

THE IMPACT OF THE INSTITUTIONAL ENVIRONMENT ON THE ECONOMIC DEVELOPMENT

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Abstract. *Economic literature recognizes three “deep determinants” of economic development: institutions, geography and openness to trade. Discussion in the literature focuses on what part of the income per capita variation can be explained by institutions, geography and openness to trade. The empirical results can’t offer a clear answer, but there is a broader agreement in the literature that institutions play a more important role than geography and openness to trade. What is unclear whether the institutions also can explain variation in per capita income across countries, in which institutional environment is to some degree similar.*

This article aims to explore and quantify the relationship of the income level with institutional environment, geography and openness to trade across countries, grouped according their institutional environment quality.

The results reveal that extent to which the variation in GDP per capita can be associated with the quality of institutional environment differs a lot between good and bad institutional environment samples. The results in good institutional environment sample come in line with series of studies in which the strong and positive link between various measures of institutions and economic development was established and support primacy of institutions over openness to trade and geography. In bad institutional environment sample, on the contrary, no evidence was found that institutions mean a lot in respect of differences in GDP per capita. These results should not be interpreted so as to mean that institutional environment is not important, rather the degree of “badness” makes no difference.

Key words: *Institutional environment, Geography, Openness to trade, Economic development.*

Introduction

Economic theory emphasizes various factors, determining the economic growth and development. Recently economists switched their attention from the variables in the neoclassical growth equation to the “deep determinants” of economic growth

and development, namely geography, openness to trade and institutions. Economists are trying to answer the questions what part of the income per capita variation can be explained by institutions, geography and openness to trade? Are these factors equally important? Do they influence each other? The main discussion is about

the relative importance of these determinants and, in particular, about geography versus institutions (Presbitero, 2006).

The advocates of institutions argue that definite institutional environment (measured through property rights, rule of law, corruption, bureaucratic quality and other institutional variables) is the key precondition of economic development. They state, that the impact of geography on the economic outcomes is only indirect, due to the impact geography makes on institutions, the main source of economic growth and development. This approach is emphasized by Acemoglu et al. (2001, 2005), Easterly and Levine (2003), Rodrik et al. (2004).

The geography approach stresses the direct effect that geographical factors have on the economic development. Geography determines climate, natural resources, agricultural productivity, diseases, transport costs, access to markets and other characteristics, that play a role in determining the economic growth and development. The cross-country econometric evidence supports the supremacy of geography over institutions (McArthur and Sachs, 2001; Sachs, 2003; Hibbs and Olsson, 2004).

Another deep determinant – openness to trade is not always taken into account in the debate on the relative contributions of geography and institutions to the economic growth and development. According to Presbitero (2006), openness to trade is not a fundamental source of growth, because, in some way, it is included in the geographical variables. Bloch and Tang (2004) present the survey of numerous empirical studies, which have documented the importance of trade for growth in the very long run.

Some empirical research give a certain insight that relative importance of geography and trade depends on the quality of institutions. The cross-country investigation by Mehlum et al. (2006) reveals that the abundance of natural resources is a blessing when institutions are good and a curse when institutions are bad. Bolaky and Freund (2004), Borrmann et al. (2006) find in their empirical research that countries having good institutions benefit from trade more than those having bad ones. These results suggest that global sample is not informative and countries having good and bad institutions should be analyzed separately, but that's not the case the research generally undertakes. Generally the literature examines either the global sample or the developing countries.

In empirical investigations the relationship between the economic growth (or per capita income) and geography, institutions and openness to trade was clarified in the samples of different countries by using various indicators. That is one of the problem aspects of the literature as the results are hardly comparable. This article aims to examine the importance of institutions, geography and trade in explaining the income per capita variation across countries using the same indicators and samples of the same countries. There is a broad agreement in the literature that weak institutions (rule of law, bureaucratic quality, corruption, government repudiation of contracts, civil liberties and etc.) inhibit economic development while strong ones lead to prosperity. What is unclear is whether the institutions can also explain the variation in per capita income across countries, in which the institutional environment is

to some degree alike. The problem is the following: does it matter in respect of explaining variation of per capita income if the country's institutional environment is "good" or "better" and "bad" or "worse"?

Research object: the relationship between the economic development and institutional environment, geography and openness to trade.

Research aim: to explore and quantify the relationship of the income level with institutional environment, geography and openness to trade across countries, grouped according their institutional environment's quality.

