

## **Sustainability Information in Annual Reports of Companies Domiciled in the Czech Republic and the Slovak Republic**

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*The importance of corporate sustainability reporting continues to grow. This growth is rooted in numerous contingent factors and scientific questions regarding the key contingent variables. Knowledge related to these issues is important both for academic and practical purposes. Although sustainability reporting and sustainability management are not identical activities, they are strongly interconnected and communication, per se, is of great importance for the sustainability of companies. In the Czech Republic, and especially in the Slovak Republic, there is a lack of up-to-date empirical research into the extent of sustainability reporting and our article addresses this research gap.*

*The primary concern is the investigation of the association between the amount and structure of disclosure and its determinants. Scientific methods of content analysis, ratio analysis, and statistical data analysis including regression analysis are applied.*

*Few companies report on environmental and social issues in a comprehensive way. The structure and amount of reporting is similar in the countries analyzed. Company size positively impacts the relative share of both environmental and social disclosure in the total disclosure. Company affiliation to a high-profile industry positively impacts the relative share of environmental disclosure in the total disclosure, as well as the total amount of environmental disclosure. Total amount of disclosure positively impacts the absolute amount of economic, environmental and social disclosure. Reporting, in accordance with the IFRS, positively impacts the relative share of social disclosure in the total disclosure.*

**Keywords:** *Annual Reports; Content Analysis; Corporate Sustainability Reporting; Corporate Responsibility Reporting; CSR Communication; Determinants of Reporting.*

### **Introduction**

Numerous scholars (e.g., Gray, 2007; Lee, Park, Rapert, & Newman, 2012; Roca & Searcy, 2012; Searcy & Buslovich, 2014) agree that the importance of corporate sustainability, both in academia and practice, is on the rise. In this paper, in accordance with numerous studies, the term “corporate sustainability” is used interchangeably with the term “corporate social responsibility”, though some authors (Bansal & Song, 2017) refer to the historical differences of these concepts.

The term “corporate sustainability” can be defined in various ways (Aguinis & Glavas, 2012; Hahn, Pinkse, Preuss, & Figge, 2015; Williams, Kennedy, Philipp, & Whiteman, 2017). In this article we apply the term broadly to embrace all areas depicted by the triple bottom line approach (Elkington, 1997), as well as other salient characteristics, especially stakeholder focus, volunteer focus, diversity, resilience focus, long-term focus and supply chain (Ahi & Searcy, 2013; Ashby, Leat, & Hudson-Smith, 2012; Maj, 2018).

Companies adopt various initiatives to achieve sustainability-related goals and often publicly disclose the results of these initiatives in a variety of reports, such as specialized corporate responsibility reports, annual

financial reports (hereinafter abbreviated “AFR”), and web pages (Kundeliene & Stepanauskaite, 2018). The adoption of these initiatives is growing as reporting on environmental, social and governance indicators is increasingly required by various stakeholders (Bonson & Bednarova, 2015). Nevertheless, long-term research conducted by KPMG, including its latest report (KPMG, 2017), confirms that the main driver of environmental, social and governance reporting is regulation imposed by governments and stock exchanges.

Studies show that large companies tend to report more non-financial information within AFR (KPMG, 2017). Ultimately, reporting in various regions and countries still differs significantly and, from our viewpoint, we conclude that a divergence between Eastern Europe (where the rate of reporting is relatively low) and Western Europe (where a higher amount of reporting occurs) still exists, that the Czech Republic and Slovak Republic rank below the global average of reporting and that a culture of sustainability in the Eastern European region has not fully developed (KPMG, 2017, p. 14). While the amount of sustainability reporting is growing worldwide, especially in Eastern European countries, a low percentage of companies systematically disclose their sustainability-related activities (Habek & Wolniak, 2015).

Although more research is being done, sustainability reporting is still an under-researched area, especially in comparison with Western Europe. This is especially true of research published in high-quality journals indexed in Scopus or the Web of Science. Differences in the amount of research also exist at the level of individual countries.

In relation to the previous facts (the increasing global importance of AFR as a form of media for reporting sustainability information and the relatively low amount of up-to-date research into sustainability reporting in the Czech Republic and Slovak Republic), our research analyzes the contents of AFR of Czech and Slovak companies where AFR also include “management reports” which can contain sustainability-related information both in narrative and quantitative forms.

Annual financial reports of the largest companies for the period ending in the calendar year 2014 are the object of our analysis. One annual financial report for each company is analyzed as companies in the Czech Republic and Slovak Republic usually do not change their patterns of reporting over time. The structure and extent of their reports is, therefore, quite similar throughout several reporting periods.

Even though we admit that focusing on AFR may lead to an incomplete picture of sustainability reporting, knowledge concerning the amount of sustainability disclosure in AFR is important, per se, because this type of reporting may be considered as the most trustworthy communication channel of any company. Moreover, Guthrie, Petty, Yongvanich, and Ricceri (2004) ascertain that the analysis of AFR is a good proxy for the actual amount of reporting. Similarly, Gray, Kouhy and Lavers (1995) highlight the importance of AFR as regularly produced statutory documents.

The article aims to fill a research gap which exists due to the lack of up-to-date empirical research in the form of content analysis in the Czech Republic and, in particular, the Slovak Republic. This aim is supported by two interconnected subsidiary aims – first, the identification of the extent to which Czech and Slovak companies report on sustainability issues including the extent of reporting on individual topics; second, understanding the factors (contingent variables) which influence the quantity of reporting. These aims determine research tasks which include the preparation of the coding scheme, the coding of the selected annual reports, the quantitative analysis of the results by descriptive statistical methods, and, ultimately, the identification of key determinants of sustainability reporting by regression analysis.

