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Does non-financial reporting regulation increase diversity and equal opportunity disclosures? Evidence from Poland

Czy unijna dyrektywa w sprawie raportowania niefinansowego poprawiła ujawnienia dotyczące różnorodności? Studium dla Polski

MARCO PAPA*, MONIKA WIECZOREK-KOSMALA**, KAROLINA SYTY***

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Abstract

Purpose: The main aim of our study is to verify whether the implementation of non-financial reporting regulations, following the adoption of Directive 2014/95/EU, increased disclosures on diversity and equal opportunities in Polish listed firms. We study whether the diversity and equal opportunities disclosures differ significantly if we compare the information presented in companies' non-financial reports in the pre-Directive period (2016) and the post-Directive period (2018).
Methodology/approach: Guided by Clarkson et al. (2008), as well as by the Global Rerporting Initiative (GRI) standards, we have applied manual content analysis, using the coding scheme that is useful in capturing the types of disclosures. We implement Wilcoxon signed ranks test to verify the statistical significance of the differences between the diversity and equal opportunities disclosures in the pre- and post-Directive periods.
Findings: Our evidence suggests that disclosures on diversity and equal opportunities in Poland significantly increased after the implementation of the Directive, but the patterns of the prevalence of disclosure types have remained stable.

* Professor Marco Papa, University of Bari, Department of Economics and Finance, https://orcid.org/0000-0003-3266-5616, marco.papa@uniba.it

** Dr hab. Monika Wieczorek-Kosmala, associate professor, University of Economics in Katowice, Department of Startegic and Regional Studies, https://orcid.org/0000-0002-7048-0172, m.wieczorek-kosmala@ue.katowice.pl

*** Karolina Syty, PhD candidate, assistant professor, University of Economics in Katowice, Department of Informatics and International Accounting, https://orcid.org/0000-0002-5013-7908, karolina.syty@uekat.pl

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Research limitations/implications: This evidence is provided for a relatively small sample of Polish listed firms (N=19) that issued CSR/sustainability reports in 2016 and 2018, which could be considered a limitation of our study. Nevertheless, our study has practical implications within the impacts of the regulatory framework of companies' reporting schemes, as far as diversity and equal opportunities (DEO) disclosures are concerned.
Originality/value: Our evidence fills an important gap within the studies that review the implementation of the Directive in developing European economies. At the same time, it provides evidence within the emerging field of studies that compare the various types of disclosures before and after the implementation of the EU Directive, which is relevant for revising the impact of regulatory frameworks on non-financial reporting.
Keywords: diversity and equal opportunities, disclosures, non-financial reporting, Poland, developing economies.

Streszczenie

Cel: Celem artykułu jest ocena skutków wdrożenia dyrektywy dotyczącej raportowania niefinansowego (Dyrektywa 2014/95/EU) w zakresie poprawy ujawnień odnoszących się do różnorodności w polskich spółkach giełdowych. Badaniu poddano, czy ujawnienia dotyczące różnorodności w 2018 roku różnią się na poziomie istotnym statystycznie od ujawnień w 2016 roku (czyli odpowiednio po i przed wejściem Dyrektywy w życie).
Metodyka/podejście badawcze: W badaniach zastosowano metodę analizy treści. Autorski arkusz do manualnego kodowania danych oparto na koncepcji zaproponowanej przez Clarksona i. in. (2008) oraz treści standardów GRI (Global Reporting Initiative) dla zbadania różnych typów ujawnień. W badaniach zastosowano test Wilcoxona (kolejności rang) dla porównania statystycznej istotności różnic ujawnień dotyczących różnorodności dla obserwacji przed i po wdrożeniu Dyrektywy.
Wyniki: Badania wykazały, że ujawnienia odnoszące się do różnorodności znacznie się poprawiły po wdrożeniu Dyrektywy, lecz wzorce typów ujawnień pozostały takie same.
Ograniczenia/implikacje badawcze: Badania przeprowadzono na relatywnie małej próbie, ale obejmującej wszystkie polskie spółki giełdowe, które opublikowały raporty niefinansowe przed i po wdrożeniu Dyrektywy (N=19). Badania mają praktyczne znaczenie dla oceny wpływu obowiązku ujawnień na zakres i schematy raportowania konkretnych informacji (tu: dotyczących różnorodności)
Oryginalność/wartość: Artykuł uzupełnia ważną lukę badawczą w zakresie wpływu wdrożenia regulacji w sprawie raportowania niefinansowego w mniej rozwiniętych krajach europejskich. Stanowi także ważny wkład w relatywnie nowy strumień badań porównujących zakres ujawnień (dotyczących różnorodności) w okresie przed i po wdrożeniu dyrektywy.
Słowa kluczowe: różnorodność, ujawnienia, raportowanie niefinansowe, Polska, gospodarki rozwijające się.

Introduction

There is a growing awareness and understanding of the relevance of diversity and equal opportunities in the business community. As noted by Herring (2009), diversity leads to the contestation of ideas and increases creativity and superior solutions to problems. By contrast, homogeneity increases group cohesion but lowers adaptability and innovativeness (e.g., Fukofuka, Ali, 2021). This study addresses the problem of diversity and equal opportunities in Polish companies by revising their disclosure practices in light of Directive 2014/95/EU (hereafter: NFR

Directive). Overall, the existing non-financial reporting regime, implemented with the NFR Directive, should increase these disclosures by increasing the interest in diversity and equal opportunities and the related consequences. In particular, in Poland, the new regulatory framework has forced companies to revise their existing diversity and equal opportunity practices. It has created pressure to demonstrate improvements within (Lisowska, 2020), which is consistent with Chen et al.'s (2018) observations on the international community. In the long run, mandatory reporting schemes may have a positive effect that will ultimately help to reduce the inequalities and the extent to which the idea of corporate social responsibility is integrated into business practices (Grosser et al., 2005; Christensen et al., 2019).

