

CORRELATIONS BETWEEN INSTITUTIONAL-POLITICAL GOVERNANCE AND ECONOMIC GOVERNANCE IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

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Abstract. In this paper, sustainable development is defined as an undisturbed process of steady growth within four areas, which are also referred to as governances: environmental, social, economic and institutional-political. When searching for factors stimulating sustainable development, it is important to identify correlations between individual governances. Data for the study were retrieved from the Eurostat website. Variables were assigned to individual governances and divided into stimuli and inhibitors according to the description of variables provided by Eurostat. The collected data were used to determine the synthetic measure of economic governance and synthetic measures for groups of variables defining institutional-political governance. Hellwig's taxonomic measure was used as the research tool. This study made it possible to determine the econometric model indicating statistically significant correlations for two groups of variables selected from among five groups characteristic of institutional-political governance. The group of characteristics relating to coherence and efficiency policy and the group describing civil society (openness, participation and active citizenship) showed a statistically significant and positive direction of impact on economic governance in the analysed period.

Keywords: economic governance, institutional-political governance, sustainable development, synthetic measure

INTRODUCTION

Sustainable development is defined as development which satisfies the needs of the present generation without compromising the ability of future generations to satisfy their own needs. This definition mainly refers to basic human needs which constitute an important element of sustainable development. Nonetheless, defined as above, sustainable development may be modified by institutional-political governance (Hall, 1999).

In this paper, sustainable development means an undisturbed process of steady growth within four areas also referred to as the environmental governance, social governance, economic governance, and institutional-political governance.

Assuming that steady growth occurs within these governance areas, it is vital to identify the underpinning factors for each of them. Awareness of these correlations should enable the implementation of necessary adjustments to sustainable development in the future.

The aforesaid assumptions were used to set the objective for the analyses under discussion, which is to determine the mutual correlations between economic governance and groups of variables that describe the institutional-political governance.

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CORRELATIONS BETWEEN INSTITUTIONAL-POLITICAL GOVERNANCE AND ECONOMIC GOVERNANCE

In certain areas, sustainable development is closely linked to globalization processes. As confirmed by research, in some cases, globalization processes caused irreparable damage to some efficiently operating, socially and culturally sustainable communities (Srikantia, 2016). The globalization's impact on sustainable development requires the international community to adopt a list of common goals. Among them, it is essential to identify those with a global impact in terms of sustainable development because such goals usually involve competing demands and critical compromises (Muller et al., 2015).

Synergy and conflicts regarding sustainable development on a global basis (between countries or even continents) pose a major problem which must not be ignored (Olsson et al., 2014).

Issues relating to the international coverage of transport operations are an example of how specific countries interact with each other with respect to sustainable development. A study performed by a transport organization showed that countries with underdeveloped transport have a limited access to the global trade exchange. On the one hand, this has some environmental protection implications: a more favorable situation resulting from the absence of adverse environmental effects of transport operations. On the other hand, however, countries with a poor transport infrastructure are economically backward areas. Therefore, three paths towards sustainable development may be identified: information and telecommunication technologies; changes in social preferences, especially as regards environmental protection; and sustainable production and consumption (Kohler, 2014).

In the global community, corporate social responsibility (CSR) has gained in importance. Essentially, this term is related to economic globalization, which is particularly manifested in the growth of international trade. Also, specific CSR requirements are reflected in stringent environmental protection obligations (Sun, 2010).

A panel research conducted for Hungary, Bulgaria, Romania and Turkey showed that energy consumption is a significant factor behind carbon dioxide pollution in the region. Therefore, in these countries, green energy

production technologies are required in order to achieve sustainable development (Atici, 2009).

An element of economic activity which is indispensable in the sustainable development context is the dependence on the stakeholders' opinions, lending conditions, good reputation, and local institutions (Iannone, 2015).

Furthermore, mutual trust between organizations, local government units and public institutions is based on the social capital of organizations (Palmi, 2014).

