Varazdin Development and Entrepreneurship Agency and **University North**
in cooperation with
Azerbaijan State University of Economics (UNEC)
Faculty of Management University of Warsaw
Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat
Polytechnic of Medimurje in Cakovec

Economic and Social Development

55th International Scientific Conference on Economic and Social Development Development

Book of Proceedings Vol. 1/4

Editors:
Altay Ismayilov, Khatai Aliyev, Manuel Benazic

ISSN 1849-7535

Baku, 18-19 June 2020

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55th International Scientific Conference on Economic and Social Development was dedicated to Azerbaijan State University of Economics 90th anniversary

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Title ■ Economic and Social Development (Book of Proceedings Vol. 1/4), 55th International Scientific Conference on Economic and Social Development Development

Editors ■ Altay Ismayilov, Khatai Aliyev, Manuel Benazic

Publishing Editor ■ Spomenko Kesina, Mario Vrazic, Domagoj Cingula

Publisher ■ **Design** ■ **Print** ■ Varazdin Development and Entrepreneurship Agency, Varazdin, Croatia / University North, Koprivnica, Croatia / Azerbaijan State University of Economics, Baku, Azerbaijan / Faculty of Management University of Warsaw, Warsaw, Poland / Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat, Morocco / Polytechnic of Medimurje in Cakovec, Cakovec, Croatia

Printing ■ Online Edition

ISSN 1849-7535
The Book is open access and double-blind peer reviewed.
Our past Books are indexed and abstracted by ProQuest, EconBIZ, CPCI (Web of Science) and EconLit databases and available for download in a PDF format from the Economic and Social Development Conference website: http://www.esd-conference.com

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ECONOMIC GROWTH AND PUBLIC GOVERNANCE: FORESIGHT SCENARIOS

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ABSTRACT

The stable social and economic development of the national economy could be achieved by developing the mechanism to solve the contradictions in the triangle: society-government-economics. In this case, the most crucial goal was synchronising and harmonisation of economics and political reforms on the target and goals. In the paper, the authors highlighted that reforming was closely connected to the foresight of political institutions impact on economic development, which emphasised the features and efficiency of the national economy. The paper goal was to the foresight of economic growth, considering the tendency on political institutions efficiency. The generalisation of the approaches to estimate of the political institutions' role, confirmed the significant impact on the social development. Thus, political institutions structured the institutional environment and developed the stimulus on offers of production's factors, specialisation and realisation of innovations. The political competitiveness had an impact on the different parts of the neoclassical model of economic growth: the accumulation of labour and capital, the accumulation of human capital, and productivity. However, the scientists had not investigated the features of political institutions' impact on the quality and quantity parameters of economic growth mentioned above. The study used the developed autoregressive integrated moving average model (ARIMA) for the foresight of economic growth of the selected countries considering the tendency on political institutions efficiency. The null hypothesis of the investigation was the checking of a unit root was present in a time series sample using the augmented Dickey-Fuller test. The core criteria of political institutions' efficiency were indicators developed by the World Bank – «The Worldwide Government Indicators». The time of analysis was 2000-2019 with a forecast horizon of 10 years. The findings confirmed the dependency of economic growth from the level of corruption and political stability at the most significant level. It means that declining corruption leads to direct and indirect positive effects: increasing the efficiency of political institutions.

Keywords: *ARIMA, Unit root, Foresight, Government indicators*

1. INTRODUCTION

Providing stable social and economic development of the national economy requires the development of effective mechanisms to overcome the contradictions in the triangle: society-government-economy (Bilan et al., 2019; Ibragimov et al., 2019). In this case, the most crucial goal is to synchronize and harmonize economic and political reforms (Sadigov, 2018).

Thus, the first task of the social and economic system of relations that exist in the country is providing economic growth. The reforming of the national economy is closely related to the estimation of the dimensions which influenced economic growth. Besides, these dimensions identify the features and efficiency of the national economy (Sadigov, 2004). The short-term analysis of the economy could be characterized by the continuing fluctuating of the production volumes, unemployment rate, price, increasing of the real production volume (Shkolnyk et al., 2018; Rekunenko et al., 2019; Jafarzadeh, Shuquan, 2019; Pavlyk, 2020). In the long-term perspectives, economic growth is a positive dynamic of the aggregate supply or potential output of goods and services, the analysis of factors and patterns of which is one of the central tasks of economic science.