The main aim of our study is to verify whether the implementation of non-financial reporting regulations, following the adoption of the NFR Directive, increased disclosures on diversity and equal opportunities (hereafter: DEO disclosures) in Poland. Thus, we study whether the DEO disclosures differ significantly if we compare the information presented in companies' non-financial reports for 2016 (the pre-Directive period) and 2018 (the post-Directive period). Guided by Clarkson et al. (2008), as well as by the Global Reporting Initiative (GRI) standards, we have developed a coding scheme that is useful for capturing the types of DEO disclosures, including KPI[1]-related quantitative disclosures and narrative, management-oriented disclosures. In addition, we adopted Clarkson et al.'s (2008) approach to compare the differences between hard and soft DEO disclosures. Overall, we find that the DEO disclosures have significantly increased in the post-Directive period, although the existing disclosure patterns have not changed when comparing the pre- and post-EU Directive implementation period.

Our work contributes to the existing academic debate in several dimensions. First, it adds evidence to the emerging field of studies that compare the various types of disclosures before and after the implementation of the European Union's (EU) NFR Directive. Recently, a growing body of research has reported the changes in the non-financial disclosures in the pre- vs. post-Directive periods. However, the results are mixed regarding the expected improvement (e.g., Mio et al., 2020; Cordazzo et al., 2020; Carung et al., 2021). The evidence of the impacts of the NFR Directive is still relevant, given that a new Corporate Sustainability Reporting Directive (Directive 2022/2464) is entering into force. In particular, such evidence fuels the efforts to monitor the impacts of reporting regimes on the increase in the quality of firms' disclosures.

A second important contribution of this study is that it addresses a single problem – DEO disclosures. In the existing research, a more general overview is prevalent – mostly the ESG (Environmental, Social and Governance) or sustainability-oriented approach. In this regard, we fill a relevant gap in the area of DEO disclosures, given the relevance of this topic, also for human resource management, pointed out by Ghauri et al. (2021) and Ben-Amar et al. (2021). At the same time, by revising the increase in the DEO disclosures in the post-Directive period, we open the field for further research that may review the informativeness of these disclosures or the overall improvement in the related ESG practices.

[1] KPI – Key Performance Indicators

Finally, our research contributes significantly to bridging the existing knowledge gap, specifically focusing on the unique aspects and challenges that developing economies face. The NFR Directive enhanced the changes of the local (in this case, Polish) legal regulations within the existing non-financial reporting schemes for large undertakings, starting with the fiscal year 2017. At the time, Central and Eastern European (CEE) countries reported limited readiness to implement the new European or global regulations (Dumitru et al., 2017), questioning the quality of the non-financial disclosures at the early stages of the Directive's implementation. Thus, a closer look at Poland is justified by its constraints in implementing the NFR Directive. The paper provides results that demonstrate the directions of the changes in non-financial disclosure schemes after the implementation of the Directive. Thus, our study contributes to the relatively insufficient evidence on post-Directive NF reporting in Poland. This is an under-researched issue, even if we consider local studies, as most papers discuss the reasons and the carriers of the non-financial disclosures (primarily the types of the reports) and the pre-Directive evidence (e.g., Tylec, 2020; Dumitru et al., 2017). No research has provided an in-depth review of DEO disclosures as a single problem.

The remainder of this study is organized as follows. In the second section, we provide a brief literature review of the current research on DEO disclosures and summarize the existing research on non-financial disclosures for Poland. In the third section, we develop the theoretical background of the study, framed on the assumptions of isomorphism theory. In the fourth section, we explain the research design and method, in particular, the details of the applied manual coding system. The fifth section presents the results and discussion. Section six concludes.

1. Background and literature review

Sustainability reporting has existed in Poland for 12 years and was primarily driven by the emerging institutional settings after the country's accession to the European Union in May 2004 (Fijałkowska, Macuda, 2019). In 2009, the Warsaw Stock Exchange created the index of socially responsible firms (the Respect Index), and firms listed there are seen as leaders in both CSR reporting and trendsetters in ESG actions (Wróblewska, 2014). The implementation of Directive 2014/95/EU was introduced by the Accounting Act of December 15, 2016 (Journal of Laws of 2016, item 1047). Before this regulation, the companies listed on Warsaw Stock Exchange had to meet some mandatory reporting requirements related to the publication of financial reports, as well as non-financial information that explained the most relevant corporate governance-related issues (management board and internal employment) (Aluchna, 2005; Regucki, 2014).

The non-financial reporting legislation implemented with the NFR Directive allows Polish to choose the NFR framework. To enhance the implementation of the non-financial reporting regime, the Polish non-financial reporting standard (known as the SIN) was developed in 2017 by an expert committee (SIN, 2017; Tylec, 2020). However, there is strong empirical evidence that in the pre-Directive period, the GRI guidelines were prevalent in the CSR reports presented by Polish firms (Piłacik, 2015; Michalczuk, Konarzewska, 2018; Idasiak, 2018; Woźniak, 2018), confirming international trends (Simmons et al., 2018). Piesiewicz et al. (2021) recently performed a broader study that reviewed 57 non-financial reports of Polish listed companies from 2013–2018. They found adherence to GRI standards and the relative weakness of the KPIs and the narrative NFI disclosures in companies outside the energy-related sectors. However, before the NFR Directive was implemented, Polish firms commonly reported non-financial information in the Management Discussion and Commentary part of their annual reports (Szadziewska et al., 2018).

