries.

When it comes to the analysis of institutions and economic growth in Bosnia and Herzegovina and the neighboring countries, several authors have made a significant contribution, including Efendić (2008), Halebić (2006, 2009), Buterin et al. (2018), Bađun (2005), Milenković and Vujović (2020), etc. Efendić (2008) presented findings related to institutions and economic growth in transition countries, including Bosnia and Herzegovina. The author stated that the efficiency of institutions is an important determinant of the speed at which transition countries progress toward membership in the European Union. The results showed the highest level of correlation between institutional indices and economic performance in the sample from Bosnia and Herzegovina. Thus, the institutions in Bosnia and Herzegovina can be a very important factor in supporting the achievement of better economic results. The results also showed that the efficiency of B&H institutions is below the transition average. The author also stated that if Bosnia and Herzegovina wants to improve its position in the EU integration process, it is necessary for the quality of its institutions to grow annually by about 5%. Halebić (2006) investigated the relationship between institutional quality (in accordance with the concept of new institutional economics) and economic growth (measured by GDP per capita) in Bosnia and Herzegovina during the period from 1998 to 2005. The goal of the study was to compare trends in the parameters of institutional quality and economic growth. The author concluded that institutions do not receive adequate attention in educational programs in B&H and that "the authorities should pay full attention to the issue of improving economic

institutions, their examination and measurement" (Halebić, 2006, p. 162). Buterin et al. (2018) investigated, using institutional development indicators, whether and how institutions have affected the growth of Croatia compared to some European Union member states. The results of the research demonstrated that the development of institutions had an impact on economic growth, with a focus on the analysis of the Index of Economic Freedom, the International Index of Property Rights, as well as economic growth rates. The author's recommendation is that Croatia should make significant institutional improvements, through institutional reform. Bađun (2005) aimed to demonstrate how it is both justified and important to introduce the quality of public management into the discussion about the economic progress of Croatia. By analyzing the values of indicators related to the rule of law and the quality of public administration, as well as the dynamics and nature of reforms in the judiciary and public administration, it was concluded that the holders of power in Croatia are somewhat more focused on rent-seeking than those in the European Union countries. The author stated that institutional deficiencies affect the level of GDP per capita in Croatia and that faster and more effective reforms in the judiciary and public administration, along with the suppression of corruption and the strengthening of democracy (as a mechanism for controlling power holders) would have a positive impact on future economic growth. Halebić (2009) investigated the nexus of the structure of institutions and economic growth in Bosnia and Herzegovina, Croatia, and Serbia in relation to the wealth coefficient of these countries. From the perspective of national economies, the study aimed to explore whether the institutional structure has a positive or negative effect on economic growth in the aforementioned countries, and whether improving economic institutions contributes to economic growth. The second objective was to examine, from a global economy perspective, the potential contribution of improving economic institutions to the growth or decline of these countries' relative importance in the global economy. The research established a strong correlation between economic institutions and gross domestic product, indicating equal returns based on the ratio. Milenković and Vujović (2020) emphasized that the Western Balkan countries need stable and strong institutions to achieve economic growth and sustainable development, and conversely, stable and strong institutions are

a result of such growth. The key reasons for the underdevelopment of the education and health systems, overall socioeconomic development and migration can be traced to weak institutional development and widespread corruption. Babajić et al. (2024) found a statistically significant positive relationship between GDP/pc and institutional quality variables in the Western Balkan countries. Furthermore, they pointed out that "one of the key challenges in the future is certainly building adequate, efficient, transparent and corruption-free institutions" for these countries (Babajić et al., 2024, p. 65).

From the previous literature review, it is possible to conclude that institutions have a significant impact on economic growth. However, there are also historical examples, such as China and Singapore, demonstrating that undemocratic economic systems can achieve impressive growth rates. Additionally, there are opposing views and scientific conclusions, such as those presented by Chomen (2022), Sachs (2003), Smolo (2021), and others. Sachs emphasized that institutions are an important–but not the most crucial–factor for economic growth and development. He also highlighted the significance of international and donor aid for the development of underdeveloped and poor areas (Sachs, 2003). Furthermore, Smolo (2021) examined the impact of foreign direct investment and institutional quality on the economic growth of the Western Balkans. His research showed that development of institutions has "significantly negative or no role in growth directly". The author states that "because the institutions within the sample countries are at low levels of development to make any significant impact on either growth" (Smolo, 2021, p. 47).

