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THE IMPACT OF NON-FINANCIAL INFORMATION ON THE FINANCIAL PERFORMANCE OF LARGE BULGARIAN AND SOUTH AFRICAN ROAD FREIGHT COMPANIES

Summary. The transport sector is one of the key sectors of the economy, contributing significantly to GDP, employment, and job creation. However, it is also one of the main polluters of the environment. In the specialized literature, there is little to no evidence of research conducted on the demand (presence or absence) for a relationship and correlation between disclosed non-financial information (NFI) and the financial performance of transport sector companies. The present research attempts to at least partially fill these gaps by applying appropriate research methods and analytical approaches and interpretation of the results obtained by targeting a sample of companies that fall under the mandatory regime and those that have a voluntary disclosure regime of non-financial information. The study of international practices in this area is based on eight South African road freight transport companies listed on a world stock exchange. The research of these foreign companies is used as a kind of bridge for comparison to focus on a specific sample of Bulgarian companies (the two largest entities for international road freight transport on European territory and beyond). By using the capabilities of statistical software (Gretl and Stata software), an answer is sought to the question of whether the NFI disclosure (i.e., the preparation of an integrated report/non-financial statement or corporate sustainability report) in accordance with GRI standards for a certain reporting period affects the financial performance of the companies in the following year(s). A difference-in-differences analysis was conducted to trace (search for and possibly confirm) a causality and measure the effect of NFI disclosure.

1. INTRODUCTION

The transport sector is key to implementing economic flows and logistics chains at national, regional, and global levels and, thus, is a significant factor in economic employment, job creation, and economic growth. Simultaneously, it is one of the largest environmental polluters and the cause of various health problems for humans. The focus of scientific interest in the present research is directed to one of the "leaders" who have had a substantial impact on the climate footprint, specifically road transport, particularly road freight transport. Despite policies imposed to reduce air pollution from transport over the last decade due to the introduction of fuel quality standards and European vehicle emission standards, concentrations of air pollutants continue to be overly high [1]. In this context, relevant scientific and applied methods, methodologies, and regulations are being sought and applied globally as disciplining and deterrent measures so that polluting companies commit themselves to greater transparency, environmental reporting, and social corporate responsibility in their business activities.

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In the context of current global and narrower European climate issues, the present study could contribute to the global volume of knowledge in the field of the impact opportunities of integrated corporate reporting and, more specifically, the disclosure of NFI and the preparation of credibly corporate sustainability reports in a specific economic sector such as road freight transport. Such a study is informative and useful for the international scientific community insofar as the problems of environmental corporate accountability of Bulgaria as an EU Member State directly impact the other member states.

Table 1

Harmful air emissions from road transport in Bulgaria 2017-2022 (tons)

Pollutants	2017	2018	2019	2020	2021	2022
Sulfur oxides (SOx)	39	41	42	37	38	37
Nitrogen oxides (Nox)	39856	39076	39408	35819	37853	36121
Non-methane volatile organic compounds (NMVOC)	9442	8383	7832	6932	6945	6497
Methane (CH_4)	967	874	848	774	796	742
Carbon oxide (CO)	60367	58573	53922	48837	51803	49249
Carbon dioxide (CO_2)	8842106	9164322	9515457	8993162	9635388	9583125
Dinitrogen oxide (N_2O)	272	297	314	300	319	319
Ammonia (NH_3)	829	735	712	673	704	716

Source: National Statistical Institute [2]

As can be seen from the data (Table 1), the need for more effective measures to achieve sustainable development in transport and, in particular, road freight transport is indisputable. In the last few years, the efforts of various international organizations have increasingly appreciated (adoption of conventions and relevant regulations) for gradually tightening regimes that encourage and/or obligate an ever-expanding range of companies which through their corporate accountability to "illuminate" numerous non-financial aspects of their business activities through a Corporate Sustainability Report.

This study focuses on a group of major international South African companies in the road freight transport sector, publicly traded on global stock exchanges, and the two largest Bulgarian companies in the same industry during the examined timeframe. These companies were selected in the sample because only foreign enterprises must publish NFI according to their local law and non-EU jurisdiction for the seven-year period analyzed. At the same time, after 2023, similar requirements will become mandatory for the selected Bulgarian companies as long as they meet the "large-sized" criteria, which, in turn, already fall within the scope of the new European Directive and the rules for preparing a Corporate Sustainability Report.

A seven-year period was researched to analyze the dependence and relationship between non-financial and financial information chains from 2017 to 2023.

This study aims to build research models to analyze the impact of non-financial information reported and disclosed for a particular reporting period on the financial results of transport operators presented in the annual financial report (AFR) for the following year(s).

Only foreign enterprises have published integrated reports, and Bulgarian transport companies are not legally obliged to prepare integrated reports for the analyzed period.

