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Measuring the Influence of Environmental Policy
on Economic Development of the Countries: EU-28 Scope

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Abstract

*In current paper, we have researched the influence of environmental policy
stringency (EPS) on economic development of the EU-28. The problem of identi-
fying the influence of stringency of environmental policy (EP) on economic de-
velopment of the EU-28 is that currently there is no well-established understand-
ing of what economic results can be achieved depending on the extent of EPS
within a separate country. The paper aims at making contribution to theoretical,
empirical and political scopes of perception of EP as an independent factor of
economic development of the EU-28. The results of research indicate that EPS is
significant factor of economic development of the EU countries.*

Introduction

The theory and practice of the process of transition of the EU countries to
green economy have dictated the need to clarify the essence and scientific-
practical aspects of the formation and development of EP as a factor of economic

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development of the country in today's new challenges of economic globalization. One of such challenges is the problem of transition from so-called brown economy to green economy while simultaneously maintaining economic development. About 40 years the EU Governments wonder whether harmonization of environment policy should be an additional condition for European integration.

An increase in the demand for natural resources forms the necessity of sustainable development. In such circumstances, the stringency of EP is rising due to the following reasons. Most EP efforts in the EU consist of implementing Directives that are developed by European Commission. Member states along with European Parliament have to approve the Directives. Under such circumstances, member states gain and lose their influence on decision-making process because they have to approve ER standards of other member states. Along with numerous Directives member states are obliged to comply with provisions of the EU emission trading system, Kyoto Protocol, REACH (Registration, Evaluation and Authorisation of Chemicals). Thus, achieving supranational and national goals related to pollution reduction means that for some the EU countries EPS could become an obstacle to keep harmful production and increase their incomes. Thus, the relevance of current paper lies in the necessity of identifying to what extent economic development of the EU-28 can be explained by the EPS. In current paper we introduce the indicator of EPS and statistically determine whether EP can be considered as an independent factor of economic development of the EU-28.

Current paper is structured as following. In the first section, we have conducted literature review on the perspectives of the effects of EP, the impact of EP on export of the countries, state of the art in the development of measures of EPS. The second section describes research design. The third section describes empirical results. The last section provides concluding remarks.

1. Literature Review

1.1. Perspectives of the Effects of EP

The influence of EP has been researched by the authors on the micro-, meso- and macro-level. The research on micro- and meso-level gives an opportunity to verify Porter hypothesis, pollution haven hypothesis and other theories and hypotheses aimed at identifying the influence of EP on the economic results, innovativeness of the firms and allocation/relocation of "dirty" production. In particular, Zhai Liu and Chan (2019) have researched the impact of environmental regulation on firm export in China and tested Porter and pollution haven

hypotheses. The authors have outlined that the setting-up of the environmental standards under the Red Line policy boosts firm exports. The Red Line standard encourages companies to increase R&D expenditures and production efficiency. At the same time, the authors have also emphasized that the pollution haven hypothesis does not always apply in LDCs, that is, EP does not necessarily mean hurting firm exports. In case the government sets EP goals, like, for instance, holistic approach to EP, the companies enhance their production efficiency and innovation to stimulate exports. There are also research findings which support Porter hypothesis in the sense that EP enhances productivity and environmental quality (Ambec et al., 2013; Kriechel and Ziesemer, 2009; Petroni, Bigliardi and Galati, 2018; Přívara and Přívarová, 2019; Roy Chowdhury and Das, 2011; Sadeghzadeh, 2014; van Leeuwen and Mohnen, 2017).

Another theory, which links environment and economy, is so called "environmental Kuznets curve". It implies that economic development initially results in environmental degradation. After achieving a certain level of economic growth, it is suggested that the society improves the relationship with the environment and the levels of environmental degradation should be reduced (Ekins, 1997). However, it should be noted that there is no guarantee that economic growth will lead to environmental improvement. As reality shows, economic growth is often associated with more environmental inputs and higher emissions. Only targeted EP can bring improvements. Thus, it can be concluded that based on mentioned, Porter hypothesis more properly fits realities and serves a ground for sufficient coordination between economy and environment.

