WHICH DIMENSIONS OF INSTITUTIONAL QUALITY MATTER MORE IN ATTRACTING FDI FLOWS: GREY RELATIONAL ANALYSIS[a]

Marija Petrović-Ranđelović[*], Sonja Jovanović, Snežana Radukić

University of Niš, Faculty of Economics, Niš, Serbia

Abstract

The purpose of this study is to determine the relationship between individual dimensions of institutional quality and inflows of foreign direct investment (hereinafter: FDI) on a sample of European countries in 2020. In order to investigate this relationship, the data used are from the relevant World Bank databases. Taking into account the heterogeneity of the analyzed countries regarding the development level of the dimensions of institutional quality, cluster analysis is applied to define homogeneous groups. After identifying the significance of differences in the development level of the institutional quality dimensions between clusters, the analysis focus is placed on the group of countries that belong to the first cluster. The Gray relational analysis is applied to identify those institutional quality dimensions which development should be improved. The main empirical finding of this study reveals that the relative importance of the individual institutional quality dimensions in determining FDI inflows varies in the observed countries. Also, the analysis shows that a low level of political stability has the greatest negative impact on FDI inflows in countries that belong to the first cluster. Therefore, this study gives policy recommendation regarding the activities that should be taken by the authorities in order to create an enabling institutional environment for FDI in these countries.

Key words: FDI, institutions, European countries, Grey relational analysis

---

[*] Аутор за кореспонденцију: Марија Петровић-Ранђеловић, Трг краља Александра Ујединитеља 11, 18105 Ниш, Србија, marija.petrovic@eknfak.ni.ac.rs

КОЈЕ ДИМЕНЗИЈЕ ИНСТИТУЦИОНАЛНОГ КВАЛИТЕТА СУ ВАЖНИЈЕ У ПРИВЛАЧИВАЊУ СДИ ТОКОВА - *GREY* РЕЛАЦИОНА АНАЛИЗА

Апстракт

Сврха овог рада је да утврди однос између појединачних димензија институ-ционалног квалитета и прилива страних директних инвестиција (у даљем тек-сту: СДИ) на узорку европских земаља у 2020. години. У циљу испитивања ове повезаности, коришћени су подаци из релевантних база података Светске банке. Имајући у виду хетерогеност анализираних земаља у погледу нивоа развијено-сти димензија институционалног квалитета, примењена је кластер анализа како би се дефинисале хомогене групе. Након идентификовања значајности разлике у развијености димензија институционалног квалитета између кластера, у анализи је акценат стављен на групу земаља које припадају првом кластеру. Grey рела-циона анализа примењена је да би се идентификовале оне димензије институ-ционалног квалитета чији развој треба побољшати. Главни емпиријски налаз ове студије открио је да релативни значај индивидуалних димензија квалитета ин-ституција у одређивању прилива СДИ варира у посматраним земљама. Такође, анализа је показала да низак ниво политичке стабилности има највећи негативан утицај на прилив СДИ у земље које припадају првом кластеру. Према томе, ова студија даје препоруке у вези активности које би надлежни државни органи тре-бало предузети како би се створило повољно институционално окружење за СДИ у овим земљама.

Кључне речи: СДИ, институције, европске земље, Grey релациона анализа.

INTRODUCTION

The institutional quality is found in the focus of mainstream eco-nomics in explaining differences in economic development between the countries since the late 1990s (Benassy-Quere, Coupet, & Mayer, 2005) when the researchers achieve a consensus that the weak institutions are the main cause of economic problems the developing economies face (Chang 2011). In particular, the empirical study of Acemoglu, Johnson and Robinson (2005) points out the importance of the institutional factor, the so-called social infrastructure in determining the economic perfor-mance of countries.

Above all, with the beginning of the transition process in the for-mer socialist countries of Central and Eastern Europe towards a market economy in the early 1990s, the role of building an efficient institutional framework in fostering economic growth and accelerating the compre-hensive socio-economic reforms was recognized. At the same time, the role of institutions in determining the FDI inflows in developing econo-mies is becoming an inevitable trend in research efforts to explain the FDI location determinants. As a result, the investigation of institutions-FDI nexus becomes an increasingly relevant area of research.

Since FDI are an important determinant on the economic growth and development of many countries, the literature often stresses that the full development benefits of FDI can be achieved only by assuming the existence of such an institutional framework that not only enables their efficient absorption, but also acts as an incentive to FDI inflows. Moreover, institutional quality is an important determinant of macroeconomic stability and private sector development (Ferreira & Ferreira, 2016: 22).

According to Vittorio and Marani (2006: 17), well-developed institutions are one of the most important determinants in attracting FDI flows through three channels: by improving factor productivity, by reducing the transaction costs, such as corruption-related costs, and by increasing the predictability of the investment environment. Also "the FDI-promoting effect of good institutions might be an important channel of their overall effect on growth and development" (Benassy-Quere et al., 2005: 9).

In this regard, Jude and Levieuge (2014) indicate the existence of a certain threshold level of institutional quality below which the absorption of the positive FDI effects on economic growth is not possible. To gain the benefits of FDI-led economic growth, measures aimed at improving the institutional environment should precede policies to attract FDI in the host country. Similarly, Brahim and Rachdi (2014) found that only in the countries with good institutions FDI has positive impact on economic growth. These authors conclude that the public authority efforts just below a certain threshold level value for certain institutional environment indicators, such as Investment profile, Democratic Accountability and Government stability (0.006, 0.206 and 0.206, respectively) will result in a sharp increase of the elasticity of FDI induced growth. Besides, the study conducted by Trojette (2016) indicates that institutional threshold for channeling the FDI positive growth impact increases as the quality of institutions becomes better.

To the best of the authors' knowledge, only one of the previous studies, the study of Victoria and Martin (2018), examine the relationship between these two variables in the case of European countries. Therefore, the aim of this paper is to examine the dispersion in the institutional quality development in European countries and the sensitivity of inward FDI flows to the level of development of individual institutional quality dimensions in the observed countries.