An investigation of the extent and key determinants of reporting is important because communication is of critical importance for corporate sustainability. Moreover, an increase in the quantity and quality of reported information often leads to greater attention paid to sustainability issues by companies. The process results in an improvement of sustainability management and better relationships with stakeholders. If companies do not make the effort to report sufficient information on their activities, it may be necessary to support reporting by regulation. The research into the extent of reporting is therefore highly relevant also for policymakers because it informs their decisions.

This article specifically deals with two scientific questions: 1) Which factors influence the amount and structure (i.e. the relative share of individual sustainability topics) of sustainability disclosure in absolute and relative terms in the AFR of Czech and Slovak companies? 2) Which topics are reported by Czech and Slovak companies? The relevance of these questions is confirmed by the number of papers dealing with them (e.g. Habek & Wolniak, 2015; Dagiliene, Leitoniene & Grecnikova, 2014). Our approach is unique as it uses detailed quantitative content analysis at the level of number of words in the individual AFR of the companies analyzed.

Answering these questions contributes to the literature via the statistical analysis of the relationship between the amount of sustainability reporting and its determinants, and, by providing insight into the content and structure of sustainability information disclosed in the AFR of Czech and Slovak companies.

Methodologically, scientific methods of quantitative content analysis, ratio analysis, and statistical data analysis are applied. Descriptive statistics (e.g. mean, median, skewness, kurtosis) regarding the quantity of reporting on sustainability-related issues are provided to illustrate the total amount of sustainability reporting. Several hypotheses, based on various theoretical underpinnings, in particular the shareholder, stakeholder, legitimacy, and institutional theories, are also developed and tested via regression analysis.

The article proceeds with a review of the literature and the formulation of research hypotheses, an explanation of the data gathering process and research methodology, a presentation and discussion of results, and our conclusions.

## Literature Review and Development of Hypotheses

The literature review is divided into two parts. First, we identify key research studies dealing with sustainability reporting in Central and Eastern Europe and summarize their findings concisely. Then we deal with the literature on the determinants of sustainability reporting and develop research hypotheses.

In the context of Central and Eastern Europe, there are several up-to-date English-language articles on sustainability reporting published in high-quality journals (e.g., Dagiliene, 2010; Dagiliene & Nedzinskiene, 2018; Gallen & Peraita, 2018; Habek, 2014; 2017; Habek & Wolniak, 2015; 2016; Horvath *et al.*, 2017; Kundeliene & Stepanauskaite, 2018; Kunz, Ferencova, Hronova, & Singer, 2015; Lock & Seele, 2016; Szczepankiewicz & Mucko, 2016; Tetreva, 2018, Waniak-Michalak, Sapkauskiene, & Leitoniene, 2018). If we look at the articles from the viewpoint of the countries analyzed, there are only two papers aimed at the Czech Republic, both of which analyze reporting through corporate websites. Tetreva (2018) explicitly concludes that the amount of reporting of chemical companies is low, which corresponds with the low level of corporate responsibility reporting in the Czech Republic. Neither of the papers mentioned focus solely on the Slovak Republic.

Of course, outputs published in conference proceedings, books, and less prestigious journals exist, but these are not discussed in detail in our literature review.

Generalizing the results of existing studies is difficult due to the deployment of diverse methodologies analyzing a variety of reports (standalone sustainability reports, AFR, website reporting etc.). Nevertheless, with some simplification, it is possible to summarize that the majority of companies in Central and Eastern European Countries report little information. Especially scarce are quantitative environmental and social data, i.e. reporting is mainly narrative and unsystematic. For example, Habek (2017) investigated standalone sustainability reports prepared in accordance with GRI standards in four countries (the Czech Republic, Hungary, Poland, and the Slovak Republic) and concluded that CSR reporting is not widespread in the countries analyzed.

In addition to providing a description of the amount, and the content, of reporting on sustainability in AFR, our article investigates the determinants of sustainability reporting. Seminal reviews and summarizing articles (Ali, Frynas, & Mahmood, 2017; Fifka, 2013; Cowen, Ferreri, & Parker, 1987; Hahn & Kuhnen, 2013; Kuzey & Uyar, 2017) have identified numerous variables that may determine the amount of reporting.

Camilleri (2018) provided a relevant list and an interpretation of theories from the viewpoint of corporate communications. Kuzey and Uyar (2017) advocate that the key theories related to sustainability reporting are the agency, legitimacy, stakeholder (Jensen, 2002), and signaling theories. Kuzey and Uyar (2017) express the opinion that it is not possible to explain sustainability reporting on the basis of one single theory and that multiple theories should be used.

We decided to test the impact of key determinants, namely the size, profitability, and affiliation of a company to a high-profile industry, and the impact of reporting, in accordance with the International Financial Reporting Standards, on selected dependent variables represented by an absolute amount of sustainability disclosure and a relative amount of sustainability disclosure. The developed hypotheses regarding the aforementioned determinants can be seen below.

Company size is an independent variable examined in numerous studies. Regarding the role of company size, two of the theories are especially important: shareholder theory (Eisenhardt, 1989; Jensen & Meckling, 1976) and legitimacy theory (Suchman, 1995), both of which suggest a positive impact of company size on the amount of disclosure (Karaman, Kilic & Uyar, 2018). Moreover, there is strong empirical support for this relationship (Clarkson, Overell, & Chapple, 2011; Patten, 1991; Reverte, 2009).

Annual financial reports are especially standardized regarding structure and the content of disclosure on economic issues. Therefore, we hypothesize that company size positively impacts the total amount of sustainability reporting and, simultaneously, we hypothesize that reporting on environmental and social issues increases relatively more than reporting on economic issues.

The hypotheses regarding impact of company size on the relative amount of reporting are formulated as follows:

Hypothesis 1a: Company size positively impacts the relative share of reporting on environmental issues in the total disclosure.

Hypothesis 1b: Company size positively impacts the relative share of reporting on social issues in the total disclosure.

