

## **Socially Responsible Indexes and Non-financial Disclosures. The Case Study of the WIG-ESG**

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**Abstract:** The aim of the study was to answer the question of how being listed on the WIG-ESG index affects the quality of published non-financial information. The author studied the annual reports of companies listed on the WIG-ESG, and of companies outside this index. The analysis of variance and grouping using the k-means method, followed by the evaluation of the obtained division by the value of the silhouette index, showed that in terms of the variables describing the quality of published non-financial information, it was impossible to demonstrate that companies listed on the WIG-ESG stand out when compared to other entities.

**Keywords:** non-financial reporting, socially responsible index, WIG-ESG, Warsaw Stock Exchange

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### **1. Introduction**

In Central and Eastern Europe the first appearance of an index listing companies, which in principle were to stand out from other entities in terms of social responsibility was the RESPECT index implemented in 2009 by the Warsaw Stock Exchange (Giełda Papierów Wartościowych S.A. – hereinafter WSE). RESPECT was an income index in which entities could be included if they fulfilled specific criteria related to fluidity, investor relations (especially corporate governance), and social responsibility, wherein the last condition was verified on the basis of questionnaires collected from companies. From a worldwide perspective, the first stock market index listing socially responsible companies was the Domini 400 Social Index opened in 1990 in the USA, currently named the MSCI KLD 400 (Sikacz, 2016). Other significant ESG indexes include the FTSE4GOOD Index (and others in the FTSE group), the Calvert Social Index, the Ethinvest Environmental Index, ÖkoDax, DAXglobal Alternative

Energy, DJSI STOXX, DJSI Euro STOXX, the ECPI Index Family, GreenTec Climate 30, the Global Challenges Index, the Jantzi Social Index, DJSI World, the Dow Jones Sustainability North America Index, the Natur-Aktien-Index and the UmweltBank-AktienIndex (Czopik, 2017).

The WSE opened the WIG-ESG index on the 3rd September 2019 with a base value of 10,000 points, similarly as the RESPECT index as an income index (Rogowski and Lipski, 2022). The share of one company on the index is limited to 10%, while the overall share of companies for each of which the share exceeds 5%, is limited to 40% (GPW Benchmark, 2023). As mentioned earlier, the WIG-ESG lists the largest companies, i.e. those listed on the WIG20 and mWIG40 indexes, where qualification for the ESG index is carried out by correction using an adjustment factor i.e. an assessment of the degree of compliance with environmental, social and corporate governance principles (thus the index name: Environmental, Social, Governance). Companies that qualify for the WIG-ESG are from the WIG20 and mWIG40 indexes according to their status at the end of January, April, July and October in a given year, and the weighting of individual entities making up the index is created on the basis of the results of analyses and ESG data contained in ESG Risk Rating Reports, prepared by the independent research agency Sustainalytics B.V. headquartered in the Netherlands. Companies receive a rating of between 0 and 100 points (the higher the number, the better the compliance with ESG principles), and are then divided into five groups, which are compared to the ranking from the previous quarter. Depending on the requirements, the ranking can be smoothed out in order to ensure the stability of the index, and in the case of any doubts, the Stock Exchange Indexes Committee or the Capital Market Indicators Supervisory Committee can issue an opinion (Chapter 8 of the Stock Exchange Index Family Regulations).

The aim of this article was to investigate whether companies can be divided according to the criterion of the quality of their non-financial reporting, with consideration for the fact that they are listed on the index of socially responsible entities. The method used to achieve this aim was the analysis of the data using k-means grouping.

In the current subject literature there are four principal areas of research. A considerable number of authors have addressed the problem of the practical aspects of non-financial reporting, as well as discussing the legal basis for such reporting. Some publications focus on the issue of the attestation of non-financial information, while others examine the essence of ESG indexes, although as a rule they analyse the problem from the point of view of investors. The subject literature presented in the next chapter shows that the proposed aim of this article fills a research gap by conducting a study that combines aspects of non-financial reporting with the essence of the WIG-ESG index.

## 2. Review of Previous Research

Studies focused on the topic of indexes of socially responsible entities address above all the issue of the effectiveness of portfolios composed of shares of the companies listed on these indexes. It was found, among others, that in the period 2007-2010, CSR type indexes generally allowed for the generation of at least average profits (Sikacz, 2016), which was also confirmed by the results of earlier research (e.g. Bek-Gaik and Rymkiewicz, 2014; Bartkowiak and Janik, 2012 and Kowalke and Prochownik, 2011).

The second group of studies on ESG/CSR indexes is related to attempts to connect the fact of companies being listed on this index with the quality of published non-financial reports. While it is true that such research does show that companies from the WIG-ESG distinguish themselves in terms of submitting their reports to the GRI Sustainability Disclosure Database and to the Social Reports competition (Konarzewska, 2020), there is a lack of research that attempts to compare, for example, selected aspects of non-financial reporting by companies on the WIG-ESG index with companies from outside this index. Research into non-financial reporting by socially responsible entities has to date usually focused exclusively on non-financial data (Rubik, 2018), while it may be of cognitive value to add financial data to such analysis. There are also studies devoted to reporting by banks listed on the WIG-ESG (Wójcik-Jurkiewicz, 2020), whilst this paper analyses non-financial entities.

Studies connecting the issue of indexes of socially responsible entities and non-financial reporting are not however very common, and in the author's assessment, a more justified division of prior scientific output in the above area could take the form proposed below (Table 1).

Table 1. Principal research avenues in the field of non-financial reporting, and issues related to the indexes of socially responsible entities

Principal research avenue	Specific aspects	Selected publications
The practice of non-financial reporting	Technical aspects, evaluation of information disclosed (especially in terms of its comparability), sectoral reporting and review of scientific output	Miścikowska, 2022; Mousa and Ozili, 2023; Klimko and Juhászová, 2022; Abhayawansa and Adams, 2022; Kamiński, 2020; Czaja-Cieszyńska, 2022; Martyniuk and Gostkowska-Drzewicka, 2022; Trocka, 2021; Błażyńska, 2020; Ogreaan and Herciu, 2022; Wójcik-Jurkiewicz, 2020; Aguado-Correa et al., 2023; Steblyanskaya et al., 2022; Lopes and Penela, 2022; Szewieczek and Franczak, 2020; Permatasari and Narsa, 2022; Lakhani and Herbert, 2022; Kawacki and Kuberska, 2021; Grueso-Gala and Zornoza, 2022; Michelon, Trojanowski and Sealy, 2022
ESG indexes	Use of indexes in taking investment decisions, as well as analysis of data published by entities listed on the index	Sikacz, 2016; Czopik, 2017; Wójcik-Jurkiewicz, 2020; Sikacz and Wołczek, 2017; Kiczmer and Stonka, 2019; Rubik, 2018; Konarzewska, 2020
Legal basis of reporting	Standardisation of reporting and review of EU legislation	Pigatto et al., 2023; Karwowski et al., 2020; Błażyńska 2019; Walińska et al., 2018; Shekhovtsova et al., 2022; Pelikanova and Rubacek, 2022; Tylec, 2022; Surna-Syta, 2019
Attestation of non-financial reporting	Research into the procedures and legal basis for attestation (research from the point of view of the auditor), as well as research into the approach to the problem by the audited entities (research from the point of view of companies)	Trucco et al., 2022; Hoti and Sopa, 2022; Zęgota and Iwanow, 2019; Bartoszewicz and Rutkowska-Ziarko, 2022; Piotrowska, 2018; Zyznarska-Dworczak, 2016

Source: own elaboration.