The paper is organized as follows. The next two sections deal with the definition aspects of institutions and present analytical and empirical findings on the relationship between institutions, geography and openness to trade and economic performance. The third section introduces the data and methodology the analysis is based on. The fourth section presents the empirical analysis and discusses the results. The article ends with conclusions.

The definition of institutions and its functions in economics

The interest to institutions in economic community has been particularly influenced by the Nobel laureate in economics Douglass North. According to North (1990), "institutions are the humanly devised constraints that structure human interaction". They are made up of formal constraints (laws, constitutions) and informal constraints (taboos, customs, and traditions). Rodrik (2000) defines institutions as "a set of humanly devised behavioral rules that govern and shape the interactions of human beings, in

part by helping them to form expectations of what other people will do." According to Voigt and Engerer's (2001) view, it is important to distinguish the "rule component" of institutions on the one hand and the "enforcement component" on the other.

The research of the impact of institutions on economic performance highlights the importance of the economic, politic and legal institutions. Gagliardi (2008) presents a review that combines the theory and empirical evidence on the mechanisms through which the emergence and evolution of institutions create a favorable ground for the economic development. It could be concluded, that institutions are important because they help to solve problems of coordination of agents' plans; overcome opportunism and promote cooperative behavior; reduce uncertainty. Appropriate set of institutions defines the incentives for individuals and organizations to invest in both physical and human capital, which are the proximate determinants of the economic growth.

Many economists argue that definite institutional environment is the key precondition of the economic development. According to Easterly and Levine (2001), foreign aid, foreign investment, education, big infrastructure projects, conditional aid, debt forgiveness, etc. will not have any impact on the economic development if countries fail to meet the basic institutional requirements: rule of law, protection of property rights, efficient bureaucracy, corruption-free government and political constraint on executive. Of course, institutional factors provide constraints, which may inhibit policy makers' efforts to respond to external shocks and quickly

correct policy mistakes. However, the assumption in the literature is made, that the benefits of constraints outweigh the costs of lost flexibility (Henisz, 2000).

The impact of institutions on the economic performance is indirect, as institutions don't produce goods or services. According to the institutional approach, both the amount and productivity of resources depend on the institutional environment. Well-defined institutions lower uncertainty, reduce macroeconomic volatility, stimulate specialization, lower transaction costs and thus foster investments and innovation.

Institutions, geography and openness to trade as deep determinants of economic performance

There is a broader agreement in the literature that institutions play a more important role than geography and openness to trade. Advocates of institutions do not state that geography or trade are not important, rather they maintain that institutions are more important.

Easterly and Levine (2003) find no evidence that geography variables (tropics, germs, and crops) affect country income directly. The results indicate an indirect effect since tropics, germs and crops help to explain cross-country variation in the institutional development. These findings come in line with Rodrik et al. (2004) results: geography and trade are no longer statistically significant after controlling for institutions. Decker and Lim (2008) support this conclusion, however, some model specifications indicate that geography and

openness to trade are not always 'trumped' by institutions.

Another strand of the literature has emphasized the dominant role of geography in explaining cross-country differences in the level of economic development. The authors argue that geography determines climate, natural resource endowments, diseases, transport costs, and agricultural productivity. Furthermore, it exerts an impact on human capital and diffusion of knowledge and technology from more advanced areas. The leading contributor in this field Jeffrey Sachs and his co-authors have argued in a series of papers that measures of geography may directly affect the level of economic development in addition to the undoubted effects of the institutional environment of a country (Sachs and Warner, 1999, 2001; McArthur and Sachs, 2001; Sachs, 2003). Carstensen and Gundlach (2006) support the hypothesis, that geographic indicators such as disease ecology, measured through malaria incidence, may have a large negative effect on the income, independent of the quality of country's institutions. However, the authors do not neglect the importance of institutions.

Bosker and Garretsen (2008) in line with Rodrik et al. (2004) concluded that geography has only indirect impact on GDP per capita. Despite this, the authors argue that relative geography matters. A country's GDP per capita depends on both: own-country institutions and also on the quality of institutions in its neighboring countries.

Another camp emphasizes the role of the international trade as a driver of productivity change. According to Rodrik et al. (2004) it may be useful to separate "moderate" and "maximal" versions of this view.