2. LITERATURE REVIEW

The complexity and multidirectional of economic growth as a term justified the ambiguities at the stage of determining the nature and content categories (Ibragimov et al., 2019). Thus, the American economists – representatives of the classical school, P. Samuelson and W. Nordhaus, economic growth defined as the longterm tendency of increasing the real output of goods and services in the economy. The findings of the analysis of the approach to defining "economic growth dimensions" allowed identifying the differences in the interpretation of its category. The scientists allocated the dimensions as follows as: the main factors of production that ensure GDP growth; resources involved in the production process; GDP growth determinants; sources and processes that determine economic growth, etc. Relevant scientific directions on identifying the parameters of the macroeconomic stability and its impact on economic growth formed the separate scientific school. J.B. Sei, unlike other classical, allocated three factors of production: labour, capital and land ("The Three Factors Theory"). J. Schumpeter (2000) introduced the concept of "entrepreneurship" into economic science as the fourth factor of production. J. M. Keynes (1971) considered the volume of investments in the national economy as the main factor influencing the growth of national income. In the methodology, Keynes highlighted non-economic factors, in particular the state (political system), which should stimulate consumer demand for the means of production, investment and psychology of people (Özgür, Memis, 2017). At the same time, Kondratiev (who developed the concept of long waves) identified the necessity to analyse of the impact on the economic growth of legal, social, political factors, as well as the role of the government in economic growth (Özgür, Memis, 2017). Further, in the second half of the twentieth century, scientists justified the institutional determinants of growth: people's interests, their behaviour, rules, norms, socio-economic relationships. K. Marx, identifying two fundamental factors of economic growth: the personal and the real formed the basis for their classification of factors and identified the relationship with other elements of the economic system (Peterson, Jolibert, 1995). S. Kuznets (1966) did the comprehensive analysis of the economic growth and factors which boosted the fundamental understanding of social development and its economic and social nature. He made a powerful contribution to the comparative analysis of economic growth. In the modern economic theory, the role of the human capital was underlined in the endogenous growth models and modified models by R. Solow (1956). The model provoked the considering of the quality variables in the modelling of economic growth, which provoked the modernisation of long-term analysis of the economic growth [50]. Solow model used as the first stage of each scientific, economic investigation. Solow model analysed four variables: output Y, capital K, labour L and the level of "knowledge" E accumulated in society. Output Y could change over time only when the factors of production K, L, E change. From the standpoint of dynamics, the Solow model is considered as a closed whole, in which the manufactured universal product is fully consumable. The dynamic model considers five macroeconomic (endogenous) variables: Y is the gross domestic product (GDP); I – gross investment; C – consumption fund; K – fixed assets; L is the number of the employed population.

The first three variables (Y, I, C) are performance indicators (their values accumulate over the year), the variables K, L are instantaneous variables (their values could be changed at any time). The results of the analysis confirmed that traditional dimensions did not allow to confirm the hypothesis on the significant role of the capital in the economy. Thus, the findings in the paper (Dehmej, Gambacorta, 2019), confirmed that from 1929 to 1982 years, only 20% of the American national revenue growth was provoked by the accumulation of real capital. In 1996 OECD published the report on knowledge economic (De Beaufort Wijnholds, Kapteyn, 2001; Sutherland, Hoeller, 2014). The scientists did not accept its theory during the few years. However, in 2000 the European Commission declared the Lisbon program which changed the scientists' views on the knowledge economy. The knowledge economy consists of:

1) Socio-political aspects of the social life of countries.
2) Civilizational and economic evolution and the emergence of a new paradigm in economics that is critical to the economic development of knowledge and innovation, which are much more important than the "classical" factors of production.