We suppose that size of company positively influences the total amount of disclosure, which subsequently influences the amount of absolute economic, environmental and social disclosure in a positive manner. The second set of hypotheses relates to impact of total disclosure on the absolute amount of economic, environmental and social disclosure:

Hypothesis 2a: Total amount of disclosure positively impacts the absolute amount of economic disclosure.

Hypothesis 2b: Total amount of disclosure positively impacts the absolute amount of environmental disclosure.

Hypothesis 2c: Total amount of disclosure positively impacts the absolute amount of social disclosure.

Company profitability is another important factor influencing the amount of disclosure. To legitimize their existence and profits, more profitable companies have the resources for high-quality reporting and are expected to report more than less profitable companies (Branco and Rodrigues, 2008; Gamerschlag, Moller, & Verbeeten, 2011). Although the empirical results regarding influence of profitability on the amount of disclosure are not conclusive (Reverte, 2009), we presume a positive impact of company profitability on the share of environmental and social disclosure in the total disclosure. The third set of hypotheses relates to impact of profitability on the relative amount of disclosure and reads:

Hypothesis 3a: Company profitability positively impacts the share of environmental disclosure in the total disclosure.

Hypothesis 3b: Company profitability positively impacts the share of social disclosure in the total disclosure.

The fourth set of hypotheses relates to impact of profitability on the absolute amount of disclosure:

Hypothesis 4a: Company profitability positively impacts the absolute amount of economic disclosure.

Hypothesis 4b: Company profitability positively impacts the absolute amount of environmental disclosure.

Hypothesis 4c: Company profitability positively impacts the absolute amount of social disclosure.

Company industry also influences the amount and structure of sustainability reporting. The literature (for a summary see, e.g., Ali, Frynas & Mahmood, 2017) suggests that companies with an affiliation to “high-profile industries” tends to report more than other companies to legitimize their existence. The fifth set of hypotheses relates to the impact of industry on the relative amount of disclosure:

Hypothesis 5a: Company affiliation to a high-profile industry positively impacts the relative share of reporting on environmental issues in the total disclosure.

Hypothesis 5b: Company affiliation to a high-profile industry positively impacts the relative share of reporting on social issues in the total disclosure.

The sixth set of hypotheses relates to impact of industry on the absolute amount of disclosure:

Hypothesis 6a: Company affiliation to a high-profile industry positively impacts the absolute amount of environmental disclosure.

Hypothesis 6b: Company affiliation to a high-profile industry positively impacts the absolute amount of social disclosure.

There are few studies dealing with the impact of implementing IFRS on sustainability disclosure. Nevertheless, existing studies (e.g., van der Laan Smith, Gouldman, & Tondkar, 2014; Negash, 2012) support the positive impact of the IFRS on the reporting of social and, to a certain degree, environmental phenomena.

Hypothesis 7a: Reporting in accordance with International Financial Reporting Standards (IFRS) positively impacts the relative share of environmental disclosure in the total disclosure.

Hypothesis 7b: Reporting in accordance with International Financial Reporting Standards (IFRS) positively impacts the relative share of social disclosure in the total disclosure.

## Data and Methodology

Regarding data, our sample consists of the AFR of the 49 largest for-profit non-financial companies with their seat in the Czech Republic (hereinafter “Czech companies”) and the 40 largest for-profit non-financial companies with their seat in the Slovak Republic (hereinafter “Slovak companies”). The turnover of these companies was considered for this selection. If a company did not make its annual report publicly available, it was omitted and the next-highest ranked company replaced it. For each company we analyzed one AFR for a reporting period ending in year 2014, i.e., 89 AFR are analyzed in total. In the Czech Republic we started with 50 companies, but we excluded one company because of the extremely specific focus of its AFR (environment, protection of forest). In cases where a company published both an individual and a consolidated AFR, the consolidated AFR was analyzed.

Regarding methodology, content analysis (hereinafter abbreviated “CA”), i.e., a technique which makes replicable and valid inferences about texts, (Krippendorff, 2013) was used. The object of the analysis was the AFR of the companies selected for the period ending in the calendar year 2014. Scientific research methods, such as ratio analysis and statistical data analysis, including regression analysis, were also used. Hypotheses were deduced using various theories, especially the shareholder, stakeholder, legitimacy, and institutional theories.

The main method of research in our paper is quantitative CA which deals with manifest content and utilizes statistical methods. Another pivotal feature of quantitative CA is the reduction of data which is realized through the coding of parts of the analyzed documents into several topics (e.g., reporting on environmental issues, social issues etc.) and the subsequent statistical (quantitative) evaluation of the amount of text dedicated to the selected topics. Finally, quantitative CA puts an emphasis on validity, reliability and objectivity (Drasko & Maschi, 2016; Guthrie, Petty, Yongvanich, & Ricceri, 2004; Neuendorf, 2017). To achieve these properties of our research, each report was discussed amongst at least two researchers.

Quantitative CA has a long tradition in the research of corporate sustainability reporting and is considered an established research method (Vourvachis & Woodward, 2015).

The amount of disclosure (text) in reports can be measured by numerous methods and the construction of various indices is especially popular.

Measuring the frequency of disclosure has been in use for many years and represents the first possibility of calculating an index. (Guthrie & Parker, 1989; Bonson & Bednarova, 2015). High validity (it is easy to identify whether a topic is or is not in the report) and simple implementation (without employing any specialized software) are the crucial advantages of this approach. On the other hand, a significant disadvantage of this approach is that it does not indicate the amount of disclosure. This disadvantage is addressed by the second approach which takes into account the amount of disclosure for each monitored topic (item). In the second approach, the amount of information disclosed on a given topic (e.g., social responsibility, environmental responsibility) is measured in chosen units (e.g., the number of words, lines, paragraphs etc.). The total disclosure index (and its potential sub-indices) is calculated by adding the number of units (words, lines, paragraphs). In our paper we use the second approach and we construct several indices.