In this regard, the selected approach in the research is based on the experience established by the foreign transport companies in the sample, which have operated in a mandatory regime to disclose NFI and to derive key indicators for relevant economic, social, and environmental performance. By relating and applying KPIs to the available data of the Bulgarian companies from the sample, the aim is to investigate and establish what the results would be and, moreover, what the impact on their financial performance would be if they also disclosed the relevant NFI (especially considering the developments

in the European legislation in 2023 and the upcoming new information environment for corporate accounting in the context of the ESG concept in the spirit of the CSRD Directive both in Bulgaria and in the EU in the following reporting periods from the current 2025).

Five analytical models were built during the research for this paper, one based on an analytical accounting approach and four based on a value analytical approach, respectively.

Upon the conclusion of this study, the results are summarized and certain conclusions and assumptions about future possibilities are made in the context of the new European CSRD Directive and the expected future empirical experience in the EU.

2. LITERATURE REVIEW

The key advantages of reporting and disclosing NFI stem from companies' ability to convey and execute an environmentally responsible approach that fosters lasting investor benefits while supporting a sustainable society and advancing carbon neutrality. Integrated reporting is a reporting strategy that seeks to present a more comprehensive picture of a company's performance, governance, and sustainability [3].

Since integrated reporting is a comparatively new area in corporate reporting, research in this direction is limited. The results of the few existing studies are contradictory, as some of them confirm and others reject and do not link integrated reporting practices with companies achieving certain financial results. In some companies, a direct relationship is established between indicators of return on assets (ROA), return on equity (ROE), and various non-financial indicators.

For instance, in research conducted by Churet, the aim is to give an answer to the question of whether the disclosure of NFI or integrated reporting leads to better financial performance, using Return On Invested Capital – ROIC ratio or, more precisely, the 10-year average of ROIC ratio as a financial performance indicator. The results do not confirm or link the disclosure practices of NFI or integrated reporting with companies achieving higher ROIC ratio values [4].

At the same time, in another study of the interaction between financial reporting and non-financial disclosure in the integrated statements of 16 Asia-Pacific companies [5], the results establish a direct relationship between the financial results represented by ROA or ROE and non-financial indicators.

Similarly, a study of enterprises by individual economic sectors shows a positive relationship between integrated reporting, covering NFI, and financial performance for companies from the information technology and healthcare sectors [6].

The NFI disclosure provides an opportunity for a more reliable evaluation of the company's value. This is a consequence of measuring the results of its activity through value creation, including the different types of capital: financial, industrial, intellectual, human, social, and natural [7-9].

Integrated reporting, including NFI, discloses data for all stakeholders' needs, allowing more effective management decision-making.

Kostyrko, Malynovskaya highlight the possibility of attracting more investments as one of the advantages of disclosing non-financial information to enhance financial reporting by providing stakeholders with more information than conventional reporting [10, 11].

Studies regarding the example of the Algerian economy have been carried out in macroeconomic research by building econometric models that show a positive relationship and impact between economic growth, measured by GDP per capita, and environmental quality, represented by CO_2 emissions [12]. P. Druckman, J. Fries, and I. Derun raise the question in their research on measuring the benefits of non-financial information disclosure through profitability indicators as part of the methods of the accounting analytical approach. In this regard, analyzing non-financial information is the basis for appropriate management decision-making that will increase the company's revenue in the long term. The study aims to find a relation between non-financial information disclosure and the company's financial performance, thereby stimulating the voluntary disclosure of social and environmental performance indicators [13].

Other researchers have examined the reporting of NFI and its effect on an enterprise's performance. For example, M.W. Affan researches the Indonesian stock exchange chemical companies regarding the

impact of NFI in the 2017 integrated reports on their financial performance. A positive relationship between the disclosure of NFI and the performance of the analyzed companies has been confirmed by linear regression as a research tool [14].

Other studies in integrated reporting reject the presence of a relation between the disclosure of non-financial information and company performance. This conclusion is reached by analyzing the solvability and liquidity of 56 international companies revealing NFI through an integrated report from 2015–2017 [15]. A study conducted by analyzed companies from the energy sector showed that the environmental indicators disclosed by European companies in the sustainable development report contribute to socially responsible behavior and profitability [16].

The results of a study and analysis in the transport (air transport sector) carried out by Yaghoub Abdi, Xiaoni Li, and X. Càmara-Turull show a positive relationship between airlines' investments in environmental and governance practices and their financial performance. Therefore, increasing both pillars (environmental and governance) leads to higher market value and financial performance for the studied airlines. In contrast, social disclosure (i.e., the third pillar of integrated corporate reporting) is established to have a negative relationship with dependent variables, indicating that airline social activities lead to both lower value and efficiency levels [17].