1.1.1. The Experience of China

Chinese policies represent interesting area research due to the fact that the country plays an important role in the world's economic development and environmental protection. Some industry level research findings identify positive influence of EP on industry transformation. In particular, the research of Li and Li (2019) was focused on empirical research on the intensity of environmental regulation and industrial green transformation in China. The authors have indicated that EP can effectively stimulate industrial green transformation by improving green total factor productivity. At the same time, literature findings also support pollution haven hypothesis (Guha, 2015; Martínez-Zarzoso, Vidovic and Voicu, 2017; Millimet and Roy, 2016; Rana and Sharma, 2019).

The research of Stavropoulos, Wall and Xu (2018) on environmental regulations and industrial competitiveness in China has shown that there is a U-shaped association between EP and industrial competitiveness, and not a simple linear relationship. The authors have concluded that only stringent EPs can create

a positive effect on industrial competitiveness. Nevertheless, there may be a trade-off at first, the government should not be too bothered. If EP is well designed, in the long-run its influence is positive. Thus, the government should set stringent EPs.

1.1.2. EP Effects for the Advanced Economies

The research conducted by Albrizio (2014) in a panel of OECD countries has shown that an increase in stringency of EP does not harm productivity growth or productivity levels – neither at the level of the entire economy nor at that of manufacturing industries. It has been also found out that at the industry level productivity growth was recorded resulting from a tightening in EPS for most technologically advanced countries. According to the research of the European Commission (2019) on the links between production, the environment and EP, in all cases, the positive macroeconomic impacts of EP are small and largely rely on the use of any tax revenues from market-based instruments.

The research of Gray (2015) at the firm level of USA has shown that the benefits to society from environmental regulation appear to be much larger than the costs of compliance. Neidell (2017) has concluded that in USA improvements in air quality have led to significant increases in worker productivity. Feng et al. (2019) have researched the impact of EPS on industrial productivity growth in OECD Countries. The results show that while stricter EP might shift a country's total cost in production upward, for countries, which have already adopted comparatively more stringent EP, further increasing their EPS enhances productivity in the long-run. More stringent EP renders the use of intermediate inputs more inelastic to the prices and decreases the substitutability between labour and intermediate inputs in the long-run. The authors conclude that more stringent EP would apply tighter control over the use of several intermediate inputs such as raw materials, energy and pollution-intensive services, leading to the use of these inputs being less sensitive to changes in their market prices. There is also evidence found by de Santis and Lasinio (2016) that the use of market based EP instruments contributes to innovations and productivity in the EU countries.

However, the results of research of Hille and Möbius (2019) on the effects of EP on innovation and productivity growth do not support the strong Porter Hypothesis. According to the authors, stricter EP fosters innovation and, therefore, has an indirect, yet not decisive, positive effect on productivity growth.

Dechezleprêtre and Sato (2014) have concluded based on extensive literature review of the impact of EP on productivity, production costs, employment, international relocation of polluting activities, innovation activity, firms competitiveness that these effects, however, appear to be small and temporary. In the

longer run, the effects tend to be smaller than in the short run, implying that state policies such as labour markets regulations can contribute to diminishing or offsetting the temporary effects of environmental regulations on competitiveness. These effects seem more likely to happen within domestic boundaries where relocation barriers are low, than across borders. According to the research results, from international perspective, the estimated effects of EP on trade and investment location so far are negligible in comparison to other determinants, such quality of workers and market conditions.

However, other research findings, which come from country studies, encouraged us to conduct this research. In particular, among the papers, which show the influence of EP at the country level is present, is OECD research of the influence of EPS on productivity growth in OECD countries (Albrizio, 2014). There has been estimated "a reduced-form model of multi-factor productivity growth, where the effect of countries' environmental policies varies with pollution intensity of the industry and technological advancement". The results of the research have identified that at the aggregate economy level, a negative effect on productivity growth is one year ahead of the policy change. At the industry level, more stringent EP is associated with a short-term increase in industry-level productivity growth. At the firm level, only the technologically advanced firms are characterized by a positive effect on productivity growth from more stringent EP, whereas other firms, less productive ones, experience a productivity slowdown. In the section below we discuss in more detail the association between EP at the country level and country export which is considered as one of the most important factors of international competitiveness of the countries.

