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Institutions and Economic Development on the Example of OECD Countries

Abstract. The problem of economic development has been the subject of discussion in economic theory for hundreds of years. It is one of the most important issues in economics. To this day, it is crucial to specify the factors and conditions of this phenomenon. The purpose of this article is to identify the direction and strength of the relationship between the quality of the institutional environment and the level of economic development. The soft modelling method and analysis of the literature were applied to identify this relationship. Selected research methods allowed for the positive verification of the adopted hypothesis- institutional environment has a significant, positive impact on shaping economic development dynamics.

Keywords: institutional environment, formal institutions, informal institutions, economic development, soft modelling, PLS.

Introduction

Economic development belongs to the most important issues in economic theory. This process is so important that nowadays a separate field in economic theory has been identified for this problem, which is known as development economics. This paper focuses on institutional environment as a factor significantly affecting the level of economic development. The purpose of this article is to identify the direction and strength of the relationship between the quality of the institutional environment and the level of economic development. The study has been conducted

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using the example of OECD countries. The main hypothesis is the supposition that the quality of the institutional environment has a strong positive influence on the level of economic development. The soft modelling method (SEM-PLS) was applied to identify a statistical relationship between institutions and economic development.

1. Economic Development in the Light of Economic Theory

Economic growth and development are closely related concepts. Economic growth means positive quantitative changes in individual economic categories in the economy, while economic development has a much broader concept. It also includes qualitative changes throughout the economy (Haller, p. 66). In this part of the article the most significant perspectives of economic growth and development will be discussed (table 1).

Table 1.
Main growth and development perspectives in the lights of economic theory

Author	Year/s	Perspective of economic growth and development
Adam Smith (2007)	1776–1890	A. Smith identified economic development as the multiplication of the wealth of the nation (Weingast, 2018, p. 15). The basic factor of production is work, the level of well-being mainly depends on its productivity. Land is the second primary production factor. Its fertility determines the size of national income. According to A. Smith, capital is a derivative factor, which indirectly impacts the growth of labour productivity (Bochenek, 2016a, p. 150). Moreover, Smith emphasized the importance of capital accumulation (Danowska-Prokop, 2017, p. 51). *The "Invisible hand of the market"*: Economic system is efficient and stimulates economic development only under conditions of economic freedom and when the natural market mechanism is working.
David Ricardo (2001) Thomas R. Malthus (2003)		D. Ricardo drew attention to the issues of specialization in international trade and openness of the economy. According to the concept of comparative advantages, the exchange between two countries leads to the greatest benefits only if the production cost in one country is relatively lower than in another one. Specializing in relatively cheaper production strongly affects the level of economic development of both sides of the transaction (Meoqui, 2014, p. 24). D. Ricardo, basing on the T. Malthus's population principle, developed the theory of differential rent. On the basis of this concept it can be concluded that trade protectionism is an obstacle to economic development (Bidard, 2014, p. 3).
Karl Marx Friedrich Engels (1955)	1848	K. Marx and F. Engels pointed out that the working class is the core element of the economy. This means that labour is the main factor that contributes to the economic development. Moreover, they developed the concept of developing social formations in economies (Bochenek, 2016b, p. 61).