After these introductory considerations, this paper is organized as follows: section two provides literature review of the most influential empirical studies regarding the relationship between FDI and institutions. Section three presents data sources and methodology used in this research, followed by the discussion of the empirical results. Finally, the last section, alongside with the concluding remarks, provides policy recommendations and the priority directions for future research.

1. LITERATURE REVIEW

The existing empirical literature on the relationship between institutions and FDI flows does not offer a unique attitude on the importance of this factor in determining inward FDI flows. The results of empirical research on the relationship between these two variables differ depending on the starting base in the selection of variables for measuring the impact of the institutional quality on the FDI inflows, as well as the applied methodology for the assessment of institutional quality.

From the aspect of the variables used as proxies for institutional quality to measure the impact of institutional quality on FDI flows, the empirical literature on the institutions-FDI nexus can be divided in three groups of research. The first group consists of those studies that provide the evidence on the impact of individual institutional quality dimensions on FDI inflows. The second group, consisting of a relatively small number of studies, focused on the research of the importance of institutions in a broader sense to determine the FDI inflows, employing a variety of institutional set of indicators (as discussed in Acemoglu, Johnson, & Robinson, 2003; North, 1991). And finally, the third group of studies concentrated towards examining the impact of institutional quality composite index on FDI inflows. Since in our research we use six variables as a proxy for institutional quality, this research paper provides an analysis of relevant studies on the relationship between FDI inflows and certain aspects of institutional quality will be performed.

Although some studies neglect the existence of positive FDI-institution nexus (see Bellos & Subasat, 2012; Nondo, Kahsai, & Hailu, 2016), it has been confirmed in a relatively large number of empirical studies.

By analyzing the relevant empirical literature, it was found that one of the first variables used as a proxy for institutional quality in the investigation of institution-FDI nexus was political stability. Among the earliest studies on this issue, we highlight the study conducted by Levis (1979). He examines the relationship between the political instability and FDI flows in developing countries, and finds that political stability is an important, but not the primary determinant of the FDI flows. Similarly, Root and Ahmed (1979) find that those developing countries that achieve comparatively high growth rates and per capita GDP, and have good infrastructure conditions and a high degree of political stability also achieve a greater FDI inflow in the manufacturing sector. Also, Schneider and Frey (1985) find that the political instability significantly reduces the FDI inflows in a group of 80 less developed countries. Political instability creates uncertainty regarding the realization of future income (Bailey, 2018) and, on that basis reduces the attractiveness of a potential host country for FDI inflows.

The level of corruption as a proxy for national institutional quality is also used as a significant variable in the investigation institution-FDI

nexus. As a cancerous social disease (Park, 2003), the high level of corruption worsens the quality of institutional infrastructure and destimulates the foreign investors' decisions to undertake FDI (Wei, 2000).

The high level of corruption increases operational inefficiency (Habib & Zurawicki, 2002), and deviates the investors' decision to other cheaper investment locations. Host countries with high levels of corruption are desirable destinations for FDI because: a high level of corruption increases the cost of investment, due to less transparency of local bureaucracy (Smarzynska & Wei, 2002), since "foreign investors have to pay extra costs in the form of bribes in order to get licenses or government permits to conduct investment" (Al-Sadig, 2009: 269). These extra costs, according to Li and Ferreira (2011), represent additional transaction costs that encourage foreign investors to avoid any formal relationship with government.

The level of corruption is closely associated with the rule of law, whereas in those economies where contract enforcement quality, property rights protection and legal system quality are weak, the corruption rises. In this case, uncertain and non-transparent business environment is created (Drabek & Payne, 2002), which reduces the expected profitability of investment projects by increasing transaction costs and on that basis, creates a barrier for larger FDI inflow (Kinoshita & Campos, 2004). According to Knack and Keefer (1995), strong legal institutions that protect property rights impel the larger FDI inflows in the host country and provide full absorption on the growth enhancing effects of institutions. In other words, strong property rights protection contributes not only in terms of attracting the larger quantum of FDI inflows, but also regarding efficient resource allocation, as confirmed by the study of Globerman and Shapiro (2003).

Regarding the voice and accountability indicator, in the available empirical literature there is some disagreement as to whether the higher FDI inflow is realized in democratic or in autocratic political systems. Asiedu and Lien (2011) noted that one of the reasons that explain the tendency of multinational corporations to undertake FDI in autocratic countries is the lack of control system and verification of persons responsible for the execution of public functions by the electorates, as is the case in democratic systems. In cases where there is no democratic control of the concept and conduct of economic policy, undertaking the FDI in autocratic countries represents a profitable alternative, since MNCs realize greater benefits in the form of investment incentives or lower labor costs, due to the lack of union that protect workers' rights. Among the first authors who questioned the validity of the assumption that democratic political systems attract smaller volume of inward FDI flows is Jensen (2003). He argues that the FDI inflows are 70 percent higher in democratic political systems than in autocratic countries. These results are in line with the

study of Harms and Urpsrung (2001) who reject the 'political repression boosts FDI' hypothesis, suggesting that the MNCs are attracted more with investment opportunities in those countries where there is a high degree of civil liberties and political freedom.

Government effectiveness has been used in the study of Globerman, Shapiro and Tang (2006) as an indicator of institutional quality. They suggest that good governance encourages the FDI inflow indirectly, by creating favorable business opportunities. The high level of political capacity of host country government in conducting the open door policy signalizes to the potential foreign investors that there exists strong policy commitment for the profitable investment project realization (Coan & Kugler, 2008), while restrictive policy (such as nationalization of the foreign affiliation assets in the host country) closes the door for FDI inflows (UNCTAD, 1998: 91).

