“Typology of welfare states: quality criteria for governance and ecology”

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ARTICLE INFO	Victor Koziuk, Oleksandr Dluhopolskyi, Yurij Hayda and Oksana Shymanska (2018). Typology of welfare states: quality criteria for governance and ecology. *Problems and Perspectives in Management*, *16*(4), 235-245. doi:10.21511/ppm.16(4).2018.20
DOI	http://dx.doi.org/10.21511/ppm.16(4).2018.20
RELEASED ON	Wednesday, 21 November 2018
RECEIVED ON	Wednesday, 03 October 2018
ACCEPTED ON	Monday, 05 November 2018

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JOURNAL	"Problems and Perspectives in Management"
ISSN PRINT	1727-7051
ISSN ONLINE	1810-5467
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
37	3	8

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BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10, Sumy, 40022, Ukraine

www.businessperspectives.org

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TYPOLOGY OF WELFARE STATES: QUALITY CRITERIA FOR GOVERNANCE AND ECOLOGY

Abstract

In the 21st century, in addition to the generally well-known indicators of material well-being, in the modern paradigm of the welfare state, the quality of the ecological environment is gaining an ever-increasing role. Besides that, the modern definition of welfare state takes into account not only environmental dimension, but also the quality of institutions through the governance system that affects the supply of environmental goods. The study provides the classification of countries according to indicators that can ensure the identification of welfare states and the assessment of the classification role of the criteria for environmental state.

The strong direct correlation between environmental state and government efficiency has been established. The results of the classification of the studied countries obtained by k-means clustering methods indicate the possibility of using the Environmental Performance Index (EPI), Government Effectiveness Index (GEI) and government expenditures indicators as complementary attributes to the classical criteria for the welfare state.

The level of country EPI can be regarded as an important complementary criterion for the welfare state. The country environmental state is much more determined by the government efficiency, the quality of state institutions and their activities, rather than by an extensive increase in the funding of such institutions and environmental measures.

Keywords environment, welfare, ecology, governance, cluster, country

JEL Classification A13, B22, H23, H53, I31, P50, Q57

Received on: 3rd of October, 2018
Accepted on: 5th of November, 2018

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INTRODUCTION

Awareness of the magnitude of the devastating impact of the growing technogenic load on the environment is increasingly causing a rise in requests for quality environmental goods from both individual and society as a whole. That is why the environmental factor becomes an important component in determining the governance effectiveness, which is, at the same time, increasingly determined by the quality of institutions that can ensure the implementation of an effective environmental policy. That is why there is a question regarding the revision of traditional approaches to the definition of a welfare state, taking into account not only its environmental dimension, but also the quality of institutions through the governance system that affects the supply of environmental goods. This approach not only contributes to the in-depth analysis of the welfare state in the context of environmentalization, but also broadens (in consequence of environmental factor) the very concept of welfare, which derives from institutional choices, within which the level of public spending becomes a private occurrence of the expression of consumer preferences.

1. LITERATURE REVIEW

According to scientists, the development of countries is increasingly determined by the ability of national economies to produce environmental goods (Cole, 2007; Duit, 2005, 2014, 2016; Scott & Graddy, 2000), which are understood as "goods or services, the benefits of which either party does not reduce opportunities for obtaining these benefits for others, and accessibility the goods are unlimited" (UK NEA, 2014; Kelman, 1996). Usually environmental public goods include air, groundwater reserves, forests, etc. However, if in developed democracies access to the latter is guaranteed to all citizens in accordance with legal norms, in countries with a distorted value system, the benefits from consumption of environmental goods are most often received by groups of special interests, blocking access to their use by the rest of society. Despite the fact that the government of any country is required to take responsibility for the quality of environmental governance in order to ensure welfare, the realities of hybrid regimes and the authoritarian style of public administration demonstrate the existence of such negative phenomena as "ecological racism" or "punishment for poverty" (Baber & Bartlett, 2005; Dluhopolskyi, 2018), which confirm the lack of political and economic freedoms, the lack of developed civil society.

A number of studies conducted on the basis of empirical per capita income comparisons and the values of a certain set of representative environmental indicators confirm the conclusion on the positive impact of the economic growth factor on the environment (Arrow et al., 1995). This emphasizes the "U-like effect of interaction", which means that the growth of incomes is attributed to the degradation of the environment to a certain point, after which the quality of the latter improves (Kuznets, 1955). That is, at the initial stages, increased pollution is considered as an acceptable side effect of economic growth. However, in the case of a country with a higher level of well-being, individuals begin to formulate requests for environmental measures that lead to the emergence of environmental legislation, new environmental protection institutes, etc. Environmental degradation necessitates institutional reforms that would force private users of environmental resources to bear the full burden of social costs caused by their activities (Dasgupta & Mäler, 1997).

