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DETERMINANT FACTORS OF SUSTAINABLE REPORTING IN THE UK – AN ANALYSIS BASED ON THE REPORTS FROM GRI'S SUSTAINABILITY DISCLOSURE DATABASE

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ABSTRACT. *Regardless of the area where they perform their activity, entities influence the environment, the economy and the society. The present paper presents the results obtained following the analysis of the sustainability reports of the publicly traded companies in the UK and published in GRI's Sustainability Disclosure Database. The estimation of the three models for which 7 variables were used as well as the analysis of the results enabled the formulation of certain useful conclusions on the relationship between the conformity degree with the GRI benchmark of the reports studied and some characteristics of the companies which published the reports. The results obtained show that the manufacturing companies are more inclined to publish sustainability reports using GRI standards or at least citing them (Citing-GRI), in comparison with the service sector companies. The results also indicate a direct and strong correlation between the size of the company and the free cash flow per share, on one hand and the publication of GRI sustainability reports, on the other hand. Both results confirm the legitimacy theory. At the same time, financial factors such as firm profitability, firm growth opportunity, the leverage, the liquidity and the free cash flow do not significantly influence the publication of sustainability reports of the UK firms, no matter what the level of their GRI adherence.*

KEYWORDS: sustainability reports, GRI, legitimacy theory, CSR.

JEL classification: M14, M40, M48.

Introduction

Nowadays, more and more aspects of corporate reporting are the focus of discussion and even academic disagreements. Thus, the main debates are centred on: the information

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categories that the firms are obliged or wish to publish; the acceptable corporate reporting framework; which the parties interested in corporate reporting and the information categories relevant for each of them are; how trustworthy the companies' reports are without a unitary auditing system of reports which contain other information than the financial one.

The debates are more vivid by the day also due to the fact that, on a global scale, there are more and more organisations tackling both the contents of the reports published by companies and the impact of the information published in these reports about the economic and social environment. On one hand, there are significant efforts coming from different directions regarding the contents and form of reports and on the other hand, the entities which should apply these rules (in the case of the legal obligation to abide by them) or those which wish to meet them (as a voluntary decision) do not always have a direct and immediate interest in publishing all the information required by the norms.

Over time, the traditional business model focused on the financial result of the firm and on investors as main interested parties (Avram *et al.*, 2018). Still, in the last 20 years, different organisations focused on finding a corporate reporting model which could comprise financial and non-financial information requested by a greater number of interested parties and which should provide the closest to reality image of the economic, social and environmental effects of the firm's activities.

The concept of Corporate Social Responsibility (CSR) refers nowadays in general to the voluntary assumption of social, economic and environmental responsibilities by the firms which exceed the law conformity but which bring benefits for the society (European Commission, 2001; Diehl *et al.*, 2017).

One of the international organisations that has been constantly promoting for over 20 years a responsible behaviour of firms, in accordance to the general sustainable development goal is Global Reporting Initiative (GRI). It can be said that the standards issued by GRI represent the reporting benchmark of economic, environmental and social aspects, which is the most largely accepted globally – it is currently used by 63% of the firms included in N100 and by 75% of the firms included in G250 (KPMG, 2017).

Created in 1997 in Boston as a small independent organisation, GRI has had a significant impact, hard to anticipate at its time, on the global economy, on the environment and the society as a whole. This influence was the result of a complex and constant process of elaboration and promotion of certain preparation guides and presentation of reports on sustainability that could allow the internal and external interested parties to make accurate opinions and take informed decisions regarding the contribution of the organisation to sustainable development (GRI, 2018).

The process of preparation of GRI guides started in 2000 with the first version of the guide (G1), then it continued in 2002 with G2, in 2006 with G3, in 2011 with G3.1 and in 2013 with G4, each new generation of guides being the outcome of an extended and structured process of public consultation.

Similar efforts have been made by other organisations such as International Integrated Reporting Council – IIRC, which elaborated and promoted <IR> Framework convincingly. The IIRC approach led to the signature of agreements with international regulatory bodies (for example, Memoranda of Understanding with the International Accounting Standard Board and Global Reporting Initiative, both in 2013). In spite of this, GRI continued its effort to improve and promote its own standards, with the year 2016 being considered one of paradigm change in terms of form and contents of sustainability reports elaborated in compliance with

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the new Reporting Standards concerning GRI Sustainability, which replace the traditional G, in fact G4 guides.

Against this backdrop, our study focuses on the identification of factors that influence the sustainable reporting process in the case of UK firms which draw up yearly reports in conformity with GRI standards and on the highlight of elements that distinguish them in relation to the benchmark used.