To summarize, the research undertaken on how disclosure of NFI affects financial performance at this stage includes businesses in various fields. However, there is no data regarding analyzed enterprises from the road freight transport branch. Taking the conflicting results into account obtained from the studies conducted so far, in order to clarify the dependence and relationship between NFI (as part of the integrated report or from the Corporate Sustainability Report) and transport companies' financial performance, the following hypotheses are formulated:

Hypothesis 0 (H_0): The disclosure of non-financial information in an integrated report / Non-financial statement (Corporate Sustainability Report) for a relevant reporting period does not affect the financial performance of transport companies in the subsequent reporting period.

Hypothesis 1 (H_1): The disclosure of non-financial information in an integrated report / Non-financial statement (or Corporate Sustainability Report) for a relevant reporting period impacts the financial performance of transport companies in the subsequent reporting period.

3. BASIC ASSUMPTIONS AND USED DATA

The quality of companies' integrated reporting impacts the decision-making process because the quality of management directly depends on the quality of the information disclosed in the reports [18]. Due to this and in line with the stated objective of identifying potential outcomes (advantages or disadvantages) from disclosing NFI, the study examines the existence of an indirect relationship and, consequently, an association between the NFI for a specific reporting period and the economic performance of enterprises in the further reporting period. For this study's aims, 10 (ten) companies were included in the main sample from two groups of companies - eight large foreign companies and two large Bulgarian companies in road freight transport. An additional sample of 10 Bulgarian companies was created in the formation of control groups to meet the needs of the difference-in-differences analysis. Foreign companies are some of the largest multinational transport companies that possess a commercial registration under the jurisdiction of the Republic of South Africa (RSA) as they road freight transport performance on its territory. These companies are listed on the Johannesburg Stock Exchange, which is obliged (by law) to prepare an annual integrated report.

The Bulgarian companies fulfill the definition of large-scale companies per the Law on Accounting. They are among Bulgaria's most significant road freight transport enterprises and are internationally licensed for transport services. Despite this, during the researched period, the Bulgarian and European regulations do not impose an obligation on them but instead offer them the discretion to decide whether to produce an integrated report/non-financial statement and, if so, to adopt an applicable international standardization framework. None of the transport companies actually disclose the NFI.

Therefore, in the present study, as a basis for the analysis, 10 (ten) more companies were included in the formed control group alongside companies from another border and related to the transport sector

operating on Bulgarian territory, and some of them disclosed the NFI voluntarily. These are subsidiaries of large foreign companies in communications (telecoms and telecommunication services).

Table 2

Companies included in the sample research

Foreign Transport Companies that are obliged to disclose non-financial information (*prepare Integrated Report respectively Corporate Sustainable Report*)	Bulgarian Transport Companies that are not obliged to disclose non-financial information (*don't prepare Integrated Report resp. Corporate Sustainable Report)*
1. Grindrod Ltd	1. PIMK Ltd
2. OneLogix Group Ltd	
3. Value Group Ltd	
4. Imperial Logistics Ltd	
5. Santova Logistics Ltd	2. DISCORDIA JSCo
6. KAP Limited Ltd	
7. ADCORP GROUP Ltd	
8. Frontier Transport Holdings Ltd	
-	Additional sample/control group of 10 companies

Source: prepared by the authors

During the 7 analyzed reporting periods (2017 - 2023), the new European Corporate Sustainability Reporting Directive (CSRD), which came into effect on January 5, 2023, had not yet been implemented. This directive introduces significant changes and increased stringency to mandatory reporting and requirements for non-financial information disclosure contrary to the more liberal and nearly advisory nature of the previous regime under the Non-Financial Reporting Directive (NFRD)[3] for companies doing business within the EU [19, 20].

All foreign companies in the sample prepare their integrated reports following the Global Reporting Initiative (GRI) standards for sustainability reporting and economic, environmental, and social performance indicators, as well as the International Integrated Reporting Framework.

4. RELATION BETWEEN NFI DISCLOSURE AND FINANCIAL OUTCOMES OF FOREIGN COMPANIES

4.1. Methodology and specification of the research model

In recent decades, several analysts have researched the impact of factors influencing NFI disclosure by companies working in various economic sectors. A large part of the inquiries study factors affecting the extent of information disclosure on environmental and social performance, such as enterprise categories based on size criteria (average number of employees, book value of the assets, net sales revenue) [21], various profitability ratios, indicators of financial leverage, [22] commercial reputation [23]. In this regard, some of the factors described above are included as variables in an analytical model for the necessities of the study. The toolkit of financial analysis (financial accounting-oriented approach and value analytical methods) and statistical methods and models were used in order to evaluate the results and test the research hypotheses. This was done to improve the quality of the research results. The regression model was tested for the absence of multicollinearity, autocorrelation, and heteroskedasticity. The data included in the study were processed by Gretl statistical software.