Joseph A. Schumpeter (1947)	1912	Innovations are the main source of economic development. J. A. Schumpeter developed a concept of development based on *"creative destruction"*. This theory assumes that economies are developing in cyclically occurring phases caused by the existence of innovations (Zagóra-Jonszta, 2015, p. 26).
John M. Keynes (2003)	1936	J. M. Keynes questioned the theory of the *"invisible hand"* of the market. In his opinion, during economic depression, an active economic policy should be applied. According to J. M. Keynes, economic development is based on consumption. Savings, according to the "*thrift paradox*"", have an adverse effect on the global production level (Bochenek, 2016c, p. 16–19). Moreover, he emphasized that a highly effective demand contributes to the possibility of achieving a high national income.
Roy F. Harrod (1939) Evsey Domar (1946)	1939 1946	*Harrod-Domar model*: R. F. Harrod and E. Domar, independent of each other, managed to come to similar conclusions. According to the Harrod-Domar model, the economic growth rate depends on the saving rate and capital intensity of production.
Arthur W. Lewis (1954)	1954	*Dual-sector model*: The essence of this model is the occurrence of two sectors in the economy: the productive *"capitalist"* sector and the non-productive *"subsistence"* one. The basis of this model is the assumption of *"self-accelerating"* economic development (the productive sector absorbs surpluses of the non-productive sector's labour force).
Robert M. Solow (1956) Trevor V. Swan (1956)	1956	*Solow-Swan model*: Pursuant to the Solow-Swan model, the rate of economic growth depends primarily on the dynamics of technical progress but also on the rate of growth labour force and capital expenditure.
Walt W. Rostow (1960)	1960	*Stadial development model*: W. W. Rostow pointed out that countries are going through five phases of economic development, ranging from traditional society to mass consumption. Investments are of particular importance in this model. Economies that are unable to maintain their investment rate at a high level are incapable of entering a higher development stage (Piętak, 2016, p. 59).
Theodore W. Schultz (1961)	1961	T. W. Schultz initiated the concept of economic development with particular emphasis on human capital. He pointed out regularities regarding the relationship between human capital and economic development. Namely (Breton, 2014, p. 2): Countries in which human capital is at a low level are not able to fully utilize their physical capital resources, economic developments occurs only when both the level of human and physical capital increases, the rate of investments in physical capital is usually higher than in human capital- the level of human capital sets the limits for economic development.
Gary S. Becker (1962)	1962	G. S. Becker pointed out the importance of investing in human capital (Osiobe, 2019, p. 182). Arguing that investing in human capital is a kind of "resource allocation" which influences future real revenues (Popiel, 2015, p. 304).

John Williamson Dani Rodrik (2006)	1980s	*Washington Consensus*: J. Williamson formulated ten (later D. Rodrik added another ten) points of stable and balanced economic development. The Williamson's and Rodrik's principles mainly referred to: the liberalization of international trade, maintaining financial discipline (sound monetary policy and resistance to exchange rate effects), reforms of the tax system, ensuring the institutional framework and increasing expenditure on: education, health protection, environmental protection and social security.
Douglas C. North (1990)	1990	*"Institutions matter"*: The existence of an appropriate institutional framework as a condition for economic development. Institutions are an integral part of every economic system. Their quality determines the economic activity of the country (Gruszewska, 2015, p. 256). A higher economic activity level leads to a higher level of economic growth and development (Fiedor, 2015, p. 104).
David Pearce Edward Barbier Anil Markandya (1990)	1990	*Sustainable development*: The essence of sustainable development is environmental protection and the issue of optimal management of natural resources (Perło, 2014a, p. 49). When the economy simultaneously develops in the economic, social and environmental dimensions, it is considered that development is sustainable (Poczta-Wajda & Sapa, 2017, p 132). The importance of this issue was indicated at the UN conference in Rio de Janeiro in 1992 (Palmer, 1992, p. 1015).
N. Gregory Mankiw David Romer David N. Weil (1992)	1992	*Mankiw-Romer-Weil model*: The extension of the neoclassical Solow-Swan model by an issue related to the accumulation of human capital.
European Commission (2010)	2010	*Europe 2020 Strategy*: The European Commission adopts three elements that are necessary for countries to achieve economic development. These are: smart growth, sustainable growth, inclusive growth.

* or "paradox of savings".
Note. Own elaboration (literature review).

Bearing in mind the literature analysis, there are a multitude of approaches to defining economic development and pointing out its crucial factors. This proves the complexity and ambiguity of this issue. The multidimensional character of economic development indicates that measuring its level is not an easy task.

D. Rodrik et al. (2004, p. 133–134) indicated three economic schools that have had the biggest influence on economic development nowadays: geographical, institutional and integrative. The geographical school refers to exogenous factors. The dynamics of economic development depend on the potential of geographical location and natural conditions. The institutional school indicates that the necessary condition for economic development is the existence of an appropriate institutional environment (endogenous factors). According to the integration school, international integration is a crucial factor for economic development (endogenous factors).

Nowadays, the institutional context of economic development is becoming more and more significant. The efficiency of institutions determines the efficiency of the economy. The thesis about the existence of the institutional framework as the base of economic development has become widespread.

2. The Quality of Institutional Environment as an Economic Development Factor

Defining institutions is not a simple task. The difficulty in determining exactly what is hidden under this term results from its interdisciplinary and multidimensional character. In this article institutions are the system of established, settled and embedded principles (rules) that structure social interactions (Hodgson, 2006, p. 18). Table 2 presents selected terms that reflect the institutions.