It is necessary to underline, that institutional changes had an impact on the technological progress and management, could fundamentally transform the economic system, determine the structure of economic development and macroeconomic growth (Saher et al., 2018; Meresa, 2019). At the same time, the political institutions allow structuring and declining of the transaction costs, optimizing property relations, and, conversely, could negatively disorganize the socio-economic structure of society, while reducing the effectiveness of innovation, investment and other development processes. The current investigations focused on the assessment of the good governance, analysis of the impact on the country's competitiveness and macroeconomic dynamic, assessment of the achieving stable balance in separate economic sectors, analysis of the dependence of the good governance from the financial and economic parameters (traditionally from GDP, inflation, unemployment, money supply, budget deficits, the stability of the national currency, balance of payments and trade, government debt, etc.) (Sadigov, 1999; Letunovska et al., 2017; Makarenko, Sirkovska, 2017; Nagy, Kiss, 2018; Kremen et al., 2018), environmental (Bhandari, 2017; Cebula et al., 2018; Hens et al., 2019; Kuzior et al., 2019; Bilan et al., 2019), social (Vasylieva et al., 2017) and marketing dimensions (Saher, 2015; Kwilinski et al., 2019; Bozhkova et al., 2018) (Figure 1).

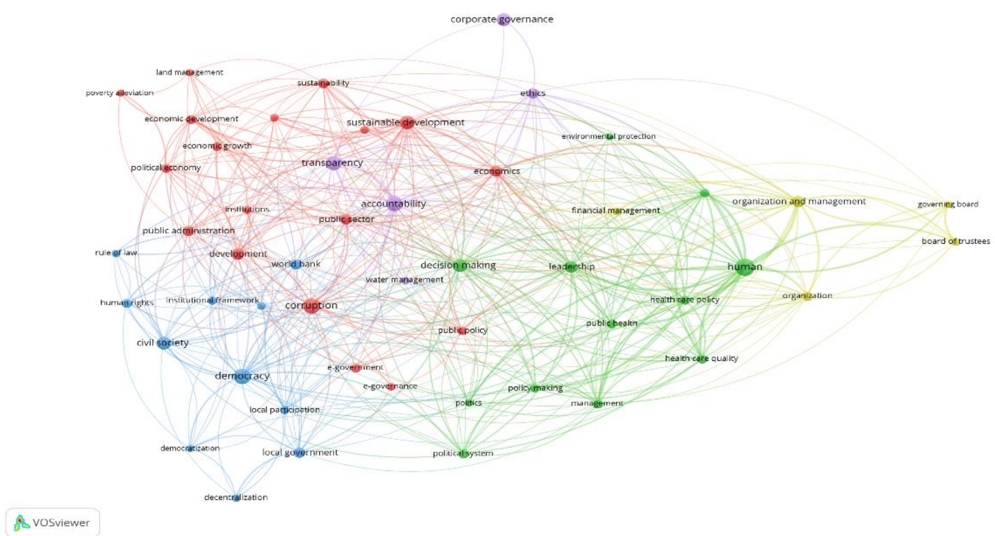
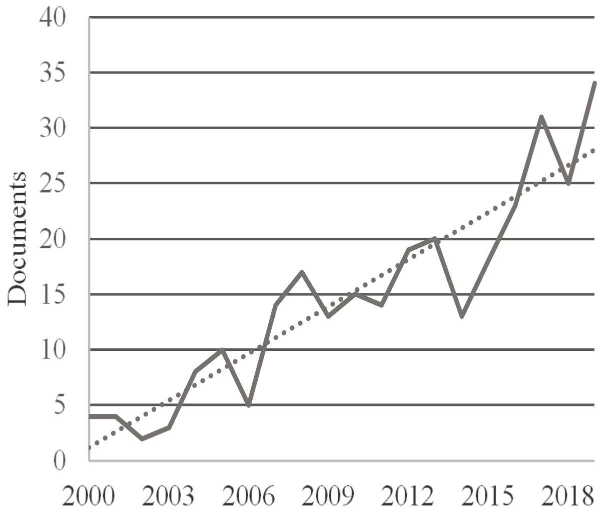


Figure 1: Content analysis of literature on good governance and visualization using VOSviewer
(Source: developed by the authors based on the Scopus, 2000-2020)

The findings confirmed that in the last ten years, the number of publications on analysis of the relationships between economic growth and good governance in the scientific databases – 292 documents. At this time, the annual growth of the publications on the selected theme – 12% (Figure 2a). The results of the analysis showed that scientists from the United States, United Kingdom, China, Spain, Germany, Netherlands, Italy, made a significant impact in the selected directions (Figure 2b).