As demonstrated in the literature, many authors provide evidence supporting the thesis that institutions strongly influence economic growth. On the other hand, there is also research suggesting that institutions may have no effect, or even a negative effect, on economic growth. Future research will determine which side the evidence will favor. However, the fact remains that developing countries, such as Bosnia and Herzegovina, must make a significant effort to accelerate economic growth. Referring to the works of the authors who have addressed this issue, this analysis concludes that, based on the set of indicators used in this paper and the period 2002-2022, no similar research has been conducted for Bosnia and Herzegovina. Therefore, it can serve as a valuable supplement to the existing body of research on this topic and help address the gap in the literature.

3. Methodology

This paper sheds light on the role of institutions on economic growth in Bosnia and Herzegovina. We aimed to achieve the main goal of the research, using the analysis of economic institutions through the governance indicators of the World Bank (2024a) and basic indicators that represent the economic growth of a country. Through the Worldwide Governance Indicators (WGI) project, the World Bank annually publishes indicators for six dimensions of governance for member countries, according to Kaufmann and Kraay (2023), namely: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

A schematic representation of the research can be seen in Figure 1. Institutions (the independent variable) were examined using the following indicators: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

Figure 1 Research scheme
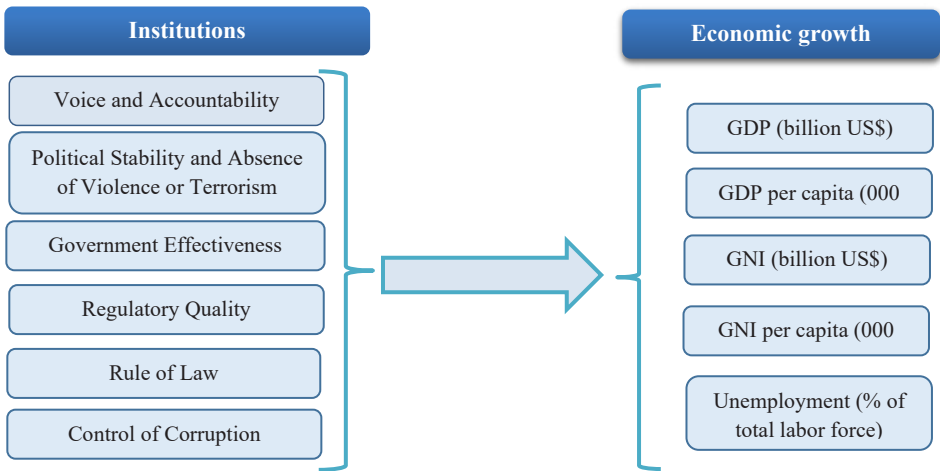
Source: Authors

"Institutional quality" refers to the efficiency, transparency, and strength of institutions within a country or region "and includes management structures, the rule of law, regulatory frameworks and the entire institutional environment that shapes economic, social and environmental results" (Ulucak, 2020). Institutional quality in this research is analyzed through the composite indicators of the six dimensions of "governance" published annually by the World Bank Group since 1996. The dimensions mentioned are generally accepted tools (e.g. research by Uddin et al., 2023, Islam & Montenegro, 2002), i.e. indicators used to assess institutional quality, and are based on hundreds of individual variables from dozens of different data sources. They represent a summarized view of institutional quality of several thousand respondents, i.e. experts from the public, private and non-governmental sectors around the world. Key dimensions refer to the following: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Efficiency, Quality of Regulation, Rule of Law, and Control of Corruption. These indicators are constructed on the basis of data on management perceptions, organized into six clusters, and collected from several dozen sources, such as: the World Economic Forum, the European Bank for Reconstruction and Development, Transparency International, Freedom House, the Heritage Foundation, the World Justice Project, the IHS Markit World Economic Service, etc. According to Kaufman et al. (2023), we observe all indicators of insti-

tutional quality "in the standard normal units of the governance indicator, ranging from around -2.5 to 2.5" (Kaufman et al., 2023, p. 16).

Economic growth (the dependent variable) was examined using the following indicators: GDP (billion US\$), GDP per capita (000 US\$), GNI (billion US\$), GNI per capita (000 US\$), and the unemployment rate (% of total labor force). All indicators were obtained from the World Bank (2024b) online database for the period 2002-2022.

