“ESG disclosure regulation: in search of a relationship with the countries’ competitiveness”

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ESG DISCLOSURE REGULATION: IN SEARCH OF A RELATIONSHIP WITH THE COUNTRIES' COMPETITIVENESS

Abstract

This paper is devoted to the investigation of environmental, social and governance (ESG) disclosure regulation process and its possible connection with countries' competitiveness as an integral part of countries' Corporate Social and Environmental Responsibility (CSER) policy. ESG disclosure regulation criteria were examined according to their classification on Pension Fund Regulation, Stewardship Code, Government Corporate ESG disclosure, and Non-Government Corporate ESG disclosure by UNPRI in 2016 and for developed countries and developing and emerging countries separately. In order to find the relationship between ESG disclosure and the countries' competitiveness (describing by Global Competitiveness Index), variety of statistical tests was applied (Student's *t*-tests, ANOVA analysis, Mann-Whitney tests, simple average analysis and regression analysis with dummy variables). Research hypotheses about statistically significant differences in ESG disclosure regulation between developed countries and developing and emerging countries and the influence of ESG disclosure regulation on the overall competitiveness of the country were proved. ESG disclosure regulation became an effective instrument of countries CSER policy and tools for increasing their competitiveness.

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INTRODUCTION

The public policy in the area of corporate social and environmental responsibility (CSER) and its disclosure are the microeconomic level of the sustainable development paradigm, the basis for promoting "green" initiatives and ways to achieve the United Nations Sustainable Development Goals (SDGs) for companies in various sectors of the economy. The introduction of CSER policy (strategy) is an important tool for enhancing both the transparency and competitiveness of companies and the competitiveness of the countries. At the same time, the regulatory framework for the disclosure of information by companies is not only financial and economic, but also environmental (E), social (S) and governance (G) criteria, which are a core of the CSER policy. More than 300 regulatory disclosure tools according to ESG criteria (codes (including Stewardship codes), standards, laws, principles, regulation (including Pension Fund regulation) and conceptual frameworks) have been developed by the time of the 50 largest countries by the level of economic development. Most of them have been adopted in recent years (UNPRI, 2016b).

Government standardization and ESG disclosure regulation, implementation of sustainable development reporting, integrated re-

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porting or other forms of non-financial reporting can be seen as one of the tools for increasing transparency, investment attractiveness and competitiveness of companies, and hence the countries competitiveness.

Strengthening the countries competitive position around the world through national CSER policy is at the heart of the new concept for calculating the Global Competitiveness Index of the World Economic Forum in 2018 (GCI 4.0 WEF, 2018).

The study of the experience of the ten most competitive countries from 140 countries in the GCI 4.0 index (in the order of descending value of the index), namely USA, Singapore, Germany, Switzerland, the Netherlands, SAR Hong Kong, United Kingdom, Sweden and Denmark, testifies to the rather developed system of information disclosure regulation by companies according to the ESG criteria in these countries, which is integrated into the national CSER policy.

For Ukraine whose position in the Global Competitiveness Index is not high (83rd out of 140 countries in 2018 (WEF, 2018), the implementation of the CSER policy and ESG disclosure in the public, financial and real sectors of the economy in view of the best world experience can become a new vector in restructuring the economic system on the basis of business responsibility, transparency and investment attractiveness, minimizing information asymmetry and enhancing the effectiveness of financial markets, social partnership and trust of stakeholders.

Thus, the proof and formalization of the relationship between the introduction of ESG disclosure regulation and the countries competitiveness is an important scientific and applied task.

1. LITERATURE REVIEW

Research of the relationship between the introduction of ESG disclosure and the countries competitiveness in academic studies has different levels (companies, industries, country or country union (area)).

The study of Peiró-Signes and Segarra-Oña (2013) was characterized by high level of aggregation. They comprehensively describe implementation of ESG criteria across countries, continents, and industries. In turn, Iamandi et al. (2019) analyze ESG criteria implementation on the area level data from the EU, including country, thematic and sectoral perspectives, and named ESG approach in the EU as "aimed to increase the corporate competitiveness and to support the societal well-being altogether". The EU countries were also an object in investigation made by Sassen, Hinze, and Hardeck (2016), special attention was given to Sweden, Finland, Denmark and Norway in Dahlberg and Wiklund (2018). The case of Australia was researched in Sila and Cek (2017), Malaysia and Singapore – in Tarmuji et al. (2016).