A difference-in-differences analysis was conducted using Stata software in order to trace (search for and possibly confirm) a causal relationship and measure the effect of disclosure of NFI.

According to the literature review and research on the possible impact of the picked factors on the scope of disclosed NFI, the following multiple regression model was built.

$$FP_{it} = \alpha_0 + \alpha_1 NFI_{1it-1} + \alpha_2 SIZE_{it-1} + \alpha_3 RISK_{3it-1} + \varepsilon_{it} \quad (1)$$

[3] At European level, the initial requirement for some companies to disclose non-financial information in a more extended version was introduced with the adoption of Directive 2014/95/EU (Non-Financial Reporting Directive - NFRD) amending and supplementing the Accounting Directive 2013/34/EU.

The model construction is based on an accounting-oriented approach focused on the company's operating profit. The profit performance ratio was used to measure the efficiency of the company's activity. The financial-accounting analytical model treats profit maximization as the key goal for the company's growth and relies on events and data already presented in the annual financial statement.

Table 3

Description of variables

Variable	Definition	Description	Measurement	Source
Dependent				
FP_{it}	Company's financial position for the current reporting period.	To measure the efficiency of the companies' activities through applying a financial-accounting oriented approach, the return on sales (ROS) indicator is used for company i and period-t.	ROS is calculated as the ratio of EBIT (earnings before interest and taxes) to the value of sales revenue.	Annual financial statements
Independents				
NFI_{it-1}	Non-financial information for the previous reporting period	Environmental and social performance indicators pursuant to the Global Reporting Initiative Standards (GRI), the International Integrated Reporting Framework (IIRF), and "King IV" principles.	Disclosure Index (DI_{ir}) of environmental and social performance indicators: $DI_{ir} = \sum D_{id} / \sum D_{i\,(total)}$ $\sum D_{id}$ – the sum of the number of disclosed environmental and social indicators; $\sum D_{i(total)}$ – the sum of the total number of possible environmental and social indicators.	Annual integrated report
$SIZE_{it-1}$	Size of the company for the previous reporting period	The calculated index is proportional to the book value assets of the company.	$SIZE_{it}$ = log of the book value of assets for company i and time t (December 31 of the reporting period)	Annual financial statement
$RISK_{it-1}$	Financial risk for the company for the previous reporting period - part of the risk management methodology [24]	This ratio shows the concentration of debt capital (i.e., measures the financial dependence of the company). This is the so-called Financial Leverage Ratio.	It is calculated as a ratio between the total amount of debt and the total amount of equity.	Annual financial statement

Source: prepared by the authors

4.2. Empirical results

Correlation analysis was performed to examine the dependence between financial performance (ROS) and disclosure of NFI (disclosure index DI was used) with a time lag of 1 year.

The obtained result shows a one-way (directly proportional) medium-strength relation between the two variables, with a correlation coefficient of r ≈ 0.47 (Table 4). Therefore, as the amount of NFI disclosed in a given reporting year increases, the return on sales for the next reporting year increases.

In this regard, the influence of three variables – disclosure of non-financial information, company size, and financial leverage – for a given reporting period on the return on sales (ROS) for a subsequent reporting period was investigated. The factors in the model were included based on the experience studied and the correlation analysis performed. It is believed that ROS most accurately represents the results of the activity, revealing the final effect of the company's operational activity.

$$ROS_{it} = a_0 + a_1 NFI_{it-1} + a_2 SIZE_{it-1} + a_3 RISK_{it-1} + \mathcal{E}_{it} \quad (2)$$

Table 4

Correlation coefficient

	ROS (y)	NFI (x)
ROS (y)	1.000000	
NFI (x)	0.465463	1.000000

Source: the authors' calculations and Gretl Software [25]

The following correlation matrix was constructed in order to test the existence of independence within factor variables and, therefore, the presence or absence of multicollinearity:

Table 5

Multicollinearity test

	NFI (x)	SIZE (x)	RISK (x)
NFI (x)	1.000000		
SIZE (x)	-0.071047	1.000000	
RISK (x)	-0.487783	-0.127065	1.000000

Source: the authors' calculations and Gretl Software

Based on the results obtained from the correlation matrix above, multicollinearity is rejected (i.e., all three variables of non-financial information through the disclosure index, company size with the calculated index, and leverage ratio (can remain in the model proposed above and be analyzed.