Our coding scheme includes codes of three types:

1. Location codes, which indicate the location of the text in an AFR and include code “introduction” (e.g., the letters CEO), “basic financial statements” (e.g., balance sheets), “notes” (notes added to financial statements), “non-coded parts” (e.g., the envelope of an AFR), and a “body” (residual code).

2. Content codes indicate the topic of the analyzed text. The structure and definitions of the content codes are based on the structure of reporting suggested by the Global Reporting Initiative (2013). The highest level distinguishes between “General disclosures” and “Specific disclosures” which have several levels of sub-codes (see Table 4). The sum of the amount of disclosure (i.e., the number of words) is labeled “Total disclosure” and is equal to the sum of general disclosures and specific disclosures. It is important to note that the coding scheme is based on the GRI G4 standards but has been simplified to avoid the strict requirements on reporting required by GRI G4. For example, to code a text as “environmental” it is sufficient for a company to disclose information that it reuses/recycles water while GRI G4 requires information on the volume of water recycled/reused etc.

3. Cross-topic codes and non-coded text. Cross-topic codes include “negative information” code for texts revealing negative information about a company, “quantitative” code for quantitative disclosures related to environmental or social topics, and “goal” code for texts declaring goals for the future, e.g., changes planned related to the number of employees. Code named “non-coded text” is used for texts placed in the coded parts of AFR, such as repeated footnotes in the body of an AFR which are deemed to be irrelevant.

Results presented in this paper only relate to “content codes” and “cross-topic codes”. It would be possible to get a more fine-grained structure of the analysis by utilizing

“location codes”, but it is not necessary for the purposes of this article. Nevertheless, it is important to note that “location” codes have an important role in terms of the inclusion of text into an analysis. We decided that text in “basic financial statements” and “non-coded parts” locations would not be counted. We also decided that a text with a description of accounting methods would not be counted. This decision stems from the fact that description of accounting methods is obligatory in AFR, but is irrelevant from the viewpoint of the amount of sustainability reporting.

During the coding, the following rules were applied: (1) every AFR was divided into parts as specified by “location” codes; (2) “content codes” and “cross-topic codes” were not used in parts “Basic financial statements” and “Non-coded parts”; (3) the basic unit for coding was one sentence; (4) every word in coded parts was coded as “general disclosure” or “specific disclosure” or “non-coded

text”; (5) images were not taken into account. Technically, we utilized specialized software (NVivo, version 11 Plus).

## Results and Discussion

The results of our research are presented in several steps. First, we present basic descriptive statistics about our sample (Table 1) and we compare Czech and Slovak companies. In the first part of our analysis companies are classified according to their industry and to their utilization of the IFRS standards. Second, we provide descriptive statistics on the amount of disclosure in AFR and a detailed evaluation of reporting practices, as well as a comparison of results from previous research (Table 2 – Table 5). Third, we apply regression analysis and evaluate our hypotheses (Table 6 and Table 7).

Basic descriptive statistics of our sample can be found in Table 1.

Table 1

Description of Sample

Statistic	Czech (n=49)			Slovak (n=40)		
	Assets	Turnover	Employees	Assets	Turnover	Employees
Mean	42,449,720	41,506,448	5,612	28,553,192	27,666,606	2,882
Median	19,359,495	22,897,832	2,550	12,004,537	13,575,803	1,605
Std. Dev.	92,040,518	51,293,888	7,470	44,670,639	35,208,822	3,060
Skewness	5.658	3.528	2.072	3.559	2.740	1.965
Kurtosis	35.589	14.388	3.725	15.781	7.826	3.793
1st Qu.	8,480,751	15,100,634	890	5,076,426	8,805,902	837
3rd Qu.	37,431,149	46,342,625	6,817	27,676,578	30,357,177	3,941

The variables “Assets” and “Turnover” are measured in thousands of CZK. The respective values of these variables for Slovak companies, disclosed in EUR primarily, were converted using the exchange rate valid at the end of the year 2014. The variable “Employees” represents the annual average number of full-time employees of a company. In total, we analyzed the AFR of 49 Czech companies and 40 Slovak companies.

Table 1 indicates that the mean values of assets, turnover, and employees of the Czech companies are higher than the mean values of the same variables of the Slovak companies. The mean value of assets and turnover of the Czech companies is approximately 50 % higher and the mean value of the number of employees is 95 % higher. Another important finding is that the Czech companies are more heterogenous and it is possible to expect more outliers among them, which was confirmed by further analysis.

As industry is one of the factors presumed to influence the amount of reporting, companies were divided into two groups according to their industry. Specifically, we differentiated “high-profile industries” and “other industries”. By “high-profile” we mean classified industries attracting more attention from the public. In our sample these industries included manufacturing and electricity, gas, steam and air conditioning supplies, in particular. Other (non-high-profile) industries in our sample were represented, e.g., by the wholesale and retail trade industries, as well as the information and communication industries. Approximately 63 % of the Czech companies and 70 % of the Slovak companies were considered to be high-profile industries.

Due to the fact that implementation of IFRS standards may be a factor influencing the quality and amount of disclosure, we distinguished between companies reporting according to IFRS standards and companies reporting according to national accounting standards. In total, 44 companies (49 %) report according to the IFRS. Nevertheless, the share of companies reporting according to the IFRS is significantly higher in the Slovak sample than in the Czech sample. Specifically, 35 of the 40 Slovak companies (87.5 %) report in accordance with the IFRS standards compared to only 9 of the 49 Czech companies (18.4 %). It is possible to advocate that this difference is caused by the fact that accounting legislation in the Slovak Republic insists on more inclusive criteria, in terms of an obligation to adopt IFRS, in comparison with the Czech Republic.