The implementation of the NFR Directive initiated a lively debate in Poland on the readiness of Polish listed companies to face this new regime. For example, Polish researchers reported the limited knowledge of accountants on non-financial reporting (CSR disclosures in particular) (Krasodomska et al., 2020). Researchers were also concerned about the consistency and comparability of non-financial information at the European and local levels. For instance, Wołczek et al. (2017) concluded that presenting some GRI-based quantitative and narrative disclosures allowed reliable comparisons. Similarly, Karwowski et al. (2020) found that economic disclosures prevailed over environmental ones. Not surprisingly, there were high expectations that the new regulatory framework would increase the extent and quality of non-financial information (Matuszak et al., 2017), although the legislative framework lets companies choose the NFR reporting standard (Skoczylas-Tworek, 2020).

These expectations are consistent with the recent global research interest in the positive impact of the NFR Directive on non-financial reporting disclosures. However, the evidence is inconsistent and varies depending on the methodology and focus. Some research demonstrates the positive impact of the NFR Directive implementation on non-financial disclosures (Mio et al., 2021, Mazzotta et al., 2020). Other research shows that the degree, quality, or credibility of the disclosures did not increase, or it even decreased after the introduction of the Directive (Pagani et al., 2021; Venturelli et al., 2020; Cordazzo et al., 2020). This ongoing debate also concerns the overall expectations that the Directive will enhance material ESG activities, not merely make companies comply with the new regulatory framework (Aureli et al., 2020; Muserra et al., 2020). In this aspect, the empirical evidence of the effects of the Directive remains relevant, as the Corporate Sustainability Reporting Directive (CSRD) is entering into force. The developed methodologies, as well as the evidence of the impacts of the reporting regime on firms' reporting and material activities, remain relevant for further research on the effects of CSRD implementation.

The anxieties outlined above over the implementation of the NFR Directive in Poland (as a developing European economy) justify the choice of Poland as the country setting for the observation of the ongoing improvements of the disclosure practices under the more challenging reporting regime. Poland is under-researched. From the wide range of ESG-related issues, we have selected DEO disclosures, which remain a relatively scarce field of single-focus research on non-financial disclosures; environmental aspects are the most common. At the same time, existing works on DEO disclosures advocate that the narrowed approach is prevalent, as the research covers only the gender-related aspects, revealing the gap in other aspects of diversity in organizations (Khatib et al., 2021; Ghauri et al., 2021; Ben-Amar, 2021).

2. Theoretical framework and hypotheses development

This study builds on the insights from the institutional isomorphism theory (Di Maggio, Powell, 1983) to explain how Polish companies have implemented the NFR Directive requirements. Di Maggio and Powell (1983, p. 149) posit that companies facing the same environment tend to embrace homogenous decisions, activities, and structures to resemble each other to legitimize themselves in the eyes of stakeholders. This could arise from three forces: i) a coercive mechanism, ii) normative pressure, and iii) mimetic behavior. Coercive isomorphism originates from external expectations and social pressures about the needed behavior, such as industry guidelines or legal requirements. Accordingly, since DEOs are regarded as relevant information for the community under the NFR Directive, companies are likely to increase those disclosures to meet external expectations (Carungu et al., 2021).

Due to normative pressure, companies will disclose DEO information in their sustainable reports in response to the increasing professionalization of the environment (DiMaggio, Powell, 1983). For instance, normative isomorphic pressure could arise from positive managerial views on the desirability or necessity of providing social information through corporate reports. Finally, the mimetic force posits that, in an uncertain environment with ambiguous objectives and the means to achieve them, organizations emulate each other (DiMaggio, Powell, 1983). The extant literature supports the role played by the mimetic mechanism on firms' reporting practices (e.g., Roszkowska-Menkens, Aluchna, 2017; Carungu et al., 2021). Carungu et al. (2021) showed that adopting the NFR Directive was driven by normative/coercive vs mimetic mechanisms, leading to the adoption of voluntary stand-alone reports, along with the mandatory non-financial reports. The uncertainties over the implementation of the NFR Directive in Poland outlined above, as well as the inherent flexibility of the NFR Directive requirements (Muserra et al., 2020), make the mimetic mechanism a justified force in explaining changes in diversity reporting practices. Due to the mixed evidence on the positive impact of the NFR Directive on non-financial disclosures and the expected further strengthening of the coercive mechanism under the NFR Directive, the first hypothesis we posit is as follows:

Hypothesis 1. The implementation of the NFR Directive changed DEO disclosures in Polish listed firms.

The existing studies often address specific features of disclosures, such as their monetary, quantitative, or narrative contexts (Al-Tuwaijri et al., 2004; Choi, 1999; Wiseman, 1982 et al.), vagueness or materiality contexts (Hughes 2001; Mio et al., 2020), and their relevance, comparability, or clarity (Chauvey et al., 2015).