Bosnia and Herzegovina has recorded high unemployment rates for a long period of time, which has been one of the biggest economic and social problems, which has strongly influenced the course of its economic growth and development. Although employment/unemployment indicators represent labor market indicators and "Lagging Indicators" (lagging behind changes in the economy), this research model also includes unemployment rates alongside basic economic growth indicators to investigate the impact of institutional quality on unemployment.

As mentioned above, this paper examines whether the quality of institutions determines economic growth in Bosnia and Herzegovina. The basic research question is: Does institutional quality determine economic growth of Bosnia and Herzegovina? Specifically, which elements of institutional quality have a positive impact and which have a negative impact on GDP? Additionally, which elements have the highest correlation with changes in GDP in B&H?

Descriptive and inferential statistics were used, as well as scientific research methods, the most important of which are: the methods of induction and deduction, concretization, analysis and synthesis, as well as generalization and specialization. Secondary data, sourced from the official website of one of the world's most important financial institutions (World Bank, 2024a & World Bank, 2024b), were processed. The study focused on Bosnia and Herzegovina and the research period is 2002-2022. The research also included the correlation between the selected indicators. The values of the correlation coefficients, which are listed below, were used to indicate the strength of the relationship between the dependent and independent variables (Zahirović & Okičić, 2021, p. 69):

- correlation coefficient 0.10-0.29 - low strength of connection
- correlation coefficient 0.30-0.49 - medium strength of connection
- correlation coefficient 0.50-1.00 - high strength of connection.

Since we are interested not only in the interrelationship between the indicators but also in their potential causality, multiple linear regression will be applied. One dependent variable, representing economic growth (GDP in billions of US$), will be observed, while several independent variables, representing indicators used to measure the quality of economic institutions in B&H (all 6 indicators), will be included. For the multiple linear regression model, GDP in billions of US$ was selected as the dependent variable. This variable was selected based on the correlation analysis results, which showed that GDP has the highest correlation with most of the institutional quality indicators. Certain abbreviations for indicators were used during the research, as presented in Table 1, along with the data sources.

Table 1 Abbreviated names and data sources for the indicators used

Indicator	Code	Source
Voice and Accountability	VA	World Bank
Political Stability and Absence of Violence/Terrorism	PSAVT	World Bank
Government Effectiveness	GE	World Bank
Regulatory Quality	RQ	World Bank
Rule of Law	RL	World Bank
Control of Corruption	CC	World Bank
GDP (billion US$)	GDP	World Bank
GDP per capita (000 US$)	GDP_pc	World Bank
GNI (billion US$)	GNI	World Bank
GNI per capita (000 US$)	GNI_pc	World Bank
Unemployment (% of total labor force)	UNE	World bank

Source: Authors

To create and use the multiple linear regression models, we began by developing a general linear regression model based on the following: we checked whether the conditions for using the multiple linear regression model were met specifically verifying if there was an issue of multicollinearity in the data. Multiple linear regression is a regression model that estimates the relationship between a dependent variable (GDP) and two or more independent variables. The basic research model of multiple linear regression is as follows:

$$Y_i = b_0 + b_1 x_{1i} + b_2 x_{2i} + b_3 x_{3i} + b_4 x_{4i} + b_5 x_{5i} + b_6 x_{6i} + \varepsilon,$$

where:

i – the observed period (2002-2022),

Yi – a dependent variable (GDP in billions of $),

b_0 – a constant,

b_1, b_2, b_3, b_4, b_5, and b_6 – regression coefficients with independent variables of institutional quality,

x_{1i}, x_{2i}, x_{3i}, x_{4i}, x_{5i}, x_{6i} – independent variables of institutional quality (Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption),

ε – a model error (how much variation there is in our estimate of y).

Incorporating elements from our domain of observation, the model will take the following form:

$$BDP_i = b_0 + b_1VA_i + b_2PSAVT_i + b_3GE_i + b_4RQi + b_5RL_i + b_6CC_i + \varepsilon.$$

Based on the obtained results, it was concluded which of the independent variable indicators had the greatest influence on economic growth in B&H

in the observed period. The SPSS software was used for data processing.

4. Results and discussion

The results of descriptive statistics for the selected indicators of dependent and independent variables are presented in Table 2. It can be seen that a period of 21 years (2002-2022) was observed with no missing values for the indicators. Data from Table 2 show that the mean values (column Mean in Table 2) of all indicators of economic institutions during the observed period had an average negative value. The Government Effectiveness indicator recorded the lowest mean value of -0.7262, with a minimum value of -1.08 in 2020 and a maximum value of -0.43 in 2013. The Voice and Accountability indicator had the highest average value of -0.0762, with a minimum value of -0.33 in 2022 and a maximum value of 0.21 in 2003.