Another vector of research focuses on the concept of "environmental resource base", which is reflected in a wide range of environmental systems, but is characterized by limitation. As a result, careless use of it will irreversibly be marked by a decline in economic potential. That is why there is a need to develop an ecological policy that would consist in preserving the sustainability of ecosystems, provided that the nature and extent of economic activity are uncertain (Arrow et al., 1995). Scientists came to the conclusion that economic liberalization, as well as any other policy that contributes to the growth of the gross national product, do not substitute for environmental policy. Of particular significance in this context are reforms that are based on "signals" from resource users. Environmental damage, including the loss of environmental sustainability, is usually characterized by inevitable negative manifestations. Ignoring such "signals" is due not only to the ignorance of the dynamic effects of ecosystem changes (for example, their boundaries, marginal productivity, loss of sustainability), but also the existence of institutional barriers, such as the lack of clearly defined property rights. The development of the relevant institutions depends, among other things, on understanding the dynamics of ecosystems, based on the analysis of relevant indicators. Economic growth is not a panacea in the case of achieving an appropriate level of environmental quality, its nature – the composition of inputs (input characteristics, including environmental resources) and outputs (the end result, taking into account negative harms in the form of harmful effects) – is considerably more important in this sense. In addition, the nature of growth is also determined by the activities of institutions that are designed to provide adequate incentives to protect environmental sustainability. Balancing measures in the framework of environmental policy will not only contribute to an increase in the efficiency of environmental resource allocation, but will also ensure sustainable levels of economic activity within the ecological systems. Protecting their potential, driven by the need to maintain well-being, is important for both poor and rich countries (Arrow et al., 1995).

Scientists define both external and internal aspects of the impact on the quality of environmental governance in welfare states (Table 1). The priority of management activities in the sphere

http://dx.doi.org/10.21511/ppm.16(4).2018.20

of ecology is determined by analyzing a specific situation, which, as a rule, varies according to the countries or depends on the local context.

Table 1. Internal and external sources of environmental governance

Source: Drakenberg and Slunge (2011).

Environmental authority (internal aspects)	Factors that enable environmental governance (external externalities)
Exploitation of policy (policy, laws, regulations, policy tool)	Knowledge and information about the importance of the environment and climate change
Policy implementation (verification, compliance, implementation)	Environmental management as a priority policy vector
Research and evaluation (research, assessment, environmental information systems)	Environmental norms with clearly defined responsibilities
Environmental integration (industry responsibility, producer responsibility)	Horizontal and vertical communication, rule of law, low level of corruption
Operational support (organizational development, human resources, finance and accounting)	Access to information, public participation, accountability
	Electoral districts that demand improvement of the quality of environmental governance

2. HYPOTHESIS

The article proposes the hypothesis that the criteria for the environmental state should be regarded as an informative complement of the classical characteristics of the welfare state. For its verification, the study provides for the classification of countries according to indicators that can ensure the identification of welfare states and the assessment of the classification role of the criteria for environmental state. An important task was also to find out the shape, direction, and tightness of the relationship between the three factors that can be used to some extent to assess the country compliance with the criteria for the welfare state, namely:

1) the quality (efficiency) of governance;
2) the share of expenditures of state institutions in GDP;
3) the country environmental state.

3. METHODOLOGY

The objective of the article is to make the classification of countries according to criteria of environmental state. To accomplish this objective, the following scientific methods are used: intuitive searches, correlation, regression and canonical analysis.

The study used multidimensional scaling tools, cluster (*k*-means), dispersion, correlation and regression analyzes using the STATISTICA application statistical software package. For the formation of the output matrix, the following indicators were used:

- the Government Effectiveness Index (GEI), which is an integral part of the Worldwide Governance Indicator (The Worldwide Governance Indicators, 2018);
- indicator 4.12 of the "Central Government Finances", economic indicator, which is part of World Bank indicators "World Development Indicators" (World Development Indicators, 2017);
- country rankings (EPI, Environmental Perfomance Index) developed by the Center for Environmental Law and Policy of Yale University (USA) and the Center for International Scientific Information Networks of Columbia University (USA) (Environmental Performance Index, 2018).

The matrix which is constructed contains synchronized data for 2018 that represent the GEI quantified values for 136 countries, Government Expense for 177 countries, and EPI for 178 countries. Three-letter Alpha-3 codes are used to reduce country names in accordance with DSTU ISO 3166-1:2009 (SSTU ISO 3166-1:2009).