1. Literature Review

In the last couple of years, the interest in the research of non-financial or sustainable information presented by the companies has increased. In most cases, the starting point in the research was the theories that explain the need to publish information. Among these theories, one should mention the *agency theory* (Ness, Mirza, 1991), according to which companies publish information to the extent to which benefits outrun associated costs. Other studies, such as the one published by Hasseldine *et al.* (2005), proves the utility of these reports for the improvement of competitive advantage and for the increase in the firm's reputation. *Political theory* (Gray *et al.*, 1995) starts from the premise that companies' performances depend on the economic, political and social environment where they operate, which influences the way they decide to respond to the demands of interested parties. *The theory of interested parties*, which starts from Roberts' approach (1992), implies that the information presentation concerning the firm's commitment to sustainability is strategically used in order to manage the relationships with the interested parties and as a consequence, the presentation level will rely on the power and influence of interested parties. Finally, the growth of sustainability reports can be analysed using the legitimacy theory, in case of which some authors state that the reports are used to improve the business reputation and therefore, to get the support of the main interested parties in their operations (Suchman, 1995; Deegan, 2002; O'Donovan, 2002).

The economic crises and financial scandals have created an uncertain climate on the market so that investors, other interested parties and society as a whole have started to demand greater transparency regarding the firms' operations and a higher amount of information, which can be achieved through the publication of much more non-financial information, including sustainability reports. At the same time, interested parties have become more aware that social and environmental performance is difficult to attain without financial performance. The firms have become more aware that sustainability reporting has become an important tool in maintaining the firm's reputation.

In the last years, not only different studies of international organisations (KPMG, 2017), but also more and more researchers consider that the GRI guides/standards represent the most used benchmark at global level in the non-financial corporate reporting, especially in the corporate social responsibility (CSR) (Skouloudis *et al.*, 2009; Prado-Lorenzo *et al.*, 2009; Aktas *et al.*, 2013; Hategan *et al.*, 2015). This fact is also the result of some agreements that GRI concluded with other important organisations such as: the United Nations Global Compact, the Organization for Economic Cooperation and Development (OECD) and the UN Environmental Program.

As for the practice of corporate reporting, some authors (Karmasin, Apfelthaler, 2017) notice that, aside from GRI, there are also other global initiatives such as: the Fortune 100 Global Accountability List, Accountability's AA 1000 Responsibility Assurance Standard, the FTSE4GOOD, the Dow Jones Sustainability Index, the UN Global Compact's COP, Social

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Accountability International's SA8000 standards, CSR Hub's performance ratings, or even the ISO 26000, which not only increased global level awareness regarding CSR but also attempted to make the firms' efforts more comparable by introducing global standards in fields such as: finance, environment, labour practices, human rights, production responsibility and society (Global Reporting Initiative) or in terms of environmental sustainability, the development of positive relationships with interested parties, the support of universal human rights and the fight against corruption (FTSE4GOOD).

The European Union (EU, 2011) declared that the socially responsible companies could contribute to attain the goals of a sustainable, smart and inclusive development and that such an information overview is essential for the identification of material risks and the improvement of public trust in these companies. These arguments are in conformity with the declarations of other agencies such as: the United States Agency for International Development (USAID, 2011), the Center for Strategic and International Studies (CSIS, 2010) or the Organisation for Economic Co-operation and Development (OECD, 2007).

In this context, some authors appreciate that GRI has shaped a general reporting framework which helps firms in their attempt to obtain a sustainable competitive advantage on the global market (Vukić, 2015). Moreover, Levy *et al.* (2010) believe that the GRI standards represent the most powerful instrument to manage the firm's efforts for sustainability. At the same time, Parsa *et al.* (2018) consider that, even if GRI has achieved a lot in order to introduce a standardization form to increase the information quality by focusing on features including transparency, significance and comparability of information, there is still much to do.

Menichini, Rosati (2014) ascertain that not all the aspects regarding sustainability have the same relevance for an organisation and that the CSR performance assessment depends on its size and on the interested parties affected by the company's activities. In other words, the extent to which a company's activities affect the environment, the economy and the society represents the basic element in CSR assessment. In this respect, the new GRI Sustainability Reporting Standards have been conceived, which specify that sustainability reporting "should provide a balanced and reasonable representation of an organization's positive and negative contributions towards the goal of sustainable development." (GRI, 2018, p.3).

Despite the greater interest in sustainable reporting (Jensen, Berg, 2012), its implementation does not run smoothly (Stubbs *et al.*, 2013) and there are significant barriers in integrating non-financial information in corporate reports, alongside financial information, taking into account the lack of normalization standards of non-financial information (Eccles *et al.*, 2012; Sierra-García *et al.*, 2013).

On the other hand, some authors note that the weak performance regarding sustainability (weak economic and social performance, important impact on the environment) determines managers to try to balance the negative perceptions on the firm by increasing the amount of information about sustainability actions but by avoiding to present information about sustainable performance (Stacchezzini *et al.*, 2016).

It is worth noting that GRI does not monitor the norm conformity and does not sanction non-conformity, it simply requires firms to declare the level of application of the GRI standards, making a clear difference among the firms which report according to these standards (Chersan, 2016). Still, Tschopp (2005) considers that, without the possibility to compare and to be constant in the application of standards, corporate reports will only be biased marketing campaigns.