Table 2 Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Voice and Accountability	21	-.33	.21	-.0762	.17719	.314	.501	-.939	.972
Political Stability and Absence of Violence or Terrorism	21	-.82	.02	-.4324	.20012	.582	.501	1.053	.972
Government Effectiveness	21	-1.08	-.43	-.7262	.21158	-.435	.501	-.757	.972
Regulatory Quality	21	-.61	-.04	-.2133	.17238	-1.332	.501	.687	.972
Rule of Law	21	-.66	-.13	-.3443	.15214	-.553	.501	-.526	.972
Control of Corruption	21	-.68	-.23	-.4219	.15022	-.651	.501	-1.063	.972
GDP (billion US$)	21	6.73	24.53	16.8095	4.61083	-.663	.501	.166	.972
GDP per capita (000 US$)	21	1.60	7.59	4.6510	1.57985	-.220	.501	-.171	.972
GNI (billion US$)	21	7.16	24.25	17.0276	4.39191	-.741	.501	.280	.972
GNI per capita (000 US$)	21	1.57	7.65	4.6443	1.57688	-.352	.501	-.104	.972
Unemployment (% of total labor force)	21	12.66	31.11	24.3795	5.65886	-.911	.501	-.569	.972
Valid N (list wise)	21								

Source: Authors' calculation

When it comes to economic growth indicators (i.e. the dependent variable), it can be noted that the following mean values were recorded: GDP 16.8095 billion US$, GDP/pc 4.6510 thousand US$, GNI 17.0276 billion US$, GNI/pc 4.6443 thousand US$, and that the mean value of unemployment was 24.3795%. Regarding Skewness, it can be observed

that only Voice and Accountability, and Political Stability and Absence of Violence or Terrorism have a positively asymmetric distribution, while all other indicators have a negatively asymmetric distribution. All indicators have a platykurtic distribution, because their value in the Kurtosis column is less than 3.

Table 3 Correlations

		VA (1)	PSAVT (2)	GE (3)	RQ (4)	RL (5)	CC (6)	GDP (7)	GDP_pc (8)	GNI (9)	GNI_pc (10)	UNE (11)
1) Voice and Account-ability	Pearson Correlation	1	.060	.198	-.572**	-.635**	.801**	-.773**	-.838**	-.748**	-.837**	.818**
	Sig. (2-tailed)		.797	.391	.007	.002	.000	.000	.000	.000	.000	.000
2) Political Stability and Absence of Violence or Terrorism	Pearson Correlation	.060	1	.059	-.163	-.011	-.024	-.303	-.213	-.313	-.227	.027
	Sig. (2-tailed)	.797		.800	.479	.962	.919	.181	.355	.167	.323	.907
3) Govern-ment Effec-tiveness	Pearson Correlation	.198	.059	1	.449*	.547*	.435*	.010	-.057	.022	-.025	.430
	Sig. (2-tailed)	.391	.800		.041	.010	.049	.966	.805	.924	.915	.051
4) Regula-tory Quality	Pearson Correlation	-.572**	-.163	.449*	1	.868**	-.281	.746**	.703**	.755**	.722**	-.353
	Sig. (2-tailed)	.007	.479	.041		.000	.217	.000	.000	.000	.000	.116
5) Rule of Law	Pearson Correlation	-.635**	-.011	.547*	.868**	1	-.328	.746**	.743**	.738**	.771**	-.369
	Sig. (2-tailed)	.002	.962	.010	.000		.146	.000	.000	.000	.000	.099
6) Control of Corrup-tion	Pearson Correlation	.801**	-.024	.435*	-.281	-.328	1	-.656**	-.741**	-.633**	-.710**	.937**
	Sig. (2-tailed)	.000	.919	.049	.217	.146		.001	.000	.002	.000	.000
7) GDP (bil-lion US$)	Pearson Correlation	-.773**	-.303	.010	.746**	.746**	-.656**	1	.986**	.998**	.976**	-.748**
	Sig. (2-tailed)	.000	.181	.966	.000	.000	.001		.000	.000	.000	.000
8) GDP per capita (000 US$)	Pearson Correlation	-.838**	-.213	-.057	.703**	.743**	-.741**	.986**	1	.977**	.990**	-.816**
	Sig. (2-tailed)	.000	.355	.805	.000	.000	.000	.000		.000	.000	.000
9) GNI (bil-lion US$)	Pearson Correlation	-.748**	-.313	.022	.755**	.738**	-.633**	.998**	.977**	1	.967**	-.732**
	Sig. (2-tailed)	.000	.167	.924	.000	.000	.002	.000	.000		.000	.000
10) GNI per capita (000 US$)	Pearson Correlation	-.837**	-.227	-.025	.722**	.771**	-.710**	.976**	.990**	.967**	1	-.780**
	Sig. (2-tailed)	.000	.323	.915	.000	.000	.000	.000	.000	.000		.000
11) Unem-ployment (% of total labor force)	Pearson Correlation	.818**	.027	.430	-.353	-.369	.937**	-.748**	-.816**	-.732**	-.780**	1
	Sig. (2-tailed)	.000	.907	.051	.116	.099	.000	.000	.000	.000	.000	