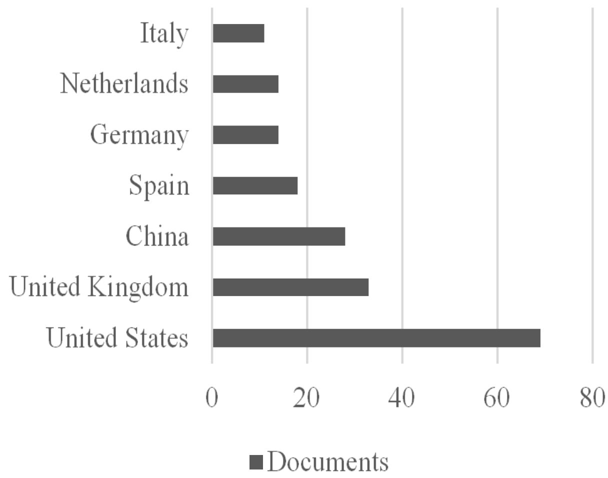


Figure 2: The dynamic (a) and countries' affiliation (b) of the papers on the relationships between economic growth and good governance, 2000-2019 years.
(Source: developed by the authors based on the Scopus, 2000-2020)

Table 1 showed the descriptive statistics of good governance efficiency on the indicators which developed by the experts from the World Bank (WGI, 2020) with it correlation features for countries: USA, UK, China, Spain, Germany, Netherlands, Italy: voice and accountability (vae), political stability and absence of violence (pve), control of corruption (cce), government effectiveness (gee), the rule of law (rle), regulatory quality (rqe). All indicators for the analysed countries had a positive value, excluding cce (Minimum=-.0296416) during 2000-2018 years. Besides, all institutional variables had a positive correlation with the fluctuation of the coefficient from 0.6268 to 0.9791 for different indicators. The findings proved the significant relationship which allowed concluding that the selected countries focused on increasing the efficiency of the good governance and macroeconomic stability.

	vae	**pve**	**gee**	**rqe**	**rle**	**cce**
Mean	1.320909	.8442897	1.345696	1.418939	1.335567	1.396952
SD	.2256454	.3390176	.6106336	.4367875	.6021135	.8089634
Minimum	.9118239	.2703004	.1976259	.6418828	.2467615	-.0296416
Maximum	1.696608	1.760102	2.09252	2.098008	1.980403	2.206632
Observations	60	60	60	60	60	60
			Correlations			
vae	1.0000					
pve	0.6309	1.0000				
gee	0.9292	0.7520	1.0000			
rge	0.9372	0.6268	0.9366	1.0000		
rle	0.9252	0.6967	0.9700	0.9345	1.0000	
cce	0.9336	0.6938	0.9728	0.9440	0.9791	1.0000

Table 1: Descriptive statistics, 2000–2018
(Source: developed by the authors)

However, the correlation matrix did not allow to confirm the role in the transformation relationships int the economic growth. In this case, the econometric models allow analysing it (Bojarko et al., 2012; Lyulyov, Pimonenko, 2017; Zergawu et al., 2018; Bilan et al., 2019; Khan, Hanif, 2020; Céspedes-González et al., 2020; Alexiou, 2020). Thus, in the paper Henisz (2000), which the most cited papers on the analysed theme in the scientific database Scopus (777) and 1894 citations in Google Scholar, the author used OLS, GLS, and GMM estimation techniques for analysis of political institutions impact on economic growth. J. Wright (2008) analysed authoritarian institutions on economic growth and investment using the econometric model (1) and OLS estimation technique. J. Wright (2008) highlighted the different impact of political regimes on economic growth.