According to analyses of social and environmental factors, the impact on sustainable development has a transnational nature. Therefore, in this context, it is essential to secure the interests of at-risk countries. This is where international corporations play a vital role, for instance by stimulating the supply chain and production cycle. It is especially important having in mind that weaker countries are the destination of hazardous products, and their natural resources are used for production processes (Jorgensen and Milanez, 2017).

In addition, sustainable development largely depends on the local government units' ability to explain the government policy (Glemarec and de Oliveira, 2012).

Another factor of importance for economic governance in the context of sustainable development is the consumers' trust in the national political system which is reflected by an increased motivation to purchase goods whose consumption is stimulated by politics, ethics, and environmental concerns. According to a research addressing the trust put in public institutions, they influence the sustainable development policy (Berlin, 2011).

In contemporary democratic societies, the results of elections may change the political situation, thus impacting the sustainable development policy. An example of the relationship between voter turnout and economic growth is the influence of election processes on the country's fiscal policy (Moldovan et al., 2014).

In order to ensure stable sustainable development, it is necessary to develop a civil society, especially in the context of representing the interests of local communities in local and regional authorities. This could be achieved by mobilizing high voter turnout. Analyses of election processes in Lithuania identified a relationship between high voter turnout and substantial civic, economic, and environmental awareness (Petruolis, 2006).

Social networks are believed to be a key factor impacting the economic and social quality of life. There is evidence that social cohesion is of key importance for

ensuring durable economic development (Jackson and Young, 2016).

The following pillars of sustainable development may be identified: the economic pillar which means financial profits and effective use of resources; the social pillar, manifested by the employment levels, social cohesion and social identity; and the environmental pillar which extends to the individual's physical environment and the pollution levels (Dalton et al., 2016).

Other substantial contributors to sustainable development include transparency, responsibility, honesty and the rule of law (Mahajan and Bandyopadhyay, 2015).

Finally, the participation of women in social life is also crucial. Social Capital (SC) measurements include variables related to trust perception, relationship networks, solidarity and social integration, and voluntary activities. The Social Capital Index (SCI) research showed no obvious differences between genders

as regards education levels; however, clear differences were discovered between genders when it comes to professional training and social capital. Note that the differences were clearly greater in women than in men. The Social Capital may have a noticeable influence on the sustainable development in the discussed contexts (Varrel et al., 2015).

The aforesaid prerequisites described in the relevant literature justify the choice of variables for the analyses discussed in this paper.

METHODS

Data necessary to conduct the research was obtained from the Eurostat website. The analysis covered 28 selected European countries studied in the 2004–2013 period. The variables were assigned to individual governance areas and divided into stimuli and inhibitors based on the description provided by Eurostat (Tables 1–2).

Table 1. Groups of variables describing economic governance
Tabela 1. Grupy zmiennych opisujące ład gospodarczy

Specification – Wyszczególnienie	Type of variable Charakter zmiennej
1	2
Economic development – Rozwój gospodarczy	
increase in per capita GDP wzrost produktu krajowego brutto na 1 mieszkańca	stimulus stymulanta
investment rate stopa inwestycji	stimulus stymulanta
regional diversification of per capita GDP in purchasing power parities at NTS 3 level różnicowanie regionalne PKB na 1 mieszkańca według parytetu siły nabywczej (PPP) na poziomie NTS 3	inhibitor destymulanta
government and local government investment debt in relation to GDP dług sektora inwestycji rządowych i samorządowych w relacji do PKB	inhibitor destymulanta
surplus/deficit of the government and local government investments in relation to GDP wynik (nadwyżka/deficyt) sektora inwestycji rządowych i samorządowych w relacji do PKB	neutral nominanta
transport intensity of GDP/rail transport transportochłonność PKB – transport kolejowy	inhibitor destymulanta
transport intensity of GDP/road transport transportochłonność PKB – transport samochodowy	inhibitor destymulanta
energy intensity of transport in relation to GDP energochłonność transportu w relacji do PKB	inhibitor destymulanta
per capita GDP in purchasing power parities (PPP) PKB na 1 mieszkańca według parytetu siły nabywczej (PPP)	stimulus stymulanta

Table 1 cont. – Tabela 1 cd.