Although disclosure-related studies in the Polish setting do not address these aspects, this study aims to capture at least the main types of disclosures. Thus, we consider the KPI-based disclosures on DEO, which are quantitative, and the narrative DEO disclosures, which explain managerial concerns, in this policy or initiatives, inspired by Clarkson et al. (2008), we also focus on hard and soft disclosures. Hard disclosures reflect the inimitable information, whereas soft ones embrace unverifiable claims on companies' activities. Given the evidence on Polish firms' readiness and uncertainty surrounding the adoption of the new non-financial regulatory legislation, we are interested in whether the patterns of the disclosure types have changed over time as a result of the implementation of the NFR Directive. Specifically, we expect that the mimetic mechanism has driven the prevalence of soft over hard information. Thus, the second hypothesis we test is as follows:

Hypothesis 2. The DEO disclosures approach by Polish firms did not change after the implementation of the NFR Directive in terms of the types of disclosures (hard, soft).

3. Research design and method

3.1. Sample composition

The sample selection scheme is explained in Table 1. To identify the non-financial companies suitable for our study, we first screened the data in the Refinitiv Eikon Database. We filtered out firms assigned a social score in Refinitiv Eikon and whether the firm has issued a CSR/sustainability report. As we focus on the effects of NFR Directive implementation, we requested data for 2016 (to cover the pre-Directive period) and 2018 (to cover the direct post-Directive period). We identified 26 firms, of which only 11 issued a CSR/sustainability report in both 2016 and 2018. However, we further verified the list of firms and identified 2 (Bogdanka and Budimex) that also issued CSR/sustainability reports in 2016 (although Refinitiv Eikon offered no information). Thus, based on the Refinitiv Eikon search, we identified 13 companies that meet the criteria of our study.

We extended our search criteria by covering all companies listed on the Warsaw Stock Exchange in the ESG index (formerly known as the Respect Index and currently known as the WIG-ESG index). As of 24.06.2021, there were 48 non-financial firms listed in the WIG-ESG index, including the 13 covered initially by Refinitiv Eikon. We checked the websites for each of the 48 firms to verify whether they issued CSR/Sustainability reports in 2016 and 2018. During this procedure, we identified a further six companies that fulfilled our criteria: Aquanet, Arcelor, Aesa, KP, Raben, and PSE. These firms were not found in Refinitiv Eikon, as they had been delisted. After double-identification of the potential sample (by combining the output from the Refinitiv Eikon and WIG-ESG screening), the final sample of firms covered 19 non-financial Polish listed firms.

Table 1. Sample selection scheme

No	Company	Sector	Refinitiv Eikon	WIG ESG	CSR Report	Refinitiv Social Score	CSR Report	Refinitiv Social Score	Sample
					2018	**2018**	**2016**	**2016**	
1	Polsat	Information	✓	✓	✓	✓	✓	✓	✓
2	Orange	Information	✓	✓	✓	✓	✓	✓	✓
3	Lotos	Manufacturing	✓	✓	✓	✓	✓	✓	✓
4	Orlen	Manufacturing	✓	✓	✓	✓	✓	✓	✓
5	KGHM	Mining & Quarrying	✓	✓	✓	✓	✓	✓	✓
6	Energa	Utilities	✓		✓	✓	✓	✓	✓
7	PGE	Utilities	✓	✓	✓	✓	✓		✓
8	Eurocash	Wholesale Trade	✓	✓	✓	✓	✓	✓	✓
9	PGNG	Transp. & Warehousing	✓	✓	✓	✓	✓		✓
10	Tauron	Utilities	✓	✓	✓	✓	✓		✓
11	Enea	Utilities	✓	✓	✓		✓		✓
12	Bogdanka	Mining & Quarrying	✓		✓	✓	✓		✓
13	Budimex	Construction	✓	✓	✓	✓	✓		✓
14	Azoty	Manufacturing	✓	✓		✓	✓	✓	x
15	CCC	Manufacturing	✓	✓	✓	✓			x
16	LPP	Manufacturing	✓	✓			✓	✓	x
17	JSW	Mining & Quarrying	✓	✓	✓	✓			x
18	Asecco	Information	✓	✓	✓	✓			x
19	Famur	Manufacturing	✓	✓	✓	✓			x
20	Neuca	Wholesale Trade	✓	✓					x
21	Dino	Retail Trade	✓	✓	✓	✓			x
22	PKP	Transp. & Warehousing	✓	✓	✓	✓			x
23	Boryszew	Manufacturing	✓		✓				x
24	CD Projekt	Information	✓	✓		✓			x
25	Ciech	Manufacturing	✓	✓	✓	✓			x
26	PBG	Construction	✓			✓			x
27	Aquanet	Utilities	x	✓	✓		✓		✓
28	Arcelor	Construction	x	✓	✓		✓		✓
29	Aesa	Transp. & Warehousing	x	✓	✓		✓		✓
30	KP	Utilities	x	✓	✓		✓		✓
31	Raben	Transp. & Warehousing	x	✓	✓		✓		✓
32	PSE	Utilities	x	✓	✓		✓		✓
		In total (no. of firms)		**28**	**27**	**22**	**19**	**9**	**19**

Notes: Sector in line with NAICS (North American Industry Classification System) code provided in Refinitiv Eikon.