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As regards the researchers' interest in CSR, there are different approaches in the literature on the evaluation of economic, social and environmental behaviour of the firms based on: economic indices (Capece *et al.*, 2013), efficiency and productivity (Hwang *et al.*, 2013), innovation and technology (Grimaldi, Hanandi, 2013), communication efficiency (Diehl *et al.*, 2017), etc. Burnett *et al.* (2011) demonstrate that on the long run, the non-financial reporting has a positive effect on the market value of the firm.

The obligation to publish CSR reports has been set up for the first time in France, where all the publicly traded companies were forced, starting with 2001, to provide information regarding the social and human resource activity in their yearly financial statements (Tschopp, 2005). In Great Britain, such a requirement was enacted in 2007. Sweden was the first country in the world to ask for CSR reports from all state companies, while in 2009 this country obliged all public entities to publish sustainability reports drawn up according to GRI guides (Vazakidis *et al.*, 2013).

Belkaoui, Karpik (1989) suggested a positive relationship between profitability and the policy to present social information, this association being supported by the fact that a manager who has the necessary knowledge to manage his firm to a high degree of profitability, also has the capacity to understand its social responsibility, which should lead to the publication of more information on its social and human resource activity.

Giner (1997) underlines that the managers of very profitable companies provide more detailed information, on one hand, with the purpose to maintain the position and level of the remuneration and on the other hand, to reduce the agency costs in order to avoid the transmission of bad signals on the market and to justify the profits in order to avoid political costs. In 1971, Singhvi and Desai reasonably made out a case for the publication of information by firms, showing that when a firm's profitability is high, managers are motivated to publish as much information as possible in order to indicate a good reputation to its clients, stakeholders, investors and other interested parties. It is obvious that, according to the same logic, if the return is low or the company registers losses, the managers do not have any interest in publishing minute information which might explain the reasons of losses or return downsize. A frequently encountered argument in the literature concerning the motivation to publish information on CSR is the wish of companies to avoid/delay the regulation of the obligation to publish these pieces of information by means of their voluntary publication. Thus, profitable firms, which are more exposed to political pressure and public attention, prefer to voluntarily publish some categories of information in order to avoid for as long as possible the introduction by the authorities of the obligation to publish certain information (Ng, Koh, 1994).

2. Influence Factors of Sustainable Reporting

The firm size is very often taken into account for the identification of influence factors of sustainable reporting. According to the legitimacy theory (Suchman, 1995), due to the geographical diversity and product extent, big firms have a more significant impact on several categories of interested parties - stakeholders (Brammer, Pavelin, 2006) and are more likely to be exposed to negative events (Artiach *et al.*, 2010; Godfrey *et al.*, 2009).

The already conducted analyses show that there is a significant correlation between big companies and sustainable reporting (Ali *et al.*, 2017). This situation comes from the fact that big companies have greater financial resources which determines the allocation of a smaller percentage of available funds for sustainable reporting (Kuzey, Uyar, 2017), therefore the

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costs required for sustainable reporting are insignificant for them. Since big companies can have a higher influence on the society, they are carefully watched by a greater public and potentially, by more stakeholders who wait to see their sustainable reports (Buitendag *et al.*, 2017). By publishing reports, firms can support the legitimacy of the activities performed, which are conducted by taking into consideration sustainable criteria. Moreover, in order to benefit from legitimacy, firms have become more interested in the external assurance or certification of their sustainability reports.

As indicators of firm size, the studies usually use total assets (Saliha, Abdessatar, 2011; Kuzey, Uyar, 2017), total sales (Buitendag *et al.*, 2017) and the number of employees (Skouloudis *et al.*, 2014) as internally determined measures and market capitalization (Buitendag *et al.*, 2017) as an externally determined measure. In the econometric analyses for the firm size, the variable natural logarithm of the total active is used (Fuente *et al.*, 2017; Lourenço, Branco, 2013). The same quantification of the firm size will be used in the current research.

By taking into account the theoretical arguments and the results of previous research, we aim to answer the following research questions: I.1.a. *Is there any direct correlation between the size of firms and the publication of GRI and Citing-GRI sustainability reports?* I.1.b. *Is there any direct correlation between the size of firms and the publication of GRI sustainability reports?* And I.1.c. *Is there any direct correlation between the size of firms and the assurance of GRI reports by an external firm?*

The relationship between the sector in which firms operate (the type of industry) and the sustainability reports has been the focal point of numerous studies. The legitimacy theory considers that the firm size alongside the industry type and the firm's opportunity growth influence the sustainable reports (Kuzey, Uyar, 2017). The industry type of the firm is introduced in econometric analyses both by using a dummy variable which takes into consideration the firm's affiliation to the industrial/manufacturing sector (which means the higher risk sector) or to the service sector, and by using multiple dummy variables which may take into consideration the exact sector in which firms operate.

Skouloudis *et al.* (2014) analysed a sample of 100 firms from Greece taking into account both circumstances previously presented in order to identify the determinants of non-financial corporate disclosure. They reach the conclusion that the industry to which the firm belongs influences the non-financial sustainable reporting. They also show that industrial firms are inclined to provide more information on their sustainable activities regarding the environment, while firms in the service sector provide more information about the growth of their employees' competences.