4. THEORETICAL BASIS

The fact that stability and efficiency of institutions create the basic preconditions for investment and entrepreneurship development is a well-known fact today. Ineffective protection of property rights leads to a reduction in the share of investment in GDP compared to an economic system, which is secured by property rights. In the case of insecurity of the latter, firms choose not optimal, in terms of growth prospects, direction and scale of capital investment (Lindner & Strulik, 1999). The poor quality of the institutional environment as a whole

is a major obstacle to the development of a welfare state model, especially for emerging markets.

As practice confirms, countries with higher quality institutions show less vulnerability to external shocks. This effect was clarified by Rodrik (1999) on the example of the connection between the quality of institutions and the successful overcoming of the consequences of the "oil shock" countries in the 70's of the XX century. According to a scientist's research, effective countries with effective institutes and cohesive communities managed to realize an effective crisis control strategy. On the contrary, underdeveloped institutions and the presence of internal social conflicts made it difficult to overcome the economic crisis (Rodrik, 1999).

Manifestations of low stability of countries with weak institutions have been reflected in studies by Acemoglu, Johnson, Robinson, and Teicheren (2003), Acemoglu and Robinson (2008). In particular, the negative effects of destabilizing macroeconomic policies are less pronounced in the economies of countries with more stable institutions. In the studies of modern economists an integral Index of Institutional Development plays a key role (Lewin & Foley, 2003; The Inclusive Growth and Development Report, 2017; Esfahani & Ramirez, 2003) that takes into account the six institutional characteristics that reflect the interstate disagreement as institutions for a large sample of countries in the following parameters:

1) accountability (measure of civil liberties, political rights and freedom of press);

2) political stability and violence (indicator of the probability that a national government can be eliminated in unconstitutional way;

3) the governance effectiveness (measure of quality provisions of public services, the competence of civil servants, the degree of politicization of civil service);

4) the regulatory burden (measure of government intervention in operation on commodity markets and the banking system, the degree of administrative control in the sphere of opening a new business, control of private sector operations and foreign trade activities);

5) law and order (protection measure of individuals and property from violence and theft, the independence and efficiency of the courts, the degree of execution of agreements);

6) corruption (measure of the use of state power in private interests).

The quality of institutions can be identified with universal goods such as public, which generate significant positive externalities (Koziuk et al., 2018). Taking into account that the quality of institutions is a significant determinant for business climate (attraction of investments, attractiveness for inflow of foreign capital, etc.), scope and range of public services, citizen involvement in governance and social capital, nowadays the welfare state should not be reduced solely to the extent of redistribution. Moreover, the quality of institutions does not always require a significant redistribution of GDP through the budget. On the other hand, investments in the quality of institutions may require considerable resources. The factors of social capital and the construction of mechanisms for correction of social behavior can influence the formation of the quality of institutions irrespective of the level of redistribution, and ineffective governance can create inadequate redistributive initiatives that are far from social welfare and, rather, a form of exploitation. This creates special preconditions for the identification of welfare state forms in new coordinates: the extent of redistribution and the quality of institutions. The wording of this approach is also winning for reasons of expanding the analysis of the welfare state in the context of the ecologization of its activity and, in fact, the expansion of the very concept of well-being due to the environmental factor.

To identify the risks of distorting the links between the redistribution of GDP through the government budget and efficiency, it is necessary to conduct a theoretical analysis of options that combine the high and low values of the relevant indicators on which to base empirical data interpretation. Table 2 demonstrates a theoretical explication of correspondence between the "scale of state" and the efficiency of government. It is natural to assume that the Table 2 maxims do not take into account the wide range of intermediate options, which makes countries even with similar

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"burden on the state" and institutional quality indicators show sufficient differences both in terms of economic growth and adaptation to global competitive pressure. For example, in the context of post-socialist countries, this is an extremely important moment in the analysis of transformational processes. It should be theoretically assumed that even with increasing the variability of countries, in particular, of Central and Eastern Europe in terms of their fiscal strategies, it should not be ruled out that their paths of institutional development should be convergent, since EU membership requires appropriate reforms and compliance with standards, although not eliminates sufficient institutional differences. In other words, in fact that the EU itself is rather varied for quality reasons of institutions and, consequently, the governance efficiency, the abovementioned countries may for a long time be in the zone of soft institutional convergence, in which the result will vary more than the content a set of political and economic steps within the framework of institutional convergence. It is no coincidence that this can clearly be explained by the fact that the new EU members do not make the latter more homogeneous in institutional way, as shown in empirical studies (Rozmahel, Kouba, Grochova, & Najman, 2013). The same applies to the environmental factor of the welfare state and the quality of institutions.