A review of the literature indicates that there is a clear research gap in the form of a lack of a well-established research stream comparing the quality of non-financial reporting of companies on the WIG-ESG index and entities from outside this index.

### 3. The Concept of Disclosing Non-financial Information and the Legal Basis for Non-financial Reporting

Non-financial reporting appeared as a manifestation attempting to implement the information function of accounting, understood as creating and adapting information to the needs of the recipients (Dyduch et al., 2004). The key importance of the information function in reporting was pointed out in (Cicha, 2008), whereas the usefulness of reported information balances out its asymmetry in agency theory (Rówińska, 2016). In the USA in the 1970s and 1980s, it was found that information provided by entities listed on the stock exchange was not usually taken into account by investors (Feldman, March, 1981). In response to the deficiencies revealed in financial reporting, the concept of the social responsibility of business was born – and in 1977 in France mandatory social reports were introduced (Jarugowa and Skowroński, 1979).

The basic legal act currently regulating the basis of non-financial reporting is Directive 2014/95/UE of the European Parliament and Commission of the 22nd October 2014, amending directive 2013/34/UE related to the disclosing of non-financial information and information on diversity by some large entities and groups (NFRD Directive), which obliges the largest entities (with over 500 employees) to prepare declarations on the subject of non-financial information. Such a declaration contains a short

description of the entity's business model and of the policies applied by the entity, including implemented due diligence processes and the results of such policies, principally the risk associated with the reported areas, as well as the key non-financial result indicators related to a given activity.

The provisions of the NFRD Directive were incorporated into Polish legislation by adding article 49b to the Accounting Act. According to article 49b paragraph 1 of the Accounting Act, an entity referred to in article 3 paragraph 1e points 1-6, being a capital company, a limited joint-stock partnership or a general partnership or limited partnership, in which all partners with unlimited liability are capital companies, limited joint-stock partnerships or companies from other countries with a legal form similar to these companies, on condition that in the financial year for which it prepares a financial report, and in the year preceding this year exceeds: (1) in the case of average annual employment calculated as 500 people employed full-time, and (2) 85 million zloty in for the balance sheet total or 170 million zloty in net income from the sale of goods and products, additionally includes in the activity report – as a separate part – a declaration on the subject of non-financial information. According to article 49b paragraph 2 of the Accounting Act, the declaration on non-financial information shall include at least:

- (1) a brief description of the entity's business model,
- (2) key non-financial effectiveness indicators related to the entity's activity,
- (3) a description of the policies applied by the entity in terms of social and employee issues, as well as those related to the natural environment, respect for human rights and combatting corruption, as well as a description of the results of the application of these policies,
- (4) a description of due diligence procedures – if the entity applies them as part of the policies referred to in point 3,
- (5) a description of the key risks associated with the entity's activity that can have a detrimental effect on the issues referred to in point 3, including the risks related to the entity's products or its relations with the external environment, including its partners, as well as a description of how these risks are managed.

In subsequent editions, article 49b of the Accounting Act states, amongst others, that information should be presented in the scope necessary for the assessment of the entity's development, results and situation, and the influence of its activity on the reported issues, and where there exists a link between the values presented in the annual financial report and the information contained in the declaration on non-financial information, the declaration should contain references to the amounts shown in the financial report, as well as additional explanations regarding these amounts. Furthermore, the Accounting Act introduces the principle of report or explain, according to which, if a specific policy is not applied, the entity provides the reasons for this. It is permitted to omit from the declaration non-financial information regarding expected events or matters that are the subject of ongoing negotiations, if – according to the justified opinion of the entity's manager or members of the supervisory board or another body supervising the entity – the disclosure of such information would have a significantly detrimental effect on the entity's market position, wherein such omission may not prevent the proper and objective assessment of the entity's situation, and must be included in the declaration.

Provisions introduced into the Accounting Act, in line with the NFRD Directive, state that in preparing a declaration on non-financial information, an entity may apply any principles, including its own, national, EU or international standards, norms or guidelines. The entity includes in the declaration information about which principles, standards, norms or guidelines were applied.

An entity is permitted not to prepare a declaration on non-financial information if, along with its activity report, it prepares a report on non-financial information and places it on its website within 6 months of the balance sheet date. The entity includes in the activity report information that a separate report has been prepared on non-financial information (article 49b paragraph 9 of the Accounting Act). Meanwhile, if this is a dependent entity, including a dominating entity of a lower level, it is permitted

not to prepare a declaration on non-financial information or a report on non-financial information if its dominating entity of a higher level with its headquarters or place of management on the territory of the European Economic Area prepares a capital group declaration on non-financial information, or a capital group report on non-financial information according to the legal provisions of the state in the European Economic Area to which it is subject, and which cover this entity and its dependent entities at every level. In this case, the entity discloses in its activity report the name and headquarters of its dominating entity of a higher level that prepares a declaration or capital group report on non-financial information which cover this entity and its dependent entities at every level (article 49b paragraph 11 of the Accounting Act).

The existence of non-financial reporting separate from financial reporting resulted in entities seeing the tool of disclosing non-financial information as providing new potential for communicating with stakeholders. Research conducted by the ACCA organisation showed that in 2013, almost 70% of investors admitted that they ascribe greater importance to information from outside traditional financial reporting, and almost half revealed that financial reporting is of no use at all in the case of investments with a long-term horizon (ACCA, 2014). The freedom in providing non-financial information led to non-financial reports being used mainly for self-promotion. In the USA and Australia in the 1990's, it was found that companies that disclose the effect of their activity on the environment revealed only selected information, limiting themselves to presenting indicators that were beneficial to them, even if proceedings were underway against the entity for violating environmental regulations (Adamczyk, 2001; Deegan and Rankin, 1996). In response to attempts at instrumental use of non-financial disclosures, concepts of standardisation of non-financial reports appeared. One of the most common non-financial reporting standards are the Global Reporting Initiative (GRI) standards, which were first developed in the year 2000 (currently, the G4 guidelines are in force, as well as additions regarding reporting in selected sectors). These are divided into universal standards (basic information, indicators, approach to management) and thematic standards (economic, environmental and social aspects) (Raulinajtys-Grzybek and Karwowski, 2022). The Polish scientific community developed a simplified national version of the GRI in the form of the Non-financial Information Standard (Standard Informacji Niefinansowych – SIN, 2017), which focuses on reporting indicators (Błażyńska, 2020), whilst in 2013, the International Integrated Reporting Council (IIRC) published a framework for integrated reporting, which defines the guiding principles that should be followed in preparing an integrated report, as well as clarifying the aims and concepts of its preparation (Błażyńska, 2018).