Tables 2 and 3 provide basic descriptive statistics regarding the amount of disclosure. Variables “GenD” (general disclosure), “EconD” (economic disclosure), “EnvD” (environmental disclosure), “SocD” (social disclosure), “TotalD” (total disclosure) report the absolute amount of disclosure on tracked topics. All variables are measured in number of words. Variables “RgenD”, “ReconD”, “RenvD”, and “RsocD” are computed as a ratio of a given absolute variable (general disclosure, economic disclosure etc.) and variable “TotalD”. They express a share of a given topic on the total disclosure.

Table 2

**Description of Disclosure in Annual Financial Reports of Czech Companies (n=49)**

Statistic	Total Amount of Disclosure					Relative Amount of Disclosure			
	GenD	EconD	EnvD	SocD	TotalD	RgenD	ReconD	RenvD	RsocD
Mean	4,640	5,207	663	1,432	11,941	0.3227	0.5279	0.0412	0.1081
Median	1,930	3,505	224	587	6,369	0.3065	0.5350	0.0288	0.1025
Std. Dev.	6,037	4,904	1,405	1,922	13,281	0.1322	0.1644	0.0360	0.0468
Skewness	2.370	2.948	5.049	2.572	2,990	0.420	-0.270	1.485	0.999
Kurtosis	6.822	11.605	29.877	7.203	12.562	-0.097	-0.454	2.161	1.251
Minimum	363	921	0	77	1,577	0.1100	0.1100	0.0000	0.0300
1st Qu.	875	2,441	76	295	3,898	0.2118	0.4070	0.0152	0.0732
3rd Qu.	6,520	6,850	708	1,708	17,845	0.4118	0.6554	0.0580	0.1280
Maximum	30,723	29,201	9,248	9,637	78,809	0.7000	0.8200	0.1700	0.2600

Table 3

**Description of Disclosure in Annual Financial Reports of Slovak Companies (n=40)**

Statistic	Absolute Amount of Disclosure					Relative Amount of Disclosure			
	GenD	EconD	EnvD	SocD	TotalD	RgenD	ReconD	RenvD	RsocD
Mean	4,346	6,569	602	1,670	13,186	0.3042	0.5409	0.0425	0.1124
Median	3,298	5,812	367	1,321	11,212	0.3084	0.5143	0.0326	0.1181
Std. Dev.	3,437	3,004	682	1,426	7,483	0.1122	0.1388	0.0381	0.0552
Skewness	1.402	1.754	1.834	1.212	1.508	0.201	0.575	1.025	0.268
Kurtosis	1.366	3.284	3.319	0.855	2.237	-0.385	-0.130	0.544	-0.165
Minimum	602	3,161	0	86	4,904	0.1000	0.2900	0.0000	0.0100
1st Qu.	1,899	4,579	94	575	8,006	0.2142	0.4337	0.0097	0.0684
3rd Qu.	5,847	8,347	795	2,455	16,164	0.3800	0.6372	0.0660	0.1436
Maximum	13,464	16,121	2,896	5,794	38,275	0.5900	0.8900	0.1500	0.2400

Results depicted in Tables 2 and 3 indicate that there is no unequivocal relationship between the amount of disclosure of Czech and Slovak companies. A simple comparison of means of absolute variables shows that the mean amount of information disclosed by Czech companies for variables GenD and EnvD is higher than the mean amount of information disclosed by Slovak companies and for the rest of the variables the situation is the opposite.

The positive values of skewness of variables representing the absolute amount of disclosure suggest that the frequent amounts of absolute disclosure are clustered at

the lower end, i.e., there are many companies that report little sustainability information.

A comparison of Czech and Slovak companies, based on standard deviation, minimal and maximal amount of reporting, and values of skewness and kurtosis, indicates that the Czech companies are more heterogenous concerning the amount of disclosure.

To gain deeper insight into the reporting contents, we further analyzed the AFR and Table 4 presents more detailed content codes (topics) for each country.

Table 4

**Detailed Description of Disclosure**

Topic	Czech Republic		Slovak Republic	
	Number of words	%	Number of words	%
General disclosures (GenD)	227,341	38.85	173,826	32.96
Ethics	2,309	0.39	1,982	0.38
Participation	3,412	0.58	2,885	0.55
Generally about a company	149,470	25.54	117,010	22.19
Governance	69,642	11.90	50,511	9.58
Recognition	2,508	0.43	1,438	0.27
Specific disclosures	357,785	61.15	353,595	67.04
Economic (EconD)	255,153	43.61	262,757	49.82
Environmental (EnvD)	32,468	5.55	24,060	4.56
Social (SocD)	70,164	11.99	66,778	12.66
Human rights	721	0.12	48	0.01
Labor	50,160	8.57	55,818	10.58
Product responsibility	3,665	0.63	1,326	0.25
Society	15,618	2.67	9,586	1.82
Total disclosure (TotalD)	585,126	100.00	527,421	100.00

Total disclosure is the sum of general disclosures and specific disclosures. General disclosures are the sum of its sub-codes, i.e., ethics, participation in external corporate responsibility initiatives (e.g., information about membership in various associations aimed at corporate responsibility), general information about a company (e.g., information about key products etc.), information on corporate governance and information concerning any

awards received for being socially responsible (e.g., "Top employer"). Specific disclosures are the sum of economic, environmental, and social disclosures. Social information is further divided into disclosures on human rights, labor (e.g., relationships with employees), product responsibility (e.g., information on banned products and services) and society (e.g., impact of a company on local communities, donations to non-profit organizations, volunteerism).