Table 2.
Selected terms illustrating institutions

Institutions		
– rules of social living, – social game rules, – human behaviour regulator, – social control framework, – thinking patterns, – hidden knowledge,	– codes of conduct, – invisible social structures, – social conventions, – social order, – customs, – mind programme,	– formal principles, rules, – rituals, – routines, – contracts and contractual relations, – social framework for decision making, – social adaptation framework.

Note. Wilkin, 2016, p. 104.

There is no doubt about the institutions' positive impact on the economic development (Ratajczak, 2011, p. 41). Both formal and informal institutions have an influence on this process. The division of institutions according to the way they were formed was implemented by D. C. North (1990). Formal institutions are recognized primarily as: the system of property rights, law and various types of regulations (Dobler, 2011, p. 15). It should be noted that this type of institution is characterized by moderate variation over time. This is due to the fact that formal institutions change alongside the political situation of the country changes (Faundez, 2016, 385). In most cases formal institutions are the result of legislation (North, 1990, p. 6). The influence of formal institutions on the entire economy is significant. The appropriate legal framework is the core element of every economic system. Issues such as: the protection of property rights, respect for the law, and rule of law have an influence on the level of economic activity of entities operating in the country. Moreover, the formal institution environment has an impact on the behavior of all individuals in the

economy (Miłaszewicz, 2011, p. 13). The state system is also an important issue. It is now recognized that democratic governance has the strongest positive impact on achieving sustainable economic growth and development (Barro, 1996, p. 4–5).

The second group of institutions are informal one. They include mainly: culture, religion, behavior patterns, social trust and *"mental models"* (common behavioral patterns among individuals) (Fiedor, 2015, p. 94). It should be noted that measuring the quality of institutions is quite difficult. In the case of informal ones, it is additionally problematic due to the fact that they are strongly embedded in the culture and mentality of society. Moreover, these types of institutions do not present great dynamics in the aspect of changes. Informal institutions are the core of the entire institutional environment. They have an influence on both the quality of formal institutions and the level of economic activity (Gruszewska, 2017, p. 41). As the informal institutional environment is characterized by low variation over time, this means that changes in the entire institutional environment are also slow.

"Good" institutions have a particularly positive impact on economic development. Efficient institutions are those that facilitate the flow of information between entities, protect property rights and contracts and also affect the behavior of market participants (Gruszewska, 2013, p. 157). D. Rodrik (2007, p. 150–161) identified five groups of institutions of particular relevance to economic development:
– property rights,
– regulatory institutions,
– institutions for macroeconomic stabilization,
– institutions for social insurance,
– institutions of conflict management.

The institutions mentioned by D. Rodrik are essential for economic development. In case of the absence of "good" institutions in this areas, the economy will remain in a stagnant phase.

Synthetic measures, developed by selected statistical organizations[2], will be applied to measure the quality of institutional environment. It should be emphasized that all synthetic variables of the institutions are imperfect (Miłaszewicz, 2011, p. 16–17).

3. Soft Model Specification
Soft modelling is a method created by H. Wold (1980). The exact description and application of this method can be found in the works of J. Rogowski (1990) and D. Perło (2014a). A soft model consists of two sub-models: inner (theoretical) and outer (measurement). Inner sub-model describes the relationships between latent

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2   World Bank (T*he Worldwide Governance Indicators*, http; *Doing Business Indicators*, http), Fraser Institute (*Economic Freedom*, http; Human Freedom, http), Freedom House (*Freedom House Index*, http) and Heritage Foundation (*Economic Freedom Index*, http).

variables, while the outer one defines relationships between latent measures and their explanatory indicators (Skrodzka & Ciborowski, 2019, p. 389).