The standardisation of non-financial reporting opened up a discussion on the legitimacy and possible method of verifying the reliability of the data presented. The Statutory Auditors Act states that a statutory auditor is obliged to include information in the audit report on whether a declaration on non-financial information was prepared (article 83 paragraph 3 point 16 of the Statutory Auditors Act). In article 2 point 5, the Act also defines the concept of attestation services (incidentally, it should be indicated that in point 6 of the above-mentioned article, the Statutory Auditors Act also defines what is a related service – in practice, for attestation of non-financial reports, depending on the scope of the audit, statutory auditors apply principles both assigned to attestation services as well as to related services). Moreover, the National Audit Standards contain more precise guidelines for auditors in the form of the National Standard for Attestation Services 3000 – *Services other than audits or reviews of historical financial information*. In the period 2005-2017, among 935 European companies reporting according to the GRI standard, around half of these reports were subject to attestation, of which 30% were in Eastern Europe. Almost 60% of attestations were conducted based on the 3000 standard mentioned above, which was influenced by the common use of this standard by auditors of the so-called big four. The entities conducting the attestations were in over 80% of cases accounting and auditing firms, with the remaining attestations being conducted by small consulting or certification firms, or by individual experts. Most attestations were conducted by Deloitte and E&Y (equally in both parts of Europe). PwC conducted attestations considerably more often in Western Europe, where 6% of entities made use of reasonable assurance attestations, while 78% used limited assurance attestations. Over half of the attestations related to only parts of non-financial reports (Krasodomska and Zieniuk, 2021).

#### 4. Research Scope and Research Sample Characteristics

The starting point for collecting the research material was a review of the contents of the WIG-ESG index. The list of companies comprising the WIG-ESG index as of the 19th April 2023 was downloaded from the WSE website ([www.gpw.pl](http://www.gpw.pl)). Excluded from the research were entities operating in the financial sector, due to the specificity of their activity such entities have developed a slightly different method and scope of presenting data (similarly, among others, Elmgasbi, 2020), as well as those that due to the legal basis for establishing and conducting their activity, and the scale of activity, were characterised by the impossibility of identifying a comparable entity. A full list of companies on the WIG-ESG index, along with a division into entities selected and excluded from the analysis is presented below (Table 2).

Table 2. List of companies on the WIG-ESG index selected for the study

Number of companies	Company list	Decision regarding further analysis along with comments
11	ALIOR, GPW, HANDLOWY, INGBSK, MBANK, MILLENIUM, PEKAO, PKOBP, PZU, SANPL, XTB	Due to their activity in the financial sectors (banking, stock exchange, insurance and activity of a stock market and brokerage office nature), the companies were excluded from further analysis.
6	ALLEGRO, AMREST, ASBIS, HUUUGE, KERNEL, PEPCO	Due to their activity based on foreign regulations (Societe Anonyme companies, Public Limited Company, Incorporated and Naamloze Vennootschap) or a particular legal form (European company), these companies were excluded from further analysis.
10	ASSECOPOL, BOGDANKA, CYFRPLSAT, EUROCASH, JSW, KGHM, ORANGEPL, PGE, PKNORLEN, TAURONPE	Companies that due to their scope of activity are characterised by extremely different financial data values (such as revenues or balance sheet total) and non-financial values (such as employment), and additionally operate in sectors in which there is no competition for them on this scale (mining, ICT, telecommunications, general trade, energy, fuel).
33	11BIT, AUTOPARTN, BENEFIT, BUDIMEX, BUMECH, CCC, CDPROJEKT, CIECH, COMARCH, DATAWALK, DEVELIA, DINOPL, DOMDEV, ENEA, GRENEVIA, GRUPAAZOTY, GRUPRACUJ, INTERCARS, KETY, KRUK, LIVECHAT, LPP, MABION, MERCATOR, MOBRUK, NEUCA, PEP, PKPCARGO, SELVITA, STSHOLDING, TSGAMES, WIRTUALNA, ZEPAK – entities qualified for further analysis.	
Total companies on the WIG-ESG index: 60		

Source: own elaboration on the basis of the WIG-ESG index published on the website [www.gpw.pl](http://www.gpw.pl) [electronic access: 29.04.2023].

In order to present the differences and similarities between companies listed on the WIG-ESG index and entities from outside the index, purposeful selection was conducted to add to the 33 companies on the WIG-ESG index using the matched pairs method (Martyniuk and Gostkowska-Drzewicka, 2022). The matching criteria included the area of activity and the value of annual revenue from sales, as well as the balance sheet total as of the last balance sheet date. A limit of 2500% was applied to the relation of the indicated criteria (the largest indicator depicting the relation between the revenue and balance sheet total of an entity from one group and an entity from the other group was 2248%).

The entities considered to be comparable to the selected companies from the WIG-ESG index are presented below (Table 3).

Table 3. List of companies comparable to the companies from the WIG-ESG index

Number of companies	Company list
33	AILLERON, ANSWEAR, APATOR, ARCHICOM, ATAL, BEST, BIOMEDLUB, BIOTON, BOOMBIT, BORYSZEW, CFI, COMP, DEBICA, EMCINSMED, ENERGA, ENTER, KOGENERA, MIRBUD, NNTSYSTEM. ONDE, ORZBIALY, PCCROKITA, PCFGROUP, PLAYWAY, RAINBOW, RAWPLUG, SANOK, STALPROD, SYNEKTIK, VERCOM, VRG, WASKO, WITTCHEN

Source: own elaboration on the basis of the WIG-ESG index published on the website [www.gpw.pl](http://www.gpw.pl) [electronic access: 29.04.2023].

The data subjected to analysis were obtained from published annual reports and from information shared via the ESPI and EBI systems available on the WSE website. The subject of research was the highest available level of reporting i.e. where consolidated obtained data were available: for the WIG-ESG index, consolidated data were published by 31 companies, while consolidated data were available for 30 companies outside the index. Therefore, 61 consolidated reports and 5 individual reports were taken into consideration in this study. As part of the research, a review was conducted of annual reports irrespective of their name and subject, and in the case of other reports being published as part of an annual report (mainly sustainable development reports and similar), these reports, which companies shared on their websites, were added to the collected material.

To gain an initial understanding of the differences between entities from the WIG-ESG and those from outside this index, 28 variables were collected that characterised the scope of non-financial reporting, issues related to the companies' financial situation, and those relating to the audit of disclosed reports (Table 4).

Table 4. Selected variables characterising entities from the WIG-ESG and entities from outside the index

Type of variable	Collected variables	Companies listed on the WIG-ESG index	Companies from outside the WIG-ESG index
Variables describing elements of annual reports	1. Was a declaration published regarding the use of corporate governance? 2. Was a declaration published on non-financial information (or an equivalent other report of a non-financial nature)? 3. In the case of a lack of a non-financial report, was information disclosed on the basis for the exemption?	All companies published a declaration on the use of corporate governance, 27 companies published non-financial reports, and of the remaining 6 companies, none provided information on the basis for not preparing a non-financial report.	All companies published a declaration on the use of corporate governance, 19 companies published non-financial reports, and of the remaining 14 companies, 4 companies provided information on the basis for not preparing a non-financial report.
Variables relating to attestation of reports	4. Did the auditor issue an unqualified opinion on the financial report? 5. Was the published non-financial information subject to external attestation? 6. Which auditing firm audited the financial report?	In the case of 32 companies, an unqualified opinion was issued, one company provided their published non-financial report for attestation, over 54% of auditors were from firms in the so-called big four, wherein 30% of audits were conducted by PWC, and over 15% by EY, of firms outside the big four Grant Thornton (over 18%) and BDO (over 12%) dominated.	In the case of 31 companies, an unqualified opinion was issued, no company provided its published non-financial report for attestation, over 27% of auditors were from firms in the so-called big four, wherein over 15% of audits were conducted by PWC, of firms from outside the big four Uhy Eca (over 18%) and Grant Thornton (over 12%), dominated, as well as BDO and PKF (9% each).
Variable describing the willingness to communicate with the surrounding environment	7. Number of current reports published per year in the ESPI and EBI systems.	In total, the companies published 1401 current ESPI and EBI reports.	In total, the companies published 1134 current ESPI and EBI reports.
Variables describing diversity in bodies	Number of: 8. people on supervisory boards, 9. women on supervisory boards, 10. people in audit committees, 11. women in audit committees, 12. people on management boards, 13. women on management boards.	The companies reported: - 209 people in supervisory boards, including 40 women, - 115 people in audit committees, including 27 women, - 140 people on management boards, including 16 women.	The companies reported: - 202 people in supervisory boards, including 38 women, - 105 people in audit committees, including 15 women, - 106 people on management boards, including 8 women.