	1	2
Employment – Zatrudnienie		
employment rate for people aged 20–64 wskaźnik zatrudnienia osób w wieku 20–64 lat		stimulus stymulanta
professional lifespan czas trwania życia zawodowego		stimulus stymulanta
economic and social inactivity coefficient for young people aged 15–24 wskaźnik bierności ekonomiczno-społecznej młodzieży w wieku 15–24 lat		inhibitor destymulanta
economic and social inactivity coefficient for young people aged 20–24 wskaźnik bierności ekonomiczno-społecznej młodzieży w wieku 20–24 lat		inhibitor destymulanta
professional activity coefficient współczynnik aktywności zawodowej		stimulus stymulanta
Innovation – Innowacyjność		
share of net revenue on the sale of innovative products in the net sales revenue udział przychodów netto ze sprzedaży produktów innowacyjnych w przychodach netto ze sprzedaży		stimulus stymulanta
human resources allocated to science and technology zasoby ludzkie dla nauki i techniki		stimulus stymulanta
labor productivity wydajność pracy		stimulus stymulanta
R&D expenditure in relation to GDP nakłady na działalność badawczo-rozwojową w relacji do PKB		stimulus stymulanta
number of patent applications filed by local residents with the European Patent Office per 1,000,000 population liczba wynalazków zgłoszonych przez rezydentów do Europejskiego Urzędu Patentowego na 1 mln mieszkańców		stimulus stymulanta
Transport – Transport		
railway freight transport transport towarowy/kolejowy		stimulus stymulanta
inland waterways freight transport transport towarowy/wodny śródlądowy		stimulus stymulanta
railway passenger transport transport pasażerski/pociągi		stimulus stymulanta
Production patterns – Wzorce produkcji		
resource productivity wydajność zasobów		stimulus stymulanta
share of environmentally-friendly farmland in the total agricultural area udział powierzchni użytków rolnych gospodarstw ekologicznych w powierzchni użytków rolnych ogółem		stimulus stymulanta
organizations compliant with the environmental Eco-Management and Audit Scheme (EMAS) – organizacje ze środowiskowym Systemem Ekozarządzania i Audytu EMAS		stimulus stymulanta

Source: Wskaźniki (Indicators) (n.d.).

Źródło: Wskaźniki (b.d.).

Table 2. Groups of variables describing the institutional-political governance
Tabela 2. Grupy zmiennych opisujące ład instytucjonalno-polityczny

Specification – Wyszczególnienie	Type of variable Charakter zmiennej
1	2
Sustainable development financing – Finansowanie zrównoważonego rozwoju	
official development assistance (ODA) for developing countries oficjalna pomoc rozwojowa (ODA) dla krajów rozwijających się	stimulus stymulanta
Trade globalization – Globalizacja handlu	
import from developing countries/countries in the DAC List of ODA Recipients import z krajów rozwijających się/kraje znajdujące się na liście biorców pomocy rozwojowej według OECD DAC	stimulus stymulanta
Cohesion and efficiency policy – Polityka spójności i efektywności	
level of trust in public institutions/government poziom zaufania wobec instytucji publicznych/rząd	stimulus stymulanta
level of trust in public institutions/national parliament poziom zaufania wobec instytucji publicznych/parlament krajowy	stimulus stymulanta
level of trust in public institutions/judicature and legal system poziom zaufania wobec instytucji publicznych – sądownictwo oraz system prawny	stimulus stymulanta
level of trust in public institutions/police poziom zaufania wobec instytucji publicznych/policja	stimulus stymulanta
level of trust in public institutions/political parties poziom zaufania wobec instytucji publicznych/partie polityczne	stimulus stymulanta
level of trust in public institutions/European Parliament poziom zaufania wobec instytucji publicznych/Parlament Europejski	stimulus stymulanta
level of trust in public institutions/European Commission poziom zaufania wobec instytucji publicznych/Komisja Europejska	stimulus stymulanta
level of trust in public institutions/Council of the European Union poziom zaufania wobec instytucji publicznych/Rada Unii Europejskiej	stimulus stymulanta
corruption perceptions index wskaźnik postrzeganej korupcji	stimulus stymulanta
Civil society/openness and participation, civic activity Społeczeństwo obywatelskie/otwartość i uczestnictwo oraz aktywność obywatelska	
voter turnout for national parliament elections frekwencja w wyborach parlamentarnych do Parlamentu Krajowego	stimulus stymulanta
voter turnout for European Parliament elections –frekwencja w wyborach parlamentarnych do Parlamentu Europejskiego	stimulus stymulanta
share of households with broadband Internet access odsetek gospodarstw domowych posiadających szerokopasmowy dostęp do Internetu w domu	stimulus stymulanta
share of people using Internet to contact public administration odsetek osób korzystających z Internetu w kontaktach z administracją publiczną	stimulus stymulanta
trust coefficient wskaźnik zaufania	stimulus stymulanta