Most economists have recognized the positive effects of openness to trade on the economic development. Trade can increase per capita income directly via absolute and/or comparative advantage, and indirectly via other channels such as technology transfer, increase in scale economies and the competitive influence of the interaction with foreign firms (Bloch and Tang, 2004). The results by Alcalá and Ciccone (2004) indicate that the impact of openness on productivity is significant even after controlling for institutions and geography.

The “maximal” version proposes that trade is the major determinant of whether poor countries grow or not. Dollar and Kraay (2003) results suggest that both trade and institutions play an important joint role in the economic performance in the very long run, but the role of trade is relatively larger in the shorter run. Later the same authors supported the view that open trade regimes lead to faster growth and poverty reduction in poor countries (Dollar and Kraay, 2004).

Some empirical research gives an insight that the relative importance of geography and trade depends on the quality of institutions. The interaction of geography and institutions is an object of research in literature on resource curse. Some authors hypothesize that resource abundance leads to the decay of institutional quality, which in turn lowers growth. Murshed (2004) and Gylfason and Zoega (2006) have identified the negative effect of resources on the institutional decay and in turn to the economic growth. Mehlum et al. (2006) argue that the presence of rich natural resources in a country does not necessarily cause institutional decay. They hypothesize that in-

stitutional differences are the main reason why some countries are blessed and others cursed by their resource wealth.

The literature on the interaction of trade and institutions is very limited. The results of Bolaky and Freund (2004) from cross-country analysis imply that the trade does not always foster growth. The effect of trade on the economic outcomes (growth and the level of GDP per capita) in the long run is at best absent and at worst negative in heavily regulated countries. Borrmann et al. (2006) also try to address the question, why at given levels of openness, some countries benefit from trade more than other countries. The results from cross-country regression suggest the answer that countries with low-quality institutions have not been able to take the advantage of trade.

Data and methodology

Gwartney et al. (2006) suggest to consider a lengthy time period in the analysis of the impact of institutional factors on the economic performance. The first argument for doing this is the following: over a longer time period, short-term effects such as business cycles will be minimized. The second one, changes in the institutional quality are likely to have effects on the economic outcomes only with lags.

The period under analysis in this article refers to the year 1996–2006. That is the longest possible period as there were no data for The World Bank indicators, used for institutional indices construction, before 1996. In this article countries’ economic performance is measured by its 1996–2006 average GDP per capita based on purchasing power parity (PPP). The data source is the World Bank.

Table 1. List of indicators used for institutional indices construction

<i>Indices</i>	<i>Components</i>	<i>Data source</i>
Civil and political freedom index (CPFI)	Voice and accountability Political stability	World Bank Kaufmann et al. (2007)
	Civil liberties Political rights	Freedom House
Regulatory and business freedom index (RBF)	Investment freedom Business Freedom Financial Freedom Trade Freedom	The Heritage Foundation and The Wall Street Journal Beach and Kane (2007)
	Regulatory quality	
Rule of law index (RLI)	Rule of law	World Bank Kaufmann et al. (2007)
Corruption index (CI)	Control of corruption	
	Freedom from Corruption	The Heritage Foundation and The Wall Street Journal Beach and Kane (2007)
Property Rights index (PRI)	Property Rights	

Five indexes were constructed to measure the quality of institutional environment: Civil and political freedom index (CPFI), Regulatory and business freedom index (RBF), Rule of law index (RLI), Corruption index (CI) and Property rights index (PRI). Table 1 lists the indicators used for the construction of indices. Constructed indices capture different dimensions of the institutional environment. To obtain an overall index of the institutional environment for each country we computed the institutional environment index (IAI). IAI is the simple average of five indices, presented in Table 1. Following the standard procedure in the literature equal weights were assigned to all indices. The assumption is that all dimensions of the institutional environment are equally important.

First of all, values of components were averaged over the period of 1996–2006. To have a consistent set of indicators and to facilitate the interpretation of the results, indicators were rescaled so, that higher

value corresponds to better outcomes. Than all components were standardized to the range from 1 to 10.

All standardized components are equally averaged into the institution index. For example, CPFI is a simple average of the standardized Voice and accountability, Political stability, Civil liberties and Political rights components.

The variables used to measure geographic factors, related with the amount of countries' natural resources were never significantly related with the GDP per capita, so they will not be presented there. Only two geography variables appear in the empirical results presented in the next section:

Coast (dummy); 1 – if country adjoins the sea; 0 – landlocked; constructed by authors, data from CIA World Factbook (2007).