$$Investment = \beta_0 + \ \beta_1 Leg. + \beta_2 RegimeType * Leg. + \beta_3 RegimeType * NoLeg. \qquad (1)$$

In the empirical study Kim et al. (2018), the authors confirmed the nonlinear relations between the quantity of the government, governance efficiency and economic growth. The scientists identified the government-size threshold, which influenced the country's productivity and output (increasing threshold lead to declining productivity and output). Thus, the improving of the governance in the country was the catalyst for the country's benefits from expanding government. The findings of the model (2) were similar with Fouquau et al. (2008) and confirmed the synergy effect from the impact of the government efficiency and increase of the government-size on the economic growth.

$$\Delta y_{it} = a_i + \beta_0 govsize_{ito} + \beta_1 govsize_{ito} g(q_{it0};\ \gamma, c) + \delta_0 governance_{ito} + \delta_1 governance_{ito} g(q_{it0};\ \gamma, c) + \varphi_0 y_{it0} + \varphi_1 y_{ito} g(q_{it0};\ \gamma, c) + \varepsilon_{it} \qquad (2)$$

Where: y – economic growth or productivity growth, govsize - government size, governance - the level of governance, i – country indicator, t – the period index, α – country fixed effect, ε – error term.

Thus, the findings allowed confirming that context of the institutional factors of economic growth means the national wealth and ca[ital relate not only from the available resources but also from the rules and norms which regulate the using of the resources.

3. METHODOLOGY AND RESEARCH METHODS

The core hypotheses of the investigation were:

- H0: There is no statistically significant difference in the level of economic growth for countries that implement effective governance policies (values of vae, pve, cce, gee, rle, rqe are higher than zero) and countries have less than zero governance effectiveness;
- H1: There is a statistically significant difference in the level of economic growth for countries that implement effective governance policies (values of vae, pve, cce, gee, rle, rqe are below zero) and countries have less than zero governance effectiveness. The authors used, the similar tests as in the paper Shymon et al. (2020), the parametric (Two-sample t-test) and nonparametric test (Wilcoxon Rank-sum test) (Butt, 2006) with the purpose to check the abovementioned hypothesis (check for normal distribution, equality of dispersions of the studied trait).
- H2: the efficiency of the country's governance positive influences on the economic growth in the longterm. The authors checked the H2 using the instruments of the economic growth foresight considering the governance efficiency tendency based on the autoregressive integrated moving average model (ARIMA) ARIMA model:

$$y_t = a + \beta_1 y_{t-1} + \cdots + \beta_p y_{t-p} + \mu_t \qquad (3)$$

Where y – economic growth, t – the time index, β_1 ... β_p – parameters, μ – white noise.
At the first stage model (3) checked the null hypothesis that a unit root is present in a time series sample using augmented Dickey-Fuller test (ADF) (Im et al., 2003; Levin et al., 2002).

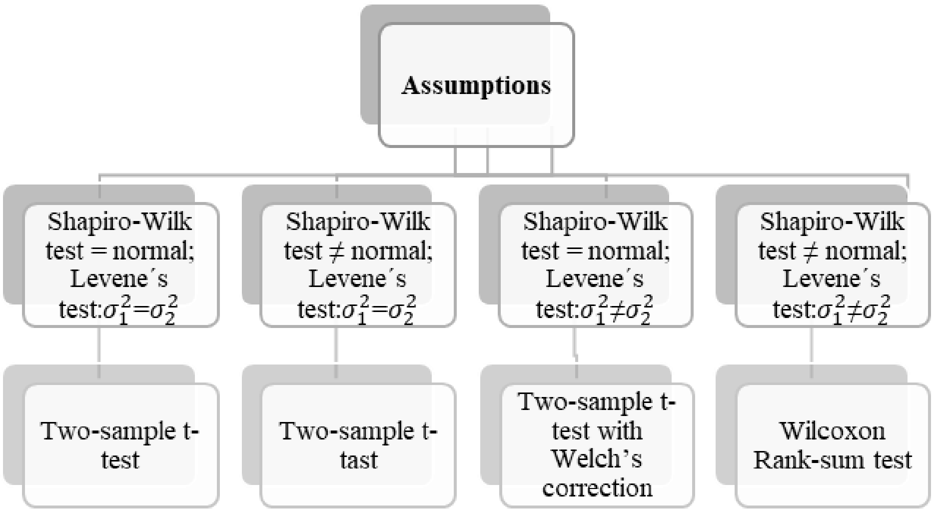


Figure 3: The structural scheme of the investigation
(Source: developed by Shymon et al. (2020))