Figure 1.
Diagram of the soft model applied in this article
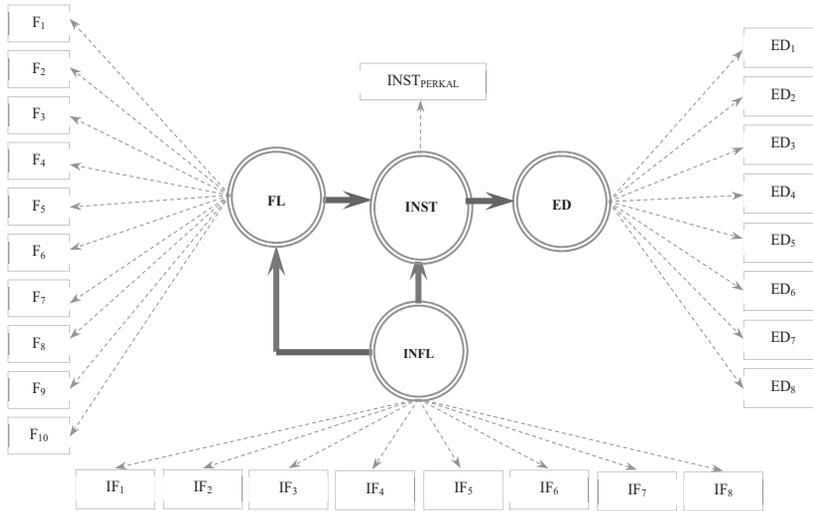
Note. Own elaboration.

The presented diagram (Figure 1) shows that the theoretical model is in the form of three equations (1, 2, 3). Statistical relationships in both internal and external models are linear (Misiewicz, 2013, p. 196). In addition, a deductive approach was applied to define latent variables. The assumption was made that unobserved variables were primary in relation to their explanatory indicators (Perło, 2014a, p. 255). The consequence of this approach is the fact that the ranking of diagnostic indicators of the external model is based on the values of factor loadings, not their weights (Marcinkiewicz, 2013, p. 456).

$$FL_t = \alpha_1 INFL_t + \alpha_2 + \varepsilon_1 \tag{1}$$
$$S_{\alpha_1} \qquad S_{\alpha_2}$$

$$INST_t = \beta_1 FL_t + \beta_2 INFL_t + \beta_3 + \varepsilon_2 \tag{2}$$
$$S_{\beta_1} \qquad S_{\beta_2} \qquad S_{\beta_3}$$

$$ED_t = \gamma_1 INST_t + \gamma_2 + \varepsilon_3 \tag{3}$$
$$S_{\gamma_1} \qquad S_{\gamma_2}$$

Table 3 presents selected diagnostic measures of latent variables. Each indicator was statistically and substantially tested. All explanatory variables are characterized by a variation higher than 7% (classical coefficient of variation) and presented in the form of intensity indexes. Moreover, selected measures have commonly recognized meaning (Roszkowska et al., 2016, p. 138). The division of measures into those explaining the formal and informal institutional environment was done arbitrarily. It was not possible to unequivocally qualify some measures to those that only explain the formal or informal environment. Forty-five variables were qualified for research. After statistical analysis and on the basis of estimated soft models the final set of indicators consists of twenty-seven variables. Diagnostic variables excluded from modelling were presented in Appendix A.

Table 3.

Diagnostic variables of latent variables

Symbol	Diagnostic variable	Type*	Source of data
Latent variable: Formal Institutional Environment (FL)			
F1	Voice and Accountability	s	World Bank (WGI)
F2	Political Stability and Absence of Violence	s	
F3	Government Effectiveness	s	
F4	Regulatory Quality	s	
F5	Rule of Law	s	
F6	Control of Corruption	s	
F7	Starting a Business – Procedures (number)	d	World Bank (DB)
F8	Starting a Business – Cost (% of income per capita)	d	
F9	Sound Money	s	Fraser Institute (EFI)
F10	Regulation	s	
Latent variable: Informal Institutional Environment (INFL)			
IF1	Freedom of Expression and Belief	s	Freedom House
IF2	Associational and Organizational Rights	s	
IF3	Personal Autonomy and Individual Rights	s	
IF4	Political Pluralism and Participation	s	
IF5	Business Freedom	s	Heritage Foundation

IF6	Religion	s	Fraser Institute (HFI)
IF7	Association, Assembly, & Civil Society	s	
IF8	Expression & Information	s	
Quasi- latent variable: Institutional Environment (INST)			
INST$_{PERKAL}$	Synthetic measure of Institutional Environment calculated using Perkal's method (see: Perło, 2014b, p.163–165; Borkowski, 2020, p. 201–203). Diagnostic variables: F1; ...; F10; NF1; ...; NF8.		
Latent variable: Economic Development (ED)			
ED1	Gross Domestic Product per capita	s	OECD
ED2	Gross Domestic Product per employee	s	OECD, World Bank
ED3	Gross fixed capital formation per employee	s	
ED4	R&D Expenditures (% of GDP)	s	OECD
ED5	Employed in services in total employment	s	World Bank
ED6	Health Protection Expenditures (% of GDP)	s	OECD
ED7	Adult education level- Tertiary, % of 25–64 year-olds	s	
ED8	Infant Mortality Rate	d	World Bank

* s- stimulant, d- destimulant.
Note. Own elaboration.