Therefore, the vast majority of relevant literature concentrated on the relationship between companies' competitiveness (in different types and forms) and its transparency and ESG criteria incorporation. Academic sources suggest that inclusion of non-financial indicators, structured according to ESG criteria in the company reporting, can increase its transparency and competitiveness, in particular, by reducing the information asymmetry between the company and the stakeholders. For example, the increase in transparency of CSER reporting led to an increase in the share price of the companies by sector in the first year by 7.1%, in the second year by 8.4% (Healy, 1999).

In other studies, there is a confirmation of an increase in the shares price of reporting companies on average by 4.4% per annum in their liquidity, and the value of the Tobin coefficient (Ernst & Young, 2013), facilitating access to funding (a decrease in the Kaplan-Zingales index by 0.6 for more transparent companies, rise in loyalty, motivation, innovative activity of employees, improvement of the business processes, quality management of resources and risks, waste and decision-making processes (Ernst &

Young; GreenBiz Group, 2013). In this case, the advantages of ESG disclosure are transformed into competitive advantages for companies.

On the whole, it should be noted that there is a certain parity between supporters and opponents of the relationship between additional disclosure of information (Mynhardt et al., 2017a, pp. 96-97), Mynhardt et al. (2017b, p. 8) and the competitiveness of companies, which in this research means the financial performance improvement. Supporters of ESG disclosure positive influence on financial performance such as Eccles et al. (2012), Khavech et al. (2012), Ngwakwe (2009), Schadewitz and Niskala (2010), Bayoud et al. (2012), Reddy and Gordon (2010), Ekwueme et al. (2013) indicate a strong relationship between ESG disclosure and increase in companies' accounting efficiency, price of shares, market share and capitalization, reduction of information asymmetry.

Opponents of ESG disclosure positive influence on financial performance such as Cormier and Magnan (2007), Detre and Gunderson (2011), Lewis (2016) and neutral relationship witnesses such as McWilliams and Siegel (2000), Adams et al. (2012), Buys et al. (2011), Humphrey et al. (2012), Najah and Jarboui (2013), Qiua (2016) state that companies' additional ESG disclosure has negative impact on share prices, financial efficiency, greenwashing practices or has no statistically significant effect.

Besides finding the relationship between ESG disclosure and competitiveness, the results of complex studies by Ioannou and Serafeim (2011), Wensen et al. (2011) indicate the impact of standardization on the quality of corporate disclosures. In our study, standardization refers to the form of regulation and control tool, which allows for increased coordination and compliance in the standardized field (Brunsson & Jacobsson, 2000). ESG disclosure and sustainability reporting assurance initiatives, both governmental and intergovernmental organizations and exchanges, have also significant impetus to this type of disclosure standardization (Sukhonos & Makarenko, 2017, pp. 168-169).

In addition to academic sources, the work of supranational organizations such as the OECD and UNPRI indicates the benefits of the ESG disclosure at the global level. Thus, the global harmonization of efforts by regulators to show progress towards the target 12.6 SDG indicates the need to standardize ESG disclosure. The opinion expressed in the OECD study (OECD, 2014) is relevant: reporting on ESG criteria that emerged as a voluntary practice in response to the needs of stakeholders, exchanges, investors, and international organizations following the Sustainable Development Summits (in particular, the Rio + 20 Summit 2012) is gradually becoming mandatory for listed companies in certain countries of the world. However, it should be mandatory for all companies to draw the attention of government agencies in order to streamline the scope, structure, key characteristics of the heterogeneous nature and scope of reporting and its role in ensuring the countries' competitiveness and financial performance of the OECD (2014, p. 26).

The study of the 50 largest countries in the world GDP (UNPRI, 2016b) gives an evidence that among the tools for promoting responsible investment, the requirements for corporate ESG disclosure were implemented in 76% of the countries under study. Among them, government requirements exist in 38 countries, the requirements of stock exchanges and non-governmental organizations in 26 and 23 countries, respectively. Pension Fund Regulation and disclosure requirements, as well as SCs, are implemented in 46% and 28% of the countries, respectively.

Dominant drivers for the ESG disclosure promotion are regulatory requirements in the most competitive countries in the world, which stipulate almost 100% mandatory disclosure of non-financial information (Table 1).