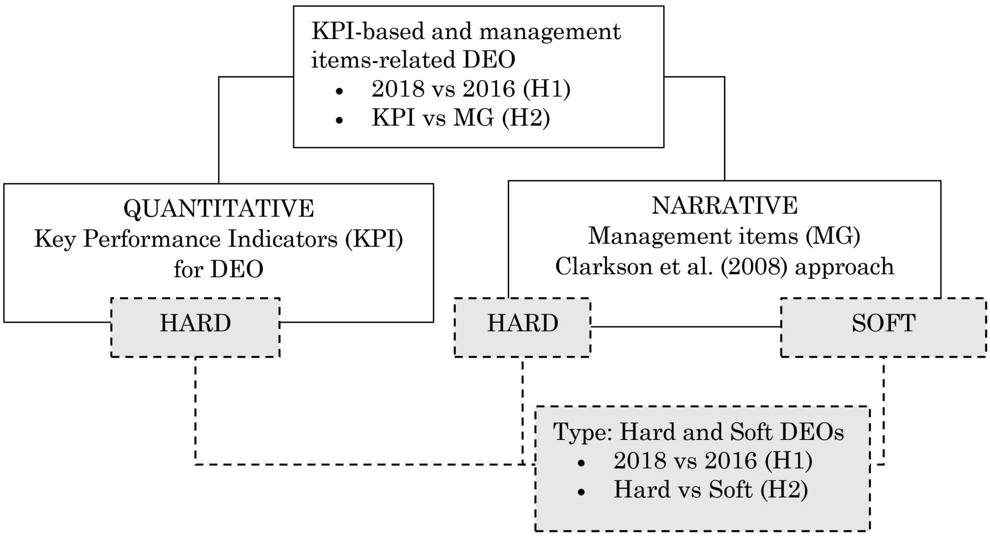
Source: own study.

3.2. Coding instrument

For our analysis, we developed a coding scheme based on Clackson et al. (2008) and the GRI standards (2016) recommendations for DEO disclosures to run the research in line with the requirements of the content analysis method. The data for each sampled company were collected manually by two independent researchers and coded with the coding instrument (outlined in Table 2). The researchers then compared the scores from the manual coding procedure, the differences were discussed, and the final decision was reached on the assigned score.

In our study, we controlled for two types of DEO disclosures, which are outlined in Figure 1. In the first dimension, we compare the DEO disclosures between the KPI-related quantitative items and all narrative management items (MG). In the second dimension, we compare the hard DEO disclosures with the soft ones. Following Clarkson et al. (2008), we classify an item as a hard DEO disclosure if it is focused on measurable aspects that cannot be easily mimicked by companies with poor diversity performance. The soft DEO items refer to qualitative disclosures that are not easily verifiable and report a general claim. As explained in Figure 1, the hard DEO disclosures embrace the KPIs and the hard MG DEO disclosures. The remaining DEO MG disclosures are classified as soft. Table 2 explains which items were considered KPIs and hard disclosures, and which were considered management-related items, divided into hard and soft ones.

Figure 1. The coding approach – types of diversity disclosures considered in the study



Source: own study.

Table 2. Coding instrument

Item	Description	Score
HARD DEO KPI disclosures (KPI) *total max. score 18; scores assigned for each reported KPI-related item: (1) KPI is presented, (2) KPI is presented relative to peers/rivals or industry, (3) KPI is presented relative to previous periods, (4) KPI is presented relative to targets, (5) KPI is presented both in absolute and normalized form, (6) KPI is presented at disaggregate level (Clarkson et al. 2008)*		**max. 18**
KPI(1)	Diversity of employees (gender, age, and other indicators)	(0–6)
KPI(2)	Diversity of governance bodies (gender, age, and other indicators)	(0–6)
KPI(3)	Ratio of basic salary and remuneration of women to men	(0–6)
DEO management items (MG) *total score 22; scores assigned as follows: 1 – if the item is reported in the diversity-related section of the non-financial report; 0 – otherwise*		**max. 22**
HARD DEO MG disclosures		**max. 7**
MG_H(1)	Spending on technologies, R&D, and/or innovations related to diversity	(0–1)
MG_H(2)	Savings arising from initiatives/investments related to diversity	(0–1)
MG_H(3)	Periodic independent verifications/audits on environmental and social performance and/or systems, if related to diversity	(0–1)
MG_H(4)	External certification related to diversity	(0–1)
MG_H(5)	External Awards for diversity policy	(0–1)
MG_H(6)	Participation in inter-governmental organizations/national agencies for the development of diversity	(0–1)
MG_H(7)	Participation in industry-specific associations/other organizations for the development of diversity	(0–1)
SOFT DEO MG disclosures		**max. 15**
MG_S(1)	A general statement of a firm's diversity policy (e.g., goals, values and principles, codes of conduct)	(0–1)
MG_S(2)	Stakeholder involvement in the ESG (diversity) processes	
MG_S(3)	A description of key diversity-related impacts, risks, and opportunities	(0–1)
MG_S(4)	A statement about formal management systems regarding diversity-related risks	(0–1)
MG_S(5)	A statement that the firm undertakes periodic reviews and evaluations of diversity-related performance.	(0–1)
MG_S(6)	A statement about specific innovations and/or new technologies related to diversity	(0–1)
MG_S(7)	A statement about the firm's compliance (commitment) with diversity-related standards	(0–1)
MG_S(8)	An overview of the industry's environmental and social impact, if related to diversity	(0–1)

Item	Description	Score
MG_S(9)	An overview of the business operations and/or products and services and their impact on the environment and society, if related to diversity	(0–1)
MG_S(10)	An overview of corporate environmental and social performance relative to industry peers, if related to diversity	(0–1)
MG_S(11)	A description of the diversity activities, projects and initiatives undertaken during the year	(0–1)
MG_S(12)	Internal audits and monitoring related to diversity-related performance	(0–1)
MG_S(13)	Existence of response plans in case of environmental & social accidents/issues, as related to diversity	(0–1)
MG_S(14)	A substantive description of employee training in environmental & social management and operations, if related to diversity	(0–1)
MG_S(15)	A statement if fines were paid, if related to diversity issues	(0–1)

Source: own study.