The built model includes the indicators of the foreign companies with shares listed on world stock exchanges (Table 2) from 2017-2023, with 56 observations. These observations were subjected to autocorrelation and heteroskedasticity tests to increase the model's reliability. The Durbin-Watson (DW) test results provide information about the absence of autocorrelation in the model.

$$d_u \leq d \leq 4 - d_u \quad (3)$$

According to the calculation results, the value of the DW coefficient is approximately d≈1.944. Comparing the empirical and theoretical values (1.681 = d_u) no autocorrelation was found (see Inequality 3). White and Breusch-Pagan (BP) tests were performed using the statistical software (Gretl). The results show that the empirical significance of the White criterion (17.727) at nine degrees of freedom (φ=9) is less than the theoretical significance of the χ^2-criterion (21.67) at α=0.01. Consequently, and considering the significance of the p-value indicator (Table 7), the results show a lack of heteroskedasticity (i.e., no difference is observed in the variances of the residuals in the model). The results of the Breusch-Pagan test also confirm the absence of heteroskedasticity.

Table 6

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.5798	0.336	0.298	0.079
Predictors: NFI, Size, Risk				
Dependent Variable: ROS				

Source: the authors' calculations and Gretl software

A regression analysis was performed to test the research hypotheses. The studied model revealed that the empirical significance of the F-criterion (Table 7) exceeds its theoretical value at a significance level (Sig) α = 0.01. In this regard, with Sig F < α, the null hypothesis (H_0) should be rejected, and the alternative hypothesis (H_1), namely, that the more detailed disclosure of non-financial information for the relevant reporting period has a certain extent influence on the financial results for the following reporting period, should be accepted.

The calculated regression coefficients show that a 1% increase in the volume of disclosed non-financial information would lead to a 0.11% increase in the companies' financial performance. The remaining two coefficients are related to an alteration in the direction of reduction, respectively, with a 1% increase in the size of companies and their financial risk, ROS decreases by 0.018% and 0.04%, respectively. The coefficient of determination shows that the independent variables determine

approximately 33.6% of the outcome, and the standard error is less than 0.08%. However, the remaining 66.4% of the variation in ROS is due to other factor variables that are excluded from the study model.

The difference-in-differences method was used to trace causality and estimate the effect of the disclosure of NFI, which was presented as an integrated report by the sampled foreign enterprises. A second control group of observations was formed for the needs of the study: companies that are not legally obliged to disclose NFI and, accordingly, do not provide an integrated report. The changes in the value of the return on sales for the two studied groups before and after the introduction of the regulatory requirement to prepare an integrated report were compared in order to trace the existence of a causal relationship between the NFI disclosure and the financial results of the companies.

Table 7

Results of the estimation of the equation

Dependent variable: ROS, Time period: 2017 – 2023				
Independent variables	Coefficient	Std Error	T-Stat	p-value
Constant	0.23212	0.0878	2.642	0.0109 **
NFI	0.11029	0.0432	2.548	0.0138 **
Size	-0.01817	0.0093	-1.953	0.0563 *
Risk	-0.03975	0.0147	-2.712	0.0090 ***
Adjusted R Square	0.298			
P-value (F)	0.000713			
F	6.621724			
Durbin-Watson stat	1.944			
White test p-value	0.0384			
Breusch-Pagan test p-value	0.0014			
Number of observations	56			

Source: the authors' calculations and Gretl software

Table 8

Summarizing the results of difference-in-differences analysis

ROS	Coefficient	Std Error	T	P > / t /	[95% confidence interval]	
NFI_treated	.06511	.0439302	1.69	0.098	-.011238	.1614391
Time	.02502	.0334634	0.65	0.542	-.045415	.0875491
DID	.047865	.0486157	0.99	0.352	-.014173	.0665735
_cons	.0598	.0299171	2.06	0.046	.0015491	.1367251

Source: the authors' calculations and Stata software

The difference-in-differences (DID) coefficient shows that the effect is not significant at the 5% level ($P>|t| > 0.05$). Therefore, a causal relationship between the disclosure of non-financial information and the financial performance of foreign transport companies during the next reporting period was not shown at this phase of the research.

5. KEY INDICATORS FOR ECONOMIC, SOCIAL, AND ENVIRONMENTAL PERFORMANCE OF COMPANIES IN THE TRANSPORT SECTOR

Based on the established correlation between the disclosure of non-financial information and financial performance, an analysis of the annual integrated reports of the sample of foreign companies for 2017-2023 has been carried out. The sample of foreign companies prepare their integrated reports primarily in accordance with the GRI Standards for Sustainability Reporting and Economic, Environmental, and Social Performance Indicators and compile integrated reports pursuant to the International Integrated Reporting Framework.

The value creation over time key non-financial indicators essential for transport companies were derived to evaluate the influence of non-financial information on the financial and economic

performance of the company. Key non-financial indicators have been determined as material based on an in-depth analytical review of the annual integrated reports of the sampled companies.

6. RELATIONSHIP IN MAIN NON-FINANCIAL INDICATORS AND FINANCIAL OUTCOMES IN BULGARIAN ROAD FREIGHT COMPANIES

6.1. Methodology

Four analytical models were built to examine the influence of the key non-financial indicators on the financial performance of Bulgarian road freight companies. (listed in Table 2).