Thus, the modern welfare state differs not only in the scale of redistribution, but firstly the quality of institutions that provide effective market placement with the least transaction costs. The quality of institutions determines the public choice and direction of public policy, which is being conducted by policy makers. Since the achievement of a high-level development of institutions is impossible without significant investment in human capital, social capital, public administration, the search for the optimal forms of interaction between the various mechanisms of coordination of economic agents, the provision

Table 2. Options for "state scale" and government effectiveness: theoretical analysis

Source: Built by the authors.

Expenditures of general government to GDP	Government effectiveness: Low	Government effectiveness: High
Low	A typical example of a "poor country", in which the ability to collect taxes is low, and access to borrowing markets is limited. Significant institutional weakness holds back the possibility of increasing welfare in the aspect of functioning of public finances, as well as increasing the government efficiency. The potential for economic growth is low and will rely on traditional exports.	A typical example of a liberal economy with strong institutions. The combination of low taxation, moderate "state load" with government efficiency creates the preconditions for building up the potential of economic growth and welfare.
	Environmental aspect	
	Supply of ecological good will be at a low level, both in the absence of payment sources, and in the absence of the motivation to choose the good. The case of a poor country is inert to environmental problems.	The situation when the provision of environmental goods is realized through the structure of requirements and regulatory norms that have no direct consequences for the level of GDP redistribution through the budget, but correspond with the public choice regarding good "clean ecology".
High	Typically reflects the clan-redistributive state. A significant tax burden is translated into social strata that can not be minimized, and is intended to finance significant expenditures that are a source of rent seeking satisfaction. Institutional weakness is combined with the "privatization of institutions", in which the latter acquires a repressive character. The potential for growth can be high (as the country has a significant tax capacity), but depressed and shifted towards traditional exports.	A typical example of a welfare state, in which the high level of "state load" is offset by the quality of institutions. Government effectiveness is a direct source of citizens' well-being and their satisfaction with life in the light of large-scale redistribution of GDP through the budget. Potential economic growth is moderate in high-income countries.
	Environmental aspect	
	Due to the distortion between the socially optimal choice and the scale of environmental good redistribution fall out from actual economic policy priorities. The probability that pressure on the environmental quality will be formed in society will also be low due to inability to ensure the quality of governance and overall low incomes. The magnifying character of the institutes constricts public demands for ecology while simultaneously obtaining additional benefits by those who carry out "seizure of the state power".	A classic case of a welfare state when a wealthy society generates high demands for standards of living, in particular its environmental dimension, while there is no gap between social preferences and the ability and willingness to pay for it. The contribution to the provision of environmental goods is realized both through regulatory norms, and through direct transfers and correctional taxes.

of guarantees of property rights, investor protection, fair justice, it can be concluded that welfare is becoming derived from an institutional choice, within which the public spending level becomes a private occurrence of the expression of consumer preferences.

5. EMPIRICAL RESULTS

The criterion for ecological state should be considered as an informative complement of the classical indicators of welfare state. In view of this, we have compared and classified a wide range of countries according to indicators that are prioritized to a set of criteria for the welfare state, and special emphasis has been placed on the assessment of the classification role of criterion for country ecological state. In our view, it is also important to find out the form, direction and density of the relationship between the three factors (the quality (efficiency) of governance, the expenditure shares of state institutions in GDP, country environmental state), which to some extent allow to assess compliance of countries with the criteria for the welfare state. Sources of formation of the initial analytical matrix are presented above.

The *k*-means clustering method distinguishes three groups of countries that differ significantly in terms of environmental state, the efficiency of public administration and the government expenditures level (Table 3).

The first cluster consists of 42 countries, a significant number of which according to the classical criteria are considered to be welfare states. As we can see, the average value of the index of the ecological situation of this group of countries is 72.44 with fluctuations from 45.5 in Barbados to 87.67 in Switzerland (coefficient of intracluster variation 11.1%). The index of governance efficiency here is also the highest – 86.74 with a limit of 68.3 in Italy to 100 in Singapore (variation coefficient of 10.1%). According to the share of government institutions expenditures in the structure of GDP (32.7%), the first cluster is also a leader, however, with a high level of intragroup variation of 38.9%.

The second group consists mainly of middle-income countries, but there are also representatives of a class of low-income countries (for example, Kenya and Rwanda), due to the relatively high level of governance in them. The third cluster covers the least developed countries, as well as a number of middle-income countries. Among the latter, countries are characterized by an extremely unsatisfactory environmental state (India, Iraq, Pakistan, Grenada).