4. RESULTS

Table 2 showed the findings of Two-sample t-test for 40 European countries for 1996-2018 years. The core dependence variable was – level of economic development per capita, dependence variables which divided countries by two groups: 1) absolute level of governance performance indicators higher than zero; 2) absolute level of governance performance indicators below zero.

Table following on the next page

Group	Group	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
vae	0	2762.481	259.4981	2043.29	2243.583	3281.38
	1	22166.05	1391.615	15116.81	19410.03	24922.07
	combined	15482.6	1145.713	15371.35	13221.76	17743.44
	diff	-19403.57	1931.529		-23215.21	-15591.93
	Ha: diff < 0		Ha: diff != 0		Ha: diff > 0	
	Pr(T < t) = 0.0000		Pr(|T| > |t|) = 0.0000		Pr(T > t) = 1.0000	
pve	0	3054.822	639.0962	4825.071	1774.558	4335.085
	1	21241.81	1368.588	15178.38	18532.56	23951.07
	combined	15482.6	1145.713	15371.35	13221.76	17743.44
	diff	-18186.99	2059.621		-22251.41	-14122.57
	Ha: diff < 0		Ha: diff != 0		Ha: diff > 0	
	Pr(T < t) = 0.0000		Pr(|T| > |t|) = 0.0000		Pr(T > t) = 1.0000	
gee	0	2647.136	241.0238	1987.533	2166.05	3128.221
	1	23275.56	1390.133	14711.78	20520.92	26030.2
	combined	15482.6	1145.713	15371.35	13221.76	17743.44
	diff	-20628.42	1795.845		-24172.31	-17084.54
	Ha: diff < 0		Ha: diff != 0		Ha: diff > 0	
	Pr(T < t) = 0.0000		Pr(|T| > |t|) = 0.0000		Pr(T > t) = 1.0000	
rqe	0	2646.733	244.6481	2002.531	2158.277	3135.189
	1	23093.24	1389.786	14773.63	20339.56	25846.93
	combined	15482.6	1145.713	15371.35	13221.76	17743.44
	diff	-20446.51	1816.704		-24031.56	-16861.46
	Ha: diff < 0		Ha: diff != 0		Ha: diff > 0	
	Pr(T < t) = 0.0000		Pr(|T| > |t|) = 0.0000		Pr(T > t) = 1.0000	
rle	0	2762.481	259.4981	2043.29	2243.583	3281.38
	1	22166.05	1391.615	15116.81	19410.03	24922.07
	combined	15482.6	1145.713	15371.35	13221.76	17743.44
	diff	-19403.57	1931.529		-23215.21	-15591.93
	Ha: diff < 0		Ha: diff != 0		Ha: diff > 0	
	Pr(T < t) = 0.0000		Pr(|T| > |t|) = 0.0000		Pr(T > t) = 1.0000	
cce	0	3131.132	517.0386	4356.644	2099.931	4162.332
	1	23528.05	1400.15	14618	20752.71	26303.39
	combined	15482.6	1145.713	15371.35	13221.76	17743.44
	diff	-20396.92	1785.822		-23921.03	-16872.81
	Ha: diff < 0		Ha: diff != 0		Ha: diff > 0	
	Pr(T < t) = 0.0000		Pr(|T| > |t|) = 0.0000		Pr(T > t) = 1.0000	

Table 2: Results of Two-sample t-test
(Source: developed by the authors)

The findings of Two-sample t-test in Table 2 confirmed the statistically significant difference in the level of countries' economic growth depending on the governance effectiveness. It allowed confirming the alternative hypothesis H1. The authors selected two countries (Poland and Ukraine) for the checking H2. Poland and Ukraine have the common border and different level of governance effectiveness by the datat of the World Bank. The descriptive statistics of economic countries and governance efficiency showed in Table 3.