Variables describing the quality of non-financial information	Disclosure of information regarding: 14. employee issues, 15. coronavirus/ COVID, 16. Russia's aggression against Ukraine, 17. emission of gases into the atmosphere, 18. energy use, 19. water use, 20. waste generated, 21. combatting corruption.	It was found that there were 207 disclosures about the indicated information.	It was found that there were 162 disclosures about the indicated information.
Variables of a financial nature	22. Number of employees.  Value of: 23. revenue from sales, 24. balance sheet total, 25. net financial result, 26. welfare costs for employees, 27. own capital, 28. bank loans.	Altogether 171,021 employees were reported, as well as in total: - 182 billion zł of revenue, - 177 billion zł balance sheet totals, - 9 billion zł net profit, - 19 billion zł welfare costs for employees, - 71 billion zł own capital, - 24 billion zł liabilities for bank loans.	Altogether 48,878 employees were reported, as well as in total: - 65 billion zł of revenue, - 70 billion zł balance sheet totals, - 4 billion zł net profit, - 6 billion zł welfare costs for employees, - 34 billion zł own capital, - 8 billion zł liabilities for bank loans.

Source: own elaboration on the basis of financial data (companies) available on the website [www.gpw.pl](http://www.gpw.pl) [electronic access: 29.04.2023].

All companies fulfilled the obligations regarding publishing declarations on the use of corporate governance. Note that in the case of the company Mercator Medical (from the ESG index), two days before the original deadline for sending annual reports, information was provided about the change of publication date to the 2nd May, after which the reports were provided but in violation of the indicated deadline, that is on the 3rd May.

Non-financial reports, understood as part of the reporting of the management board or a separate document in the form of a declaration on non-financial information or equivalent document (such as a report on sustainable development or an ESG report), with clear reference to the requirements set out in the Accounting Act, were disclosed by some of the companies from the ESG index, wherein in the case of a lack of such a report, the companies from the index did not provide information on the basis for exemption. Meanwhile, exemption from non-financial reporting was reported by almost 29% of entities from outside the ESG index.

The companies included in the research, irrespective of their listing on the ESG index or not, in the decided majority received an unqualified opinion regarding their financial reporting, and did not submit their published reports for external auditing, with the exception of one company from the ESG index. In the case of the ESG index, the only reservation was included in the audit report for the capital group LPP, and referred to the premature recognition of a write-down on the value of assets located in Russia and Ukraine, as the group's balance sheet date fell before Russia's military attack on Ukraine. In the reservation, the auditors relied on a strictly literal wording of MSR 10, concluding that the outbreak of war in Ukraine should be a correcting event in the year in which it occurred. It would appear that the analogy applied was of a drop in the value of investments as a result of changes in the situation on the market, while in the case of the outbreak of war, we have a situation similar to the bankruptcy of a partner, as it is of a long-term nature and may be permanent. Due to the above, the aforementioned reservation is incomprehensible, both in light of the previously mentioned MSR 10 and of the principle of caution. For companies from outside the ESG index, one report received a qualified opinion, and for one report the auditor refused to issue an opinion. The reservation related to EMC Medical Institute and referred to violation of MSR 37 principles through unjustified release of



reserves to cover liabilities due to the National Health Fund (NFZ). As indicated by the auditor, on the balance sheet date, the event that was the basis for the reservation did not have an effect on the company's total own capital. In the case of CFI Holding, the auditor refused to issue an opinion due to the existence of considerable uncertainty as to the company continuing operations as a result of preparatory proceedings initiated by the Regional Prosecutor in Łódź aimed at bringing criminal and penal fiscal charges against certain people holding functions on the balance sheet date in the statutory bodies of the companies comprising the capital group. To sum up, it can be stated that the quality of financial reports of companies on the ESG index and from outside the index is similar. The reservations relate to events in which certain operations were included in the wrong financial year, which cumulatively do not have a negative impact on the financial results or financial situation. The only case of refusal to issue an opinion and action on the part of the prosecutor with regard to management of a group from outside the ESG index shows that qualification of an entity to the WIG-ESG may provide it with credibility in terms of respecting the law. Certain concerns as to the safety of investments in companies listed on the WSE may result from the fact that despite the refusal to issue an opinion regarding the financial report of the CFI Holding group described above, the management board of this entity accepted the report, indicating that it was doing so, among others, based on the auditing firm's audit report, according to which the report presents a fair and clear picture of the group's financial situation and its financial results, and is also compliant as regards the form and content with applicable legal regulations and the statute, and was additionally prepared on the basis of correctly kept accounting books. Such action by the management board of a public company once more opens up the discussion on the qualifications of the people who sit on such bodies. Legal steps should be expected on the part of the Warsaw Stock Exchange. It transpires that another problem is the fact that some auditors also include documents submitted by the supervisory board in the annual report, and indicate whether significant distortions were noted in these documents. In the case of CFI Holding, the auditor did not include an assessment of the management board's financial report in the audit report, and additionally did not express an opinion regarding any other element of the annual report.

The auditing of financial reports is dominated by the auditing firms of the so-called big four, however this domination is more pronounced for the WIG-ESG index. Among all the entities included in the research, only one decided to obtain confirmation (to a certain degree) of the credibility of the published non-financial report – this was the group CD Projekt, which commissioned the auditing firm Deloitte to conduct an independent attestation service giving limited assurance regarding selected indicators presented in its Sustainable Development Report. Thus two firms audited the group – Deloitte in the scope indicated above, and Grant Thompson in terms of an audit of the consolidated financial report. Attestation of the non-financial information consisted of obtaining limited assurance in terms of all the reported profile indicators, as well as selected thematic indicators according to the International Standard of Assurance Engagements 3000 (amended version): *Attestation services other than audits or reviews of historical financial information*, published by the International Auditing and Assurance Standards Board. The auditor formulated a conclusion according to which nothing stood out that would suppose that the indicators covered by the attestation were not prepared, in all key aspects, according to the GRI Standards Guidelines. Due to the scope of the auditor's work, which covered only a small area of the whole non-financial report, as well as considering the confirmation method, i.e. obtaining limited assurance instead of reasonable assurance, there is no basis for paying significant attention to the confirmation of credibility conducted for the non-financial information reported by CD Projekt, and no more importance should be ascribed to such information than activity of a marketing and advertising nature.