Dispersion analysis (one-way ANOVA) determines the characteristics of the countries that have made the largest contribution to their distribution by clusters. Greater values of the *F*-parameter for GEI and EPI (Table 4) reveal that such indicators are governance efficiency and environmental state.

Table 3. Composition and average values of country clusters* by the environmental state, the efficiency of governance and the share of government expenditures in GDP

Source: Built by the authors on the basis of Environmental Performance Index (2018), The Worldwide Governance Indicators (2018), World Development Indicators (2017), The Inclusive Growth and Development Report (2017).

Cluster	Country	List of countries	Indicators		
			EPI	GEI	ExpGov
1	CHE, LUX, AUS, SGP, CZE, DEU, ESP, AUT, SWE, NOR, NLD, GBR, DNK, ISL, SVN, NZL, PRT, FIN, IRL, EST, SVK, ITA, GRC, CAN, ARE, JPN, FRA, HUN, CHL, POL, USA, MLT, BEL, CYP, ISR, LVA, KOR, HRV, LTU, MYS, MUS, BRB	42	72.44	86.74	32.47
2	SRB, BLR, BGR, KWT, ARM, TUN, CRI, JAM, KIR, JOR, SYC, AZE, TUR, ALB, LKA, URY, SUR, ZAF, RUS, MDA, DOM, FJI, BRA, THA, TTO, MAR, BHR, KAZ, COL, ROU, MKD, LBN, DZA, ARG, UKR, ATG, OMN, BWA, GEO, DMA, BTN, BHS, BIH, PER, IDN, CPV, PHL, SLV, NAM, SEN, VNM, KEN, RWA, GRD	54	51.06	53.68	27.20
3	EGY, BLZ, NIC, HND, GTM, VUT, MNG, CAF, ZMB, KGZ, BFA, LAO, MWI, CIV, COG, ETH, PRY, NGA, UGA, SWZ, NPL, TZA, KHM, PAK, IRQ, BEN, GHA, SLB, IND, MOZ, AGO, TGO, MDG, BGD, LBR, SLE, AFG, LSO, MLI	39	36.37	22.87	19.40

Note: * Country codes according to DSTU ISO 3188-1:2009 (SSTUISO 3166-1:2009).

http://dx.doi.org/10.21511/ppm.16(4).2018.20

Table 4. Generalized results of one-factor dispersion analysis (dependent variable – successively each of indicators, predictor – cluster number)

Source: Built by the authors on the basis of Environmental Performance Index (2018), The Worldwide Governance Indicators (2018), World Development Indicators (2017), The Inclusive Growth and Development Report (2017).

Indicators	Between group sum of squares	Degrees of freedom	Within group sum of squares	Degrees of freedom	F	P
EPI	26837,18	2	8699,42	132	203,6	0.000000
GEI	82670,94	2	13599,30	132	401,2	0.000000
ExpGov	3488,21	2	13133,00	132	17,5	0.000000

The visual alignment of countries within the selected clusters is shown on the 2-D graph (Figure 1), built on the results of multidimensional scaling of the sampled countries. As we see, the differentiation of countries in groups occurs along the axis of abscissa and the decisive role in this is played by the first latent variable. Obviously, this latent variable combines two variables previously determined by the variance analysis, the EPI and GEI variables. The second latent variable that defines the country along the vertical axis reflects the dispersion of the government spending indicator with a certain impact on the environmental factor.

An important role of the environmental state and the governance effectiveness indicators in identifying the welfare states, which are mainly related to 1 cluster, is also illustrated by a scatter plot, which graphically reflects simultaneously the values of all indicators of the sampled countries (Figure 2). This diagram also illustrates the actual distribution of countries proposed in Table 2 into four groups (their borders are indicated by

Source: Built by the authors on the basis of Environmental Performance Index (2018), The Worldwide Governance Indicators (2018), World Development Indicators (2017), The Inclusive Growth and Development Report (2017).