Finally, in the modern market systems the state is attributed, inter alia, the regulatory function in all those areas where the market mechanism fails to work efficiently, or where the state has an interest regarding the conditions under which economic activity takes place. The impact of regulatory institutions on the FDI inflows highly depends on the "laws and policies enacted and enforced and on the way firms respond" (Holmes, Miller, Hitt, & Salmador, 2012: 10). However, as noted by Cuervo-Cazurra and Genz (2008) foreign investors matter more for regulatory quality rather than the level of imposed regulations. That is, in a highly regulated country, the risk and uncertainty of doing business is lower than in the poorly designed regulatory settings. This is confirmed in a study of Kaditi (2010).

Starting with an assumption that institutions-FDI nexus differs across countries, Kurul (2017) expresses doubt regarding the findings of numerous studies that showed the existence of a linear relationship between institutions and FDI. He goes a step further in research and finds that below a certain threshold value of 0.40 the institutional quality variable has no role in determining FDI inflows. This directly indicates that the relationship between FDI and institutions is not linear and that the above identified critical value, FDI showed exceptional sensitivity to changes in the quality of institutions.

2. DATA SOURCES AND METHODOLOGY

The empirical research of the relationship between institutions and FDI inflows had been intensified after the 1990s, when a cross-national statistical empirical material on the set of institutional variables was ascertained and the methodology for comparing countries according to the degree of achieved institutional quality developed. This allowed us to obtain the opinion on the institutions-FDI nexus, as well as to more clearly

determine the role of institutional determinants in determining FDI in-flows. Also, this has provided the opportunity to statistically ascertain the influence of institutional quality on FDI inflows and based on the empirical results make recommendations to policy makers regarding the activities for the improvement of institutional quality in order to encourage FDI inflows.

The objective of this paper is to examine the development level of individual dimensions of institutional quality and their relationship with the FDI inflows for 42 European countries in 2020. Therefore, the follow-ing hypotheses have been established.

H1: European countries are very heterogeneous in terms of institu-tional quality; while EU member states achieve the best performances.

H2: The relation between the development level of individual insti-tutional quality dimensions and FDI inflows determine the importance of individual dimensions in achievement targeted levels of institutional quality.

The data from World Development Indicators (for FDI) and Worldwide Governance Indicators (for institutional variables) were em-ployed for the validation of the starting hypotheses. In this study, the de-pendent variable is net FDI inflows as percentage of GDP (FDI) as the proxy measure of the FDI. There are numerous reasons, well established in the existing empirical literature on FDI, in favor of using this relative measure of FDI rather than absolute measure (net FDI inflows) (see Lew-is, 2008). First, the scale effects, that is, the effects of the country size are placed under control by selection of the relative measure (Kurul & Yalta, 2017). Second, as noted by Lewis (2008), in host countries that are not desirable investment destinations, FDI not only plays a small role in the economy, but also the ratio of FDI net inflows to GDP tends to be lower. Thus, using absolute measures may blur the picture regarding the role that FDI plays in the economy of the host country.

The question is how to measure the quality of institutions. This task becomes especially challenging, because at the country level, there is no comprehensive data set that covers all aspects of an institution (Econ-omides & Egger, 2009). There are numerous indicators of the quality of the institutional environment that, depending on the types of institutions, can be classified into different categories. For the purpose of this study, a set of six measurable governance indicators, developed by Kaufmann, Kraay and Mastruzzi (2010) and included in the World Bank's Govern-ance Indicators database, have been used: Voice and Accountability (VA), Political Stability and Absence of Violence/Terrorism (PV), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), Control of Corruption (CC). These six indicators capture various aspects of institutional quality. The first two are related to the political institutions, the second two are related to the economic, while the last two are related to the administrative setting. Although each of these indicators serves to give a full explanation of the various aspects of the same phenomenon,

they are not mutually exclusive, but support each other, because they are situated in the relationships of interconnection and mutual dependence (Globerman & Shapiro, 2002; Mauro, 1995). For example, more efficient governance can potentially contribute to the improvement of the regulatory environment, while the high level of rule of law can reduce corruption. Finally, all together, they can contribute to the increase of the level of economic development. The analysis in this study was based on the value of institution independent variables measured in percentile rank terms, ranging from 0 (lowest) to 100 (highest).

In order to prove the above assumptions, the following methods were applied: cluster analysis, Kruskal-Vallis test, and Grey relational analysis (GRA). Cluster analysis is a method of multivariate analysis used in data classification, in this case in the grouping of countries in homogeneous groups. In order to test whether there are statistically significant differences in the average values of the institutional quality dimensions between homogeneous groups of countries obtained by applying cluster analysis, the non-parametric alternative to the analysis of variance, named Kruskal-Vallis test, has been applied.

GRA is applied for the purpose of comparing the institutional development level of the national economy. The application of this analysis is especially significant in circumstances where there is no sufficiently precise and clear information about the observed category. "GRA is a quantitative analysis to explore the similarity and difference of development trends among elements used to measure the relation among elements" (Huang & Lin 2009: 1132). The essence of this analysis is the relationship between two series. This analysis will serve as the basis for providing recommendations to the policy makers in which direction their activities should be directed in order to improve the individual dimensions of institutional quality.

The basis of this analysis represents the calculation of Grey relational coefficients (GRC). The calculation procedure for these coefficients firstly implies the normalization of the analyzed data, so that they are reduced to the same scale. In this case, there is no normalization because the value of all dimensions are given on the same scale, e.g. ranging from 1 to 100. According to the Grey relational methodology, parameter values in the selected sample are compared with reference series. Elements which are necessary for the calculation of the GRC may be generally represented as follows:

X_0 is a referential series with k entities, while $x_1,...x_N$ are the data series which are compared with referential series.

$$x_0 = [x_0(1), x_0(2), ..., x_0(j), ..., x_0(k)]$$
$$x_1 = [x_1(1), x_1(2), ..., x_1(j), ..., x_1(k)]$$
$$\vdots$$
$$x_j = [x_j(1), x_j(2), ..., x_j(j), ..., x_j(k)]$$
$$\vdots$$
$$x_N = [x_N(1), x_N(2), ..., x_N(j), ..., x_N(k)]$$

In this case, the referential series consists of maximum values of all six dimensions from WGI, thus $k=6$. Each country in the sample represents separate series. According to the number of countries included in the analysis, N=8.