The Partial Least Squares method (Lohmöller, 1989, p. 28–30) is applied to estimate the soft model. The estimation is carried in three basic stages. Stage one: iterative estimation of weight values. Stage two: calculation of parameters (factor loadings) both theoretical and measurement model. Stage three: determining the value of free expressions for both internal and external relation (Rogowski, 1990, p. 38).

The soft model is subject to substantive and statistical verification. Substantive verification consists in assessing the estimated parameters in terms of compliance with theoretical assumptions. Various measures are used for statistical verification of the model. The fit of the model to the empirical data is assessed using the coefficient of determination (Rogowski, 1990, p. 47–48). The predictive capabilities of the model are tested on the basis of the Stone-Geisser test. The values of this test are (-∞, 1> (Rocki, 1998, p. 110). Negative values indicate that the estimated model has poor prediction capabilities- this is the basis for negative model verification. The procedure for calculating the S-G test values allows also an estimation of the standard deviation of the model parameters (Tukey's Jackknifing method). A parameter is statistically significant if its standard deviation does not constitute more than 50% of its estimated value- "2s" rule (Perło, 2014a, p. 97).

4. Research Results

Based on the detailed indicators presented in Table 1, a soft model for 2016[3] data was created. The estimation was conducted with the help of specialist software-MM programme (Miękkie Modelowanie) developed by D. Karaś (SGH). Table 4 presents estimates of the outer sub- model.

Table 4.
Estimates of the outer sub-model

Variable	Weight	Std. Dev.	Factor loading	Std. Dev.	R^2
Formal Institutional Environment (FL)					
F1	0.1498	*0.0091*	0.9418	*0.0257*	0.8870
F2	0.1411	*0.0102*	0.8127	*0.0376*	0.6605
F3	0.1266	*0.0075*	0.9367	*0.0252*	0.8774
F4	0.1206	*0.0082*	0.9121	*0.0300*	0.8320
F5	0.1332	*0.0077*	0.9616	*0.0261*	0.9247
F6	0.1221	*0.0063*	0.9236	*0.0231*	0.8531
F7	-0.0906	*0.0095*	-0.5821	*0.0472*	0.3388
F8	-0.1235	*0.0098*	-0.7804	*0.0411*	0.6091
F9	0.0787	*0.0066*	0.6062	*0.0416*	0.3674
F10	0.1007	*0.0070*	0.7739	*0.0314*	0.5990
Informal Institutional Environment (INFL)					
IF1	0.1469	*0.0117*	0.8801	*0.0722*	0.7745
IF2	0.1598	*0.0109*	0.9306	*0.0609*	0.8660
IF3	0.1667	*0.0110*	0.8842	*0.0472*	0.7819
IF4	0.1616	*0.0130*	0.9104	*0.0705*	0.8289
IF5	0.1360	*0.0111*	0.6078	*0.0497*	0.3694
IF6	0.1227	*0.0116*	0.7398	*0.0777*	0.5473
IF7	0.1218	*0.0145*	0.7566	*0.0987*	0.5724
IF8	0.1667	*0.0101*	0.9709	*0.0530*	0.9426
Institutional Environment (INST)					
INSTPERKAL	1.0000	*0.0000*	1.0000	*0.0000*	1.0000

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3   The research period was dictated by the availability of statistical data.

Economic Development (ED)					
ED1	0.1604	*0.0084*	0.8348	*0.0200*	0.6969
ED2	0.1617	*0.0089*	0.8810	*0.0126*	0.7762
ED3	0.1512	*0.0069*	0.8279	*0.0163*	0.6854
ED4	0.0925	*0.0118*	0.6017	*0.0321*	0.3620
ED5	0.1916	*0.0152*	0.8872	*0.0236*	0.7872
ED6	0.1662	*0.0135*	0.5964	*0.0348*	0.3557
ED7	0.1748	*0.0119*	0.7782	*0.0242*	0.6055
ED8	-0.2081	*0.0159*	-0.6616	*0.0331*	0.4377

Note. Own elaboration (MM programme).