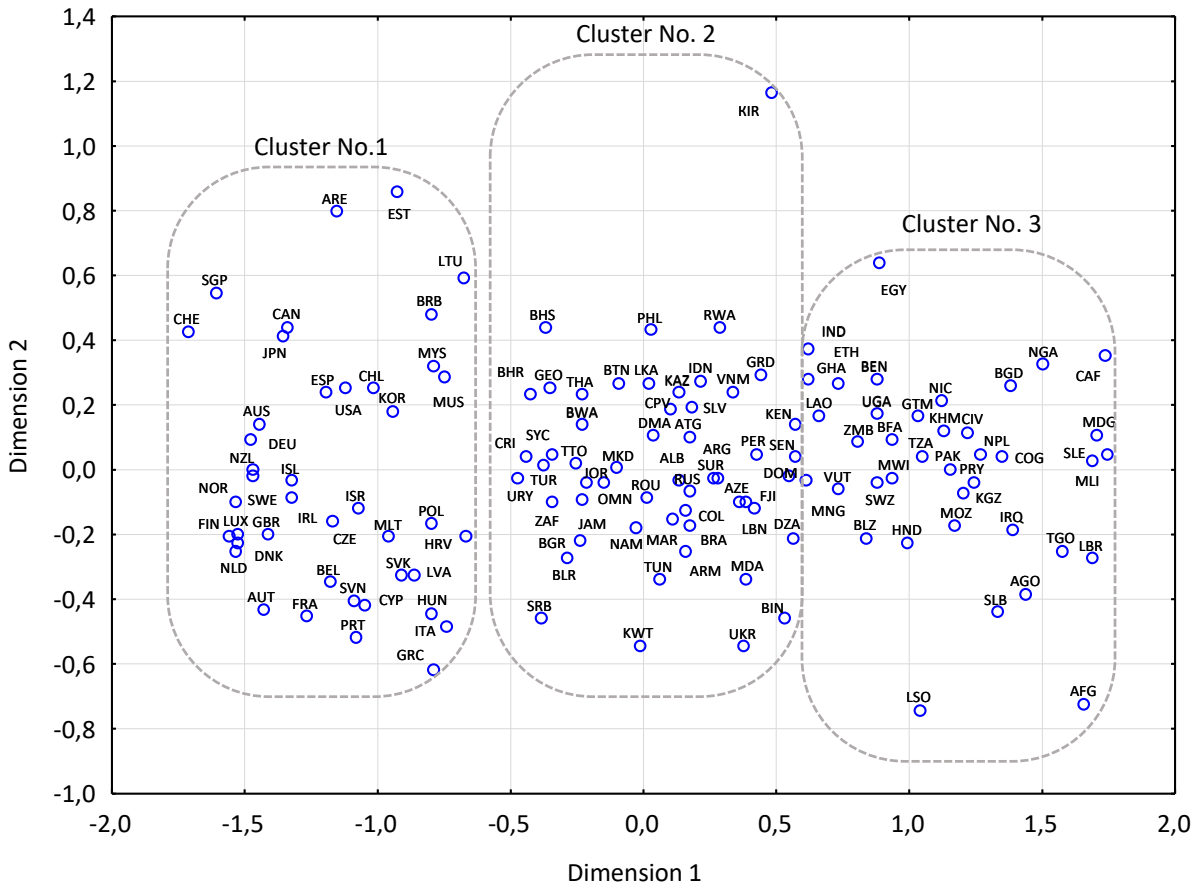

Figure 1. Ordination of countries according to their multidimensional scaling according to EPI, GEI and ExpGov indicators

Source: Built by the authors on the basis of Environmental Performance Index (2018), The Worldwide Governance Indicators (2018), World Development Indicators (2017), The Inclusive Growth and Development Report (2017).