It can be summarized based on literature review that there is evidence of the positive impact of EP and, in particular, stringent EP in both the countries with advanced economies and China. Most often, as concluded by the authors, there is non-linear relationship between EPS and the effects on the economies. Moreover, the effect of stringent EP seems to be more visible in the long-run and in the short run the effects are more likely to be negative.

1.2. The Impact of EP on Export of the Countries

According to many studies country's exports plays a leading role in economic growth of the countries and their competitiveness (Falk, 2009; Lapatinas and Litina, 2019; Mahmoodi and Mahmoodi, 2016; Rusu and Roman, 2018; Sakyi et al., 2017; Schor, 2016; Sultanuzzaman et al., 2019; Zahonogo, 2016; Zhu and Fu, 2013). Furthermore, country's export is considered among globalization indicators. The extent to which a separate economy is involved in globalization process is crucial for nowadays reality as it shows how many advantages a country can

obtain while participating in international economy. Thus, it is crucially important to identify whether country's exports is affected by its EP and in what a way.

As mentioned above, an increase in international fragmentation of production has strengthened fears that industrial activity may move to the locations/countries with less stringent EPs that, in fact, in line with the so-called pollution haven hypothesis. In case pollution haven hypothesis, the effects are strong, domestic responses to environmental challenges can demonstrate ineffective or meet strong resistance, however, there is not much evidence of this at the country level.

When researching how EP affect global value chains, Kozluk and Garsous (2016) have concluded that EP does not seem to be a major driver of international trade patterns, but have some significant effects on specialisation. More stringent domestic EP have no significant effect on overall trade in manufactured goods, but is related to a comparative disadvantage in "dirty" industries, and a corresponding advantage in "cleaner" industries. The effects are stronger for the domestic component of exports than for gross exports, yet especially smaller than the effects of trade liberalization. Another research for OECD countries (Arlinghaus, 2015) on the impacts of carbon prices on indicators of competitiveness, including exports has shown that there are positive effects of EP in the long-run.

Costantini and Mazzanti (2012) have found out that EP is not harmful for export competitiveness of the manufacturing sector, whereas specific energy tax policies and innovation efforts are positively associated with exports. EP and private innovation both trigger higher efficiency in the production process through various complementarity mechanisms, thus EP brings net benefits.

Babool and Reed (2010) have researched the impact of EPS on international competitiveness in manufacturing, in particular, on net exports, in OECD countries. The authors have found out positive association between net exports and EP for paper products, wood products and textile products, however, most manufacturing industries appeared to be harmed by more stringent EP.

Eisenbarth (2017) has researched whether the export tax equivalent of partial VAT reduction and export taxes are higher for products which are more pollution intensive along several dimensions. The research findings have indicated that the VAT reduction rates are set in a way that restraints exports of SO_2 intensive and energy intensive products, water pollution intensive, from 2007 on.

De Santis (2012) has conducted the research aimed at estimating with the use of a proxi of environmental stringency, the effect of three major multilateral environmental agreements (MEAs) on 15 EU countries' bilateral exports. The results of the research support pollution haven theory and identify that the EU-15 bilateral export flows were positively affected by the presence of environmental agreements in the period 1988 – 2008. It was identified that MEAs membership

in the sample period had an overall positive effect on the exports of EU-15. The average positive variations of exports (of EU-15 towards 24 OECD countries) induced by signing Kyoto, Montreal and UNFCCC agreements, could be partly explained by possible trade diversion effect in regards to the member states that did not sign MEAs and a related trade creation effect among environmental agreements members owing, for instance, to homogeneity of environmental-related production standards.