Table 2 cont. – Tabela 2 cd.

	1	2
Equal rights in management – Równoprawność w zarządzaniu		
share of women managers in the total number of managers udział kobiet na stanowiskach kierowniczych w ogólnej liczbie pracujących na stanowiskach kierowniczych		stimulus stymulanta
women's participation in public life/share of women in national parliaments in Q4: single-chamber parliaments or lower chambers of parliament udział kobiet w życiu publicznym/parlamenty narodowe w IV kwartale: jednoizbowe lub niższe izby parlamentu		stimulus stymulanta
women's participation in public life/share of women in national parliaments in Q4: the upper chamber of parliament udział kobiet w życiu publicznym/parlamenty narodowe w IV kwartale: wyższa izba parlamentu		stimulus stymulanta
women's participation in public life/regional level authorities (councilors): total udział kobiet w życiu publicznym/władze szczebla regionalnego (radni): ogółem		stimulus stymulanta
women's participation in public life/local level authorities: mayors or other municipal council leaders udział kobiet w życiu publicznym/władze szczebla lokalnego: burmistrzowie lub inni liderze w radach gmin		stimulus stymulanta
women's participation in public life/local level authorities: councilors udział kobiet w życiu publicznym/władze szczebla lokalnego: radni		stimulus stymulanta

Source: Wskaźniki (Indicators) (n.d.).

Źródło: Wskaźniki (b.d.).

The preliminary analysis of empirical data involved determining a coefficient of variation for each *j*-th variable. This is a relative measure of dispersion which enables the elimination of quasi-constant variables.

The data gathered in Tables 1–2 was used to determine the value of the Hellwig's synthetic measure as per the procedure detailed in the relevant publication (Czyżewski and Polcyn, 2016). This was followed by the calculation of appropriate aggregate values which are the basis for further research stages. Economic governance was assessed by adding up the Hellwig's measure values for the groups of variables which describe, respectively, the economic development; employment; innovation; transport; and production patterns (Table 1). As regards the institutional-political governance, the Hellwig's synthetic measures were used for the following groups of variables: sustainable development financing; trade globalization; cohesion and efficiency policy; civil society: openness and participation; civic activity; and equal rights in management (Table 2).

The resulting aggregate values for groups of variables representing specific types of governance (determined for each of the 28 analyzed countries during a continuous 10-year observation period) were statistically tested in order to select the optimum model version together

with the corresponding estimation methodology. Testing included the following steps:

- Choosing between the classical least squares model and the panel model

First, the Breusch-Pagan test was performed. The Breusch-Pagan statistics was 1.47245e-134. This is a low level suggesting that the classical least squares (CLS) estimation needs to be rejected. Therefore, it is necessary to introduce individual effects.

In this analysis, the model demonstrated an individual effect, and thus there are two options for choosing the estimators: the fixed effects estimator or the random effects estimator. The estimators are selected by analyzing the value of the Hausman test.

- Panel estimator

Random effects estimator; individual effects are treated as random variables.

The Hausman statistics *p*-value for random effects is 5.94313e-005, implying the rejection of the hypothesis that the random effects estimator is adequate to perform the planned analytical task (Hausman, 1978; Hausman and Taylor, 1981).