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).
Source: Authors' calculation

Table 3 shows the correlation between the indicators, where Pearson's correlation was used. The obtained results indicate a statistically significant correlation between Voice and Accountability, Regulatory Quality, Rule of Law, and Control of Corruption, with almost all indicators used as a

measure of the country's economic growth (only Rule of Law and Control of Corruption do not have a statistically significant correlation with the unemployment rate). This means that, based on the correlation analysis, it was determined that in B&H, achieving higher economic growth requires these institutional quality variables to have higher values. Voice and Accountability and Control of Corruption have a strong negative relationship with all indicators of economic growth (except with the Unemployment indicator, with which they have a strong positive relationship). Regulatory Quality and Rule of Law have a strong positive relationship with economic growth indicators of B&H (except with the Unemployment indicator, with which they have no statistically significant connection). This means that higher values of Voice and Accountability and Control of Corruption are associated with lower economic growth. This could be related to the tendency of certain investors to invest in countries where corruption is less controlled and the voice of the people is weaker, as speculative investments can be more profitable in such environments. On the other hand, any increase in Regulatory Quality and Rule of Law can also contribute to the economic growth of B&H. It is interesting that Political Stability and Absence of Violence or Terrorism and Government Effectiveness do not have a statistically significant relationship with the economic growth indicators of B&H. In terms of the relationship within the group of independent variable indicators (economic institutions), the following statistically significant correlations were found: Voice and Accountability with Regulatory Qual-

ity (a strong negative connection of -0.572), Rule of Law (a strong negative connection of -0.635), and Control of Corruption (a strong positive connection of 0.801); Government Effectiveness with Regulatory Quality (a medium strong positive relationship of 0.449), Rule of Law (a strong positive relationship of 0.547), and Control of Corruption (a medium strong positive relationship of 0.435); and Regulatory Quality with Rule of Law (a strong positive relationship of 0.868). On the indicator side of the dependent variable (economic growth), all indicators have a statistically significant connection. There is a strong positive relationship for all indicators, except with the Unemployment indicator, with which all indicators have a strong negative relationship. Similarly to the research by Acemoglu (2004, 2005), Góes (2016), Acquah et al. (2023), Iqbal and Ali (2024), Efendić (2008), Halebić (2006, 2009), Buterin et al. (2018), Bađun (2005), Milenković and Vujović (2020), Babajić et al. (2024), etc., and contrary to the findings of Sachs (2003), Smolo (2021), and Chomen (2022), our research results show that, when it comes to institutional quality indicators, Control of Corruption is inversely proportional to economic growth indicators, while the Regulatory Quality and Rule of Law indicators are directly related to economic growth indicators. It is possible to state that institutions determine economic growth of Bosnia and Herzegovina; in other words, the higher the levels of control of corruption, regulatory quality and rule of law, the faster the economic growth.

The multiple linear regression model is presented in Table 4.

Table 4 Linear regression model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.944[a]	.892	.845	1.81372

a. Predictors: (Constant). Control of Corruption. Political Stability and Absence of Violence or Terrorism. Regulatory Quality. Government Effectiveness. Voice and Accountability. Rule of Law.
Source: Authors' calculation

Based on the data presented in Table 4, it can be concluded that 89.2% of the change in the dependent variable (the R Square column), i.e. gross domestic product, is explained by selected independent variables. Adjusted R Square is 84.5%. The standard error of the estimate is 1.81372, which is smaller than the standard deviation of the depend-

ent variable, which is 4.6183. Based on the ANOVA procedure results, it is concluded that the coefficient of determination is 0.000, indicating that the statistical significance of the evaluated model and its suitability for further explanation are confirmed (Table 4).