In our study, we will take into consideration the first possible situation, namely we will consider a single dummy variable for the ensemble of firms in the manufacturing and service sectors. We will be able to answer the following research questions: I.2.a *Is there any correlation between the sector in which the firms operate and the publication of GRI and Citing-GRI sustainability reports?* I.2.b. *Is there any correlation between the sector in which the firms operate and the publication of GRI reports?* I.2.c. *Is there any correlation between the sector in which the firms that publish GRI sustainability reports operate and the external assurance of reports?*

The firms' profitability is another variable taken into account in the analysis of firms' sustainable reports. Profitable firms are interested in the publication of as much financial and non-financial information as possible, which can certify the legitimacy of performing certain activities and also maintain or even increase the firm's profit.

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For the quantification of a firm's profitability, many studies take into account the variables: return on equity (ROE – return on equity determined as income available to common equity excluding extraordinary items divided by the average common equity for the fiscal year) and return on assets (ROA - return on assets determined as income after taxes divided by the average total assets for the fiscal year).

We will find answers to the following research questions: I.3.a *Is there any correlation between the firms' profit and the performance of GRI and Citing-GRI sustainability reports?* I.3.b. *Is there any correlation between the firm's profit and the GRI sustainability reports?* I.3.c *Is there any correlation between the firms' profit and the certification of GRI sustainability reports by an external firm?*

The agency theory supports, according to Jensen, Meckling (1976), that the more indebted the companies are, the more interested in publishing voluntarily more information they become. In this way, the asymmetry of information, the agency costs and implicitly the capital cost are reduced. The leverage represents a risk for the firm and the relationship between risk and sustainable reporting is scarcely discussed in the literature (Kansal *et al.*, 2014). Since the firm's creditors are careful about the loan payments made by the firm and about the firm's activity, it is interested in revealing as much information related to sustainability in order to minimize creditors' concerns and implicitly, to reduce the firm's risk.

The results obtained when testing the correlation between leverage and sustainable development are contradictory. De Beelde, Tuybens (2015) and Barako *et al.* (2006) prove the existence of a positive correlation between leverage and voluntary disclosure while this is invalidated by the research conducted by Lourenço, Branco (2013), Liu, Anbumozhi (2009) and Kansal *et al.* (2014).

In order to quantify a firm's leverage, the econometric analyses use the ratio of total debt to total equity.

Resting on the agency theory, we aim to answer the following questions: I.4.a *Is there any correlation between leverage and the performance of GRI and Citing-GRI sustainability reports?* I.4.b. *Is there any correlation between leverage and the performance of GRI sustainability reports?* I.4.c. *Is there any correlation between leverage and the certification of GRI sustainability reports by an external firm?*

Also supported by the Legitimacy Theory as a factor of the publication of sustainability reports, *the growth opportunity* of a firm is encountered in the specialty studies on this topic. Positive results are obtained by Ameer, Othman (2012) and Artiach *et al.* (2010). The greater the growth opportunity of a firm, the more interested it is to publish sustainability reports which can justify its development strategies.

In order to quantify the growth opportunity of a firm, we will take into consideration the index price to book which represents the price to book value of equity per share at the end of fiscal year. We will test the following hypotheses: I.5.a. *Is there any direct significant correlation between the firms' growth opportunity and the GRI and Citing-GRI sustainable reporting?* I.5.b. *Is there any direct significant correlation between the firms' growth opportunity and GRI sustainable reporting?* I.5.c. *Is there any direct significant correlation between the firms' growth opportunity and the external assurance of GRI sustainability reports?*

According to the signalling theory, investors make decisions on the capital market in relation to the financial and non-financial information which is disclosed by the firms issuing financial assets that influence the *firm's liquidity*. The publication of detailed sustainability

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reports and in conformity with certain criteria (such as the GRI sustainability reports) can be a signal from the company's management for its solvency and its good development perspectives. The results obtained so far when testing the influence of the firm's liquidity on the sustainable reports are contradictory: Bakar *et al.* (2011) confirm this hypothesis while Kuzey, Uyar (2017) do not confirm it.

When testing the influence of a company's liquidity on the performance of sustainable reports we used as a variable free-float which represents the share of publicly traded shares on total outstanding shares of the company. The research questions for this potential influence factor are the following: I.6.a. *Is there any direct significant correlation between the firms' liquidity and the GRI and Citing-GRI sustainable reporting?* I.6.b. *Is there any direct significant correlation between the firms' liquidity and the GRI sustainable reporting?* I.6.c. *Is there any direct significant correlation between the firms' liquidity and the external assurance of GRI sustainable reports?*