Model 1:

$$EVA_{it} = a_0 + a_1 NFI_{(GRI302)it-1} + \varepsilon_{it} \quad (4)$$

Model 2:

$$EVA_{it} = a_0 + a_1 NFI_{(GRI305)it-1} + \varepsilon_{it} \quad (5)$$

Model 3:

$$EVA_{it} = a_0 + a_1 NFI_{(GRI401)it-1} + \varepsilon_{it} \quad (6)$$

Model 4:

$$EVA_{it} = a_0 + a_1 NFI_{(GRI404)it-1} + \varepsilon_{it} \quad (7)$$

Table 9

Material financial (economic) and non-financial performance indicators used by the studied companies (2017-2023), in accordance with GRI

INDICATORS	INDICATORS REVIEW
Economic Indicators	
GRI standard 201-1	Direct economic value generated: revenues; Economic value distributed: operating costs, employee wages, and benefits, payments to providers of capital, payments to government by country, and community investments; Economic value retained: 'direct economic value generated' less 'economic value distributed.'
Environmental Indicators	
GRI standard 302-1	Energy consumption within the organization.
GRI standard 305-1	Direct GHG emissions.
Social Indicators	
GRI standard 401-1	New employee hires and employee turnover. Total number and rate of new employee hires during the reporting period by age group, gender, and region.
GRI standard 404-2	Programs for upgrading employee skills and transition assistance programs.

Source: GRI and Annual Integrated Reports of the studied foreign companies [26]

The economic indicator with the greatest application from the analysis of the annual integrated reports of the sample companies is GRI 201-1 (see Table 9). This indicator summarizes information on the economic value created and distributed by the company, including all revenues and expenses, such as retained (undistributed) earnings and payments to the government.

At the same time, when conducting financial analyses for the opportunities to improve companies' financial performance, the globally accepted indicator - EVA (economic value added) is widespread.

Therefore, it is assumed that the analytical review through the integrated reporting prism gives reason to consider the EVA indicator and the GRI 201-1 standard as identical concepts.

6.2. Empirical results

1) Key financial performance indicators (economic indicators)

The information for calculating the EVA indicator was primarily collected from the Annual Financial Statements as well as the Annual Activity Reports of DISCORDIA JSCo and PIMK Ltd. available on the web page of the Bulgarian Registry Agency and from the websites of the two largest road freight companies operating in Bulgaria [27].

Table 10

Indicators applied to compute the EVA of PIMK Ltd. and DISCORDIA JSCo 2017-2023

Indicators	PIMK Ltd.							DISCORDIA JSCo						
	2017	2018	2019	2020	2021	2022	2023	2017	2018	2019	2020	2021	2022	2023
NOPAT	5601	3495	521	9230	18,22	28,69	23,58	6422	8224	6102	8519	19136	26,8	-10,
WACC%	10.09	7.18	6.41	5.72	5.82	11.01	8.36	10.41	7.78	7.07	6.04	6.04	9.49	5.90
Ic	177,5	197,67	195,6	191,4	205,8	226,9	237,4	28,382	40,73	56,12	59,0	86,0	110	120
EVA	*-12,3*	*-10,7*	*-12,0*	*-1722*	6246	3701	3734	3468	5055	2134	4900	13,9	16,30	-17,4

Source: prepared by the authors

2) Key non-financial indicators – environmental indicators

Indicators from Table 9 are attached.

- GRI 302-1 is a key environmental indicator of the organization's direct energy consumption. In this analysis, the main energy costs include the cost of raw materials, fuels, and lubricants for DISCORDIA JSCo's and PIMK Ltd.'s vehicles, electricity, and other types of energy.

Table 11

Costs for raw materials, fuels, electricity, and other types of energy (thousand lv) 2017-2023

Company	2017	2018	2019	2020	2021	2022	2023
PIMK Ltd.	63,304	57,644	54,059	40,666	48,871	73,870	60,296
DISCORDIA	18,850	27,308	34,003	32,650	52,812	100,630	106,663

Source: the authors, based on the companies' database

- The *GRI 305-1* reflects the total weight of direct GHG emissions released into the atmosphere.