While scoring the KPIs, we followed Clarkson et al.'s (2008) proposal to assign scores ranging from 0 to 6, depending on the informativeness of the DEO item. Thus, the maximum score for the KPI-related items was 18. To obtain the KPI information, we screened the ratios and the related narrative disclosures presented in the sections of the report dedicated to disclosing DEO items. Within the management items (MG) we coded information for 22 items, out of which seven were classified as hard disclosures and 15 as soft disclosures. While coding the management items (MG), we used the binary system, giving 1 point if the information was disclosed and 0 otherwise.

3.3. Measuring the DEO disclosures

For our empirical analysis, we developed several DEO disclosure indices (*DI*). The first is the overall index *DI*(*all*), which is a summary score obtained for all coded items ($Score_i$) for company *i*, divided by the maximum possible score of 40 (*score_max*):

$$DI(all) = \frac{Score_i}{Score\_max}$$

We also develop the DEO disclosure indices for the types of disclosures:

$$DI(KPI) = \frac{KPI\_Score_i}{KPI\_Score\_max},$$

where *DI*(*KPI*) denotes the DEO disclosure index for KPI-related items, KPI_Score_i denotes the sum of the scores for KPI items obtained by company *i*, and *KPI_Score_max* denotes the maximum score for KPI items, which is 18;

$$DI(MG) = \frac{MG\_Score_i}{MG\_Score\_max},$$

where *DI*(*MG*) denotes the DEO disclosure index for management items, MG_Score_i denotes the sum of the scores for management items obtained by company *i*, and *MG_Score_max* denotes the maximum score for management items, which is 22;

$$DI(hard) = \frac{Hard\_Score_i}{Hard\_Score\_max},$$

where *DI*(*hard*) denotes the DEO disclosure index for hard disclosure items, $Hard\_Score_i$ denotes the sum of the scores for hard items obtained by company *i*, and *Hard_Score_max* denotes the maximum score for hard items, which is 25;

$$DI(soft) = \frac{Soft\_Score_i}{Soft\_Score\_max},$$

where *DI*(*soft*) denotes the DEO disclosure index for soft disclosure items, $Soft\_Score_i$ denotes the sum of the scores for soft items obtained by company *i*, and *Soft_Score_max* denotes the maximum score for soft items, which is 15.

3.4. Method

To examine whether the DEO disclosures increased between 2016 (pre-Directive) and 2018 (post-Directive), we use statistical tests for comparing two related samples. We apply the parametric paired samples Student's t-test, and for additional verification, the Wilcoxon signed ranks test. As outlined in Figure 1, these comparisons address not only the overall DEO disclosures index *DI*(*all*), but also the remaining DEO disclosures indices *DI*(*KPI*), *DI*(*MG*), *DI*(*hard*) and *DI*(*soft*).

We use the same methodical approach to examine whether the DEO disclosure approach changed after the Directive was implemented. More specifically, we examine whether the medians and means of the pairs of DEO indices differ significantly in the pre- and post-directive periods. In this aspect, we replicate the methodical approach following Papa et al. (2022).

4. Results and discussion

4.1. The DEO disclosure scores

In the first stage of our analysis, to draw some preliminary conclusions, we considered the overall change in the scores assigned to the analyzed companies for their DEO disclosures. Table 3 presents detailed information on the assigned scores for each company and the changes in the scores between 2016 and 2018, as well as the related descriptive statistics. In our sample, the scores assigned for DEO disclosures varied between the companies, ranging from 0 to 14 out of the possible maximum of 40 for 2016, and 2 to 16 in 2018. For 15 out of the 19 companies, the score was higher in 2018 compared to 2016. In some cases, the increase was significant (Acelor, Aquanet, and PGNiG). If we consider the points for KPIs, we observe slight changes over time or comparable levels of the points. However, in several cases (Acelor, Aquanet, PGNiG, PGEm and PSE), there was a significant increase in the points assigned for KPI disclosures. The scores assigned to DEO disclosures in management items suggest a similar conclusion, i.e., there is a group of companies that obtained similar scores and a group that increased their score (Acelor, Aquanet, Enea, Bogdanka, Budimex). Overall, Acelor and Aquanet increased their diversity disclosures scores in all aspects considered in this study. The companies for which the diversity score has decreased are in the minority (only two companies, Orlen and KGHM, with a significant decrease).

Table 3. The nominal DEO disclosures scores, as assigned for sampled companies in the coding procedure