Latitude (Distance from equator in degrees); data source Parker (2000).

Openness to trade is measured by two indicators. One of them is commonly used

Table 2. GDP per capita 1996–2006 average (current international \$, PPP, thousands)

	N	Mean	Min	Max	CV* (%)	Percentiles		
						25	50	75
Good institutional environment (GIE)	41	21,5	6,36	52,33	47,7	10,9	22,8	28,7
Bad institutional environment (BIE)	87	3,5	0,57	12,39	71,4	1,6	3,2	5,1

* The coefficient of variation (CV) is defined as the ratio of the standard deviation to the mean, expressed as a percent.

in the literature that is the the sum of export and import as a share of GDP. As 1 percent of GDP refers to different amount of trade across countries, an alternative indicator is offered by the authors. That is the sum of export and import per capita based on purchasing power parity (PPP). Both indicators are calculated by the authors. The data on the export and import is from UNCTAD Handbook of Statistics Online, the PPP rates are from the World Bank (World development indicators database).

There were 128 countries for which the data used in this article could be obtained. These countries were separated into two groups according to their institutional environment quality (measured through five indices, presented in Table 1). To this end hierarchical cluster analysis was performed by means of the computer program SPSS. Ward's cluster method and Chebychev interval measures were selected. One group (cluster) constitutes 41 countries and subjectively it was named "good institutional environment group". The other group constitutes 87 countries and it was named "bad institutional environment group".

Similarly as in Rodrik et al. (2004), the impact of institutions, openness to trade and geography on GDP per capita is estimated by the following equation:

$$Y_i = a + b_1 \text{INS}_i + b_2 \text{OPN}_i + b_3 \text{GEO}_i$$

Where Y_i is GDP per capita in country i , INS_i , OPN_i , and GEO_i are respectively measures for institutions, openness to trade, and geography.

Regression analysis was performed by means of the computer program SPSS. The stepwise entry method for independent variables was specified, so statistically insignificant variables were removed from the model. The nature of the relationship between the dependent variable and each independent variable was examined by the scatter plot and R-square value. The analysis of variance (ANOVA) was used to test how well the model fits the data. The one-sample Kolmogorov-Smirnov test was applied to test whether residuals are normally distributed. The outliers, which influence the model coefficients, were detected by examining standardized residuals and Cook's distance values. The tolerance and variance inflation factor (VIF) were used as multicollinearity diagnostic statistics. These statistics did not reveal any multicollinearity problems, so their values were not presented in the article.

The variation in GDP per capita in relation with the institutional environment, openness to trade and geography.

Table 2 presents the data on GDP per capita average in good and bad institutional environment countries.

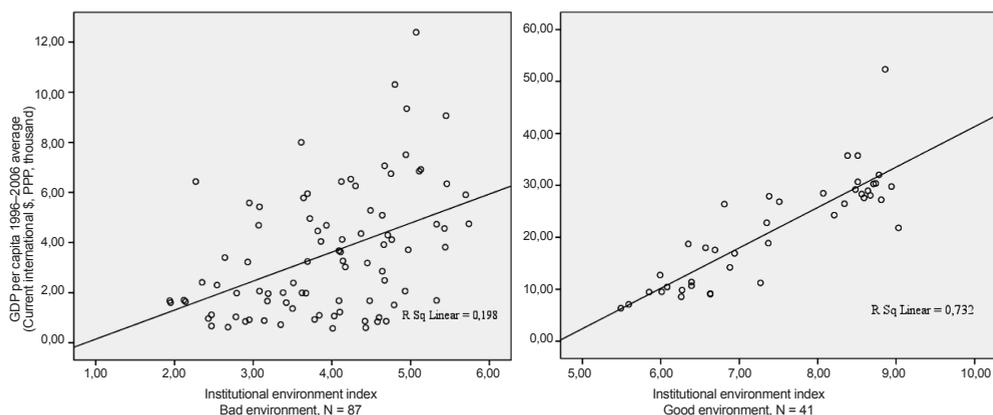


Fig. 1. Institutional environment index and GDP per capita relationship

As can be seen from table 2, countries with good institutional environment are on the average about 6 times richer than countries with bad institutions. Of 128 analyzed countries the highest GDP per capita average in 1996 – 2006 was in Luxembourg (52,33) and the lowest one in Tanzania (0,57). Average GDP per capita in the richest and poorest nations differs about 91,8 times, i.e. the average income level in Tanzania constitutes only 1,1 percent of the average income level in Luxembourg. The lowest value of GDP per capita (6,36) among GIE group countries was in Panama. But more than 75 percent of BIE group countries' GDP per capita was below \$ 5,1 thousand, that is they do not reach the lowest GDP per capita value in GIE group.