Ramzy and Zaki (2018) have researched the effect of EPS on agricultural trade between European Union and 20 MENA countries during the period 2001 – 2014. The results have shown that EP affects agricultural trade between both regions because in the presence of excessive zero trade observations, they act as important fixed export costs that impact the trade probability. More stringent EPs enhance innovative efforts in cost-saving green technologies, which positively affect agricultural exports and increase productivity.

The research of Montagna, Pinto and Vlassis (2020) on the trade effects of international environmental agreements on the welfare of the countries has shown that introduction of the agreements can reduce the level of welfare in the non-participating countries due to the trade creation and trade diversion effects of the policy. Thus, the terms-of-trade effects of EP are substantial channel affecting the incentives of the countries to join an environmental agreement and can deteriorate the pollution haven effect. In the section below, we discuss current development of the measures of EPS.

1.3. State of the Art in the Development of Measures of Environmental Policy Stringency

In this section, we have provided the most significant and widely used measures of EPS in empirical studies. Since 1995, when firstly an index of EPS was presented by Dasgupta et al., many authors have tried to evaluate in an effective way the stringency of EP (Mody et al., 1995). This first index was constructed on the base of UN Environmental Program. Esty and Porter (2002) constructed Environmental Regulatory Regime Index based on the Environmental Sustainability Index and the Global Competitiveness Report 2001 – 2002 of WEF.

Organisation for Economic Co-operation and Development (OECD) has contributed a valuable insight to how EPS should be assessed and developed EPS Index (OECD, 2018). However, there is still no indicator available for every country. Other approaches to measuring EPS have been researched by Botta and Koźluk (2014) which are grouped by the authors into single policy change events, composite indicators of policies, surveys of perception, firm/plant level environment-related expenditures, shadow prices, environmental performance/outcomes.

2. Research Design

2.1. Hypothesis Development

In our previous research on EP policy of the EU we have tested the hypothesis that the system of EP instruments applied in the developed EU countries is more diverse than in developing and transition economies due to the fact that developed countries have long established laws and formal governmental structures to address their environmental issues (Vovk, Dziura and Grešš, 2019). We have found out that the degree of variety of EP instruments among the EU members is dependent not only on the development of production and actual environmental problems, but also on other determinants of development, as in not all member states with a high number of production enterprises, the EP is diverse. Only in the United Kingdom, Denmark, Belgium, Netherlands Austria, Finland, France, Germany, Ireland, Luxembourg and Sweden the system of EP is the most diverse.

These countries joined the EU much earlier than many other member states, thus, they are characterized by a sounder institutional framework. With the use of cluster analysis method, we have identified the groups of the EU countries with similar competitive advantages and environmental performance. Cluster analysis has been conducted with the use of Ward method (1963). This method minimizes the sum of squares for any two (hypothetical) clusters, which can be formed at each step. This method intends to create small clusters. This property is also important for our research, since we have 28 countries, which are characterized by different levels of the development and competitiveness. Thus, the countries can be combined into classes (clusters) according to similar features. Then each cluster has been analyzed from the point of view of the practice of the use of different instruments of environmental policy.

The indicators for cluster analysis have been chosen in accordance with the three groups of factors of economic development of the countries: traditional factors of economic development of the countries, post-industrial factors of economic development and the factors of the resistance of the countries to external financial and economic shocks and crises. The dendogram of cluster analysis has been presented in the Figure 1. According to the Figure 1, we have obtained four clusters:
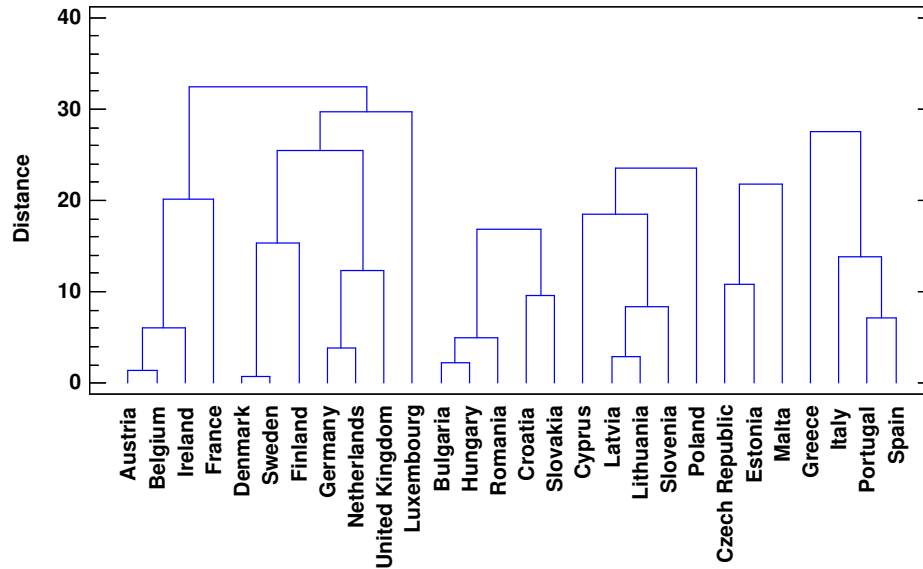
Cluster 1: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, Netherlands, Sweden and United Kingdom.