The next inaccuracy in the annual documents and audit report was noted concerning the annual report for a group from outside the ESG, that is NTT System. The auditor indicated that other information also consists of, among others, a separate declaration on non-financial information, while in the activity report it was only indicated that the issuer did not fulfil the criteria that would require them to prepare such a declaration.

Apart from periodical reports, one of the elements that allow an assessment to be made of a company's communication with the environment is the number of current reports shared in the ESPI and EBI systems, in which entities evidence significant agreements, changes among shareholders, and all information that is important from the point of view of conducting activity, including to a considerable degree information of a non-financial nature. The number of current reports published by companies from outside the WIG-ESG constituted over 80% of the reports disclosed by companies listed in the index.

In terms of the structure of the entities, companies from the ESG index were more numerous than those from outside the index, and the percentage of women employed in the listed companies was 3% higher than for companies from outside the index. It is worth underlining that some companies from outside the ESG index did not report anywhere in their annual reports on the composition of the audit committees, and such information had to be sought on their websites, and sometimes in current reports.

The quality of non-financial reporting was determined on the basis of selected qualitative variables as a result of a review of documents published as part of the annual reports. Every variable in this group is of a binary nature, where 1 indicates the fact of a given problem being reported, and 0 the lack of disclosure of such information. Disclosure was considered to have been completed if an entity provided specific information about a given issue and not only mentioned it. Due to the fact that social, employee and environmental issues, as well as those relating to corruption, are a common element of non-financial reporting, in the decisive majority the source of such information were declarations on non-financial information. In the case of information about coronavirus and the Russian aggression against Ukraine, in the vast majority these problems were reported on in activity reports.

In terms of declarations regarding employment, there is no uniform means of reporting – some entities disclosed their average annual employment, while others reported employment by number of people or full-time positions on the balance sheet date. Information was first collected on average annual employment (if available as an FTE indicator), and if such information was not available, data were obtained on employment on the balance sheet date calculated as total number of full-time positions. Data were only taken into consideration for units operating on the territory of Poland.

## 5. Research Results

The starting point for the analyses were indicator variables characterising the quality of non-financial reporting by the entities included in the research. On the basis of the data presented in Table 4, three variables were developed:

- (1) *Par.wom*, which due to the connection between disclosing non-financial information and diversity policy was calculated as an indicator showing the percentage of women in company management and supervisory bodies of the total number of people in such bodies.
- (2) *Ind.NR*, which presents synthetically whether companies report in the eight selected areas (employee matters, issues related to coronavirus, the war in Ukraine, the emission of gases into the atmosphere, energy use, water use, waste generation and the problem of combatting corruption, wherein every area was assigned 0.125 points and thus an entity could obtain from 0 to 1 points),
- (3) *Ind.CR*, calculated as the number of current reports in relation to the highest number of reports (the indicator was based on the company that reported the highest number of current reports, with this company receiving the result 1, while the remaining entities achieved indicators below this value).

The analysis was first conducted on the above-mentioned non-financial variables, and in the next step the calculations were repeated on the non-financial variables along with an additional three variables of a financial nature, i.e. ROE and ROA indicators and an indicator of the percentage of credit in the balance sheet total (*Par.CB*).

The variables thus developed were subject to simulation in order to determine the optimal number of classes (for  $k$  from 2 to 10) by grouping using the  $k$ -means method, and each time the obtained division was examined using the silhouette index (Gatnar, Walesiak, 2009, p. 418). For the best divisions, supporting analysis of variance (ANOVA) was also conducted, which provided additional information on the studied variables.

The value of the silhouette index for the groups of companies described only by non-financial variables is presented below (Figure 1).

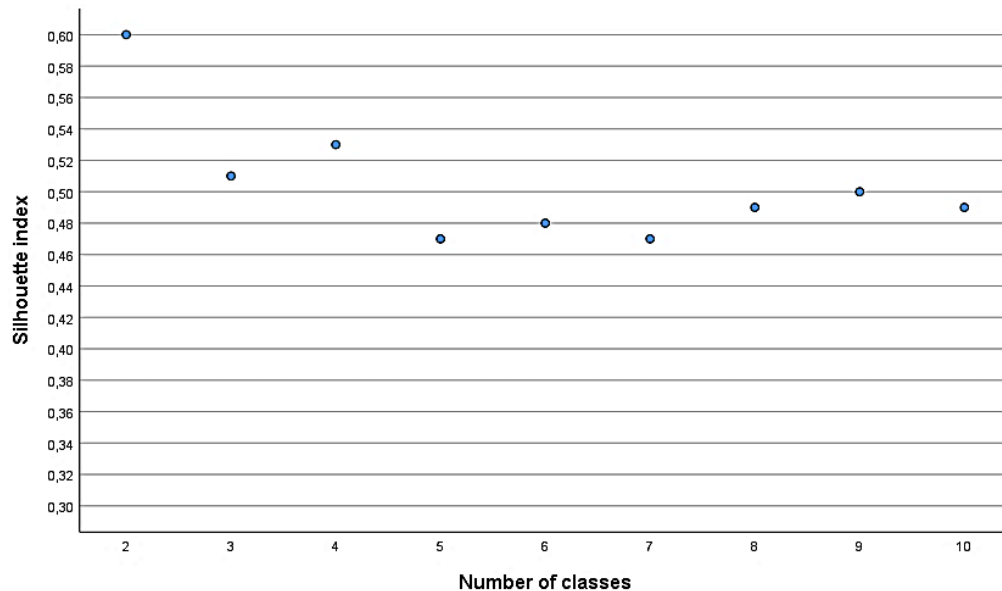


Fig. 1. Silhouette index depending on the number of classes in the case of company characterisation through non-financial variables

Source: own elaboration.

The highest silhouette index value was for the grouping with a division into two clusters, which can be presented graphically (see Figure 2).

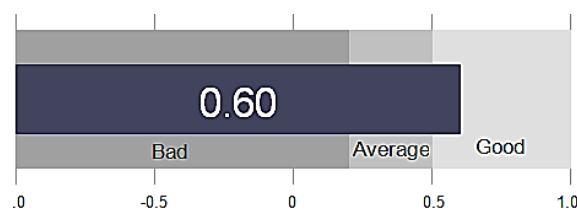


Fig. 2. Silhouette index for  $k$ -means grouping for the given two clusters (characterisation of companies through non-financial variables)

Source: own elaboration.

The best division was obtained by dividing the entities into two clusters (the contents of each cluster are presented later in the paper). According to the ANOVA analysis results, it can be indicated that the two groups obtained mainly differ from one another with regard to the variable *Ind.NR* (Table 5).

In order to conduct a comparison, an ANOVA analysis was conducted, grouping the studied entities according to whether they are listed on the ESH index (Table 6).

It is worth noting that for the division into entities listed on the ESG index and those from outside the index, the silhouette index was 'bad' (Figure 3).

Table 5. ANOVA analysis for k-means grouping with a division into two clusters (characterisation of companies through non-financial variables)

		Single-factor ANOVA				
		Sum of squares	df	Average square	F	Significance
Par.Wom	Between groups	0.012	1	0.012	0.570	0.453
	Within groups	1.397	64	0.022		
	Total	1.410	65			
Ind.NR	Between groups	5.783	1	5.783	395.667	<0.001
	Within groups	0.935	64	0.015		
	Total	6.718	65			
Ind.CR	Between groups	0.110	1	0.110	3.230	0.077
	Within groups	2.175	64	0.034		
	Total	2.284	65			

Source: own elaboration.