The absolute difference (Δ_{0i}) of the compared series and the referential series should be obtained by using the following formula:

$$\Delta_{0i}(j) = |x_0(j) - x_i(j)| \qquad (1)$$

and the maximum and the minimum difference should be found.

GRC (γ_{0i}) between the series being compared with the referential series for the *j-th* value, i.e. in this case the cluster, is obtained by the following formula:

$$\gamma_{0i}(j) = \frac{\Delta\min + \Delta\max}{\Delta_{0i}(j) + \Delta\max} \qquad (2)$$

where $\Delta\max = \max\max\Delta_{0i}(j)$, $\Delta\min = \min\min\Delta_{0i}(j)$.

Grey relational grade (GRG, Γ_{0i}) for each series x_i can be calculated by summarizing GRC weighted values.

$$\Gamma_{0i} = \sum_{j=1}^{k} w_j \gamma_{0i}(j) \qquad (3)$$

The final value of GRG represents the average value of grades obtained from the equation (3). "The higher value of the GRG means that the corresponding parameter is closer to optimal" (Hasni, Tabatabaei, & Amiri, 2012: 83). Optimal parameter is the defined target value of each dimension in the best performing countries.

3. EMPIRICAL RESULTS AND DISCUSSION

The analysis covered 42 European countries. In order to confirm the first hypothesis, the hierarchical cluster analysis is applied, whereby the method for connecting the European countries in the homogeneous groups, i.e. clusters, was Whithin group linkage. According to this method, the dissimilarity between two clusters is represented by the average of all the possible distances between the cases within a single new cluster determined by combining clusters.

The three homogeneous groups are created with a different number of countries. The largest number of countries found in the second cluster,

covering, among others, 25 EU countries, except Bulgaria and Cyprus which were excluded from the analysis due to the unavailability of data. Bulgaria, together with Albania, Armenia, Montenegro, North Macedonia, Serbia and Turkey, is in the first cluster (Table 1).

Table 1. The Structure of the Cluster by Country

Cluster 1 n=7	Cluster 2 n=30		Cluster 3 n=5
Albania	Austria	Latvia	Belarus
Armenia	Belgium	Lithuania	BiH
Bulgaria	Croatia	Luxembourg	Moldova
Montenegro	Czech Republic	Malta	Russian Federation
North Macedonia	Denmark	Netherlands	Ukraine
Serbia	Estonia	Norway	
Turkey	Finland	Poland	
	France	Portugal	
	Georgia	Romania	
	Germany	Slovak Republic	
	Greece	Slovenia	
	Hungary	Spain	
	Iceland	Sweden	
	Ireland	Switzerland	
	Italy	United Kingdom	

Source: Authors research

The average level of accomplishment (percentile rank) of certain institutional quality dimensions by the clusters is given in Table 2. The average values of dimensions given in the table indicate the performances of clusters. The second cluster has the highest average value of the analyzed dimensions of institutional quality, which indicates that this cluster consists of the countries with the highest level of institutional development. Regarding the level of institutional development, then follow the countries that belong to the first cluster, while in the countries that belong to the third cluster the institutional development is at the lowest level.

Table 2. The Average Values of Indicators by Clusters

Cluster	Descriptive statistics	VA	PS	GE	RQ	RL	CC
1	Mean	45.69	41.37	52.14	62.03	48.56	44.51
	Std. Deviation	10.72	16.74	3.39	6.35	5.85	9.76
2	Mean	84.18	72.30	83.27	84.80	83.58	81.93
	Std. Deviation	13.37	14.57	12.98	1.65	12.93	14.24
3	Mean	32.26	22.92	33.66	40.20	29.42	30.00
	Std. Deviation	17.72	7.68	15.21	9.46	10.96	11.03
Total	Mean	71.58	61.26	72.17	75.69	71.29	69.51
	Std. Deviation	24.35	23.08	21.98	18.47	23.40	24.07

Source: Authors research

There is a large gap in institutional development between the countries that belong to the second cluster and those which are classified into the first and third. The institutional quality in the group of countries in the third cluster is on the average about 50 percent lower compared to the countries in the second cluster. Better performances regarding the institutional development, are to certain extent, realized by the countries from the first cluster, in which the quality of institutions is on the average around 32 percent lower compared to the countries in the second cluster.

In order to test the significance of the observed differences Kruskal-Vallis test has been applied, as the preconditions for the application of the one-way factor analysis have not been fulfilled. Since the realized level of significance (Table 3) is lower than 0.05, the hypothesis that there are differences in the average values of the institutional quality between created groups (clusters) of countries can be confirmed.

Table 3. Test Statistics[a,b]

	VaC	PS	GovE	RQ	RL	CC
Chi-Square	24.204	22.592	23.369	23.602	25.664	24.966
df	2	2	2	2	2	2
Asymp. Sig.	.000	.000	.000	.000	.000	.000

a. Kruskal Wallis Test
b. Grouping Variable: Average Linkage (Within Group)
Source: Authors research

In the next step, the analysis will be focused on the countries that belong to the first cluster. Based on the link between FDI inflows and the institutional quality dimensions, the analysis is aimed at determining their contribution to the achievement of the targeted level of institutional quality. In Table 4 the values of all six institutional quality dimensions, as well as the targeted values of best performing countries in this context are given.