The fixed effects estimator is used to estimate the parameters of models with demonstrated individual effects.

The Hausman statistics p-value for random effects is $5.94313e-005$. The Hausman statistics p-value below 0.05 indicates that the fixed effects estimator will ensure a greater adequacy of analyses under consideration (Hausman, 1978; Hausman and Taylor, 1981).

The model was developed with the use of Gretl 2016d.

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The above analyses, involved in selecting the panel analysis method, led to an obvious finding that the differences between the countries covered are constant over time but unknown (assumption resulting from the fixed effect model).

Table 3 shows subsequent stages of panel model improvements through the estimation of fixed effects. The log likelihood was adopted as the indicator of improvements to the model's explanatory properties, assuming that lower values mean better explanatory properties of the required model. The analysis based on that principle resulted in a model with a log likelihood of -6.90402 . As it was the lowest value in the model under consideration, it was considered to be the best one. Furthermore, the decreasing values of information criteria (Schwarz Bayesian criterion, Akaike's criterion and Hannan-Quinn's criterion) indicate an improvement of the model's explanatory properties. Therefore, model 4 (Table 3) is the most adequate among those calculated (Schwarz, 1978; Akaike, 1973; Akaike, 1973; Hannan and Quinn, 1979).

In model (3), the LSDV R^2 value indicates that approximately 92% of variability is explained by the model. Note the negligible changes in the value of the indicator in all of the successively calculated models (Table 3). The value of the 'within' (intra-group) variance is 0.079592. The intra-group variance indicates that the variability explanation level depends on intra-group heterogeneity (in this case, it means heterogeneity within the analysis period) (Turczak and Zwiach, 2016).

Initially, the model comprised five synthetic measures explaining economic governance. The panel analyses enabled the elimination of the following variables due to lack of statistical relevance: sustainable development financing; equal rights in management; and trade

globalization. Note that the eliminated variables demonstrated a negative impact on sustainable development. It seems plausible that trade globalization has a negative impact on economic governance in the context of sustainable development, as also confirmed in the relevant literature (Olsson et al., 2014).

Conversely, it is difficult to explain why sustainable development financing may have a negative impact on economic governance. Nonetheless, it should be noted that the value considered was only valid for official development aid granted to developing countries (Table 2). Most of the 28 countries covered by the analysis did not receive any development aid. This could suggest that providing developing countries with development aid contributed to a negative impact on economic governance due to decreased levels of investment in sustainable development in those countries. Alternatively, it could also be concluded that development aid for developing countries failed to bring the intended effect. Nevertheless, the aforesaid statements on the negative impact of sustainable development financing on economic governance are nothing but conjecture as no statistically significant impact of the value discussed on the econometric model was demonstrated.

Another variable which proved to have a negative impact in the model were equal rights in management. However, it should be stated that the analyzed value is affected by quite a high differentiation between genders in holding managerial positions and involvement in politics. Perhaps, it would be possible to draw some statistically relevant conclusions if the women's participation in the discussed values was substantially greater.

The cohesion and efficiency policy has a positive impact on economic governance, suggesting that the level of trust in public institutions and the corruption ratio are well suited for the calculation of the indicator as they improve the value of the synthetic measure of economic governance. An increase in the value of the cohesion and efficiency policy measure by one unit will cause an increase in the synthetic measure of economic governance by 0.3562. This relationship suggests that the variable under consideration had the strongest impact on economic governance among all variables covered (Table 3).