The free cash flow of the company as well as its profitability could influence the publication of sustainable reports from the perspective of resource availability (according to resource availability view). A company which has free cash flow could direct it to the preparation and performance of sustainability reports but also to the assurance of reports by an external company. A study which confirms the influence of free cash flow was conducted by Ledoux *et al.* (2014). The variable that we will use in the econometric analysis is the free cash flow per share and it represents the ratio of cash-flow from operating activities to total number of shares. The index represents the firm's capacity to obtain cash flow from operating activities after the capital expenses and dividend payments have been made. We will answer the following questions: I.7.a. *Is there any direct significant correlation between free cash flow and the GRI and Citing-GRI sustainable reporting?* I.7.b. *Is there any direct significant correlation between free cash flow and the GRI sustainable reporting?* I.7.c. *Is there any direct significant correlation between free cash flow and the external assurance of GRI sustainable reports?*

3. Data Overview and their Descriptive Analysis

Our research was performed on a sample of 196 publicly traded companies from the United Kingdom, which are in the GRI Sustainability Disclosure Database – GRI Reports Complete List, in the year 2016. The variables total assets, return on assets, ratio of total debt to total equity, free-float, and price to book for the firms which are part of the sample were taken from the Thomson Reuters Eikon database. Each sample in the UK from the GRI Reports Complete List was manually searched for in the Thomson Reuters Eikon database in order to identify its listing code and to extract the financial data. The variables concerning the sustainable reporting (the industry where the firm operates, the type of GRI, Non-GRI, Citing -GRI sustainable reports published by the firm) were taken from the GRI Sustainability Disclosure Database. The results of the statistical and econometric analyses were obtained by means of the Eviews software programme. The description of all the variables under study is presented in the *Table 1*:

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Table 1. The variables used in the analysis

Variable	Description
DEBTR	Represents the leverage of firm and it is quantified as the ratio of total debt to total equity.
FCASH	Free cash flow per share - the ratio of cash-flow from operating activities to total number of shares.
FF	Free-float (share of publicly traded shares on total outstanding shares of the company).
IND	Represents the industry where the firm operates; it is a dummy variable. Takes the value 1 for the manufacturing firms and 0 for the service sector firms.
LTA	Represents the firm size and it is quantified by the natural logarithm of total assets.
PTOBOOK	It is a variable which represents the firms' opportunity growth. It is quantified by means of the index price to book which represents the market price to book value of equity per share at the end of fiscal year
ROA	Represents the firm's profitability and it is quantified by means of the return on assets.
SUSTGRI	It is a dummy variable which shows whether the firm publishes a GRI sustainability report. Takes the values 1 if the firm performs a GRI sustainability report and 0 in the rest of the cases.
SUSTR	It is a dummy variable which shows whether the firm publishes a sustainability report. Takes the values 1 if the firm performs a sustainability report and 0 in the rest of the cases.
ASS	It is a dummy variable which shows whether the firm has its sustainability report performed by an external firm. Takes the value 1 if the firm has an external sustainable report and 0 in the rest of the cases.

Source: defined by the authors.

According to the sample structure presented in *Table 2*, 120 firms in the UK representing a percentage of 61.22%, perform their activities in the manufacturing sector while only 76 of the firms (38.78%) operate in the service sector. Of the 196 firms comprised in the sample, only 49 perform GRI or Citing-GRI sustainability reports, representing only 25% of the total. 33 firms perform and publish GRI sustainability reports. Of these, a percentage of 81.82% also have an external assurance of their sustainability reports. As a consequence, we can ascertain that most of the firms which publish GRI sustainability reports are also interested in assuring their external evaluation.

Table 2. The structure of the sample of publicly traded firms in the United Kingdom

Variable	Absolute frequency	Relative frequency (%)
INDUSTRY	Manufacturing	120
	Services	76
	Total	196
SUSTGRI	Non- GRI and Citing – GRI report	163
	GRI report	33
	Total	196
SUSTR	Non- GRI report	147
	GRI and Citing –GRI report	49
	Total	196
ASSURANCE (out of 33 GRI sustainability reports)	External assurance	27
	No external assurance	6
	Total	33

Source: authors' computations using Eviews.

Table 3 presents descriptive statistical indices for the variables considered in the analysis. The average level of the FF variable (free-float) of 0.855 shows that 85.5% of the firm's shares are listed on the stock market. The mean of the variable SUSTRGRI shows that 16.84% of the firms publish GRI sustainability reports while the mean of the variable SUSTR discloses that in 2016 only 25% of the firms publish GRI and Citing-GRI sustainability reports (49 firms out of the 196 that make up the sample).

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Table 3. Indices of the descriptive statistics for the variables under analysis

Variables	Mean	Maximum	Minimum	Std. deviation
DEBTR	1.070027	16.71708	0.000000	1.926946
FCASH	0.837209	11.26879	-0.308720	1.279482
FF	0.855455	0.999730	0.136950	0.207566
IND	0.387755	1.000000	0.000000	0.488486
LTA	21.90892	28.28854	15.30220	2.008149
PTOBOOK	9.017795	551.8790	-11.97010	55.20779
ROA	0.065601	2.338134	-0.350300	0.182226
SUSTGRI	0.168367	1.000000	0.000000	0.375150
SUSTR	0.250000	1.000000	0.000000	0.434122

Notes: DEBTR - the leverage of firm, FCASH - free cash flow per share, FF- free-float, IND – the type of industry where the firm performs its activity: manufacturing or service, LTA - natural logarithm of total assets, PTOBOOK - price to book, ROA- return on assets, SUSTRGRI - dummy variable that quantifies whether the firm publishes GRI sustainability reports, SUSTR - dummy variable that quantifies whether the firm publishes GRI and Citing-GRI sustainability reports.