In Ukraine, only 21.7% of companies reveal the information on CSER (based on the results of the CSR Development Center's Transparency Index in Ukraine 2017), which indicates that Ukrainian companies do not perceive CSER as a policy that integrates into business strategy and is the basis of the company's competitiveness on the market. At the same time, due to the implementation of CSR measures, Ukrainian companies will be able to contribute to increasing their competitiveness on the global, regional and domestic markets (Zinchenko et al., 2018).

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Table 1. Countries with the highest share of ESG disclosure in annual company reports and regulatory requirements for its compilation

Source: WEF (2017), WEF (2018), UNPRI (2016a), UNPRI (2016b), UNPRI (2016c), MSCI (2016).

Country	GCI 4.0, points	ESG disclosure quote, %	Status
The USA	85.6	94	Mandatory and voluntary ESG
Singapore	83.5	84	Mandatory and voluntary ESG
Germany	82.8	73	Mandatory environmental criteria, mandatory ESG criteria in progress, mandatory social criteria in progress, comply and explain governmental criteria
Switzerland	82.6	82	Mandatory environmental criteria, mandatory ESG in progress, comply and explain governmental criteria, Mandatory social criteria in progress
Japan	82.5	99	Mandatory and voluntary environmental criteria
The Netherlands	82.4	82	Mandatory environmental criteria, mandatory ESG, mandatory social criteria in progress
Hong Kong	82.3	n/a	n/a
United Kingdom	82.0	99	Mandatory environmental criteria, mandatory ESG, comply and explain governmental criteria, mandatory social criteria, voluntary social criteria
Sweden	81.7	88	Mandatory environmental, mandatory ESG in progress, comply and explain governmental criteria, mandatory social criteria in progress
Denmark	80.6	94	Mandatory environmental, comply and explain ESG, mandatory ESG in progress, mandatory social criteria in progress

2. DATA AND METHODOLOGY

We use country data concerning ESG disclosure (Government Corporate ESG disclosure (GCESG) and Non-Government Corporate ESG disclosure (NGCESG), Pension Fund Regulation (PFR) and Stewardship Code (SC) implementing from responsible investment regulation map, summarized by UNPRI (2016b) and UNPRI (2016c). The largest economy (developed and developing) was chosen in accordance with MSCI ACWI index (MSCI, 2016. Another important data source is WEF (2017). Initial data set is presented in Appendix A (Table A1).

The following hypotheses are tested in this research:

H1: *There are differences in ESG disclosure regulation between developed countries and developing and emerging countries.*

H2: *ESG disclosure regulation influences overall competitiveness of the countries.*

To confirm/reject these hypotheses, we use a number of parametrical and non-parametrical tests including Student's *t*-tests, ANOVA analysis, Mann-Whitney tests, as well as simple average analysis and special technics like regression analysis with dummy variables.

To do this, overall, data set is divided into 2 groups: developed countries' data and developing and emerging countries.

Average analysis provides preliminary evidence on whether there are differences between developed and emerging countries' data.

Both parametric and non-parametric tests are carried out given the evidence of statistically significant differences in data sets. The null hypothesis (*H0*) in each case is that the data belong to the same population, a rejection of the null suggesting the presence of statistically significant difference between analyzed data sets.

The tests are carried out at the 95% confidence level, and the degrees of freedom are $N-1$ $(N$ being equal to $N_1+N_2)$.

We also run multiple regressions including a dummy variable to identify possible differences between developed and emerging countries:

$$Y_i = a_0 + a_1 D_i + \varepsilon_i, \qquad (1)$$

where Y_i – ESG criterion value for developed country i, a_n – mean ESG criterion value for the developed countries, D_{nt} – dummy variable for the emerging countries, equal to 1 for observations corresponding to the emerging countries and to 0 otherwise, ε_i – error term for country i.

The size, sign and statistical significance of the dummy coefficients provide information about possible differences.

To test *Hypothesis 2*, correlation analysis, Granger causality tests and multiply regression analysis are used.

3. RESULTS

First, we test *Hypothesis 1:* There are differences in ESG disclosure regulation between developed countries and developing and emerging countries. To do this, variety of statistical tests, including average analysis and regression analysis, are performed.