Table 5 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	379.141	6	63.190	19.209	.000[b]
	Residual	46.054	14	3.290		
	Total	425.195	20			

a. Dependent variable: GDP (billion US$)
b. Predictors: (Constant). Control of Corruption. Political Stability and Absence of Violence or Terrorism. Regulatory Quality. Government Effectiveness. Voice and Accountability. Rule of Law.
Source: Authors' calculation

In order to assess the coefficients of the estimated regression model, it is necessary to first check a potential problem of multicollinearity in the data. Looking at the Tolerance column in Table 6, we see that the value of the Rule of Law variable is 0.087, which is below the level of 0.10. Alternatively, if we examine the VIF column, its value is 11.481, which is greater than 10. This indicates that the Rule of Law variable has a multicollinearity problem, which will be addressed by removing this variable from the model and re-creating the regression model.

Table 6 Coefficients for a linear regression model (Dependent variable: GDP (billion US$))

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	13.438	2.164		6.210	.000		
	Voice and Accountability	7.711	6.236	.296	1.237	.237	.135	7.422
	Political Stability and Absence of Violence or Terrorism	-5.906	2.157	-.256	-2.739	.016	.883	1.132
	Government Effectiveness	-9.987	4.467	-.458	-2.236	.042	.184	5.430
	Regulatory Quality	5.932	4.996	.222	1.187	.255	.222	4.509
	Rule of Law	26.493	9.032	.874	2.933	.011	.087	11.481
	Control of Corruption	-10.759	5.208	-.351	-2.066	.058	.269	3.721

Source: Authors' calculation

The new model, with the Rule of Law variable omitted, is presented in Table 7. From the R Square column, it can be seen that 82.5% of the change in the GDP (a dependent variable) is explained by the changes in the selected independent variables. Adjusted R Square is 76.7%. The standard error of the estimate in the specified model is 2.22644, which is smaller than the standard deviation of the dependent variable, i.e. GDP in billions of US$, which is 4.6183.

Table 7 New linear regression model summary (without the Rule of Law variable)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.908[a]	.825	.767	2.22644

a. Predictors: (Constant). Control of Corruption. Political Stability and Absence of Violence or Terrorism. Regulatory Quality. Government Effectiveness. Voice and Accountability.
Source: Authors' calculation

The repeated ANOVA procedure shows that the new coefficient of determination is 0.000, which indicates that the statistical significance of the evaluated model and its suitability for further analysis are confirmed (Table 8). The research confirmed the statistical significance of the evaluated regression model of 14.155 (p = 0.0000), with the coefficient of determination R^2 = 0.825 and Adjusted R^2 = 76.7%.

Table 8 ANOVA (without the Rule of Law variable)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	350.839	5	70.168	14.155	.000ᵃ
	Residual	74.356	15	4.957		
	Total	425.195	20			

a. Predictors: (Constant). Control of Corruption. Political Stability and Absence of Violence or Terrorism. Regulatory Quality. Government Effectiveness. Voice and Accountability.
Source: Authors' calculation

Table 9 lists the coefficients of the newly created regression model. Based on the values in the Tolerance and VIF columns, it can be seen that the multicollinearity problem is no longer present (the values in the Tolerance and the VIF column are less than 1 and less than 10, respectively). The estimated constant term is statistically significant. In addition, a statistically significant influence of the Regulatory Quality variable (B = 14.044, p = 0.015) on GDP in B&H was determined. On the other hand, no statistically significant influence of other independent variables on GDP was confirmed (Sig. values are greater than 0.05). For this reason, the obtained data do not provide sufficient evidence to conclude that a decrease in the values of institutional indicators would lead to an increase in the country's economic growth, as measured by an increase in GDP (except for the Regulatory Quality indicator, whose decrease would have a statistically significant influence on a decrease in GDP). All estimated coefficients in the model are negative, except for the Regulatory Quality variable and the constant term.