The remarkable differences were obtained not only between the countries with good and bad institutional environment but also among the countries with similar institutional environment. The average GDP per capita levels in the richest and poorest countries differ about 8 times across 41 countries where the institutional environment is good and about 22 times across 87 countries where the institutional

environment is bad. These results indicate that GDP per capita variation among GIE countries is not as large as among BIE countries. The coefficient of variation (CV) supports this conclusion.

It is well documented in the literature that GDP per capita differences across countries can be explained by the quality of institutions. The results in Table 2 come in line with this strand of the literature. What is unclear is whether the institutions can also explain variation in per capita income across countries, in which institutional environment is to some degree alike. To what extent the variation in GDP per capita across good and bad institutional environment countries can be associated with the quality of that environment can be seen in Figure 1.

In Figure 1 we can see that institutional environment index (IEI) explains about 73 percent of variation in GDP per capita across 41 GIE countries. These results come in line with the series of studies in which the strong and positive link between various measures of the institutions and the economic development was established. The IEI values failed to explain the

Table 3. *The results of regression analysis*

		<i>Good institutional environment (GIE)</i>		<i>Bad institutional environment (BIE)</i>	
		(1)	(2)	(1)	(2)
	a	-32,60	-32,60	-2,86	<u>-0,13</u>
Latitude (degrees)	b	removed	removed	0,06	0,03
	β			0,37	0,21
Coast (dummy)	b			1,69	1,12
	β			0,33	0,24
Institutional environment index	b	7,19	7,19		
	β	0,88	0,88		
Corruption index	b			1,16	removed
	β			0,43	
International trade per capita	b	removed			0,69
	β				0,72
Adjusted R ²		0,78	0,78	0,45	0,78
N		40	40	86	82

Notes:

- 1) GDP and international trade per capita values are in current international \$, PPP, thousands.
- 2) Countries omitted as outliers: GIE models (1) and (2) – Luxembourg; BIE model (1) – Argentina, model (2) – Argentina, Malaysia, Brasilia, Mexico, Columbia.
- 3) Coefficients significant at 0.05 level. Underlined statistically insignificant coefficient.
- 4) „Removed“– means that variable was selected for the model but removed as insignificant.

GDP per capita variation across 87 BIE countries. Why is the explanatory power of IEI values very strong in the good institutional environment sample and at best weak in the bad environment sample? The literature suggests that institutions affect the economic development through their impact on the investments and innovations. It can be expected that all IEI values in BIE group indicate not favorable environment for the investments and innovations and the degree of “badness” doesn’t make much difference, whereas the degree of “goodness” means a lot.

The IEI values do not help to explain the variation in GDP per capita across relatively large 87 countries sample. Per-

formed regression analysis revealed that other deep determinants – openness to trade and geography have high explanatory power in that sample. Contrary situation was obtained in GIE countries. Trade and geography variables are no longer statistically significant after controlling for institutions (see Table 3).

Correlation analysis of institutional environment, geography and openness to trade variables (described in the data and methodology section) and GDP per capita was performed to select the independent variables for regression analysis.

Across the GIE countries GDP per capita strongly and positively correlates with all indices of institutions. The corre-

lation between these indices is also strong and positive, thus IEI as overall measure of the institutional environment quality was preferred. Across BIE countries GDP per capita is weakly (but significantly) related with the indices of institutions. Only the correlation with the Corruption index coefficient exceeds the value of 0,5, indicating moderate strength of relationship. Given results are similar to those obtained by Aixala and Fabro (2008). The authors concluded that "Control of corruption" is the most important aspect of poor countries' institutional quality as regards GDP per capita variation.