Table 4. The Values of Indicators and Targeted Values

Country	VA	PS	GE	RQ	RL	CC
Albania	51.20	49.50	48.10	60.60	40.90	31.70
Armenia	49.30	25.90	48.60	61.10	51.90	57.70
Bulgaria	56.00	60.80	50.50	69.70	51.40	46.20
Montenegro	48.80	47.20	53.40	64.90	55.30	56.30
North Macedonia	50.20	50.50	57.70	68.80	52.40	38.00
Serbia	40.60	43.90	54.30	57.20	47.60	37.50
Turkey	23.70	11.80	52.40	51.90	40.40	44.20
Target value/Country	100.00	96.70	99.50	99.00	100.00	100.00
	Norway	Iceland	Switzerland	Finland	Finland	Denmark

Source: Authors research based on the World Bank Worldwide Governance Indicators database, December 2021

In the first dimension, VA, maximum percentile-rank in the amount of 100 is recorded in Norway. In Finland and Denmark, the maximum percentile rank (100) of the RL and CC dimension, are recorded, respectively. In the second, third and fourth dimensions, a maximum percentile rank in amount of 96.7, 99.5 and 99.00 is recorded in Iceland, Switzerland and the Finland, respectively.

Calculating the difference between the values of the individual dimensions by countries and target value (equation 1), the results were obtained, as shown in Table 5.

Based on the calculated deviation and by applying the equation 2, the values of GRC were obtained. The maximum value of the coefficient (1) represents the minimum distance from the target value.

Table 5. Deviation from Target Values

Country	VA	PS	GE	RQ	RL	CC
Albania	48.8	47.2	51.4	38.4	59.1	68.3
Armenia	50.7	70.8	50.9	37.9	48.1	42.3
Bulgaria	44.0	35.9	49.0	29.3	48.6	53.8
Montenegro	51.2	49.5	46.1	34.1	44.7	43.7
North Macedonia	49.8	46.2	41.8	30.2	47.6	62.0
Serbia	59.4	52.8	45.2	41.8	52.4	62.5
Turkey	76.3	84.9	47.1	47.1	59.6	55.8

Source: Authors research

Table 6. Grey Relation Coefficients

Country	VA	PS	GE	RQ	RL	CC
Albania	0.96	0.91	0.91	0.89	0.88	0.81
Armenia	0.95	0.78	0.91	0.90	0.97	1.00
Bulgaria	1.00	1.00	0.93	1.00	0.96	0.91
Montenegro	0.94	0.90	0.96	0.94	1.00	0.99
North Macedonia	0.95	0.92	1.00	0.99	0.97	0.85
Serbia	0.89	0.88	0.96	0.86	0.93	0.85
Turkey	0.79	0.71	0.95	0.81	0.88	0.89

Source: Authors research

Table 7. Spearman's Rho Correlation Coefficients and Weights

	VA	PS	GE	RQ	RL	CC
Correlation coefficients	0.217	0.051	0.181	0.188	0.165	0.260
Weights	0.204	0.048	0.170	0.177	0.155	0.245

Source: Authors research

In order to calculate the final GRG it is necessary to weight the calculated value of GRC by appropriate weights to emphasize the importance of individual dimensions in the structure of GRG, and in this particular case, the dimensions of institutional quality. The weights are

calculated based on the values of correlation coefficients between individual institutional quality dimensions and FDI inflows in all European countries (see Table 7).

Table 8. Weighted GRC and GRG

Country	VA	PS	GE	RQ	RL	CC	Grade
Albania	0.196	0.044	0.155	0.158	0.137	0.198	0.888
Armenia	0.194	0.037	0.155	0.159	0.150	0.245	0.940
Bulgaria	0.204	0.048	0.158	0.177	0.150	0.222	0.959
Montenegro	0.193	0.043	0.163	0.167	0.155	0.242	0.963
North Macedonia	0.195	0.044	0.170	0.175	0.151	0.208	0.944
Serbia	0.181	0.042	0.164	0.152	0.145	0.207	0.892
Turkey	0.161	0.034	0.161	0.144	0.136	0.218	0.854

Source: Authors research

Based on the values of Spearman's rho correlation coefficient, shown in Table 7, it can be seen that the highest level of direct agreement with the FDI inflows has the dimension of institutional quality referred to CC (0.260), followed by the VA (0.217) and RQ (0.188), that show the same level of agreement with the FDI inflows. The lowest level of correlation with the FDI inflows refers to PS (0.051), which indicates that there is interdependence between these two variables.

The weights related to GRC are matched to the degree of agreement with the FDI inflows. Thus, the largest share in the structure of GRG has CC (0.245), while PS (0.048) has the lowest share. Weighted values of the GRC, as well as calculated value of GRG, are shown in Table 8.

The ranking of the selected countries has been made according to the weighted values of the GRC and the calculated value of GRG (Table 9). The highest rank (1) is assigned to a highest weighted value GRC, and thus the calculated value of the GRG. The highest rank of each of the analyzed institutional quality dimensions indicates that this dimension in the relevant country, taking into account the relation with FDI, is more developed compared to other countries, i.e. that according to this dimension given country is closest to the countries that are grouped in the third cluster (cluster with the highest level of institutional quality).

Table 9. Country Rank According to GRC and GRG

Country	VA	PS	GE	RQ	RL	CC	Rank
Albania	2	3	7	5	6	7	6
Armenia	4	6	7	4	4	1	4
Bulgaria	1	1	5	1	4	3	2
Montenegro	5	4	3	3	1	2	1
North Macedonia	3	3	1	2	2	5	3
Serbia	6	5	2	6	5	6	5
Turkey	7	7	4	7	7	4	7

Source: Authors research

According to the obtained ranks, Bulgaria is the closest to the second cluster regarding the VA, PS and RQ institutional dimensions; North Macedonia in terms of GE; Montenegro in terms of RL; and Armenia is closest to second cluster regarding the CC institutional dimension.

Taking into account all the dimensions of institutional quality, the closest to the countries of the second cluster is Montenegro (rank 1), followed by Bulgaria (rank 2), and North Macedonia (rank 3). After them, on the rank list of institutional quality the highest position is taken by Armenia and Serbia. Albania and Turkey are far behind the countries that belong to the second cluster. Regardless of the fact that the most developed institutional dimension in Albania is VA, other institutional quality dimensions are very poorly developed, as is also the case with Turkey.