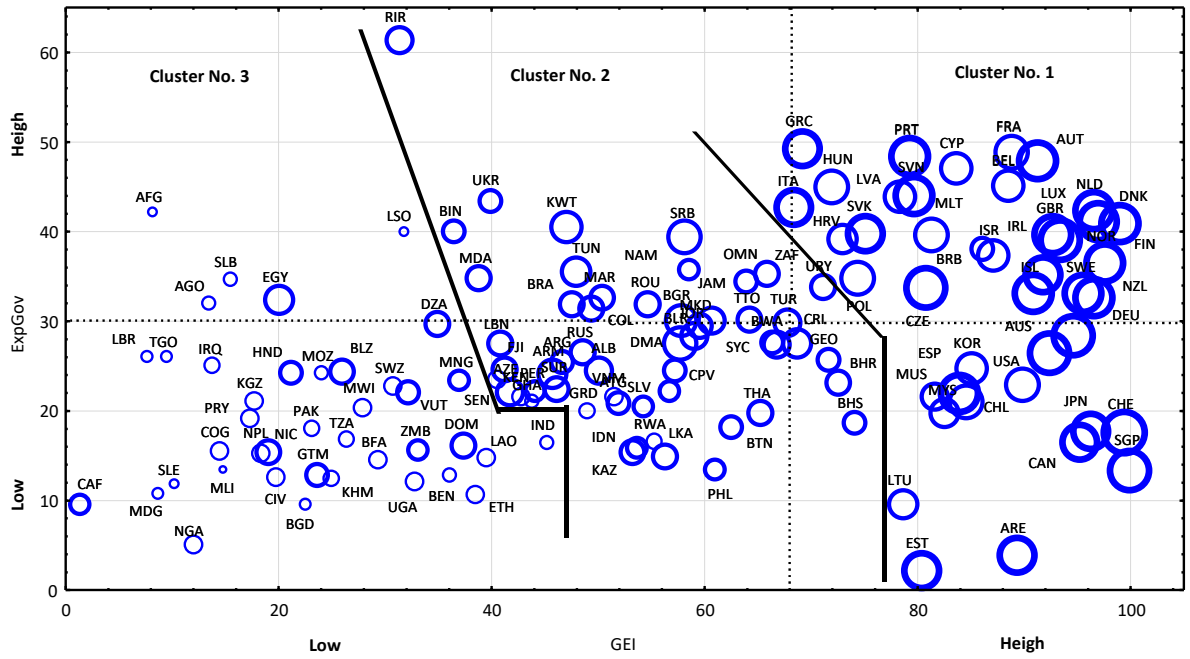

Figure 2. Ordination of the countries on the governance efficiency and the share of government expenditures in GDP (the larger diameter of the bubble illustrates the relatively better level of country environmental state)

a dashed line) according to the quantitative characteristics of "state scale" (values ExpGov) and governance quality (values of GEI). Thus, the hypothesis about the possible grouping of countries according to, the principle proposed in Table 2 is practically confirmed. However, inclusion in the classification analysis of the environmental predictor (EPI) changes the composition and configuration of the classification matrix from square to diagonal. The boundaries of these new three clusters, the composition of which is practically identical to the groups of countries identified by the methods of cluster analysis and multivariate analysis, is shown in Figure 2 by solid lines. This indicates that the environmental state factor, as a criterion characterizing the welfare of the state, has its own special vector (specific direction and force) in the process of country classification with different levels of development and well-being.

In the process of correlation and regression analysis, the form, density and direction of interdependence between the studied characteristics of the countries are determined. The correlation matrix (Table 5) illustrates the existence of a direct linear dependence between all the indicators, with strong correlation between the EPI and GEI variables ($r = 0.842$). Correlation coefficients between ExpGov and two other indexes are also reliable at the level of significance of 0.1%, but illustrate only a moderate statistical relationship ($r = 0.359$ and 0.419).

As a result of the regression analysis, two adequate two-factor models (Table 6, 7), which illustrate the linear and non-linear regressive dependence of the country environmental state on the governance efficiency and the share of government expenditures in the structure of GDP, were obtained. As we can see from the description of both models, the variability of the environmental indicator among the sample is 72.5-73.4% due to the variability of the cost efficiency index and the share of public expenditure.

The linear regression model shows that the improvement of the country environmental state to a considerably greater extent, namely 2.4 times, is due to an increase in the government efficiency than an extensive expansion of government expenditures. Graphically, this pattern can be defined from Figure 3, comparing the slopes of the 3-D graph of regression (area) to the corresponding axes.

http://dx.doi.org/10.21511/ppm.16(4).2018.20

Table 5. Correlation matrix of Government Effectiveness Index (GEI), level of government expenditures (ExpGov) and Environmental Performance Index (EPI) of 135 countries

Source: Built by the authors on the basis of Environmental Performance Index (2018), The Worldwide Governance Indicators (2018), World Development Indicators (2017), The Inclusive Growth and Development Report (2017).

Indicators	EPI	GEI	ExpGov
EPI	1.000	0.842***	0.419***
GEI	0.842***	1.000	0.359***
ExpGov	0.419***	0.359***	1.000

Note: The correlation coefficient is significant for *** $p < 0.001$.

Table 6. Results of multiple linear regression analysis: regressant – the country environmental state, regressors – the government efficiency and the level of government expenditures in GDP

Source: Built by the authors on the basis of Environmental Performance Index (2018), The Worldwide Governance Indicators (2018), World Development Indicators (2017), The Inclusive Growth and Development Report (2017).