Cluster 2: Bulgaria, Croatia, Hungary, Romania and Slovakia.

Cluster 3: Cyprus, Czechia, Estonia, Latvia, Lithuania, Malta, Poland and Slovenia.

Cluster 4: Greece, Italy, Portugal and Spain.

Figure 1

Dendrogram of Clusters

Source: Vovk, Dziura and Grešš (2019).

Our analysis of the practice of application of different EP instruments by EU countries (Table 1) has identified that the main EP instruments in the EU are subsidies, taxes and fees. It is noteworthy that the countries of the 1st cluster have the most diverse EP.

It could be explained by the higher production levels in these countries and the higher numbers of production firms, however, in fact, the real sector is mostly developed in the United Kingdom Spain, France, Italy, Germany and Poland and not all of these member states are in the 1st cluster (Vovk, Dziura and Grešš, 2019).

Thus, based on above mentioned results of our previous research, in current research we have tested the following hypothesis:

Hypothesis: *there is causal effect between EPS and economic development of the EU-28*

For testing our hypothesis, the following regression model has been employed:

$$l_{Export} = \alpha_0 + \alpha_1 l_{GFCF} + \alpha_2 Upper + \alpha_3 l_{r\&d} + \alpha_4 l_{EPS} + \mu \tag{1}$$

In the next section, we have described the data and method employed.

T a b l e 1

Application of EP Instruments in the EU

Instruments	Cluster 1	Cluster 2	Cluster 3	Cluster 4
	Austria Belgium Denmark Finland France Germany Ireland Luxembourg Netherlands Sweden United Kingdom	Bulgaria Croatia Hungary Romania Slovakia	Cyprus Czech Republic Estonia Latvia Lithuania Malta Poland Slovenia	Greece Italy Portugal Spain
Subsidies (for example for environmentally – friendly activities)	●	●	●	●
Taxes and fees (directly applied to the pollution source, on input or output of a production process	●	●	●	●
Low carbon policy tools: Emission trading permits	●	Hungary only	Czech Republic Estonia Latvia Lithuania Poland Slovenia	●
Carbon taxes	Denmark Finland France Ireland Sweden United Kingdom		Estonia Poland Slovenia	Portugal Spain
Environmental education	●	●	●	●
Voluntary approaches	●	Slovakia only	Czech Republic Latvia	Italy only
Deposit refund systems	Denmark Finland Germany Ireland Luxembourg Netherlands Sweden United Kingdom	●	●	Italy Spain
National strategies	●	●	●	●
Regulatory instruments	●	●	●	●

Source: Based on the data from OECD (2018); European Environment Agency (2016).

2.2. Data and Method

2.2.1. Indicator for Assessing EPS

Given there is no widely established indicator for EPS, in current paper we have proposed to apply the approach based on indirect assessing the pollution abatement costs and characterized by a simple way of calculation. As an environmental parameter, we propose to use the following indicator:

$$e_{is} = \frac{E_{is}}{V_{is}} \qquad (2)$$

where

e_{is} — indicator of EPS in industry i, sector s,

E_{is} and V_{is} — emissions level and value added of the industry i in sector s respectively.