Results of average analysis are presented in Appendix B. As can be seen, all analyzed ESG criteria (PFR, SC, GCESG and NGCESG) in developed countries were higher than in case of developing and emerging countries.

To find whether these differences are statistically significant or not, we perform parametric tests (Student's *t*-test and ANOVA), non-parametric tests (Mann-Whitney tests), as well as regression analysis with dummy variables. Results are presented in Appendix C. In order to ease their interpretation, we summarize these results in Table 2.

Overall picture is very clear: there are statistically significant differences in ESG disclosure regulation between developed countries and developing and emerging countries. Developed countries pay much more attention to this aspect. So, *Hypothesis 1* is confirmed.

Next, we test *Hypothesis 2:* ESG disclosure regulation influences overall competitiveness of the country.

To do this, as a preliminary empirical evidence, we provide correlation analysis between ESG criteria (PFR, SC, GCESG and NGCESG) and overall competitiveness of the country (see Appendix D for results). In case of developed countries, all ESG criteria are negatively correlated with the rank (the lower the rank, the better the results). It means that the use of ESG regulation is one of the signs of a good economy. As for the case of developing and emerging countries, the results are mixed: most of the criteria (GCESG and NGCESG) show positive correlation. This can be explained by very low level of involvement into ESG regulation.

An obvious conclusion from these results is that ESG regulation is an important part of competitiveness of the countries.

To find additional evidences in this favour, we perform Granger causality tests (see Appendix E). Overall, there are no statistically significant and confirmed causalities between ESG criteria and rank of the country in the ranking of 50 largest economies. Still, in most of the cases, rank was rather dependent variable than independent, which is one more indirect evidence in favor of *Hypothesis 2:* the more ESG criteria actually used by the country, the more competitive the country.

Table 2. Overview of the results for ESG criteria

Type of regulation/ methodology	Average analysis	Student's *t*-test	ANOVA	Mann-Whitney test	Regression analysis with dummies
PFR	+	+	+	+	+
SC	+	–	–	–	–
GCESG	–	–	–	+	–
NGCESG	–	–	–	+	–

Note: "+" indicates the presence of statistically significant difference between developed countries and developing and emerging countries' data sets, "–" indicates the absence of statistically significant difference between developed countries and developing and emerging countries' data sets.

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Table 3. Multiplied regression analysis: ranking in 50 largest economies (Y) and ESG disclosure regulation variables (X variables)

Parameter	Overall data set	Case of developed countries	Case of developing and emerging countries
a_0	31.00 (0.00)	40.98 (0.00)	22.07 (0.00)
PFR, a_1	−0.5461 (0.82)	3.0699 (0.56)	1.1325 (0.73)
SC, a_2	−3.4545 (0.17)	−0.8185 (0.81)	−4.3067 (0.32)
GCESG, a_3	−0.6939 (0.61)	−3.4498 (0.22)	1.2592 (0.51)
NGCESG, a_4	−0.5958 (0.75)	−4.3396 (0.16)	2.6801 (0.31)
F-test	0.91	1.08	0.64
Multiple *R*	0.27	0.45	0.32

On the final stage of *Hypothesis 2* testing, we run a multiplied regression analysis (rank as dependent variable and ESG criteria as independent variables). Results are presented in Table 3.

As can be seen in case of overall data set, there is rather strict dependence between ESG disclosure regulation and overall competitiveness of the countries. Negative signs of coefficients in regression equation (see Eq. 1) show that the more ESG criteria used for disclosure regulation, the higher the competitiveness of the country:

$$Y_i = 31.00 - 0.5461 \cdot a_1 - 3.4545 \cdot a_2 - \\ -0.6939 \cdot a_3 - 0.5958 \cdot a_4, \quad (2)$$

where Y_i – is rank of the country in the ranking in 50 largest economies, a_1 – PFR, a_2 – SC, a_3 – GCESG, a_4 NGCESG.

As can be seen from this regression model, SC has higgest influence on the competitiveness of the country. All other groups (PFR, GCESG and NGCESG) in general have equal impact, which is 6-7 times lower than the SC criteria. So, the SC looks like a primary object, the first one to start if the country decides to incorporate ESG disclosure regulation.

Overall, we find some evidence in favor of *Hypothesis 2*. ESG disclosure regulation really influences overall competitiveness of the countries. This influence is direct: the more ESG disclosure criteria executed by the country, the higher its competitiveness of the country.