The DISCORDIA JSCo and PIMK Ltd. fleets meet the European environmental standards for emissions "Euro" 5, 6, and "EEV." The relative share of the companies' pollutant emissions is presented in the following table:

Table 12

Relative shares of carbon dioxide (CO_2) emissions in the atmosphere of the researched companies

Year	Absolute value (tons)		Relative value (%)		Coefficient	
	PIMK Ltd.	DISCORDIA	PIMK Ltd.	DISCORDIA	PIMK Ltd.	DISCORDIA
2023	109,246	159,078	1.14%	1.66%	0.0114	0.0166
2022	98,705	143,745	1.03%	1.50%	0.0103	0.0150
2021	117,547	130,073	1.22%	1.35%	0.0122	0.0135
2020	108,815	102,520	1.21%	1.14%	0.0121	0.0114
2019	116,083	87,538	1.22%	0.92%	0.0122	0.0092
2018	121,881	69,646	1.33%	0.76%	0.0133	0.0076
2017	118,483	52,168	1.34%	0.59%	0.0134	0.0059

Source: Prepared by the authors using their own methodology and calculations based on official data of the sampled Bulgarian companies

Explanatory note: The coefficients reflecting the relative share of carbon dioxide emissions in the atmosphere were calculated according to a methodology developed by the authors by comparing the net sales revenues of transport services of the analyzed company and the operating revenues of transport companies for the whole economic sector.

3) Key non-financial indicators – social indicators

- The first social indicator included in the value-based analytical model of the research is *new employee hires and employee turnover* of DISCORDIA JSCo and PIMK Ltd. (*GRI 401 -1*).

Table 13 presents the average number of employees for the sector and for DISCORDIA JSCo and PIMK Ltd.

- The second indicator relates to human capital and provides information about the organization in terms of conducting upskilling programs for employees (GRI 404-2)

The analysis results based on the four models based on a value analytical approach show correlations of different strengths and directions. The data are summarized in Tables 15 and 16.

Table 13

The average number of employees for DISCORDIA JSCo, PIMK Ltd., and the transport sector from 2017-2023

Indicators	2017	2018	2019	2020	2021	2022	2023
DISCORDIA JSCo	588	784	1012	1153	1456	1899	2314
PIMK Ltd	1676	1651	1632	1561	1561	1596	1647
Transport sector	148,623	149,981	149,934	144,331	144,623	144,838	144,963

Source: DISCORDIA JSCo's and PIMK Ltd.'s Annual Financial Statements and the NSI database

Table 14

Training programs and staff development – PIMK Ltd. and DISCORDIA JSCo 2017-2023

Year	Training number of employees		Training hours per employee	Total training hours	
	PIMK Ltd.	DISCORDIA	PIMK Ltd. / DISCORDIA	PIMK Ltd.	DISCORDIA
2023	51	415	104	5304	43,160
2022	35	443	104	3640	46,072
2021	22	303	104	2288	31,512
2020	29	141	104	3016	14,664
2019	107	228	104	11,128	23,712
2018	27	196	104	2808	20,384
2017	49	162	104	5096	16,848

Source: prepared by the authors according to researched companies and NSI database

Table 15

Summarizing the results of the correlation analysis

	Models	Correlation coefficient (r)
1.	$EVA_{it} = \alpha_0 + \alpha_1 NFI_{(GRI302)it-1} + \varepsilon_{it}$	-0.8481
2.	$EVA_{it} = \alpha_0 + \alpha_1 NFI_{(GRI305)it-1} + \varepsilon_{it}$	-0.4719
3.	$EVA_{it} = \alpha_0 + \alpha_1 NFI_{(GRI401)it-1} + \varepsilon_{it}$	-0.4356
4.	$EVA_{it} = \alpha_0 + \alpha_1 NFI_{(GRI404)it-1} + \varepsilon_{it}$	0.5109

Source: the authors' calculations and Gretl software

Table 16

Relationships and inconsistencies between the results of the statistical models

Indicators	Relationships / Correlations	Contradictions/ Inconsistencies
Key environmental indicators		
Model 1: $EVA_{it} = a_0 + a_1 NFI_{(GRI302)it-1} + \varepsilon_{it}$	For both companies, there is a correlation between the non-financial indicator related to energy consumption in a given reporting period and financial performance in the following reporting period.	The correlation for the two companies is of different strength and direction: for PIMK Ltd., the correlation is medium in strength and opposite (inverse) in direction; for DISCORDIA JSCo, the correlation is one-way (direct), high in strength.
Model 2: $EVA_{it} = a_0 + a_1 NFI_{(GRI305)it-1} + \varepsilon_{it}$	The relationship between the two variables is medium in strength and shows a correlation between the financial indicator EVA of the companies studied and the relative share of GHG emissions in the atmosphere.	The correlation for the two companies is in different directions: opposite (inverse) for PIMK Ltd. and one-way (direct) for DISCORDIA JSCo.
Key social indicators		
Model 3: $E\,VA_{it} = a_0 + a_1 NFI_{(GRI401)it-1} + \varepsilon_{it}$	The result of the correlation analysis for both companies shows a medium correlation between the financial indicator EVA and the non-financial indicator measuring the number of employees.	The correlation for the two companies is in different directions: opposite (inverse) for PIMK Ltd and one-way (direct) for DISCORDIA JSCo.