Estimated factor loadings are consistent with the initial assumptions. Namely, the signs of factor loadings are compatible for the stimulants and destimulants. Moreover, all factor loadings and weights are statistically significant. Their values are significantly different from zero.

Chart 1.
Absolute values of factor loadings of the FL latent variable*
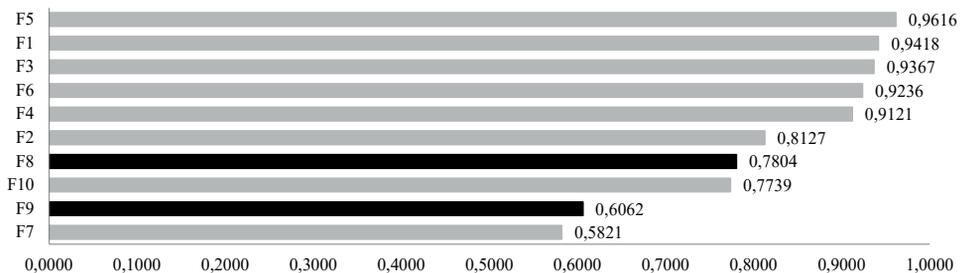

* *destimulants are marked in black*
Note. Own elaboration (MM programme).

The five diagnostic indicators very strongly reflects the latent variable "Formal Institutional Environment". The strongest factor loading was observed at the "Rule of Law" measure (F5, 0.9616). The following indicators have comparable level (very strong) of reflection of FL latent variable: the Voice and Accountability index (F1, 0.9418), Government Effectiveness index (F3, 0.9367), Control of Corruption measure (F6, 0.9236) and Regulatory Quality synthetic variable (F4, 0.9121). Four out of five WGI indexes are strongly correlated with the FL latent variable. The remaining variables reflect formal institutional environment strongly (F2, F8, F10)

and moderately (F9, F7). Statistical data analysis led to the conclusion that indicators of the rule of law, quality of regulation and control of corruption have the strongest impact on the FOL variable. Issues related to monetary policy management and the functioning of the enterprise were of secondary nature.

Chart 2.
Absolute values of factor loadings of the INFL latent variable
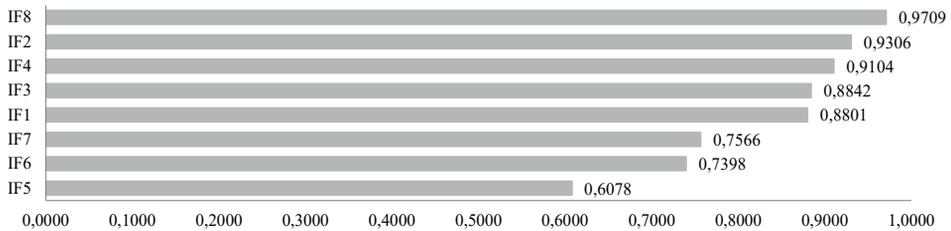
Note. Own elaboration (MM programme).

Three out of seven indicators of latent variable INFL have very strong correlation with it: Expression & Information index (IF8, 0.9709), Associational and Organizational Rights indicator (IF2, 0.9306) and Political Pluralism and Participation measure (IF4, 0.9104). Variables IF3, IF1, IF7 and IF6 strongly reflect this latent variable. Indicator IF5- Business Freedom has a moderate correlation (0.6078) with the INFL latent variable.

Chart 3.
Absolute values of factor loadings of the ED latent variable*
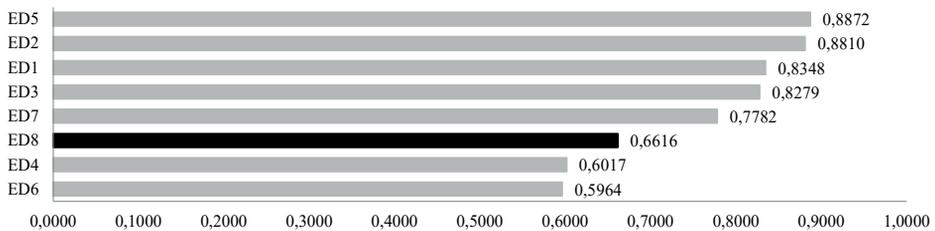
* destimulants are marked in black
Note. Own elaboration (MM programme).