In Czech companies, economic disclosure (43.61 % of the total disclosure) has the largest share of the total disclosure which is not surprising as AFR deal primarily with economic information. The next largest group is general information about a company (25.54 % of the total disclosure). The third-largest group is related to reporting on social issues (11.99 %), a topic comprised mostly of information on labor (accounting for 71.49 % of disclosure on social issues, 8.57 % of the total disclosure, and includes, for example, facts about structure of employees, principles of rewarding etc.) and from information on relationships with society (accounting for 22.26 % of disclosure on social issues and 2.67 % of the total disclosure). The fourth-largest group concerns reporting on environmental issues and accounts for slightly more than 5 per cent of the total disclosure. Other topics are reported only minimally with the least reported being human rights (1.03 % of reporting on social issues and 0.12 % of the total disclosure). It is important to remind that the share of “Product responsibility” on the total disclosure is so low because information about products, per se, is coded under the broad code “Generally about company”.

The importance of individual topics among the Slovak companies is very similar to the Czech companies. Again, the largest share of total disclosure relates to economic disclosure (49.82 % of the total disclosure), which is followed by general information about a company (22.19 % of the total disclosure), reporting on social issues (12.66 % of the total disclosure) and reporting on environmental issues (4.56 % of the total disclosure). Comparatively, the share of economic disclosure from the total disclosure is higher in the Slovak sample and the same is true for reporting on labor. On the contrary, the relative share of other topics (especially general information on company, governance, environmental disclosure and relations to society) is slightly lower among the Slovak companies. Overall, the identified differences allude to the fact that Slovak companies report more on issues that are interesting for shareholders and internal stakeholders (employees) while the share of reporting on relationships with society and environment is lower.

Despite these minor differences between the Czech and Slovak companies, it is possible to summarize that there are no systematic and significant differences between the amount of reporting of Czech companies and Slovak companies.

The “Goal” column shows the amount of absolute disclosure of goals for the future, the “Neg.” column shows the absolute amount of disclosure of negative information and the “Q” column shows the absolute amount of quantitative disclosure regarding environmental and social areas. Table 5 shows that there are significant differences between individual companies in terms of reporting their goals, negative information about their business, and quantitative information on environmental and social areas. First, numerous companies do not report anything while others report at least some information of this type. Second, with the exception of one Czech company, the amount of disclosure is generally low.

Goals are mentioned in the AFR of 34 Czech companies (69.39 % of the Czech sample) and 24 Slovak companies (60.00 % of the Slovak sample). The goals often relate to economic and operational issues, though goals in environmental and social areas in both countries relate mostly to employees (e.g., employment, training and career, remuneration etc.), health and safety (e.g., zero injuries) and the environment (e.g., environmental investments, reduction of emissions and effluents, protection of environment). Goals from other areas (e.g., cooperation with educational institutions) are scarce. The goals are often formulated generally, without specific values nor a time frame.

Negative information usually relates to legal disputes, fines, operational problems, economic problems and is reported by 25 Czech companies (51.02 % of the Czech sample) and by 16 Slovak companies (32.65 % of the Slovak sample). Companies generally tend to hide negative information for reputational purposes. This behavior leads to a low amount of disclosed negative information in both countries. Among the Czech companies, the amount of negative disclosure seems significantly higher than among the Slovak companies, but this is due to one Czech company with multiple legal disputes described in its AFR (the disclosure of this company has 3,888 words, constituting 59.31 % of the negative disclosure reporting in the sample of Czech companies).

The findings on quantitative environmental and social disclosure prove to be interesting. Prior research (e.g., Cho, Roberts & Patten, 2010; Cho, Laine, Roberts, & Rodrigue, 2015) advocates that companies tend to provide information on their environmental and social performance that is too general and provide narrative to manage their public image and increase their legitimacy. Our results, to a large extent, support this claim. All companies report at least some quantitative information on social performance, but it is due to every company reporting at least some quantitative facts on its employees (e.g., structure of employees according to their nationality, fluctuation of employees, number of newly created positions for graduates, remuneration). Quantitative information on other topics is not reported systematically. Moreover, only rudimentary, randomly selected numbers, without longer time series or broader context, are often reported. This result is in accordance with the majority of the available research, e.g., Waniak-Michalak, Sapkauskienė, and Leitoniene (2018) found that companies change certain measures with other ones to increase the level of legitimacy.

Table 5

**Detailed Description of Disclosure**

Statistic	CZ (N=49)			SK (N=40)		
	Goal	Neg.	Q	Goal	Neg.	Q
Mean	85	134	167	62	39	202
Median	33	2	90	22	0	132
Std. Dev.	121	557	232	130	78	189
Skewness	2.13	6.65	4.51	4.20	2.99	2.07
Kurtosis	5.46	45.58	25.17	20.72	10.37	4.99
Minimum	0	0	26	0	0	24
1st Qu.	0	0	62	0	0	72
3rd Qu.	141	51	218	51	44	260
Maximum	588	3,888	1,532	752	387	891
Sum	4,165	6,555	8,205	2,470	1,546	8,085

Table 5 offers another set of detailed information on the amount of disclosure (measured in number of words).

### Regression Analysis

In the regression analysis the reports were analyzed as one group of 89 AFR. Firstly, a background model was estimated and simultaneous outliers were excluded. Then we again estimated the model and tested statistical assumptions of the model (normality of residuals, heteroskedasticity, and multicollinearity). Multicollinearity was not present in any model and, therefore, it was not necessary to deal with. Non-normality of residuals was usually identified only with heteroskedasticity which was dealt with via the utilization of a robust estimate of the covariance matrix.

Following our hypotheses, we analyzed the dependence of the relative dependent variables Recon, Renv, Rsoc and Rquantitative on company size (measured by turnover), profitability (measured by return on equity, ROE), industry, and IFRS adoption. We used the following multiple linear regression model:

$$\text{RelativeD} = \beta_0 + \beta_1 \cdot \text{Turnover}_i + \beta_2 \cdot \text{ROE}_i + \beta_3 \cdot \text{Industry}_i + \beta_4 \cdot \text{IFRS}_i + \varepsilon_i \quad (1)$$

where: “RelativeD” is the value of relative disclosure (e.g., economic disclosure divided by total disclosure). Consequently, equations are estimated for relative economic, relative environmental, relative social, and relative quantitative disclosure, i.e., in total we estimate four equations;  $\beta_0$  is a constant;  $\beta_1 \dots \beta_4$  are regression coefficients;  $\text{Turnover}_i$  is used as a measure of the size of a company;  $\text{ROE}_i$  is return on equity of a company (earnings after tax divided by equity); Industry is a dummy variable, whose value is 1 if the company belongs to a high-profile industry and 0 otherwise; IFRS is a dummy variable, whose value is 1 if the AFR is prepared in accordance with IFRS standards and 0 otherwise.