Table 9 New coefficients for a new linear regression model (Dependent variable: GDP (billion US$))

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	12.022	2.590		4.642	.000		
	Voice and Accountability	-3.620	6.009	-.139	-.602	.556	.219	4.574
	Political Stability and Absence of Violence or Terrorism	-5.020	2.621	-.218	-1.915	.075	.901	1.110
	Government Effectiveness	-.280	3.682	-.013	-.076	.940	.408	2.449
	Regulatory Quality	14.044	5.108	.525	2.750	.015	.320	3.127
	Control of Corruption	-12.168	6.366	-.396	-1.911	.075	.271	3.690

Source: Authors' calculation

Based on the obtained results, it is possible to write down the following rated model:

GDP = 12.022 - 3.620 * VA - 5.020 * PSAVT - 0.280 * GE + 14.044 * RQ - 12.168 * CC (Equation 1)

By including some estimated future values of independent variables in the model, it is possible to predict GDP for a future period. This can serve as a useful basis for decision-makers to identify which aspects of the institutions could be improved and where progress could be made, ultimately leading to better economic results and greater economic growth in the country.

5. Conclusions and research opportunities

The quality of institutional performance is monitored through the following indicators: corruption control, government efficiency, political stability and the absence of violence, the quality of regulation, and the rule of law. These indicators enabled clear conclusions to be drawn. Corruption control and government efficiency showed a continuous decline in the period from 2002 to 2022. Political stability and absence of violence remained relatively stable, with only minor fluctuations. Regulatory quality and the rule of law also exhibited a slight downward trend. Economic growth was assessed through indicators such as GDP, GNI, and unemployment rates. Despite the decline in institutional quality, economic growth displayed modest but positive trends.

The results of the data analysis regarding the institutions in B&H showed that they play a very important role in the country's economic growth. A particularly noteworthy finding is the statistically significant correlation between Voice and Accountability, Regulatory Quality, Rule of Law, and Control of Corruption, and nearly all indicators used to measure economic growth in B&H. It is important to note that Voice and Accountability and Control of Corruption have a strong negative correlation with all economic growth indicators (except for the unemployment indicator, with which they have a strong positive correlation). In contrast, Regulatory Quality and Rule of Law have a strong positive correlation with all economic growth indicators (except for the Unemployment indicator, with which they have no statistically significant correlation). According to the created regression model, the greatest change and improvement in economic growth could be brought about by an increase in the Regulatory Quality indicator. For other indicators, regression analysis showed no statistically significant influence on economic growth. Based on the research conducted in Bosnia and Herzegovina, it is possible to conclude that among institutional quality indicators, Control of Corruption is inversely proportional to economic growth indicators, while Regulatory Quality and Rule of Law are directly related to economic growth indicators. It can be stated that institutions determine economic growth of Bosnia and Herzegovina; more specifically, the higher the control of corruption, the quality of regulation, and the rule of law, the faster the economic growth. Our research confirmed that there is a correlation between the quality of institutions and economic growth in B&H. In addition, it has been proven that the quality of economic institutions determines economic growth in B&H. It can be concluded that strong and effective economic institutions provide a solid foundation for increasing economic growth in B&H.

In the context of accelerating economic growth in economically, politically, socially, and religiously complex, small, and open countries, like Bosnia and Herzegovina, one of the key challenges for the future is certainly to develop adequate, efficient, transparent and corruption-free institutions. The research results emphasized that Voice and Accountability and Control of Corruption have a strong negative correlation and that with their more efficient and better control, greater economic growth could be achieved. On the other hand, strengthening Regulatory Quality and Rule of Law, i.e. with an increase in the value of the aforementioned indices, would also lead to increased economic growth in B&H. Adequate and efficient institutions are those that can contribute to economic growth in the country. Given the various macroeconomic problems Bosnia and Herzegovina faces, institutional strengthening in this context should be treated as an imperative. The main limitation of the study and applied methodology lies in a relatively short period of time. Future research could benefit from extending the period under observation, which will provide researchers with a better understanding of the interrelationship between economic growth and institutional quality in B&H. Furthermore, future research should focus on a detailed analysis of the influence of economic institutions on the country's economic growth but within a regional context (including more countries in the analysis) in order to present more credible conclusions. Based on the results obtained in this way, more accurate conclusions could be drawn about the quality of institutions in B&H compared to other countries at the same or similar levels of economic development. Additionally, researchers are encouraged to include more economic growth and institutional quality indicators in their future analyses referring to B&H to make their results even more reliable and verifiable. Moreover, it would be good to include some other variables that could influence economic growth (e.g. human capital, investments, demographic variables, etc.). Therefore, one of the recommendations for future research is to examine the impact of institutional variables on economic growth in a model containing more variables that influence growth (as mentioned above).

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