The diagnostic variables of economic development were characterized by the largest variation in relation to the strength of the correlation with the ED latent variable. Economic development was most strongly reflected by "Employed in services in total employment" (ED5, 0.8872). On this basis it can be concluded

that the high percentage of employment in services is the core element of economic development. This justification is in line with the economic theory. The indicators which factor loadings indicated a strong statistical relationship with the ED variable were: macroeconomic labour productivity (ED2, 0.8810), GDP per capita (ED1, 0.8348), capital investments-labour ratio (ED3, 0.8279) and the percentage of people of working age with a tertiary education (ED7, 0.7782). Infant Mortality Rate (ED8, 0.6616), R&D Expenditures as a % of GDP (ED4, 0.6017) and Health Protection Expenditures as a % of GDP (ED6, 0.5964) reflect latent measure in a moderate way.

The estimation of the inner sub-model parameters, along with their standard deviations, are presented below:

$$FL_{2016} = 0.8548 \cdot INFL_{2016} - 4.8195 \tag{4}$$
$$\quad (0.0151) \qquad\qquad (0.3097) \qquad\qquad\qquad R^2 = 0.7307$$

$$INST_{2016} = 0.5920 \cdot FL_{2016} + 0.4451 \cdot INFL_{2016} - 7.5069 \tag{5}$$
$$\quad (0.1249) \qquad (0.1682) \qquad\quad (1.2423) \qquad R^2 = 0.9990$$

$$ED_{2016} = 0.7510 \cdot INST_{2016} + 3.8677 \tag{6}$$
$$\quad (0.0120) \qquad\qquad (0.1551) \qquad\qquad R^2 = 0.5641$$

Equation (4) describes the relation between formal and informal institutional environments. Informal institutions have a very strong, positive impact (0.8548) on the formal ones. The value of determination coefficient for this equation is at 0.7307, which means that the variation of FL latent variable is explained in more than 73% by this model. Furthermore, all structural parameters are statistically significant ("2s" rule).

Equation (5) shows that both formal and informal institutional environments have a positive influence on the quality of general institutional environments. The FL latent variable has a greater impact (0.5920) on INST than INFL (0.4451). This situation may be due to the fact that the indicators of informal institutions are imperfect and do not cover all issues related to this term- accurate quantification of this type of institution is very difficult, even impossible. Latent variables FL and INFL describe variability of the INST very well ($R^2=0.9990$). The estimated model parameters are statistically significant according to the "2s" rule.

Equation (6) expresses the main function of this article. The estimated model shows that the level of institutional environment (0.7510) affects the level of economic development. This relationship is strong and positive. The coefficient of determination is equal to 0.5641, which means that variation of ED is explained by variation of INST in more than 56%. It can be considered as a sufficient result of R^2 (the model is estimated for the spatial data- the value of the coefficient of determination is considered as a satisfactory). All structural parameters of this equation are significantly different from zero ("2s" rule).

Table 5.
Stone-Gaisser's test values for ED variable

	S-G test
ED1	0.2892
ED2	0.2867
ED3	0.2601
ED4	0.0783
ED5	0.4063
ED6	0.2692
ED7	0.3333
ED8	0.3153
ED	0.2856

Note. Own elaboration (MM programme).

All Stone-Gaisser test values for the model are positive. The general value of S-G test for ED latent variable is equal to 0.2856. This shows that the model has a fairly good predictive quality. On the basis of conducted calculations it can be concluded that the estimated soft model is positively verified.

PLS method allowed estimation of values of latent variable for OECD countries. They can be treated as a synthetic indicators. What is important, calculated latent variable values do not have substantive interpretation; they can only be used for comparative analysis (Misiewicz, 2013, p. 199). OECD country rankings for all of latent variables from soft model are presented in Table 6.

Table 6.
OECD country rankings - FL, INFL, INST and ED latent variables

	FL	INFL	INST	ED
Luxembourg	10.	11.	10.	1.
Switzerland	2.	14.	8.	2.
Norway	5.	8.	7.	3.
Ireland	12.	17.	14.	4.
Sweden	4.	1.	2.	5.
United Kingdom	11.	21.	12.	6.
Iceland	13.	3.	11.	7.