CONCLUSION

This paper examines ESG disclosure regulation criteria focusing on PFR, SC, GCESG and NGCESG criteria. We split overall data set into 2 groups: developed countries and developing and emerging countries. Applying the variety of statistical tests including Student's *t*-tests, ANOVA analysis, Mann-Whitney tests, as well as simple average analysis and special technics like regression analysis with dummy variables, the following hypotheses are tested: *Hypothesis 1* – there are differences in ESG disclosure regulation between developed countries and developing and emerging countries; *Hypothesis 2* – ESG disclosure regulation influences overall competitiveness of the countries.

Overall conclusions are as follows. There are statistically significant differences in ESG disclosure regulation between developed countries and developing and emerging countries. Developed countries pay much more attention to this aspect. So, *Hypothesis 1* is confirmed.

Some evidence in favor of *Hypothesis 2* is found as well. ESG disclosure regulation really influences overall competitiveness of the countries. This influence is direct: the more ESG disclosure criteria executed by the country, the higher the competitiveness of the countries.

Results of this paper clearly show that ESG disclosure regulation is an important part of the modern economic system. This is one of the evolutionary stages: to move further in development, the countries need to incorporate ESG disclosure regulation in their systems. According to results of this paper, the highest effect for the competitiveness can be provided by incorporating SC criteria.

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APPENDIX A

Table A1. Initial data set

Rank		PFR		SC		GCESG		NGCESG	
DC	DEC	DC	DEC	DC	DEC	DC	DEC	DC	DEC
12	21	2	0	2	0	4	2	4	0
29	47	2	0	0	0	4	2	3	2
25	9	2	0	2	2	4	2	2	3
10	42	3	0	0	0	7	5	3	2
37	2	2	0	2	0	5	5	2	2
44	39	2	2	0	0	6	2	2	2
6	32	2	0	0	0	4	2	2	2
4	46	2	2	2	0	6	4	2	0
34	7	0	0	2	0	0	0	5	0
43	16	2	0	0	0	4	0	0	2
36	26	0	0	0	0	2	0	0	0
8	50	2	0	2	0	5	2	2	3
3	35	0	0	2	2	2	5	2	0
17	15	3	2	0	0	4	2	2	2
28	23	0	0	0	0	3	2	2	3
45	41	2	0	0	0	3	2	0	2
38	49	0	0	2	0	2	4	3	2
14	40	2	0	0	0	6	2	2	2
22	24	2	2	0	0	6	3	2	2
19	13	0	0	0	0	0	5	3	0
5	20	2	0	2	0	7	2	2	0
1	33	0	3	0	2	2	3	3	2
–	11	–	2	–	2	–	2	–	0
–	27	–	0	–	0	–	3	–	2
–	18	–	0	–	0	–	4	–	2
–	31	–	0	–	0	–	2	–	0
–	30	–	0	–	0	–	0	–	2
–	48	–	0	–	0	–	2	–	2

Note: DC is used for developed countries, DEC is used for developing and emerging countries.