Company	KPI (max.18)			MG (max.22)			Hard (max.25)			Soft (max.15)			Score in total (max.40)		
	2016	2018	Δ	2016	2018	Δ	2016	2018	Δ	2016	2018	Δ	2016	2018	Δ
Orlen	6	4	–2	5	6	1	6	6	0	5	4	–1	11	10	–1
Aquanet	3	6	3	1	4	3	3	6	3	1	4	3	4	10	6
Arcelor	2	4	2	0	3	3	2	4	2	0	3	3	2	7	5
Aesa	2	3	1	3	3	0	2	3	1	3	3	0	5	6	1
Orange	6	6	0	4	5	1	7	7	0	3	4	1	10	11	1
KP	5	6	1	7	6	–1	6	7	1	6	5	–1	12	12	0
Raben	2	3	1	2	2	0	2	3	1	2	2	0	4	5	1
Bogdanka	6	6	0	4	6	2	6	6	0	4	6	2	10	12	2
Budimex	9	9	0	5	7	2	9	9	0	5	7	2	14	16	2
Enea	2	2	0	4	7	3	2	4	2	4	5	1	6	9	3
Energa	5	5	0	4	4	0	5	5	0	4	4	0	9	9	0
PGNiG	2	8	6	4	4	0	2	8	6	4	4	0	6	12	6
PSE	5	8	3	5	4	–1	5	8	3	5	4	–1	10	12	2
Tauron	2	2	0	3	4	1	2	2	0	3	4	1	5	6	1
PGE	3	6	3	4	3	–1	4	6	2	3	3	0	7	9	2
KGHM	5	0	–5	3	2	–1	5	0	–5	3	2	–1	8	2	0
Lotos	2	5	3	5	5	0	3	7	4	4	3	–1	7	10	3
Polsat	0	2	2	0	3	3	0	2	2	0	3	3	0	5	5
Eurocash	3	3	0	3	4	1	3	3	0	3	4	1	6	7	1
mean	3.68	4.63	0.95	3.47	4.32	0.84	3.89	5.05	1.16	3.26	3.89	0.63	7.16	8.95	2.11
St.Dev.	2.13	2.32	2.24	1.73	1.49	1.42	2.20	2.37	2.16	1.58	1.21	1.38	3.44	3.24	2.02
min	0	0	–5	0	2	–1	0	0	–5	0	2	–1	0	2	–1
max	9	9	6	7	7	3	9	9	6	6	7	3	14	16	6

Notes: 2016 as pre-Directive score; 2018 as post-Directive score; the total score presents here a sum of the scores assigned for KPI and MG (management items); this is equivalent to the sum of scores for SOFT and HARD DEO disclosures.

Source: own study.

The descriptive statistics in Table 3 indicate that the mean values for the DEO disclosure scores are higher in 2018 compared to 2016 for all categories (KPIs and MG, soft and hard, as well as for the overall score). In our subsequent analysis, we tested the DEO disclosure indices. The descriptive statistics for the disclosure indices are reported in Table 4. We found that the diversity disclosure indices increased after implementing the new regulatory framework on non-financial disclosures. There was also a reduction in the dispersion scores (standard deviation), with the exception of the quantitative KPIs-related disclosures *DI*(*KPI*). The descriptive statistics in Table 4 for the DEO disclosure indices indicate that the mean *DI*(*KPI*) exceeds the mean *DI*(*MG*), in both periods. However, if we consider the hard disclosures index *DI*(*hard*), which captures the KPI-items and hard management disclosures, then the mean *DI*(*hard*) exceeds the *DI*(*soft*) in both periods.

Table 4. Summary statistics for the indices of diversity disclosures

Variables	2016 (pre-Directive)				2018 (post-Directive)				mean Δ	SD Δ
	min	max	mean	SD	min	max	mean	SD		
DI(all)	0.00	0.35	**0.1789**	0.0883	0.05	0.40	**0.2237**	0.0831	0.0448	–0.0052
DI(KPI)	0.00	0.50	**0.2047**	0.1215	0.00	0.50	**0.2573**	0.1325	0.0526	0.0110
DI(MG)	0.00	0.32	**0.1579**	0.0807	0.09	0.32	**0.1962**	0.0695	0.0383	–0.0112
DI(hard)	0.00	0.36	**0.1558**	0.0903	0.00	0.36	**0.2021**	0.0975	0.0463	0.0072
DI(soft)	0.00	0.40	**0.2175**	0.1085	0.13	0.47	**0.2596**	0.0828	0.0421	–0.0257

Source: own study.

4.2. NFR Directive's effects on DEO disclosures (Hypothesis 1)

The first hypothesis we tested is that the implementation of the NFR Directive changed the DEO disclosures in Polish listed firms. With the exception of *DI*(*KPI*) for 2016 and *DI*(*soft*) for 2018, the disclosure indices are normally distributed (see data in Appendix 1). Thus, to confirm our first hypothesis, we used both the parametric Student's t-test and the non-parametric Wilcoxon signed-rank tests. Table 5 shows the results of the tests, together with the mean values of the DEO indices:

Table 5. Differences in DEO disclosure indices:
pre- vs. post-NFR Directive implementation

Variables	Means			Student t-test		Wilcoxon test	
	2016 Pre-Directive	2018 Post-Directive	Δ	t	p-value	Z	p-value
DI(*all*)	0.1789	0.2237	0.0448	–2.826	0.011**	–2.718b	0.007***
DI(*KPI*)	0.2047	0.2573	0.0526	–1.798	0.089*	–1.811b	0.070*
DI(*MG*)	0.1579	0.1962	0.0383	–2.509	0.022**	–2.432b	0.015**
DI(*hard*)	0.1558	0.2021	0.0463	–2.276	0.035**	–2.209b	0.027**
DI(*soft*)	0.2175	0.2596	0.0421	–1.935	0.069*	–1.840b	0.066*

Notes: statistically significant at: ***$\alpha = 0.01$; **$\alpha = 0.05$; *$\alpha = 0.1$. Sample (N) is 19 companies.

Source: own study.

The increase in the index of DEO disclosures (*DI*(*all*)) of +4.48% is statistically significant at 5% on the parametric Student t-test and at 1% on the non-parametric Wilcoxon signed rank test. When we consider the single types of disclosures, the increase in the indices of KPI-based DEO disclosures (*DI*(*KPI*)) of +5.26% and managerial item-related DEO disclosures (*DI*(*MG*)) of +3.83% are also statistically significant at the 10% level. The increase in the index of hard DEO disclosures (*DI*(*hard*)) of +4.63% is statistically significant at 5% as well. The increase in the soft DEO disclosures index (*DI*(*soft*)) of +4.21% is also statistically significant, at 5%. These findings confirm that after implementing the NFR Directive, the DEO disclosures in Polish firms increased, both at the overall level and at the level of particular types of disclosures considered in this study. This evidence supports our first hypothesis and suggests that the new mandatory regime increased adherence to the DEO-related disclosures.