No evidence was found that countries with higher international trade shares in GDP have higher income per capita. The correlation of the GDP per capita and the openness to trade (measured as a sum of export and import as a share of GDP) was insignificant in both good and bad institutional environment countries samples. This relationship is confirmed in the literature on the economic growth, but do not hold when the level of GDP per capita instead of its growth rate was analyzed. The explanation can be found in Vamvakidis (2002). The author finds no positive correlation between openness and growth before 1970 and suggests that the positive correlation between openness and growth is only a recent phenomenon. Thus the level of GDP per capita across countries does not yet capture this relationship.

The importance of the international trade in explaining GDP per capita variation may not be neglected if an alternative measure of openness is used. In both good and bad institutional environment countries' samples export plus import per

capita values (PPP adjusted) are positively and significantly correlated with the GDP per capita. Trade and geography variables have no impact on the GDP per capita, if the institutional environment index is taken into account (Model 2 in Table 3). These results came in line with Acemoglu et al. (2001), Easterly and Levine (2003), Rodrik et al. (2004). Contrary to this conclusion, the standardized coefficient β in Table 3 (Model 2 BIE group) indicates that international trade has the highest impact on GDP per capita compared with geography and institutions. In BIE countries sample the effect of the institutions (measured through Corruption index) on GDP per capita became insignificant after the inclusion of international trade per capita.

It could be concluded that institutions, geography and trade can explain a large part (78 percent) of variation in GDP per capita across both good and bad institutional environment countries. Geography, as it was measured there, had a small explanatory power in both samples. If following Presbitero (2006) trade is not considered as deep determinant of the economic development (model 1 in Table 3), geography and institutions can explain only 45 percent in GDP per capita variation across BIE countries.

Only good institutions trump geography and trade. Where other things are constant one unit increase in the institutional environment index is associated with \$7,19 thousand increase in GDP per capita. But no evidence was found that institutions mean a lot in respect of differences in GDP per capita across bad institutional environment countries. These results should not be interpreted so as to mean that institutional

environment is not important, rather the degree of “badness” makes no difference.

Conclusions

Economic literature recognizes three “deep determinants” of economic development: institutions, geography and openness to trade. Results of the empirical research fail to give an unequivocal answer related to the importance of the said factors and different investigations may be found the results whereof confirm that the impact of the institutional, geographic as well as international trade factors are of paramount importance for the development of economics.

According to the institutional approach, well defined institutions lower uncertainty, reduce macroeconomic volatility, protect property rights and thus foster investments and innovation, which are the proximate determinants of the economic growth and development. Another strand of literature has emphasized the dominant role of geography in explaining cross-country differences in the level of economic development. The authors argue that geography determines climate, natural resource endowments, diseases, transport costs, agricultural productivity and exerts an impact on the human capital and diffusion of knowledge as well as technology from more advanced areas. According to the openness to trade advocates, trade can increase per capita income directly via the absolute and/or comparative advantage, and indirectly via other channels such as technology transfer, increase in scale economies and the competitive influence of interaction with foreign firms.

This research focuses on the relationship between GDP per capita and the insti-

tution variables across countries, in which institutional environment is to some degree alike. GDP per capita average in 1996–2006 in good institutional environment sample is about 6 times larger than in bad environment sample. The remarkable differences were obtained not only between countries with good and bad institutional environment but also among countries with similar institutional environment.

The results reveal that the extent to which the variation in GDP per capita can be associated with the quality of the institutional environment differs a lot between good and bad institutional environment samples. The results in good institutional environment sample come in line with the series of studies in which a strong and positive link between various measures of institutions and economic development was established. The results support the primacy of institutions over the trade and geography variables. In good institutional environment sample the positive effect of trade and geography on GDP per capita became insignificant after controlling for institutions.

Contrary to that, institutional environment index values failed to explain the GDP per capita variation across the bad institutional environment sample (87 countries). In this sample GDP per capita is weakly (but significantly) related with the indices of institutions. Only the coefficient of correlation with the Corruption index exceeds value of 0,5, indicating moderate strength of the relationship. The effect of the corruption index on GDP per capita became insignificant after the inclusion of the international trade per capita.

According to the literature, countries with good institutions are richer than those

with bad ones. Results of this research support the given statement, but no evidence was found that institutions mean a lot in respect of the differences in GDP per capita across bad institutional environment countries. The assumption can be made, that all values of institution indices in bad institu-

tional environment indicate the environment wherein investments and innovations cannot flourish and the degree of “badness” doesn’t make much difference, whereas the degree of “goodness” means a lot. In order to confirm this assumption empirically a further investigation needs to be done.

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