It is important to mention an issue concerning the measurement of company size. In this regard, various measures were used in prior research (especially assets, turnover, and number of full-time employees). Turnover was considered as a proxy for company size in our research as this measure was used to select companies for our sample. Moreover, we found a strong relationship between all measures of size.

Results of the regression can be found in Table 6. Statistical significance (p-values) is expressed by the number of stars, “\*” means a p-value between 0.01 and 0.05, “\*\*\*” means a p-value between 0.001 and 0.01, “\*\*\*\*” means a p-value between 0 and 0.001.

All models were tested for multicollinearity, heteroskedasticity, and normality of residuals. Also, for each equation, outliers were identified and removed from the analysis (in total we analyzed 89 AFR and the “N” in Table 6 represents the number of reports following the removal of outliers). No multicollinearity was found when considering equations for relative dependent variables. Results of tests for heteroskedasticity and normality of residuals are reported in Table 6. It is possible to summarize that tests for normality of residuals failed only in the model with independent variable Renv. This issue was solved via use of a robust estimate of coefficients.

We found positive and statistically significant dependence of relative environmental disclosure on the variable “Turnover” and a positive and statistically significant dependence of relative social disclosure on “Turnover” meaning that hypotheses 1a and 1b were confirmed.

We did not find a statistically significant dependence of any relative dependent variable on a company’s profitability. Moreover, the value of coefficients is negative. This finding is quite surprising because the majority of studies report a positive relationship between profitability and amount of reporting. For example, Gamerschlag, Moeller, and Verbeeten (2011) found that profitability positively affects environmental disclosure. Nevertheless, some studies present mixed results and other studies indicate a negative relationship between profitability and disclosure (Duran & Rodrigo, 2018). Hypotheses 3a and 3b are rejected.

Regarding the independent variable “Industry” we found positive and statistically significant dependence of relative environmental disclosure on affiliation to a high-profile industry. This result is in accordance with our expectations with similar results being reported, e.g., in Ali, Frynas, and Mahmood (2017). Hypothesis 5a was confirmed, but hypothesis 5b was rejected.

Regarding the independent variable “IFRS” we found a positive and statistically significant dependence of relative social disclosure on reporting in accordance with the IFRS. The dependence of relative environmental disclosure on the IFRS is positive, but not statistically significant. This result is partially in accordance with the literature, which expects positive dependence of environmental and social reporting on the IFRS (van der Laan Smith, Gouldman, & Tondkar, 2014; Negash, 2012). Hypothesis 7b was confirmed, but hypothesis 7a was rejected.

Table 6

Evaluation of Linear Regression for Relative Variables

Variable	Recon	Renv	Rsoc	Rquantitative
	coefficient	coefficient	coefficient	coefficient
Turnover	-6.943e-10	3.1775e-10**	4.762e-10**	5.026e-12
ROE	-2.362e-02	-1.1162e-02	-1.546e-02	-3.892e-03
Industry	3.314e+00	2.6666e-02***	1.197e-02	2.028e-03
IFRS	-4.925e-02	6.6409e-03	2.013e-02*	-1.017e-03
Robust estimate	no	yes	no	no
Heteroskedasticity	ok	ok	ok	ok
Normality of residuals	ok	fail	ok	ok
N	83	83	81	83



Following our results for relative amount of disclosure, we extended our analysis to the absolute amount of disclosure. For the absolute dependent variables Econ, Env, Soc and Quantitative, we analyzed their dependence on total disclosure, profitability (ROE), and industry. We removed the Turnover and IFRS variables because there is a strong relationship between these variables and variable “total disclosure” which is an important control variable in linear regression models including absolute amounts of reporting. The following multiple linear regression model was used:

$$\text{AbsoluteD} = \beta_0 + \beta_1 \cdot \text{TotalD}_i + \beta_2 \cdot \text{ROE}_i + \beta_3 \cdot \text{Industry}_i + \varepsilon_i, \quad (2)$$

where: “AbsoluteD” is the amount of absolute disclosure and equations for economic, environmental, social, and quantitative disclosure are consequently estimated, i.e., in total four equations were estimated;  $\beta_0$  is a constant;  $\beta_1 \dots \beta_4$  are regression coefficients; TotalD is the total amount of disclosure;  $\text{ROE}_i$  is return on equity of a company (earnings after tax divided by equity); Industry is a dummy variable whose value is 1 if the company belongs to a high-profile industry and 0 otherwise.

Results of the regression can be found in Table 7 which shows that there are numerous problems with heteroskedasticity and normality of residuals. Therefore, it is necessary to be cautious with the interpretation of results.

Table 7

**Evaluation of Linear Regression for Absolute Variables**

Variable	Econ.	Env.	Soc.	Quantitative
	coefficient	coefficient	coefficient	coefficient
TotalD	3.42879e-01***	4.2534e-02***	1.40371e-01***	1.41269e-02***
ROE	4.76845021e+02	-2.1570e+02	-1.26993539e+02	-3.13576411e+01
Industry	6.1327e+02*	4.7587e+02***	-3.9689437e+01	2.32145238e+01
Robust estimate	yes	yes	yes	yes
Heteroskedasticity	fail	fail	fail	fail
Normality of residuals	ok	fail	fail	fail
N	84	85	82	83

Regarding the independent variable “TotalD” we found positive and statistically significant dependence of all dependent variables on the total amount of disclosure. This confirms our hypothesis that an increase of total disclosure leads to an increase of economic, environmental and social disclosure. Hypothesis 2a, hypothesis 2b and hypothesis 2c were confirmed.