Table 6. ANOVA analysis for grouping according to the factor of listing on the WIG-ESG (characterisation of companies through non-financial variables)

		Single-factor ANOVA				
		Sum of squares	df	Average square	F	Significance
Par.Wom	Between groups	0.018	1	0.018	0.818	0.369
	Within groups	1.392	64	0.022		
	Total	1.410	65			
Ind.NR	Between groups	0.479	1	0.479	4.918	0.030
	Within groups	6.239	64	0.097		
	Total	6.718	65			
Ind.CR	Between groups	0.130	1	0.130	3.876	0.053
	Within groups	2.154	64	0.034		
	Total	2.284	65			

Source: own elaboration.

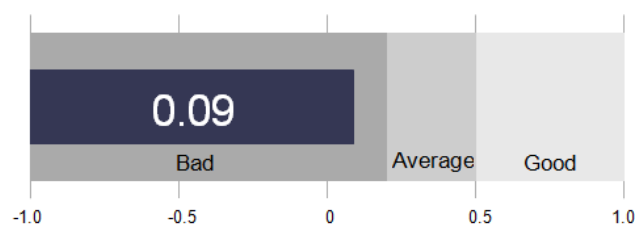


Fig. 3. Silhouette index for grouping according to the factor of listing on the WIG-ESG (characterisation of companies through non-financial variables)

Source: own elaboration.

The conclusions from the analysis conducted for a division into entities from the WIG-ESG and those from outside the index show that there is a certain key difference in the case of the non-financial reporting indicator (*Ind.NR*), however with a decidedly higher p value than in the case of a division of the population into two groups using the k-means method. For the current reports indicator (*Ind.CR*), in the case of a division into entities from the ESG index and those from outside the index, one can talk about a borderline p value, thus it can be supposed that companies from the ESG index provide a different average number of current reports. However, attention should be drawn to the value of the silhouette indicator, which shows that classification according to the listing on the WIG-ESG has no impact on the considered non-financial indicators. In other words, the developed non-financial variables bear no relation to belonging to the group of entities listed (or not) on the ESG index.

In order to be able to compare the entities not only from the point of view of variables describing non-financial reporting, additional k-means grouping was conducted for all (six) variables, applying a division into two and a higher number of clusters (in order to conduct a simulation for the obtained clusters), wherein due to the tentative grouping, in order to achieve results that made conducting comparative analysis possible, it was necessary to remove the entities which comprised one or two-element clusters, i.e. DATAW, STSHOLD, LIVECHAT and CCC. After grouping without these entities, for every variant the silhouette index value was checked (Figure 4).

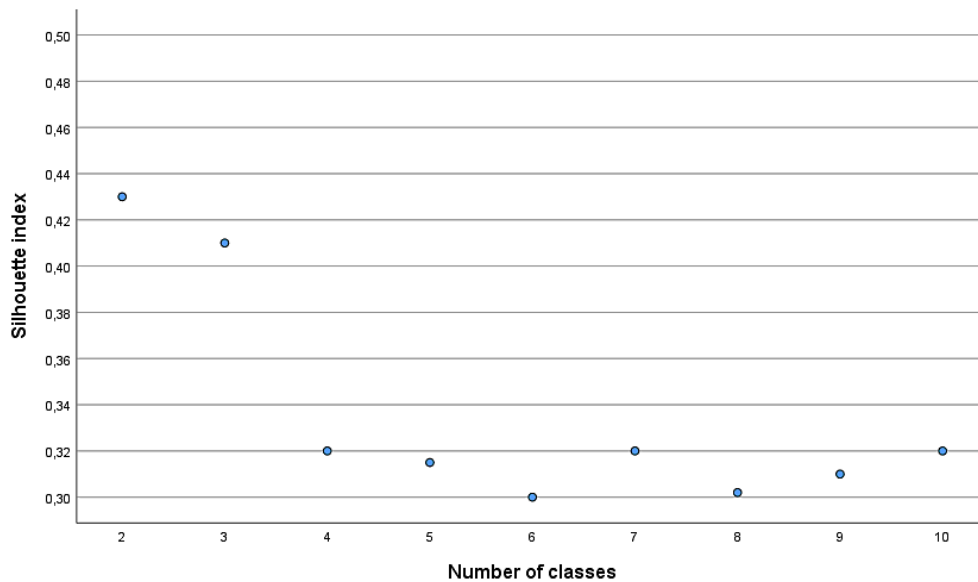


Fig. 4. Silhouette index depending on the number of classes in the case of characterisation of companies through non-financial variables and financial variables

Source: own elaboration.

The highest value was obtained for two classes; however it achieved an average index value (Figure 5).

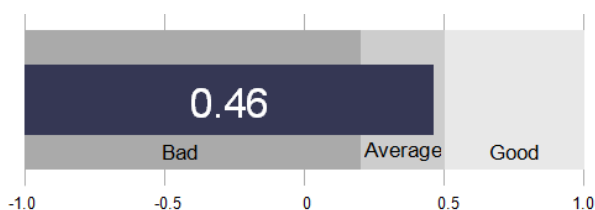


Fig. 5. Silhouette index for k-means grouping for the given two classes (characterisation of companies through non-financial variables and financial variables)

Source: own elaboration.

A division of the companies according to all six variables meant that significant statistical differences in the averages were only found in the case of the non-financial reporting indicator and the indicator of the percentage of credit in the balance sheet total, as shown in the ANOVA analysis results (Table 7).

Table 7. ANOVA analysis for k-means grouping with a division into two clusters (characterisation of companies through non-financial variables and financial variables)

		Single-factor ANOVA				
		Sum of squares	df	Average square	F	Significance
Par.wom	Between groups	0.012	1	0.012	0.559	0.458
	Within groups	1.276	60	0.021		
	Total	1.287	61			
Ind.NR	Between groups	5.524	1	5.524	386.265	<0.001
	Within groups	0.858	60	0.014		
	Total	6.382	61			
Ind.CR	Between groups	0.125	1	0.125	3.641	0.061
	Within groups	2.059	60	0.034		
	Total	2.184	61			
Par.CB	Between groups	0.060	1	0.060	6.321	0.015
	Within groups	0.565	60	0.009		
	Total	0.625	61			
ROE	Between groups	0.003	1	0.003	0.140	0.710
	Within groups	1.177	60	0.020		
	Total	1.180	61			
ROA	Between groups	0.007	1	0.007	1.079	0.303
	Within groups	0.362	60	0.006		
	Total	0.368	61			

Source: own elaboration.

In the last step, the companies were divided according to all six variables, where this time the division criterion was belonging to the ESG index (as previously, the following companies were removed from the entities studied: DATAW, STSHOLD, LIVECHAT and CCC). However, the silhouette index value for such a division showed a weak quality of the division (Figure 6).

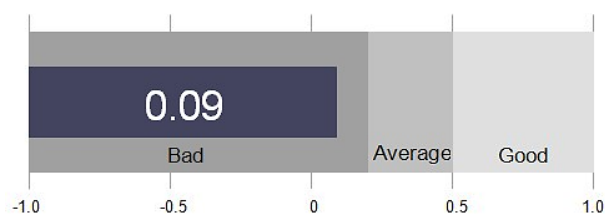


Fig. 6. Silhouette index for grouping according to the factor of belonging to the WIG-ESG (characterisation of companies through non-financial variables and financial variables)

Source: own elaboration.