CONCLUSION

This paper investigates the dispersion in the development of institutional quality and sensitivity of inward FDI flows (measured in FDI as percentage of GDP) on the development level of individual institutional quality dimensions in European countries for 2020. For this purpose, the empirical analysis in this paper relies on the usage of a set of institutional quality indicators from the World Bank's Worldwide Governance Indicators database. These indicators are grouped into six different categories, as follows: Voice and Accountability (VA), Political stability and Absence of Violence/ Terrorism (PS), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC).

Research results and discussions can be systematized in several segments.

When making a decision for FDI location, foreign investors put, among other factors, an emphasis on the host country institutional quality. A review of relevant literature finds that institution-FDI nexus causes many controversies in the extensive empirical literature on FDI. However, the arguments in favor of the growing importance of this determinant of FDI inflows encounter empirical support in a number of empirical studies.

Based on the obtained empirical results of the cluster analysis and grouping of the countries in the clusters, the first defined hypothesis of this study is partially proven - there is pronounced institutional heterogeneity among European countries. Contrary to the expected results, all EU member states do not achieve best institutional performance. EU Member country - Bulgaria, along with non-EU countries - Albania, Armenia, Montenegro, North Macedonia, Serbia and Turkey are classified into the first cluster, which by the quality of the institutions does not achieve the best performance. The existence of significant differences in the average values of all six institutional quality dimensions between the formed clusters, additionally confirms the results of the applied Kruskal-Vallis test.

Previously obtained results define the focus of further research. In order to determine the distance of the countries in the first cluster to the frontier – best performing countries in terms of the development of individual institutional quality dimensions, Gray relational analysis has been applied. The results clearly point to the relative importance of institutional quality indicators in determining FDI flows in the countries that belong to the first cluster (Albania, Armenia, Bulgaria, Montenegro, North Macedonia, Serbia and Turkey). In other words, the empirical results confirm the second hypothesis - not all indicators of institutional quality have equal importance in determining FDI inflows in the observed countries, which is in line with the research of Kurul and Yalta (2017). Observed by the dimensions of institutional quality, the greatest importance for FDI inflows in the countries of the first cluster, according to the obtained values of weights that are related to the GRC, belongs to CC (0.245), while PS has minor importance (0.048).

The results obtained by the ranking of countries based on the weighted values of GRC and GRG calculated value indicate that Montenegro, Bulgaria and North Macedonia are closest to the best performed cluster regarding the development of all institutional quality dimensions, taking into account the relationship with the FDI inflows. This result is not surprising for Bulgaria given that it has the status of full membership in the EU. Lower institutional performances of other countries in this cluster are the consequence of still unfinished transition processes and the need for numerous structural adjustments of their economies to the challenges of the European integration processes.

An essential question in designing and implementing the policies towards FDI is which dimensions of institutional quality matter more in determining the FDI inflows in the European countries. In this regard, the contribution of this paper is twofold. First, this paper provides a valuable contribution to the development of the empirical literature on the relationship between the institutions and the FDI inflows in the European countries by employing Gray relational analysis. The application of this method made it possible to identify those dimensions of established institutional infrastructure that have the greatest impact on FDI inflows, and to map out the key institutional areas that should be improved in order to achieve larger FDI inflows. To the best of our knowledge, none of the existing empirical studies in the literature has been conducted by employing this method, especially not on the case of the European economies.

The second contribution pertains to the ranking of countries from the first cluster according to the GRC and GRG, which made it possible to provide not only the recommendation on which dimensions of the institutional framework should be improved in order to achieve greater FDI inflows, but also clearly determine the relative position of the first cluster countries in relation to the second cluster countries.

Empirical findings of this study have important policy implications for European countries grouped in the first cluster. First, since those European countries with well-developed institutional infrastructure achieve higher FDI inflows, the improvement of critical institutional quality dimensions in European countries in the first cluster represents a priority area of action for policymakers in the future. For these countries, political stability represents that dimension of institutional quality that poses the greatest barriers to FDI. The reason of being that is the low level of political stability diverts the decisions of potential foreign investors, since it increases the risk and uncertainty regarding the realization of a particular FDI project that satisfies the basic investors' expectations. In addition to that, to increase the level of political stability, the activity of the policy makers should be directed towards enforcing the rule of law, as the dimension of institutional environment that does not directly encourage FDI inflows, but indirectly increases the predictability of investment and provide guarantees regarding the FDI realization.

Furthermore, from the perspective of the development of institutional quality dimensions at the country level, in order to encourage greater FDI inflows, policy makers should consider engaging in the activities in the following areas: raising the government effectiveness and effective control of corruption in Albania, which are bottleneck in administrative settings for FDI and undermine respect for the rule of law; in Armenia and Bulgaria, emphasis should be placed on increasing the efficiency of the government; increasing the level of democracy and strengthening of political institutions are of the utmost importance in Montenegro and North Macedonia; the priority task in the future in Serbia is imposing the continuation of the regulatory reforms implementation and the process of legislation harmonization with EU *acquis* in order to improve the quality of legislative regulation and increase the ability of regulatory authorities to control crime, as well as increasing the level of citizen participation in political decision-making and more effective protection of human rights as a precondition for building a market economy and democratic society; in Turkey, emphasis should be placed on improving the institutional quality in four dimensions: respecting democratic principles, strengthening political stability, improving the quality of legislative regulations and the creation of conditions for effective law enforcement.

The presented research has not examined the impact of institutions on FDI led economic growth, but this could be a good starting point for our future research. Also, whereas different types of FDI have different effects on the host country's economic development, the impact analysis of the institutions on different types of investments in terms of their motivation can be a very interesting area of research in the future.

REFERENCES

Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as the Fundamental Cause of Long-Run Growth. In: P. Aghion & Durlauf, S. N. (Eds.), *Handbook of Economic Growth* Volume 1A (pp. 385-472). Retrieved October 10, 2020, from https://economics.mit.edu/files/4469.

Acemoglu, D., Johnson, S., Robinson, J., & Thaicharoen, Y. (2003). Institutional Causes, Macroeconomic Symptoms: Volality, Crises and Growth. *Journal of Monetary Economics*, *50*(1), 49-123.