The higher the value of indicator (2), the less strict in certain industry EPS is. Thus, taking into account the proposed method for calculating EPS, we expect negative correlation between EPS and economic growth of the EU-28. The use of this indicator gives an opportunity to calculate EPS for different sectors as well as for the whole country level. The data for calculating this indicator are available on the Eurostat Website or World Input-Output Database.

In current research, we have used the data from Eurostat for emissions of CO_2, tonne for NACE activities and gross value added for NACE activities, at current prices, million units of national currency. We have used the emissions of carbon dioxide given the fact that there is considerable emission of this gas from energy and environmental sectors. We emphasize that it is important to use CO_2 emissions accounts due to the fact that CO_2 emissions account for around 80% of all greenhouse gas emissions from the manufacturing processes. UNECE accounts currently include different variations of this indicator. In particular, there is introduced indicator on CO_2 emissions from manufacturing (in kg)-to-manufacturing value added and CO_2 emissions form fuel combustion-to-value added of economic activities (Nagy, 2019). Other authors have also used other variations of this indicator. In particular, Randers (2012) has used greenhouse gas emissions per unit of value added ("GEVA"). Carbon dioxide emissions have been also used for similar indicator by European Environment Agency (2013), Liu, Lackner and Fan (2021).

The usefulness of this indicator is that it represents changes in the average carbon intensity of the energy mix, in the structure of the manufacturing sector, in the energy efficiency of production in different sectors. Currently, all the EU countries in more or less extent are suffering from CO_2 pollution. Taking into account that value added is constantly growing in all the EU-28, the value of proposed EPS indicator can be decreased or increased mainly due to the changing level of emissions. Thus, such a method of EPS calculation can provide real information on EPS level among the EU-28 in a sufficient way. In the next section, we have presented research design of current study

2.2.2. Regression Analysis

Regression analysis has been conducted for four clusters of the EU member states described above with the use of European Commission data. For all indicators there has been used available data from 1995 to 2016. For conducting regression analysis, we have used panel data and fixed effects estimation. Since our regression

analysis contains panel data, for diagnostics of the models' goodness of fit we have used joint test on named regressors and test for differing group intercepts as the basis for analysis of panel data, which in an effective way show the overall quality of the models, given not large number of observations and panel data structure. In the Table 2 below, the description of variables has been presented.

T a b l e 2

Description of Variables

Variable	Description	Source	Expected sign of the influence on emigration flow
l_Export: dependent variable	Logarithm of the value of exports of goods and services, at current prices in million EUR	European Commssion (2018a)	
l_GFCF	Logarithm of the value of gross fixed capital formation at current prices, million EUR	European Commssion (2016)	+
Upper	Upper secondary and post-secondary non-tertiary education (levels 3 and 4), percentage of total employment	European Commssion (2018b)	+
l_R&D	Logarithm of the value of gross domestic expenditure on research and development (R&D), million units of national currency	European Commssion (2018c)	+
l_EPS	Logarithm of the indicator of EPS	European Commssion (2016; 2017)	–

Source: Authors.

An indicator of exports of goods and services has been used for our analysis, since according to many studies it plays a leading role in economic growth of the countries. Furthermore, as we already have identified, exports of the country is an indicator, which is imposed by EP. Our choice is also explained by the importance of the analysis of globalization indicators. The extent to which a separate economy is involved in globalization process is crucial for nowadays reality as it shows how many advantages a country can obtain while participating in international economy. It should be noted that according to United Nations Economic Commission for Europe indicators of globalization include the following ones ("Globalization indicators by Country, Indicator and Year," 2018):
- total exports to GDP, %;
- total trade to GDP, %;
- domestic final demand met by total imports, %;
- trade balance in US dollars;
- trade balance to GDP, %;
- trade balance to total trade, %;
- total trade per capita;
- export performance, %;

- export performance, in US dollars;
- import coverage by exports, %;
- growth rate of total trade, %

Thus, from this list could be seen that international trade plays the most important role in globalization process that is why the amount of exports is perceived as an important indicator of economic development of the countries.