The results of the ANOVA analysis (Table 8) show that between the companies listed on the ESG index and those from outside the index, there is a statistically significant difference in average values in the case of the variables: *Ind.NR*, *Ind.CR* and ROE (remembering however the quality of such a division presented in Chart 6).

Table 8. ANOVA analysis for grouping according to the factor of belonging to the WIG-ESG (characterisation of companies through non-financial variables and financial variables)

		Single-factor ANOVA				
		Sum of squares	df	Average square	F	Significance
Par.wom	Between groups	0.010	1	0.010	0.477	0.493
	Within groups	1.277	60	0.021		
	Total	1.287	61			
Ind.NR	Between groups	0.571	1	0.571	5.900	0.018
	Within groups	5.811	60	0.097		
	Total	6.382	61			
Ind.CR	Between groups	0.156	1	0.156	4.620	0.036
	Within groups	2.028	60	0.034		
	Total	2.184	61			
Par.CB	Between groups	0.015	1	0.015	1.451	0.233
	Within groups	0.610	60	0.010		
	Total	0.625	61			
ROE	Between groups	0.076	1	0.076	4.157	0.046
	Within groups	1.103	60	0.018		
	Total	1.180	61			
ROA	Between groups	0.008	1	0.008	1.334	0.253
	Within groups	0.360	60	0.006		
	Total	0.368	61			

Source: own elaboration.

The assessment of the silhouette index value shows that a good division is possible only in the case of non-financial variables. Grouping using the k-means method resulted in identical values for the clusters, irrespective of whether non-financial or financial variables were used as the criterion (the difference in the number is exclusively due to the elimination of the four companies), however, the division according to all variables is average. Irrespective of which variables were analysed, it was not possible to achieve even an average division if the grouping factor was belonging to the ESG index.

Irrespective of the grouping method, as well as of whether the grouping was conducted according to non-financial variables or all the variables, in every variant, the average value of *Ind.NR* turned out to differ in a statistically significant way in the obtained clusters.

A summary of the calculations made is presented below (Table 9).

Due to the identical content of the clusters in grouping by non-financial variables and all the variables, a comparative analysis was conducted of the obtained clusters only for the characterisation of the entities through non-financial variables, including also the values of the division according to the criterion of belonging to the ESG index, where cluster 1 is companies listed on the index (Table 10).

Table 9. Comparative summary of the obtained clusters, ANOVA analysis results and silhouette index values for k-means grouping, and a division of entities according to the factor of belonging to the ESG index due to the characterisation of the studied entities through non-financial variables and all variables

Division method	Non-financial variables			All variables		
	Cluster composition	Variables significantly differing classes	Silhouette index	Cluster composition	Variables significantly differing classes	Silhouette index
k-means grouping	<u>S1</u> : 26 companies from the WIG-ESG 16 companies from outside the ESG <u>S2</u> : 7 companies from the WIG-ESG 17 companies from outside the ESG	Variable <i>Ind.NR</i>	0.60 (good division)	<u>S1</u> : 24 companies from the WIG-ESG 16 companies from outside the ESG <u>S2</u> : 5 companies from the WIG-ESG 17 companies from outside the ESG	Variables <i>Ind.NR</i> and <i>Par.CB</i>	0.46 (average division)
Grouping WIG-ESG and others	<u>S1</u> : 33 companies from the WIG-ESG <u>S2</u> : 33 companies from outside the ESG	Variables <i>Ind.NR</i> , and borderline <i>Ind.CR</i>	0.09 (bad division)	<u>S1</u> : 33 companies from the WIG-ESG <u>S2</u> : 33 companies from outside the ESG	Variables <i>Ind.NR</i> and <i>Ind.CR</i> and <i>ROE</i>	0.09 (bad division)

Source: own elaboration.

Table 10. Characterisation of non-financial variables for k-means grouping, and division of entities according to belonging to the ESG index

Cluster / variable	Nominal value		Average value		Maximum value	
	Cluster 1	Cluster 2	Cluster 1	Cluster 2	Cluster 1	Cluster 2
<i>Division by k-means grouping</i>						
<i>Par.wom</i>	0.00	0.00	0.17	0.15	0.73	0.53
<i>Ind.NR</i>	0.63	0.00	0.92	0.31	1.00	0.63
<i>Ind.CR</i>	0.14	0.09	0.45	0.37	1.00	0.79
<i>Division by adopted factor of belonging to the ESG index</i>						
<i>Par.wom</i>	0.00	0.00	0.18	0.15	0.53	0.73
<i>Ind.NR</i>	0.13	0.00	0.78	0.61	1.00	1.00
<i>Ind.CR</i>	0.14	0.09	0.47	0.38	1.00	0.81

Source: own elaboration.

Grouping by using the k-means method produced cluster 1, which can be defined as a group of companies generally very engaged in non-financial reporting – these companies demonstrate decidedly higher values for *Ind.NR*, and also higher values for *Ind.CR*. Thus, entities in this cluster report the most frequently and on the highest number of issues. Such significant differences are not however found for the value of the variable *Par.wom*, which may suggest that attempts to connect social responsibility with diversity policy have not as yet proved successful.

Comparing the values of the non-financial variables for clusters obtained as a result of k-means grouping and a division according to the criterion of belonging to the ESG index, it can be seen that the second division does not demonstrate such noticeable differences, and above all that the maximum value of the variable *Par.wom* belongs to the group of entities that are not listed on the ESG index. The remaining two take higher values for entities from the index, however the conclusion can be drawn that from the point of view of the analysed non-financial variables, the professionally developed WIG-ESG index did not attract entities that could be considered as leaders in terms of the application



of diversity policies and the intensity and scope of non-financial reporting. Grouping using the k-means method showed that in terms of the non-financial variables proposed in this paper, it cannot be said that entities from the WIG-ESG have a decidedly better approach to the problems of non-financial reporting, however, it would appear justified to create and improve this type of indicator, as looking at the proportion of entities from the ESG index in cluster 1 (that is the cluster of 'leaders'), it can be seen that entities from the WIG-ESG prevail (62% of the cluster), while in cluster 2, entities from the index constitute the minority (29% of the cluster).

The characteristics of the obtained clusters are presented in graphic form as box plots (Figures 7, 8 and 9).

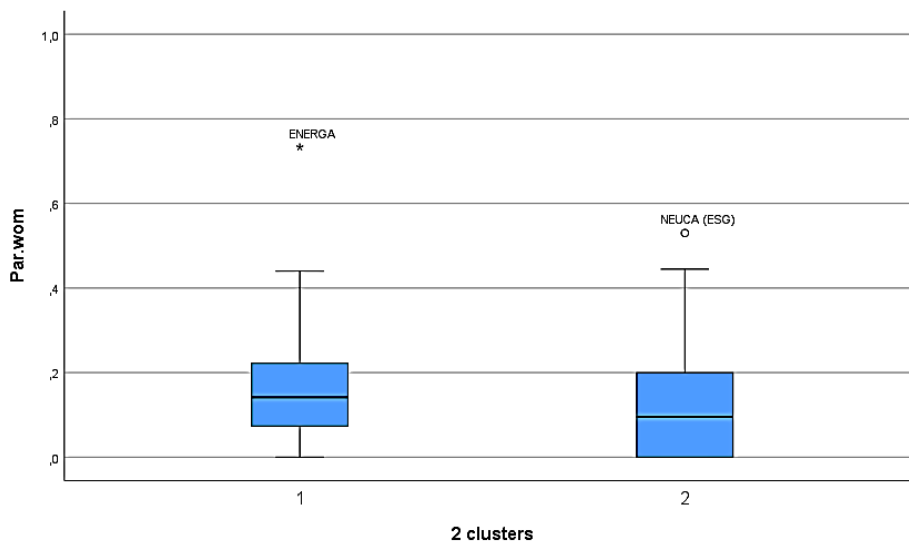


Fig. 7. Characteristics of the variable *Par.wom* in the division using the k-means grouping method

Source: own elaboration.