Al-Sadig, A. (2009). The Effects of Corruption on FDI Inflows. *Cato Journal*, *29*(2), 267-294. Retrieved October 15, 2020, from https://www.cato.org/sites/cato.org/files/serials/files/cato-journal/2009/5/cj29n2-4.pdf

Asiedu, E., & Lien, D. (2011). Democracy, Foreign Direct Investment and Natural Resources. *Journal of International Economics*, *84,* 99-111. https://doi.org/10.1016/j.jinteco.2010.12.001

Bailey, N. (2018). Exploring the Relationship Between Institutional Factors and FDI Attractiveness: A Meta-Analytic Review. *International Business Review*, *27*, 139-148.

Bellos, S., & Subasat, T. (2012). Corruption and Foreign Direct Investment: A Panel Gravity Model Approach. *Bulettin of Economic Research*, *64*(4), 565-574. https://doi.org/10.1111/j.1467-8586.2010.00370.x

Benassy-Quere, A., Coupet, M., & Mayer, T. (2005). Institutional Determinants of Foreign Direct Investment. *CEPII Working Paper,* No 2005-05. Retrieved October 10, 2020, from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.182.6961&rep=rep1&type=pdf.

Brahim, M., & Rachdi, H. (2014). Foreign Direct Investment, Institutions and Economic Growth: Evidence from the MENA Region. *Journal of Reviews on Global Economics, 3*, 328-339.

Chang, H. (2011). Institutions and Economic Development: Theory, Policy and History. *Journal of Institutional Economics,* 7(4), 473-498. doi:10.1017/S1744137410000378

Coan, T. G., & Kugler, T. (2008). The Politics of Foreign Direct Investment: An Interactive Framework. *International Interactions*, *34*(4), 402–422. Retrieved October 10, 2020, from https://scholar.harvard.edu/files/tcoan/files/politicsfdi.pdf.

Cuervo-Cazurra, A., & Genc, M. (2008). Transforming Disadvantages into Advantages: Developing-Country MNEs in the Least Developed Countries. *Journal of International Business Studies*, *39*, 957–979.

Drabek, Z., & Payne, W. (2002). The Impact of Transparency on Foreign Direct Investment. *Journal of Economic Integration*, *17*, 777-810.

Economides, G., & Egger, P. H. (2009). The Role of Institutions in Economic Outcomes: Editorial Introduction. *European Journal of Political Economy*, *25*(3), 277-279.

Ferreira, M. P., & Ferreira, J. G. (2016). The Impact of the Selected Institutional Environment Dimensions of the Sub-Saharan Countries on their Ability to Attract Foreign Direct Investment. *Revista Eletronica de Negocios Internacionais (Review of International Business)*, *11*(1), 21-36. Retrieved August 5, 2020, from https://internext.espm.br/internext/article/view/325.

Globerman, S., & Shapiro, D. (2002). Global Foreign Direct Investment Flows: The Role of Governance Infrastructure. *World Development*, *30*(11), 1899-1919.

Globerman, S., & Shapiro, D. M. (2003). Governance infrastructure and US foreign direct Investment. *Journal of International Business Studies*, *34*(1), 19-39.

Globerman, S., Shapiro, D., & Tang, Y. (2006). Foreign Direct Investment in Emerging and Transition European Countries. *International Finance Review*, *6*(6), 431 - 459.

Habib, M., & Zurawicki, L. (2002). Corruption and Foreign Direct Investment. *Journal of International Business Studies*, *33*(2), 291-307.

Harms, P., & Ursprung, H. W. (2001). Do Civil and Political Repression Really Boost Foreign Direct Investments? *CESifo Working Paper*, No. 421, CESifo Group Munich. Retrieved August 1, 2020, from https://www.econstor.eu/handle/10419/75778.

Hasni, H., Tabatabaei, A., & Amiri, G. (2012). Grey Relational Analysis to Determine the Optimum Process Parameters for Open-End Spinning Yarns. *Journal of Engineered Fibers and Fabrics*, *7*(2), 81-86.

Holmes Jr., R. M., Miller, T., Hitt, M. A., & Salmador, M. P. (2012). The Interrelationships among Informal Institutions, Formal Institutions, and Inward Foreign Direct Investment. *Journal of Management*, *39*(2), 531-566. https://doi.org/10.1177%2F0149206310393503

Huang, Y., & Lin, C. (2009). Constructing Grey Relational Analysis Model Evaluation of Tourism. *Journal of Information and Optimization Sciences*, *30*(6), 1129-1138.

Jensen, N. (2003). Democratic Governance and Multinational Corporations: Political Regimes and Inflows of Foreign Direct Investment. *International Organization, 57*(3), 587-616.

Jude, C., & Levieuge, G. (2014). Growth Effect of FDI in Developing Economies: The Role of Institutional Quality. Retrieved August 1, 2020, from HAL, https://halshs.archives-ouvertes.fr/halshs-01014404/document.

Kaditi, E. A. (2010). Foreign Investments and Institutional Convergence in Southeastern Europe. *LICOS Discussion Paper*, No. 260. Leuven: LICOS. Retrieved September 1, 2020, from https://feb.kuleuven.be/drc/licos/publications/dp/dp260.pdf.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The Worldwide Governance Indicators: Methodology and Analytical Issues. *The World Bank Policy Research Working Paper*, No. 5430. Retrieved September 15, 2020, from https://openknowledge.worldbank.org/handle/10986/3913.

Kinoshita, Y., & Campos, N. F. (2004). Estimating the Determinants of Foreign Direct Investment Inflows: How Important are Sampling and Omitted Variable Biases? *BOFIT Discussion Papers*, No. 10. Retrieved September 1, 2020, from https://www.econstor.eu/handle/10419/212541.

Knack, S., & Keefer, P. (1995). Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures. *Economic and Politics*, *7*(3), 207–227.