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APPENDIX B

Average analysis

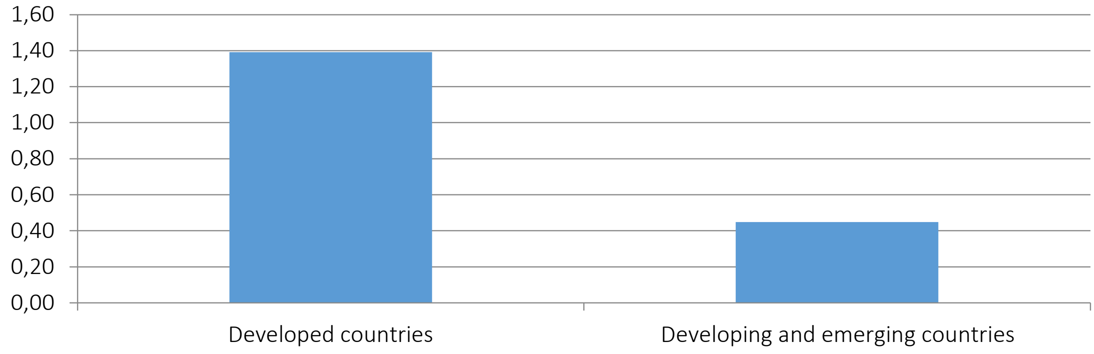

Figure B1. PFR

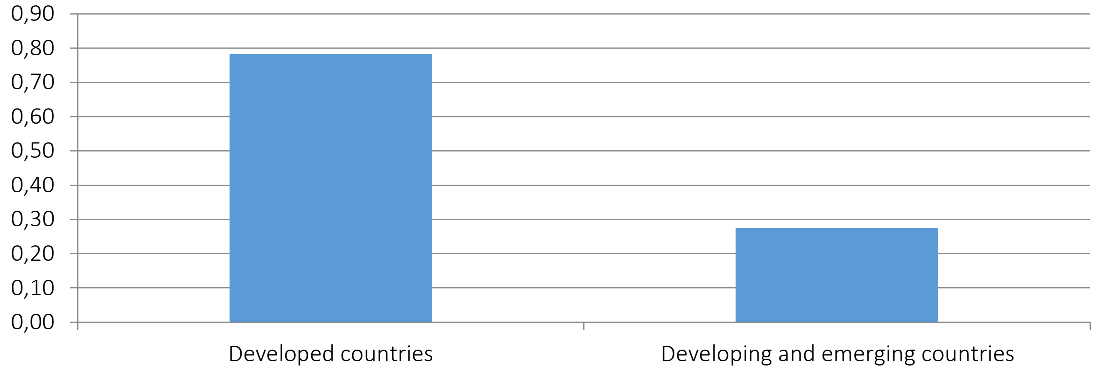

Figure B2. SC

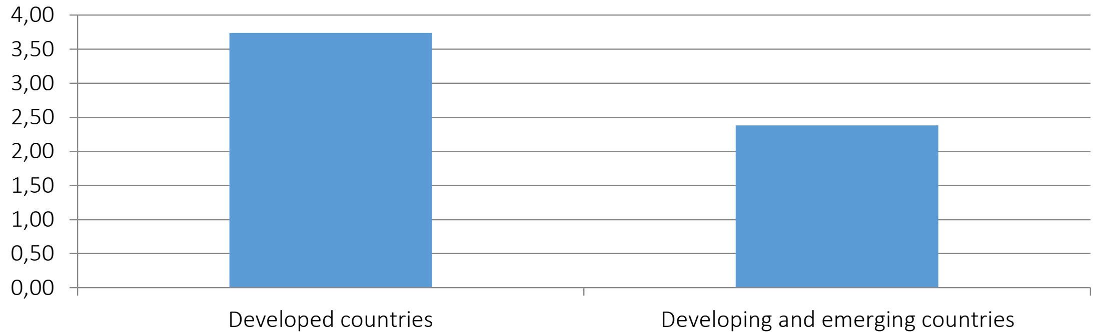

Figure B3. GCESG

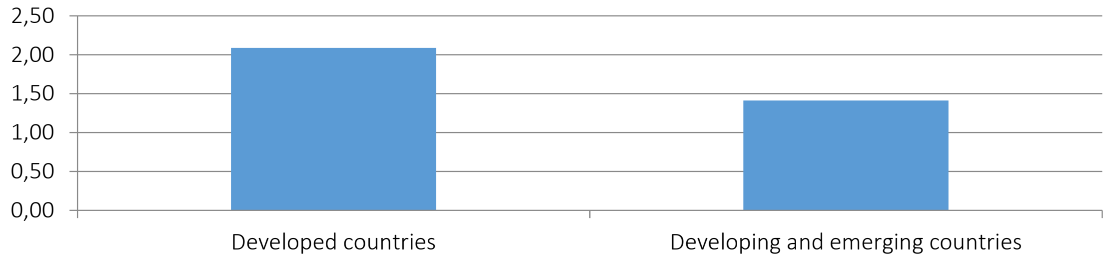

Figure B4. NGCESG

APPENDIX C

Parametric tests: Student's t-test

Table C1. *T*-test of the differences between developed countries and developing and emerging countries

Parameter	RFR	SC	GCESG	NGCESG
t-criterion	3.31	2.00	2.63	2.08
t critical (p = 0.95)	1.96	1.96	1.96	1.96
Null hypothesis	Rejected	Rejected	Rejected	Rejected