Model 4: $EVA_{it} = a_0 + a_1 NFI_{(GRI404)it-1} + \varepsilon_{it}$	The correlation coefficients for both companies show a medium-strength one-way (direct) relationship between the variables of staff training in relation to upskilling and subsequent financial performance.	There are no opposite directions. Only the relationship between the two variables is more pronounced in DISCORDIA JSCo.

Source: prepared by the authors

Analysis of possible reasons explaining the different directions of the correlation between the two large Bulgarian transport companies:

- It is expected and logical that only in the last model 4, the correlation coefficients for both companies do not have different directions and show a well-pronounced one-way (direct) relationship between the staff training variables (increasing their qualifications) and improved financial performance for the companies;
- The three matches of the correlation analysis results in the first three models (column 2) are also logical, but the directionally different results found in column 3 are of additional interest;
- Value added can only be created by capital when the company receives a return on invested capital greater than the cost of raising it. The data in Table 10 show that from 2017–2020, the first Bulgarian company (PIMK Ltd.) did not create economic value added as EVA < 0. The underlying cause is a decrease in profit (NOPAT), which is decreasing at an outpacing rate relative to the cost of capital, including the more expensive capital resource, equity, whose relative share is the highest. Owing to the negative values of EVA, the correlation analysis performed on PIMK Ltd. confirmed an opposite directional relationship and dependence between the examined indicators. The data for the second Bulgarian company, DISCORDIA JSCo (Table 10), shows an increased profit for the analyzed period (except for 2023), which provides a return on invested capital and creates added value for the company. The increase in the positive values of the EVA indicator is associated with an increase in the efficiency of business activity, mainly at the expense of capital utilization.
- The conflicting results could be due to a time lag between the contribution of integrated reporting to better quality ESG corporate governance and the eventual impact of such governance on financial results, as well as the fact that in Bulgaria, integrated reporting is not nationally regulated for the researched period, which allows the NFI disclosure by individual companies to carry out in different ways and with varying degrees of reliability.
- Until the new EU Corporate Sustainability Reporting Directive, adopted in December 2022, is implemented, the GRI framework for reporting non-financial information will not be regulated in the EU (as well as in Bulgaria) as a formal reporting basis for disclosure of NFI. Only after the newly adopted unified standards are implemented at the EU level will a more precise and reliable correlation and direction of change between the variables in column 3 of table 16 be sought.

Diff-in-diff analysis was conducted to trace a causality between the disclosure of NFI and the financial performance of the Bulgarian companies studied. For this purpose, a control group of companies was formed, including enterprises from the communication services sector. Some of them disclose NFI voluntarily as part of the structure of large foreign companies.

The DID coefficient reflecting the average effect of the impact of NFI disclosure on the financial performance of Bulgarian companies shows a positive effect, significant at the 10% level.

7. CONCLUSIONS

The following main generalizations can be made:

- Correlation and regression analyses were performed in a sample of five large foreign companies from the road transport sector, listed on world stock exchanges, legally obliged to prepare and disclose NFI, as a result of which a positive, one-way relationship and dependence between NFI for a given accounting period and the financial result (operating profit) of the companies in subsequent accounting periods (based on an accounting-analytical approach and a model built accordingly).

- The annual integrated reports of the sampled foreign companies were studied, and five key indicators of economic, social, and environmental performance were derived per the GRI.

Table 17

Summarizing the results of difference-in-differences analysis

ROS_BG	Coefficient	Std. err.	T	P > | t |	[95% conf. interval]	
NFI_treated	-.0189432	.0287567	-1.54	0.089	-.0740713	.0379852
Time	-.0434516	.0231054	-1.79	0.054	-.0954577	.0004304
DID	.0576912	.033884	1.82	0.071	-.0051584	.1372967
Risk	-.0237571	.0089194	-2.12	0.028	-.0402227	-.002509
Size	-.0059017	.0090581	-0.61	0.531	-.0209754	.0138611
cons	.1461712	.0704591	2.59	0.010	.0430792	.3309972

Source: the authors' calculations and Stata software

- The key indicators for economic, social, and environmental performance derived according to GRI have been adapted and calculated for the two large-scale Bulgarian enterprises from the road freight branch for the analyzed timeframe.
- On this basis, after performing correlation and regression analyses, the existence of a relationship and dependence between the values of the calculated indicators and the economic value added (EVA) of Bulgarian companies from 2017–2023 was verified and established (based on value analytical approach and models built accordingly).
- A difference-in-differences study was conducted using Stata software to assess the effect of non-financial disclosure on the financial performance of all the investigated transport companies. The analysis of the foreign transport companies did not reveal a causal relationship. For Bulgarian enterprises, such a causality was observed at a significance level of 10%.

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