4.3. The DEO disclosure approach (Hypothesis 2)

In our second hypothesis, we tested whether the level of different types of disclosures remains unvaried after the implementation of the NFR Directive. First, we observed that all DEO disclosure indices increased in the post-Directive period, and this increase was statistically significant (Table 5). We also observed that the KPI-related DEO disclosure indices *DI*(*KPI*) in both years exceeded the management items DEO disclosure indices *DI*(*MG*) Similarly, we found that the soft DEO disclosure indices *DI*(*soft*) exceeded the hard ones *DI*(*hard*). Thus, we checked if these differences are statistically significant, to confirm that the DEO disclosure approach did not change over time. The results of the Student's t-test and Wilcoxon signed ranks test are reported in Table 6. Table 6 also presents the means of the diversity disclosures to demonstrate the scale and direction of the differences.

Table 6. Differences in DEO disclosure indices: types of DEO disclosures in the pre- and post-Directive periods

Variables	**Means**			**Student t-test**		**Wilcoxon test**	
				t	**p-value**	**Z**	**p-value**
	DI(*KPI*)	*DI*(*MG*)	Δ				
2016	0.2047	0.1579	–0.0468	2.058	0.054*	–1.808	0.071*
2018	0.2573	0.1962	–0.0611	2.194	0.042**	–2.073	0.038**
	DI(*hard*)	*DI*(*soft*)	Δ				
2016	0.1558	0.2175	0.0617	–3.144	0.006***	–2.583	0.010**
2018	0.2021	0.2596	0.0575	–3.029	0.007***	–2.437	0.015**

Notes: statistically significant at: ***$\alpha = 0.01$; **$\alpha = 0.05$; *$\alpha = 0.1$. Sample (N) is 19 companies.

Source: own study.

We confirm that the KPI-related DEO disclosures are significantly greater than the management item-related DEO disclosures in both 2016 and 2018 (at the 5%

and 10% levels of confidence, respectively). We also confirm that the soft DEO disclosures are significantly greater than the hard ones in 2016 and 2018, also at 1% at the parametric level, and 5% at the non-parametric level. Although our sample of Polish firms is relatively small (19 observations), we confirm the statistical significance of the DEO disclosure approaches each year. This evidence supports our second hypothesis that the implementation of the Directive did not change the DEO disclosures approach in Polish companies. If we consider the DEO indices, the KPI-related disclosures *DI*(*KPI*) were more common than the management items DEO disclosures *DI*(*MG*). At the same time, soft DEO disclosures *DI*(*soft*) were more common than hard ones *DI*(*hard*).

Conclusions

Our study provides strong empirical evidence that the DEO disclosures in Poland increased statistically significantly when we compared the pre-Directive and post-Directive periods. Those differences are observed for each of the examined variables (DEO disclosure indices), except for soft disclosures. This means that the examined companies significantly increased their DEO disclosures as a result of the Directive on non-financial reporting. These findings are in line with prior studies, which covered the Directive's overall impact on the informativeness of firm non-financial disclosures (e.g., Mio et al., 2021; Mazzotta et al., 2020).

We also provide evidence that Polish companies' approach to DEO disclosures did not change over time. The prevalence of KPI-related disclosures over non-KPIs, as well as the prevalence of soft disclosures over hard ones, is statistically significant in both pre-Directive and post-Directive periods. The prevalence of soft disclosures over hard ones suggests that mimetic isomorphism may have been the driver of the DEO disclosure practices in Poland. Firms may have viewed the NFR Directive regulation as an uncertain reporting regime to cope with a mimetic disclosure approach. However, this aspect needs further empirical analysis to confirm the possible relevance of the impression management drivers.

This evidence is provided for a relatively small sample of Polish listed firms (N=19) that issued CSR/sustainability reports in both 2016 and 2018, which could be regarded as a limitation of our study. Nevertheless, we obtained statistically significant results that provide evidence that supports the tested hypotheses. However, further research should be conducted to confirm whether similar effects of implementing the Directive are observable in further years (e.g., in 2019 or 2020).

We believe that this study will also enhance further inquiries of a similar nature that will provide evidence for other countries located in Central and Eastern Europe. These countries are regarded as comparable in numerous dimensions: the history of their transition, the same period of the accession to the EU (May, 2004), and the overall trends in economic development. A comparison of the changes in DEO disclosures in listed companies in Hungary, the Czech Republic and/or Slovakia could lead to interesting results that may shed light on the importance of country-related settings to the observed effects on the increase or decrease in DEO disclosures and/or the changes in DEO disclosure approaches.

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Appendix 1. Tests of normality of the examined variables (Shapiro-Wilk test)

Variables	**Shapiro-Wilk**	
	Statistic	**p-value**
DI(KPI) 2016	0.900	0.049
DI(KPI) 2018	0.963	0.633
DI(MG) 2016	0.922	0.123
DI(MG) 2018	0.927	0.150
DI(Soft) 2016	0.934	0.209
DI(Soft) 2018	0.959	0.561
DI(hard) 2016	0.919	0.106
DI(hard) 2018	0.902	0.052
DI(all) 2016	0.986	0.990
DI(all) 2018	0.969	0.755

Source: own study.