Regression summary for dependent variable: EPI, $R^2 = 0.725$, $F(2.132) = 173.8$						
Indicators	***b****	**Std. err. – of *b****	**b**	**Std. err. – of *b***	***t* (33)**	***p*-value**
Intercept	–	–	21.70	2.15	10.11	0,0000
GEI	0.794	0.049	0.48	0.03	16.22	0.0000
ExpGov	0.134	0.049	0.20	0.07	2.73	0.0071

Table 7. Results of multiple nonlinear regression analysis: regressant – the country environmental state, regressors – the government efficiency and government expenditures in GDP

Source: Built by the authors on the basis of Environmental Performance Index (2018), The Worldwide Governance Indicators (2018), World Development Indicators (2017), The Inclusive Growth and Development Report (2017).

Regression summary for dependent variable: EPI, $R^2 = 0.734$, $F(2.132) = 182.4$						
Indicators	***b****	**Std. err. – of *b****	**b**	**Std. err. – of *b***	***t* (33)**	***p*-value**
Intercept	–	–	34.10	1.343	25.38290	0.0000
GEI^2	0.791	0.048	0.004	0.0002	16.64074	0.0000
$ExpGov^2$	0.158	0.048	0.004	0.0011	3.32133	0.0012

Source: Built by the authors on the basis of Environmental Performance Index (2018), The Worldwide Governance Indicators (2018), World Development Indicators (2017), The Inclusive Growth and Development Report (2017).

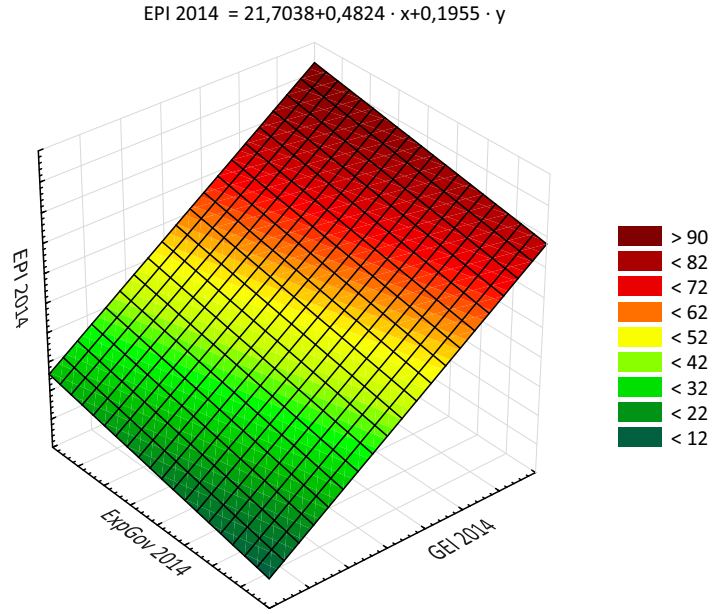

Figure 3. Schedule of multiple linear regression model of dependence of country environmental state on the level of government expenditures in GDP and government efficiency

CONCLUSION

Thus, a comprehensive statistical analysis of the data that characterizes the environmental state, government efficiency and public finances of the countries has shown a strong direct correlation between the first two indicators. However, it is not necessary to ignore the likely mutual influence of the public administration effectiveness and the share of public finances on the country environmental state. The results of the classification of the studied countries obtained by alternative methods (*k*-means clustering methods, multidimensional scaling) indicate the possibility of using the EPI, GEI and ExpGov indicators as complementary attributes to the classical criteria for the welfare state (but taking into account their different statistical significance).

Taken together, empirical evidence suggests that environmental friendliness in countries is determined primarily by the government effectiveness, rather than by the formal attribute of the welfare state as the scale of GDP redistribution through the budget. This situation can be characterized as the absence of a fatal character in the direct relationship between the level of income and the quality of environmental goods. In a wider sense, this confirms our hypothesis that environmental goods can be offered not so much by the quantitative parameters of such a state, but rather by qualitative as an attribute of the modern understanding of welfare state. Detected dependencies confirm that environmental friendliness as a manifestation of a modern, inclusive state-driven state is not the property of extremely wealthy countries. In other words, the more the society will generate pressure on the quality of institutions, the more likely it will be to improve governance, which will improve the environmental situation, and, to a greater extent, it will be coherently with a modern understanding of what social and individual well-being are.

In general, two important conclusions are drawn from the research: firstly, the level of country environmental performance index can be regarded as an important complementary criterion for the welfare state; secondly, the country environmental state is much more determined by the government efficiency, the quality of state institutions and their activities, rather than by an extensive increase in the funding of such institutions and environmental measures.

ACKNOWLEDGEMENT

The authors express their gratitude to the Ministry of Education and Science of Ukraine, with the support of which the article was published in the framework of the Project "Ecologization in a new paradigm of welfare state" 2017–2019 (state registration number 0117U000412) in Ternopil National Economic University.

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