Denmark	6.	10.	4.	8.
Australia	8.	5.	5.	9.
Israel	27.	34	33.	10.
Japan	18.	25.	21	11.
Finland	7.	4.	6.	12.
Canada	3	6.	3.	13.
Belgium	19.	12.	15.	14.
United States	14.	18.	13.	15.
The Netherlands	9.	7.	9.	16.
France	21.	27.	23.	17.
Austria	17.	16.	18.	18.
Germany	15.	13.	16	19.
South Korea	30.	31	29.	20.
Spain	28	23.	27.	21.
New Zealand	1.	2.	1.	22.
Italy	33.	29.	31.	23.
Slovenia	22.	20.	22.	24.
Estonia	16.	19.	17.	25
Greece	34.	32.	34.	26.
Portugal	23.	9.	19.	27.
Lithuania	20.	22	20.	28.
Czech Republic	25.	24.	26.	29.
Latvia	24.	28.	25.	30.
Hungary	32.	33.	32.	31.
Slovak Republic	29.	26.	28.	32.
Poland	31.	30.	30.	33.
Chile	26.	15.	24.	34.
Turkey	36.	36.	36.	35.
Mexico	35.	35.	35.	36.

Note. Own elaboration (MM programme).

The ranking shows that the highest quality of formal institutional environment in 2016 was in New Zealand, while the lowest in Mexico. Canada is the leader in terms of informal institutional environment, while Turkey closes the ranking. Norway dominates in the overall ranking of the institutional environment level, while Turkey has the weakest level of this latent variable. According to the classification of OECD countries in terms of the hidden variable ED, it follows that Luxembourg is the most developed country in the organization and Turkey the least.

Table 7.

The rho-Spearman correlation coefficients for the ranking according to the values of estimated latent variables

	FL	INFL	INST	ED
FL	1.000	0.867**	0.979**	0.762**
INFL		1.000	0.927**	0.578**
INST			1.000	0.712**
ED				1.000

*** Correlation significant at the level of 0.01 (two-sided)*
Note. Own elaboration (SPSS).

Table 7 shows the rho-Spearman correlation coefficients between all hidden variables in pairs. All correlations are statistically significant at 0.01 level. The latent variable ED strongly correlates with the INST indicator. This means that the high position of the OECD country in the institutional environment ranking is associated with a high position in the economic development ranking.

Conclusions

The aim of this article was to identify the direction and strength of the relationship between institutional environment and economic development. The purpose was achieved on the basis of the literature analysis and a constructed soft model. On the basis of the literature analysis, the factors of economic development were indicated. Institutional environment was indicated as a core element of economic development. The constructed soft model allowed for the measurement of the relationship between institutions and economic development. The latent variable INST has a positive and strong influence on the ED indicator. On this basis, it can be stated that the quality of the institutional environment has a strong, positive impact on shaping the level of economic development.

The main hypothesis of the work was the supposition that the quality of the institutional environment has a positive influence on economic development. The conducted research allowed for positive verification of the adopted hypothesis.

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APPENDIX A

Table A.
Diagnostic variables excluded from the research

Diagnostic variable	Type	Source of data
Latent variable: Formal Institutional Environment (FL)		
Starting a Business - Time (days)	d	World Bank (DB)
Registering Property - Procedures (number)	d	
Registering Property - Time (days)	d	
Registering Property - Cost (% of property value)	d	
Size of Government	s	Fraser Institute (EFI)
Freedom to Trade Internationally	s	
Latent variable: Informal Institutional Environment (INFL)		
Labour Freedom	s	Heritage Foundation
Trade Freedom	s	
Investments Freedom	s	

Latent variable: Economic Development (ED)		
Gross Capital Formation (% of GDP)	s	World Bank
Exports of goods and services (% of GDP)	s	
High - technology exports (% of export)	s	
Life expectancy at birth	s	
Real GDP growth rate (%)	s	
Unemployment rate (%)	d	
Inflation rate (%)	d	
General government deficit (% of GDP)	s	OECD
Current account balance (% of GDP)	s	World Bank
Gross savings (% of GDP)*	s	

* Gross savings as % of GDP can also be treated as a variable of the informal institutional environment (propensity to save)
Note. Own elaboration.