The rationale for the use other variables as factors of export competiveness is based on the literature findings which indicate positive association between them and exports (Jermsittiparsert et al., 2019; Rani and Kumar, 2019; Petkova et al., 2020; Pilinkienė, 2015; Feldmann et al., 2019; Dong et al., 2020; Toppinen et al., 2019; Stevans et al., 2012; Kharlamova and Vertelieva, 2013).

3. Empirical Results

In the Table 3 the regression analysis results have been presented. The Table 4 contains the results of joint test on named regressors and test for differing group intercepts.

T a b l e 3
Regression Results: Fixed Effects

Variables	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Dependent variable: l_Export				
Constant	5.23***	11.22***	9.35***	18.24***
	(1.93)	(1.8)	(1)	(2.8)
l_GFCF	0.42***	0.12	0.13**	−0.11
	(0.09)	(0.14)	(0.06)	(0.07)
l_R&D	0.42***	0.2*	0.42***	−0.38*
	(0.12)	(0.1)	(0.06)	(0.22)
l_EPS	−0.29***	−0.71***	−0.24**	−0.42*
	(0.1)	(0.18)	(0.09)	(0.21)
Upper	−0.00	−0.00	−0.03	0.01*
	(0.00)	(0.01)	(0.00)***	(0.00)
Observations	92	45	72	36
Number of countries	11	5	8	4
LSDV R-squared	0.99	0.97	0.99	0.99
Within R-squared	0.72	0.72	0.78	0.53

Note: Standard errors in parentheses. *p < 0.10; **p < 0.05; ***p < 0.01.
Source: Authors' calculations.

T a b l e 4
Joint Test on Named Regressors and Test for Differing Group Intercepts

Tests/Models	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Joint test on named regressors	51.08	23.93	54.55	7.93
	(0.00)	(0.00)	(0.00)	(0.00)
Test for differing group intercepts	126.18	52.97	41.68	26.29
	(0.00)	(0.00)	(0.00)	(0.00)

Note: p-values are in parentheses.
Source: Authors' statistical results.

The results of regression analysis have shown that in all clusters EPS is significant factor that has positive impact on exports of goods and services in the countries. In our case, the negative coefficients of EPS mean that the less ratio of emissions of carbon dioxide to value added in all NACE activities, the more stringent EP is in the country. In other words, the less the value of indicator EPS, the higher value of exports of goods and services in the country is observed.

In the fourth cluster the significance of EPS is the lowest. This could be explained by existing financial instability in PIGS countries, which is significant obstacle to implement effective environmental policy.

Conclusion

In current research, we have proposed indicator for assessing EPS in the EU-28 countries and approach for analyzing the relationship between economic development of the region and EPS along with the main factors of economic development of the countries. We have tested the hypothesis that *there is causal effect between EPS and economic development of the EU-28.* It has been found out that in all countries EPS is significant factor, which is negatively associated with exports meaning that the less ratio of emissions of carbon dioxide to value added, the more stringent EP is in the country.

There are many concerns about current environmental problems in the EU-28. The convergence process in the EU was mainly focused on economical aspects. But after many years of extensive use of natural resources the governments faced with variety environmental problems. Our previous and current research has shown that among the EU countries there are considerable differences both in economic and environmental development. Such countries, as, for instance, Germany, Austria, Belgium, France, Denmark, United Kingdom, France and which joined the EU earlier than other countries, are characterized by higher economic development and advanced system of EP. Such countries, as Slovakia, Poland, Slovenia, Hungary, and Estonia are still lagging behind above mentioned countries not only in terms of economic development indicators but also environmental performance.

For achieving more sufficient and environmental-agreed economic development, environmental performance indicators should be also included in the system of integration and convergent policies of the EU (Vovk, 2020). It should be noted that the idea of integration of environmental policy in convergent policies of the EU should become an imperative for the EU applicants and candidates as achieving high economic development indicators, inconsistent with environmental issues of the country, is meaningless as international experience shows.

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