Kurul, Y. (2017). Nonlinear Relationship between Institutional Factors and FDI Flows: Dynamic Panel Threshold Analysis. *International Review of Economics and Finance*, *48*, 148-160. http://dx.doi.org/10.1016/j.iref.2016.12.002

Kurul, Z., & Yalta, Y. (2017). Relationship Between Institutional Factors and FDI Flows in Developing Countries: New Evidence from Dynamic Panel Estimation. *Economies*, *5*, 17. doi:10.3390/economies5020017

Levis, M. (1979). Does Political Instability in Developing Countries Affect Foreign Investment Flow? An Empirical Examination. *Management International Review*, *19*(3): 59-68.

Lewis, J. (2008). Factors Influencing Foreign Direct Investment in Lesser Developed Countries. *The Park Place Economist*, *8*(1), 97-107.

Li, D., & Ferreira, M. P. (2011). Institutional Environment and Firms' Sources of Financial Capital in Central and Eastern Europe. *Journal of Business Research*, *64*, 371–376.

Mauro, P. (1995). Corruption and Growth. *The Quarterly Journal of Economics*, *110*(3), 681-712.

Nondo, C., Kahsai, M. S., & Hailu, Y. G. (2016). Does Institutional Quality Mater in Foreign Direct Investment: Evidence from Sub-Saharan African Countries. *African Journal of Economic and Sustainable Development*, *5*(1), 12-30. Retrieved August 1, 2020, from http://www.inderscience.com/offer.php?id=74441.

North, D. C. (1991). Institutions. *The Journal of Economic Perspectives*, *5*(1), 97-112.

Park, H. (2003). Determinants of Corruption: A Cross-National Analysis. *Multinational Business Review*, *11*(2), 35-39.

Root, F. R., & Ahmed, A. A. (1979). Empirical Determinants of Manufacturing Direct Foreign Investment in Developing Countries. *Economic Development and Cultural Change*, *27*(4), 751-767.

Schneider, F., & Frey, B. (1985). Economic and Political Determinants of Foreign Direct Investment. *World Development*, *13*(2), 161-175.

Smarzynska, B. K., & Wei, S. (2002). Corruption and Cross-Border Investment: Firm-Level Evidence. *William Davidson Working Paper*, No. 494. Retrieved September 15, 2020, from https://econpapers.repec.org/paper/wdipapers/2002-494.htm.

Trojette, T. (2016). Foreign Direct Investment, Institutions and Economic Growth: Threshold Effect. Retrieved September 15, 2020, from https://www.dohainstitute.edu.qa/MEEA2016/Downloads/Ines%20Trojette_Final.pdf.

UNCTAD (1998). *World Investment Report 1998: Trends and Determinants*. United Nations: New York and Geneva.

Victoria, D., & Martin, J. (2018). Do Institutions Still Matter for Investors? Impact of Institutional Determinants on Investment Inflows into European Economies. *Acta Oeconomica*, *68*(2), 245-270.

Vittorio, D., & Marani, U. (2006). Do Institutions Matter for FDI? A Comparative Analysis for the MENA Countries. *MPRA Paper*, No. 2426. Retrieved September 15, 2020, from https://mpra.ub.uni-muenchen.de/2426/1/MPRA_paper_2426.pdf.

Wei, S. J. (2000). How Taxing is Corruption on International Investors? *The Review Of Economics and Statistics*, *82*(4), 1-12.

World Bank. (2021). Worldwide Governace Indicators. Retrieved December 14, 2021, from https://info.worldbank.org/governance/wgi/

КОЈЕ ДИМЕНЗИЈЕ ИНСТИТУЦИОНАЛНОГ КВАЛИТЕТА СУ ВАЖНИЈЕ У ПРИВЛАЧИВАЊУ СДИ ТОКОВА: *GREY* РЕЛАЦИОНА АНАЛИЗА

Марија Петровић Ранђеловић, Соња Јовановић, Снежана Радукић
Универзитет у Нишу, Економски факултет, Ниш, Србија

Резиме

Практично искуство је потврдило да је максимизирање позивитних ефеката страних директних инвестиција на привредни развој у савременим условима, између осталог, одређено постојањем таквог институционалног оквира који ће омогућити пуну апсорпцију користи и подстицајно деловати на прилив страних директних инвестиција у потенцијалну земљу домаћина. Међутим, анализа утицаја институционалног фактора на прилив страних директних инвестиција представља веома сложен и изазован задатак који захтева мултидимензионални приступ изучавању. Поврх свега, таква анализа је додатно оптерећена чињеницом да у савременој литератури још увек не постоји опште прихваћена дефиниција институција, услед постојања значајних разлика у полазним основама истраживача при дефинисању овог развојног феномена, као и да постоје бројни индикатори институционалног квалитета помоћу којих се врши мерење утицаја институција на прилив страних директних инвестиција.

Извршено истраживање односа између појединих димензија институционалног квалитета и прилива страних директних инвестиција у европским земљама засновано је на сету индикатора институционалног квалитета из базе Светске банке, тзв. Индикаторима доброг управљања. Анализа је показала да (1) постоје значајне разлике у просечним вредностима свих шест димензија институционалног квалитета између формираних кластера, као и да (2) индикатори институционалног квалитета немају подједнак значај у одређивању прилива страних директних инвестиција у земљама које припадају првом кластеру (Албанија, Јерменија, Бугарска, Црна Гора, Северна Македонија, Србија и Турска). Такође, утврђено је да су Црна Гора, Бугарска и Северна Македонија, на основу израчунате пондерисане вредности GRC и израчунате вредности GRG, најближе земљама другог кластера у погледу развијености свих димензија институционалног квалитета и везе са приливом страних директних инвестиција. Стога, резултати истраживања који су приказани у овом раду не само да, применом Grey релационе анализе, доприносе развоју емпиријске литературе о односу између институција и прилива страних директних инвестиција у европским земљама, већ и носе значајне препоруке носиоцима економске политике за предузимање активности у правцу унапређења појединих димензија институционалног квалитета ради подстицања већег прилива страних директних инвестиција.