Source: authors’ computations using Eviews.

To estimate the intensity of the correlation between all the variables considered in the analysis, we used the Pearson bivariate correlation coefficient. The results are presented in Table 4. The estimation of this index also provides information for testing the multicollinearity hypothesis in the estimation of regression models.

Almost all the statistically significant Pearson correlation coefficients are mean which shows that the hypothesis regarding the lack of multicollinearity of independent variables is achieved.

Table 4. Pearson correlation coefficients

	DEBTR	FCASH	FF	IND	LTA	PTOBOK	ROA	SUSTGRI	SUSTR	ASS
DEBTR	1.00									
FCASH	0.24*** (3.49)	1.00								
FF	0.04 (0.68)	0.14** (1.97)	1.00							
IND	0.03 (0.55)	0.10 (1.44)	-0.11 (-1.59)	1.00						
LTA	0.24*** (3.54)	0.22*** (3.17)	0.28*** (4.21)	-0.03 (-0.49)	1.00					
PTOBOOK	0.399** (6.07)	0.01 (0.10)	0.06 (0.96)	0.02 (0.30)	-0.03 (-0.48)	1.00				
ROA	-0.10 (-1.42)	-0.003 (-0.05)	0.06 (0.96)	-0.07 (-1.05)	-0.20 (-2.94)	0.62*** (11.27)	1.00			
SUSTGRI	-0.03 (-0.44)	0.15** (2.19)	0.04 (0.64)	0.14** (2.05)	0.32*** (4.75)	-0.04 (-0.63)	-0.08 (-1.2)	1.00		
SUSTR	0.01 (0.22)	0.10 (1.47)	0.10 (1.42)	0.09 (1.35)	0.32*** (4.75)	-0.05 (-0.81)	-0.08 (-1.2)	0.77*** (17.32)	1.00	
ASS	-0.03 (-0.39)	0.12* (1.73)	0.01 (0.13)	0.10 (1.50)	0.32* (4.83)	-0.04 (-0.60)	0.06 (0.78)	0.88*** (26.94)	0.69*** (13.36)	1

Notes: ***, **, *- denote significance level of 1%, 5% and 10%; - DEBTR - the leverage of firm, FCASH - free cash flow per share, FF- free-float, IND – the type of industry where the firm performs its activity: manufacturing or service, LTA - natural logarithm of total assets, PTOBOOK - price to book, ROA- return on assets, SUSTRGRI - dummy variable that quantifies whether the firm publishes GRI sustainability reports, SUSTR - dummy variable that quantifies whether the firm publishes GRI and Citing-GRI sustainability reports; - between brackets there is the value of the Student test.

Source: authors’ computations using Eviews.

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The results show that there is a significant correlation between the leverage of firms (DEBTR) and price to book (PTOBOOK) the bivariate correlation coefficient being 0.399 ($p < 0.05$), between leverage of firms (DEBTR) and firm size (LTA) $r = 0.24$ ($p < 0.01$) and, also, between leverage of firms (DEBTR) and cash flow per share (FCASH), $r = 0.24$ ($p < 0.01$). The firms studied also present a significant correlation between free-float (FF) and firm size (LTA). There is a significant correlation between the firms that publish GRI sustainability reports and free cash flow per share (FCAS), the industry where they perform (IND) and firm size (LTA) while the firms that publish GRI and Citing-GRI sustainability reports are only correlated with the firm size.

The Pearson correlation coefficient between the variable which expresses the external assurance of the GRI sustainability report and the variable that expresses the firms that publish GRI sustainability reports ($r = 0.88$) is very high which shows that most of the companies that issue sustainability reports also appealed to an external assurance for these reports. Even if this correlation coefficient is very high, it will not rise the problem of multicollinearity because the two variables will not be part of the same subsequently estimated model.

4. Estimation of Models and Interpretation of the Results Obtained

In order to answer the research questions previously shown, we estimated three models. In the first model, the dependent variable is *SUSTR* which takes the value 1 if the firm draws up a GRI and Citing-GRI sustainability report and 0 in the rest of the cases (firms whose sustainability reports do not refer in any way to GRI, which means sustainability reports considered Non-GRI). The independent variables in the first regression model are the influence factors of sustainable development that we identified in the previous papers and in the economic theories: the industry type (IND), firm size, firm's profitability, firm's growth opportunity, leverage, liquidity and free cash flow. The model is under the form:

$$SUSTR = \beta_0 + \beta_1 IND + \beta_2 DEBTR + \beta_3 LTA + \beta_4 ROA + \beta_5 FF + \beta_6 PTOBOOK + \beta_7 FCASH + \varepsilon \quad (1)$$

This model will answer the research questions from I.1.a. to I.7.a.