Parametric tests: ANOVA

Table C2. ANOVA test of the differences between developed countries and developing and emerging countries

Parameter	RFR	SC	GCESG	NGCESG
F	12.49	4.79	8.41	5.05
p-value	0.00	0.03	0.00	0.03
F critical	4.04	4.04	4.04	4.04
Null hypothesis	Rejected	Rejected	Rejected	Rejected

Non-parametric tests: Mann-Whitney tests

Table C3. Mann-Whitney tests of the differences between developed countries and developing and emerging countries

Parameter	RFR	SC	GCESG	NGCESG
Adjusted *H*	10.23	4.45	7.27	4.55
d.f.	1	1	1	1
p-value	0.00	0.03	0.01	0.03
Critical value	3.84	3.84	3.84	3.84
Null hypothesis	Rejected	Rejected	Rejected	Rejected

Regression analysis with dummy variables

Table C4. Regression analysis with dummy variables of the differences between developed countries and developing and emerging countries*

Parameter	RFR	SC	GCESG	NGCESG
a_0	1.4545 (0.00)	0.8182 (0.00)	3.9091 (0.00)	2.1818 (0.00)
a_1	–0.9903 (0.00)	–0.5325 (0.03)	–1.4448 (0.00)	–0.7175 (0.03)
F test	12.49	4.79	8.41	5.05
Multiple *R*	0.45	0.30	0.00	0.03
Null hypothesis	Rejected	Rejected	Rejected	Rejected

Note: * *p*-values are in parentheses.

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APPENDIX D

Correlation analysis

Table D1. Correlation analysis of ESG disclosure regulation and overall competitiveness of the countries: case of all data set

Parameter	Ranking in 50 largest economies	PFR	SC	GCESG	NGCESG
Ranking in 50 largest economies	1	–0.14	–0.24	–0.15	–0.10
PFR	–0.14	1	0.22	0.56	0.05
SC	–0.24	0.22	1	0.16	0.23
GCESG	–0.15	0.56	0.16	1	0.01
NGCESG	–0.10	0.05	0.23	0.01	1

Table D2. Correlation analysis of ESG disclosure regulation and overall competitiveness of the countries: case of developed countries

Parameter	Ranking in 50 largest economies	PFR	SC	GCESG	NGCESG
Ranking in 50 largest economies	1	–0.09	–0.19	–0.22	–0.31
PFR	–0.09	1	–0.10	0.80	–0.18
SC	–0.19	–0.10	1	–0.01	0.35
GCESG	–0.22	0.80	–0.01	1	–0.21
NGCESG	–0.31	–0.18	0.35	–0.21	1

Table D3. Correlation analysis of ESG disclosure regulation and overall competitiveness of the countries: case of developing and emerging countries

Parameter	Ranking in 50 largest economies	PFR	SC	GCESG	NGCESG
Ranking in 50 largest economies	1	0.00	–0.19	0.10	0.22
PFR	0.00	1	0.35	0.08	–0.04
SC	–0.19	0.35	1	0.15	–0.08
GCESG	0.10	0.08	0.15	1	–0.02
NGCESG	0.22	–0.04	–0.08	–0.02	1

APPENDIX E

Granger causality tests

Table E1. Granger causality test: rank (*X*) and PFR (*Y*)

Res. DF	Diff. DF	F	*p*-value
Granger causality test: $Y = f(X)$			
47	–1	0.04	0.84
Granger causality test: $X = f(Y)$			
47	–1	0.64	0.42

Table E2. Granger causality test: rank (*X*) and SC (*Y*)

Res. DF	Diff. DF	F	*p*-value
Granger causality test: $Y = f(X)$			
47	–1	3.427	0.071
Granger causality test: $X = f(Y)$			
47	–1	2.413	0.127

Table E3. Granger causality test: rank (*X*) and GCESG (*Y*)

Res. DF	Diff. DF	F	*p*-value
Granger causality test: $Y = f(X)$			
47	–1	0.356	0.553
Granger causality test: $X = f(Y)$			
47	–1	0.842	0.364

Table E4. Granger causality test: rank (*X*) and NGCESG (*Y*)

Res. DF	Diff. DF	F	*p*-value
Granger causality test: $Y = f(X)$			
47	–1	0.72	0.401
Granger causality test: $X = f(Y)$			
47	–1	0.831	0.367

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