Regarding the independent variable “ROE”, which is used in our paper as a measure of profitability, no statistically significant relationship with any of the absolute dependent variables was found. Hypotheses 4a, 4b and 4c were rejected.

Regarding the independent variable “Industry” we found positive and statistically significant dependence of absolute environmental disclosure on affiliation to a high-profile industry. Hypothesis 6a was confirmed, but hypothesis 6b was rejected. These results provide support for the legitimacy theory, which advocates that companies in high-profile industries have to report higher quantity of information on the environmental issues than companies in other industries in order to to legitimize their existence.

### Conclusions

This article deals with two key issues. In the first part of the analysis, we provide a description, analysis and comparison of sustainability reporting through the AFR of the largest Czech and Slovak companies. Second, we test hypotheses regarding key contingent variables impacting the relative and absolute amount of disclosure of sustainability information in annual financial reports by means of regression analysis. Results of our original empirical research thus contribute to the understanding of the contents of sustainability reporting and its determinants in the Czech Republic and Slovak Republic. Here we summarize the key findings:

- There is no unequivocal relationship between the amount of disclosure of these Czech and Slovak companies. The amount of reporting on some topics is higher among Czech companies, while other topics are reported more frequently by Slovak companies.

- Positive values of the skewness of variables representing the absolute amount of disclosure were observed among Czech and Slovak companies, indicating that many companies report little sustainability information while several companies report more. It is important to discover which factors influence the amount of disclosure.

- Czech companies are more heterogenous concerning the amount of disclosure.

- The amount of disclosure of individual topics is similar in the countries analyzed. The largest share of total disclosure is from economic disclosure, followed by disclosure on general characteristics of a company, disclosure on social issues and disclosure on environmental issues.

- Goals, negative information and quantitative information are intensively reported by few companies. The majority of disclosure on environmental and social issues is of narrative character.

- Company size statistically, significantly and positively impacts both the relative share of reporting on environmental issues in the total disclosure and the relative share of reporting on social issues in the total disclosure (hypotheses 1a and 1b). We advocate that this supports our assumption that annual reports of financial accounting are notably standardized regarding structure and content of disclosure on economic issues. Company size positively impacts the total amount of sustainability reporting, which positively influences the amount of reporting on economic, environmental and social issues, but reporting on environmental and social issues increases relatively more than reporting on economic issues.

– Company affiliation to a high-profile industry positively impacts the relative share of reporting on environmental issues in the total disclosure (hypothesis 5a). This finding supports the legitimacy theory because companies belonging to industries under strong public scrutiny must justify their behavior.

– Total amount of disclosure positively impacts the absolute amount of economic, environmental and social disclosure (hypotheses 2a, 2b and 2c). The result confirms our assumption that an increase in the total amount of sustainability reporting positively influences the amount of reporting on all three aspects of a triple bottom line.

– Reporting, in accordance with the International Financial Reporting Standards (IFRS), positively impacts the relative share of social disclosure in the total disclosure (hypothesis 7b). Considering that the quantity of disclosure is a good proxy for the quality of disclosure, this finding confirms the opinion that implementation of the IFRS increases the quality of not only economic disclosure, but also of social disclosure.

– Company affiliation to a high-profile industry positively impacts the absolute amount of environmental disclosure (hypothesis 6a). Similarly, as in the case of hypothesis 5a, this result provides support for the legitimacy theory.

– All other hypotheses were rejected by the regression analysis.

– It is possible to conclude that our study contributed to the literature concerning the contents of sustainability reporting in the Czech Republic and Slovak Republic, as well as to the literature regarding the determinants of sustainability reporting. The results show that the amount of sustainability reporting grows with the size of a company but is relatively low even between the largest companies. As with Habek and Wolniak (2015), we suggest that the significant increase of reporting may stem from legislative regulations regarding reporting of large companies. Increased sustainability reporting could, subsequently, diffuse to smaller companies creating a snowball effect.

The results are significant for both academia and practice. From an academic viewpoint, our paper fills the existing research gap emanating from insufficient academic

investigation into the disclosure of sustainability information in annual reports, i.e., the most credible type of external communication. From the viewpoint of practice, our research may inspire companies to report more comprehensively and consistently for companies may, by improving their reporting, also improve their management of sustainability issues and, thus, their relationships with stakeholders.

This study has several limitations. Foremost, we have only analyzed annual reports for one accounting period ending in the calendar year 2014. On one hand, this is defensible because companies in the Czech Republic and Slovak Republic usually do not change their patterns of reporting over time. On the other hand, a new regulation on non-financial reporting recently came into force. The directive on the disclosure of non-financial and diverse information by large companies was announced by the European Commission (2014). According to this regulation, selected companies are obliged to include non-financial information in their annual reports starting from the year 2017. Second, our analysis is aimed only at annual reports, and not to other media, used for sustainability reporting. Furthermore, the analysis is mostly quantitative, and quality of the disclosed information is not extensively discussed.

Finally, we would like to propose several ideas for further research. First, we advocate that the new legislation regarding non-financial reporting provide the opportunity to investigate the impact of the regulation on the quantity and quality of sustainability reporting. It would be interesting to conduct a longitudinal comparative study to analyze whether and how the new regulation influences reporting practices in the Czech Republic and Slovak Republic. Second, the research should use not only quantitative, but also qualitative methods. For example, conduct interviews with companies on the impacts of new regulations both on their reporting practices and on the management of sustainability issues. It is reasonable to suggest that further research into sustainability reporting is needed, especially in relation to changes in the European regulations of non-financial reporting.

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