In the second model, the dependent variable is *SUSGRI* and it takes the value 1 if the firm publishes GRI sustainability report and 0 if the firm publishes a Non-GRI sustainability report. The independent variables are also the influence factors previously identified which are present as well in the first model: the industry type (IND), firm size, firm's profitability, firm's growth opportunity, leverage, liquidity and free cash flow. This second model, presented below, will answer the research questions from I.1.b. to I.7.b.

$$SUSGRI = \beta_0 + \beta_1 IND + \beta_2 DEBTR + \beta_3 LTA + \beta_4 ROA + \beta_5 FF + \beta_6 PTOBOOK + \beta_7 FCASH + \varepsilon \quad (2)$$

Both the first and the second model will consider in the analysis all 196 firms which make up the sample.

In order to answer the research questions from I.1.c. to I.7.c, we will limit the sample and we will take into account only the firms that perform GRI sustainability reports so that we can estimate the third model. This one has the dependent variable *ASS* which takes the value 1 if the firm publishes a GRI sustainability report which is assured by an external firm and 0 if the GRI sustainable report is not externally assured. The dependent variables, as for the other two models, are the influence factors identified in the literature.

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$$ASS = \beta_0 + \beta_1 IND + \beta_2 DEBTR + \beta_3 LTA + \beta_4 ROA + \beta_5 FF + \beta_6 PTBOOK + \beta_7 FCASH + \varepsilon \quad (3)$$

Since the dependent variables of the three regression models are represented by dummy variables, we estimated Probit regression models (Asandului, 2010). The results of the estimation of parameters for the three models are presented in what follows *Table 5*.

Table 5. Estimation of regression models

Model/Dependent var.	Model 1	Model 2	Model 3
Independent Variables	SUSTR	SUSTGRI	ASS
<i>Intercept</i>	-6.287752*** (-4.683095)	-7.062691*** (-4.739865)	-5.133859 (-1.588672)
<i>IND</i>	0.362486* (1.663339)	0.513856** (2.078507)	0.401943 (0.877246)
<i>DEBTR</i>	-0.027643 (-0.384222)	-0.173862 (-1.385405)	-0.206027 (-1.019078)
<i>LTA</i>	0.233484*** (4.016321)	0.271312*** (4.243588)	0.298694** (2.252062)
<i>ROA</i>	-1.083164 (-0.770362)	-2.038581 (-1.301425)	1.135343 (0.397680)
<i>FF</i>	0.391943 (0.692960)	-0.082272 (-0.132588)	-1.797303 (-1.244906)
<i>PTOBOOK</i>	-0.003139 (-0.574283)	0.001653 (0.285226)	-0.013450 (-0.198468)
<i>FCASH</i>	0.036088 (0.433408)	0.136525 (1.530430)	0.078613 (0.380430)
<i>N</i>	196	196	49
<i>McFadden R²</i>	0.1227	0.1861	0.1684
<i>LR statistic</i>	27.059	33.070	29.232
<i>Probability (LR statistic)</i>	0.000325	0.00002	0.00013

Notes: ***, **, *- denote significance level of 1%, 5% and 10%; - DEBTR - the leverage of firm, FCASH - free cash flow per share, FF- free-float, IND – the type of industry where the firm performs its activity: manufacturing or service, LTA - natural logarithm of total assets, PTOBOOK - price to book, ROA- return on assets, SUSTRGRI - dummy variable that quantifies whether the firm publishes GRI sustainability reports, SUSTR - dummy variable that quantifies whether the firm publishes GRI and Citing-GRI sustainability reports; - between brackets there is the value of the Student test.

Source: authors’ computations using Eviews.

The results obtained from the estimation of model 1 prove that there is a significant correlation between the firms that publish GRI and Citing-GRI sustainable reports and the type of industry where the publicly traded UK firms perform their activity. There is a significant difference in the sustainable reporting between the manufacturing firms and the service sector ones ($b_1=0.362$, $p<0.10$). A possible explanation of this result is that the manufacturing firms which produce goods can have a greater negative impact on the environment than the service sector firms. In order to present the legitimacy of their activity performed in compliance with the sustainability norms, firms make significant efforts to draw up and publish sustainability reports. The result of the study confirms the legitimacy theory in the GRI sustainable reporting for the UK firms.

Another significant influence factor of sustainable development, according to model 1, is the firm size ($b_3=0.233$, $p<0.01$). The result confirms a direct correlation between firm size and sustainable reporting so that, the bigger the firms, the higher the probability to publish sustainable reports than in the case of small firms. The other factors considered in the analysis, namely the firm’s profitability, the firm’s growth opportunity, leverage, liquidity and free cash flow, do not influence significantly the publication of sustainability reports for the UK firms.