On average, the proportion of women in company bodies is higher in cluster 1 (i.e. the cluster of 'leaders'), however, in both clusters there are entities which do not have any women in company bodies; note also the relative symmetry of the distribution.

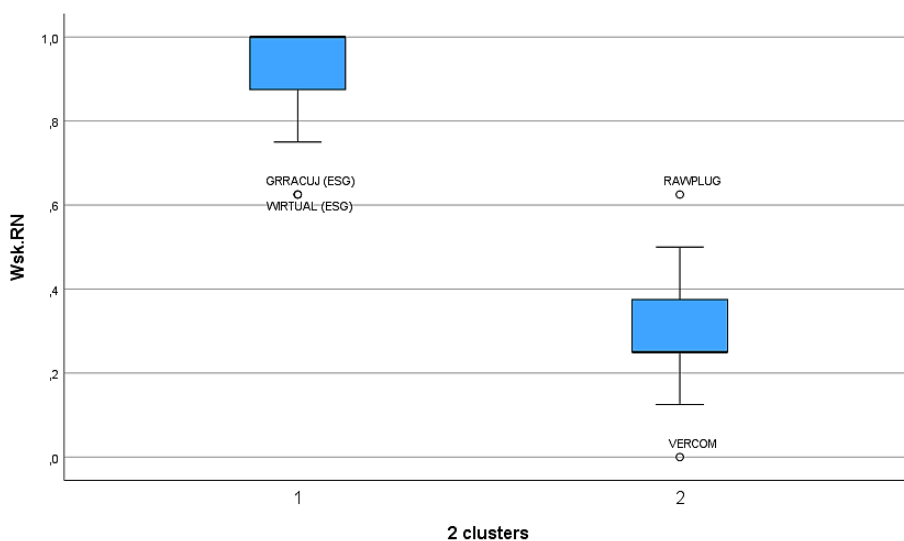


Fig. 8. Characteristics of the variable *Ind.NR* in the division using the k-means grouping method

Source: own elaboration.

The indicator of non-financial reporting shows that cluster 1 decidedly stands out in this respect, and its minimum values are at the level of the maximum obtained by companies qualified to cluster 2. Looking at the asymmetry, one can come to the conclusion that the entities in both clusters report with a certain consistency.

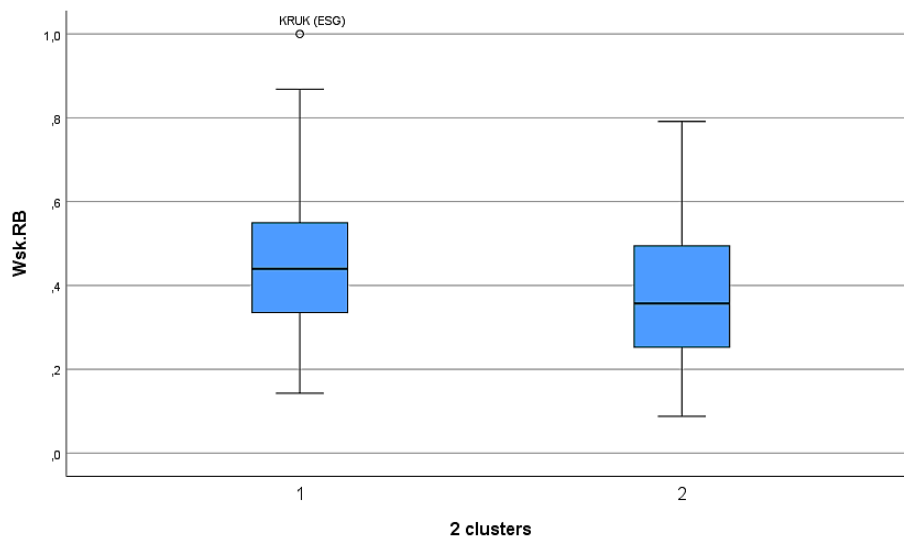


Fig. 9. Characteristics of the variable *Ind.CR* in the division using the k-means grouping method

Source: own elaboration.

In the case of the indicator reflecting the intensity of current reporting, there are not such considerable differences as in the case of *Ind.NR*, and the obtained distribution is strongly symmetrical.

## 6. Conclusion

This research contributes to previous research avenues and tries to answer the question of whether the creation of socially responsible indexes can provide certain guarantees as to the quality of non-financial reporting. On the basis of the collected research material, it can be seen that from the perspective of the developed non-financial variables (as well as non-financial variables combined with financial variables), it cannot be said that the companies listed on the WIG-ESG index stand out from the remaining entities from the viewpoint of the intensity or quality of non-financial reporting. It is therefore clear that belonging to the ESG index does not mean that from the viewpoint of the collected variables it is justified to talk of a decidedly better (or generally different) quality of non-financial reporting.

The review of the published documents also shows that it would be helpful to implement a certain standard in terms of a uniform scope of the content of elements of published reports – currently, access to some reports requires a considerable effort. What is more, the research results make it possible to consider that it would be justified to undertake further work on indicators similar to the non-financial reporting indicator proposed by the author (*Ind.NR*).

Key limitations to the research include the way the research sample was selected and the small number of researched entities, as well as the variables imposed (developed) by the author, according to which the grouping was carried out. The limitations to the research may also result from the specifics of the research method applied, as well as the need to adopt certain assumptions.

An interesting continuation of the research could involve the use of other taxonomical methods, including agglomerative methods and a different graphical presentation of the results than that used

in this paper, for example through the use of perceptual maps. It would also seem appropriate to conduct further work on indicators such as the proposed non-financial indicator, above all by researching a greater number of companies and using a different set of variables.

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## Indeksy społecznie odpowiedzialne a ujawnienia niefinansowe na przykładzie WIG-ESG

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**Streszczenie:** Celem artykułu jest odpowiedź na pytanie, jak fakt notowania spółki w indeksie WIG-ESG może wpłynąć na jakość publikowanych informacji niefinansowych. W ramach badań zapoznano się z raportami rocznymi spółek notowanych na WIG-ESG oraz spółek spoza tego indeksu. Analiza wariancji i grupowanie metodą *k*-średnich, a następnie ocena uzyskanego podziału przez wartość wskaźnika sylwetkowego wykazały, że w zakresie zmiennych opisujących jakość publikowanych informacji niefinansowych nie udało się udowodnić, że spółki notowane na WIG-ESG wyróżniają się na tle innych podmiotów.

**Słowa kluczowe:** raportowanie niefinansowe, indeks odpowiedzialny społecznie, WIG-ESG, Giełda Papierów Wartościowych w Warszawie

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