Poland	gdp	vae	pve	gee	rqe	rle	cce
Mean	4.083973	.977593	.7050882	.6016045	.8666326	.6375191	.5336866
SD	1.505159	.1123883	.2735542	.1270884	.1120842	.1574141	.1887703
Minimum	1.391892	.7238377	.1529493	.3737843	.7166154	.404506	.1388244
Maximum	7.034828	1.105113	1.072063	.8273836	1.054908	.8575056	.8196566
				Ukraine			
Mean	1.393952	-.200909	-.6342768	-.6307194	-.5183161	-.8018321	-.9662357
SD	6.942069	.2435141	.7826493	.1339378	.1202495	.0966547	.150309
Minimum	-14.7585	-.6710514	-2.020833	-.8750501	-.7573931	-1.108805	-1.269784
Maximum	12.10876	.0906661	.1731321	-.4134186	-.2200751	-.6813426	-.7218982

Table 3: Descriptive statistics for Ukraine and Poland, 1996–2018
(Source: developed by the authors)

The findings of foresight in economic growth for the two countries showed in Figure 4.

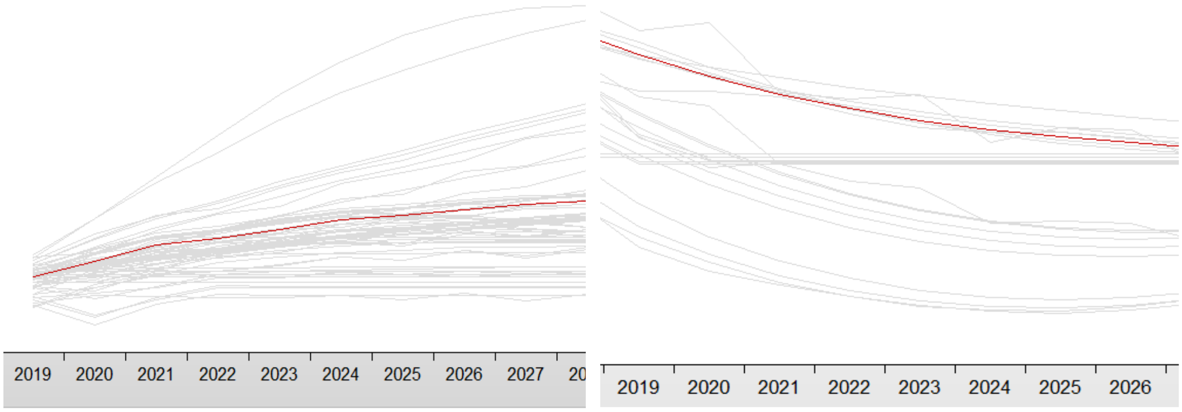


Figure 4: Forecast Comparison Graph
(Source: developed by the authors)

The graphs analysis showed that each from 100 models emphasised the cyclical structures due to the inclusion of exogenous regressors as significant indicators of governance effectiveness. It allowed confirming the hypothesis H2: high level of government efficiency lead to increasing of the economic growth in the longterm.

5. CONCLUSION

Thus, the providing of the reforms on improving the governance efficiency was the core factors which positively influenced economic growth. At the same time, the transparency of the theoretical and methodological approaches to develop the multigoal programs on the country's economic growth. In this case, the key indicators were: government rules and features of the institutional factors. Besides, the multigoal programs on the country's economic growth should be based on the findings using the foresight.

ACKNOWLEDGEMENT: *This research was funded by the grant from the Ministry of Education and Science of Ukraine (Nos. g/r 0118U003569 and 0117U003932).*

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55th International Scientific Conference on Economic and Social Development
was dedicated to Azerbaijan State University of Economics 90th anniversary