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The second model also shows a direct significant correlation between the size of the UK publicly traded firms and the GRI sustainable reporting ($b_3=0.271$, $p<0.01$). According to this second model the type of industry also influences the GRI sustainable reporting of the firms ($b_1=0.513$, $p<0.05$). The higher the probability that the firms can significantly influence the environment, the more information they publish in order to justify their legitimacy. Since the results obtained in the first two models are similar Kuzey, Uyar (2017) assess that the results obtained (by means of the analyses conducted) are robust. The third model identifies the firm size as the single influence factor of external assurance of sustainability reports for the UK firms.

Conclusions

Alongside the growth for the demand for non-financial information, the preoccupation to establish the non-financial information which is of greatest interest for interested parties and to see the most adequate form to publish this information has also increased, since the standardization specific for the publication of financial information has not been enforced in the non-financial reporting. The concept of sustainable report was entailed as a form of reporting non-financial information, various reporting frameworks being developed over time. Nowadays, the GRI standards represent the prevalently used benchmark even if, for several years, it has been attempted to impose the integrated reporting as a common reporting model for financial and non-financial information. The reason for keeping the reporting model proposed by GRI in the top of preferences of the firms that sustainably report is that it allows the reporting of economic, environmental and social information under a well-known and complete form, with the report being standardized, easy to understand, objective and applicable to firms from any activity sector and any geographical region.

The present study has highlighted that there is a direct, strong correlation between the firm size and its activity sector, on one hand, and the publication of sustainability reports, regardless of the adherence degree to the GRI standards, on the other. Thus, among the publicly traded UK firms, sustainable reporting is more frequent for the entities which perform their activity in the manufacturing sector than with the service sector firms. The big companies, regardless of their activity sector and the degree of applicability of the GRI standards, also report more non-financial information. The explanation for these two statements refers, on one hand, to the greater possibility for the manufacturing firms to affect the society as a whole and, on the other hand, to their greater availability to allocate required resources for reporting social and environmental information. In both cases, we witness the need of firms to legitimate past actions and development strategies.

Out of the financial indices used in the analysis, only free cash flow per share is in direct correlation with sustainable reporting, regardless of the adherence degree to GRI standards. The other indices are not linked in any way to the reporting of non-financial information by the firms.

As far as the firms that report in conformity with the GRI or Citing-GRI standards are concerned, our analysis only highlighted the correlation between their sustainable reporting and the firm size. The other factors included in the analysis, namely firm's profitability, firm's growth opportunity, leverage, liquidity and free cash flow do not significantly influence the publication of sustainability reports of the UK firms.

As regards the assurance of integrated reports, the results of the study indicated that the majority of the firms which publish GRI sustainability reports are interested in the

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performance of an external evaluation. On the other hand, most UK publicly traded firms have their sustainability reports audited by an external auditor and there are no significant differences between firms in relation to the adherence degree to GRI standards.

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TVARŲ ATASKAITŲ TEIKIMĄ LEMIANTYS FAKTORIAI JUNG TINĖJE KARALYSTĖJE: ANALIZĖ, PAREMTA GRI DUOMENŲ BAZĖS ATASKAITOMIS DĖL INFORMACIJOS APIE ATSKLEIDIMO TVARUMĄ

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SANTRAUKA

Nepaisant srities, kurioje įmonės vykdo savo veiklą, ji daro įtaką aplinkai, ekonomikai ir visuomenei. Šiame straipsnyje pateikiami rezultatai, gauti išanalizavus JK viešai parduodamų įmonių tvarumo ataskaitas, skelbiamas GRI (liet. *Pasaulinė atsiskaitymo iniciatyva*) informacijos apie tvarumo atskleidimą duomenų bazėje. Trijų modelių, kuriuose buvo pasitelkti septyni kintamieji, įvertinimas bei rezultatų analizė leido suformuluoti tam tikras naudingas ryšio tarp atitikties laipsnio su pagal GRI gaires tirtomis ataskaitomis ir kai kurias įmonių, paskelbusių ataskaitas, charakteristikomis išvadas. Gauti rezultatai rodo, kad gamybos įmonės, palyginti su paslaugų sektoriaus įmonėmis, yra labiau linkusios skelbti tvarumo ataskaitas, naudodamos GRI standartus arba bent jas cituodamos (angl. *Citing-GRI*). Viena vertus, rezultatai nurodo tiesioginę ir stiprią koreliaciją tarp įmonės dydžio ir laisvų pinigų srautų vienai akcijai, kita vertus, tarp GRI tvarumo ataskaitų paskelbimo. Abi išvados patvirtina teisėtumo teoriją. Pabrėžtina ir tai, kad tokie finansiniai veiksniai, kaip tvirtas pelningumas, tvirto augimo galimybė, svertas, likvidumas ir laisvieji grynųjų pinigų srautai nedaro didelės įtakos JK įmonių tvarumo ataskaitų skelbimui, nepaisant jų GRI laikymosi lygio.

REIKŠMINIAI ŽODŽIAI: tvarumo ataskaitos, Pasaulinė atsiskaitymo iniciatyva, teisėtumo teorija, įmonių socialinė atsakomybė (angl. CSR).

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