Another variable with a positive impact on the synthetic measure of economic governance is the synthetic measure of civil society. However, its impact on economic governance is weaker than that of the variable specified above. An increase in the value of the civil

Table 3. Estimation results for the “economic governance” dependent variable
Tabela 3. Wyniki estymacji dla zmiennej zależnej ładu gospodarczego

Independent variables – Zmienne niezależne	Dependent variable evolution models* Modele opisujące kształtowanie się zmiennej zależnej *			
	(1)	(2)	(3)	(4)
Const – Stała	2.113** (0.2153)	2.053** (0.1346)	2.011** (0.1124)	1.904** (0.06456)
Cohesion and efficiency policy Polityka spójności i efektywności	0.3812** (0.09393)	0.3772** (0.09312)	0.3774** (0.09299)	0.3562** (0.09125)
Civil society – openness and participation, civic activity Społeczeństwo obywatelskie – otwartość i uczestnictwo oraz aktywność obywatelska	0.1929** (0.09065)	0.1930** (0.09049)	0.1931** (0.09036)	0.2088** (0.08941)
Sustainable development financing Finansowanie zrównoważonego rozwoju	–0.3625 (0.3126)	–0.3589 (0.3119)	–0.3617 (0.3114)	
Equal rights in management Równoprawność w zarządzaniu	–0.08208 (0.1441)	–0.08049 (0.1438)		
Trade globalization Globalizacja handlu	–0.3004 (0.8331)			
Additional adjustment criteria for the model – Dodatkowe kryteria dopasowania modelu				
LSDV R2	0.915669	0.915624	0.915518	0.915060
Within R2 – W zasięgu R2	0.086188	0.085707	0.084551	0.079592
Log likelihood Logarytm wiarygodności	–5.897184	–5.97087	–6.14770	–6.90402
Schwarz Bayesian criterion Kryterium bayesowskie Schwarza	197.7424	192.2550	186.9739	182.8517
Akaike information criterion Kryterium informacyjne Akaike’a	77.79437	75.94174	74.29541	73.80804
Hannan-Quinn criterion Kryterium Hannana-Quinna	125.9057	122.5952	119.4909	117.5456

*Models calculated with the backward stepwise regression method.

b** Standardized values.

Standard error values provided in brackets.

Source: own elaboration based on models developed with Gretl 2016b.

*Modele wyznaczone, stosując metodę regresji krokowej wstecznej.

b** Wartości standaryzowane.

W nawiasach zamieszczono wartość błędów standardowych.

Źródło: opracowanie własne na podstawie modelowania w programie Gretl 2016b

society measure by one unit will cause an increase in the synthetic measure of economic governance by 0.2088. This means the impact of the discussed variable on economic governance is approximately 60% weaker than that of the synthetic measure of cohesion and efficiency policy, as discussed above. The synthetic measure which

provides a description of the civil society (openness and participation, civic activity), mainly reflected by voter turnout, trust coefficient, and Internet access (which, in this study, is considered to be a specific indicator of the society’s openness), has a clear positive impact on economic governance.

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WPLYW CZYNNIKÓW INSTYTUCJONALNO-POLITYCZNYCH NA ŁAD GOSPODARCZY W KONTEKŚCIE ZRÓWNOWAŻONEGO ROZWOJU

Abstrakt. Istotnym problemem w poszukiwaniu czynników stymulujących rozwój zrównoważony jest odkrycie wzajemnych interakcji między poszczególnymi obszarami rozwoju zrównoważonego, często określanymi jako łądy. Dane do przeprowadzonych analiz zaczerpnięto ze strony internetowej Eurostat. Zgromadzone dane posłużyły do wyznaczenia syntetycznego miernika ładu gospodarczego oraz syntetycznych mierników dla grup zmiennych opisujących łąd instytucjonalno-polityczny. Wykorzystanym w tym celu narzędziem badawczym był taksonomiczny miernik Hellwiga. W wyniku realizacji badania wyznaczono model ekonometryczny wskazujący na statystycznie istotne zależności dla 2 grup zmiennych wyselekcjonowanych spośród 5 grup charakteryzujących łąd instytucjonalno-polityczny. Statystycznie istotny i dodatni kierunek oddziaływania na łąd gospodarczy wykazywał w badanym okresie agregat cech odnoszących się do polityki spójności i efektywności oraz agregat opisujący społeczeństwo obywatelskie (otwartość i uczestnictwo oraz aktywność obywatelską).

Słowa kluczowe: łąd gospodarczy, łąd instytucjonalno-polityczny, rozwój zrównoważony, miernik syntetyczny

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