Sustainability disclosure and earnings informativeness: evidence from Sri Lanka

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Abstract

Purpose – The purpose of this paper is to investigate whether the communication that takes place through the sustainability disclosure (SD) route has an effect on earnings informativeness (EI) of firms in an emerging market.

Design/methodology/approach – The sample consists of companies listed on the Colombo Stock Exchange in Sri Lanka, where SD is a new phenomenon and a voluntary reporting initiative. Regression analysis is executed on the panel data to achieve the study objective.

Findings – The result reveals a positive association between SD and EI. Sustainability reports may provide useful information that supplements merely financial data, aiding the stakeholders to interpret the financial reporting better. The finding premises that SD enhances EI, communicating value relevant information to capital market participants.

Practical implications – SD does much to reduce capital market participants' uncertainties, thereby aiding them to assess financial information better.

Social implications – The findings of the study confirm earlier research findings that indicate a positive association between SD and EI, suggesting that capital market participants are gradually becoming aware of the value relevance of sustainability reports.

Originality/value – This is the first study investigating SD and EI association that is specific to the Sri Lankan context. Owing to the sparse studies done on the SD and EI association, this study should contribute significantly to the existing literature by broadening the geographical coverage.

Keywords Sri Lanka, Sustainability disclosure, Earnings informativeness

Paper type Research paper

1. Introduction

Environmental challenges exert a holistic effect on all living organisms on earth. This issue has regained prominence due to recent corporate scandals, economic crises and meltdowns that have appeared across the world. Consequently, concerns of stakeholders over environmental and social issues have increased lately (Muttakin and Khan, 2014), and the pressure they exert upon firms to behave in a socially responsible manner has intensified dramatically (Aguilera, 2005). According to Kiliç *et al.* (2015), recent corporate scandals and corruptions are the outcomes of placing too much emphasis on financial results while ignoring the non-financial aspects of the business. Hence, corporate social responsibility (CSR) refers to striking a good balance between the financial and non-financial goals of firms (Kiliç *et al.*, 2015). Moreover, adoption of sustainable practices has become a crucial strategy within the recent corporate agenda.

Sustainability disclosure (SD) is used to describe and justify a firm's approach and methods employed in dealing with social and environmental issues in order to legitimize corporate actions. According to Deegan (2002), the inclusion of sustainability and related information in corporate disclosure reports is envisioned to assuage societal concerns while

signaling that the firm is conforming to community expectations at last. As information has been acknowledged as the pivotal resource that molds perceptions (Adams and Zutshi, 2004; Deegan, 2002), managers make a considerable effort to adopt proactive measures to change the perceptions of the community positively through corporate disclosures. As noted by Chan *et al.* (2014), perceptions can only be effectively altered through made known remedial strategies. This obviously emphasizes the power and strategic significance of SD made through annual reports. Therefore, sustainability strategy has to be treated as a priority matter during the corporate decision-making process at the highest levels and, it requires to accommodate the interests of different stakeholder groups into the corporate agenda with all earnestness (Hillman and Dalziel, 2003). Consequently, SD has now become an important topic within the corporate and academic discourse.

To satisfy the growing information requirements of stakeholders who look for it in firms' disclosure reports, the emphasis has to be placed on the usefulness, relevance and, value of the information contained within those reports (Myburgh, 2001). On the whole, value relevance is an ongoing theme in accounting and finance literature (Francis and Schipper, 1999), and so a noticeable issue in value relevance is earnings informativeness (EI) (Dechow *et al.*, 2010). Recently, EI has received a great deal of attention (Roychowdhury and Sletten, 2012), while it has also come to be an important issue both in accounting policy and practice. In general, EI is considered as a measure of the quality of accounting information by investors (Sánchez-Ballesta and García-Meca, 2007). The literature devoted to examining the connection between financial reporting and SD suggests that there is evidence of a complementary relationship between the two (Prior *et al.*, 2008). Firms that possess high-quality financial information are generally willing to disclose all the information, including sustainability information. As a result, financial and SD relationship is expected to be complementary (Francis *et al.*, 2008). Further, Bona-Sánchez *et al.* (2017) stated that "earnings information means that information provided to a firm's stakeholder is more relevant to their decision making, a complimentary relationship between social disclosure and earnings informativeness is expected" (p. 629). This implies that SD may positively influence EI.

In contrast, firms that are handicapped by poor-quality financial information may be more likely to release sustainability and related information as a way of compensating for it (Muttakin *et al.*, 2015; Prior *et al.*, 2008). This behavior is an indicator of the managers' opportunistic behavior (Pyo and Lee, 2013; Muttakin *et al.*, 2015), which is in keeping with the essence of agency theory. As declared by Lassoued *et al.* (2017), "there is a consensus that managers use earnings management (EM) opportunistically for their own private benefits rather than for the interest of shareholders" (p. 1117). Accordingly, financial reporting and SD association assumed to be substitutive (Bona-Sánchez *et al.*, 2017; Prior *et al.*, 2008). Consistent with this notion, Lang and Lundholm (1993) also point out a substitutive association between voluntary disclosure and earnings quality, while Muttakin *et al.* (2015) stated a substitutive relationship amid CSR disclosure and earnings quality. Summing up, the relationship between sustainability information and accounting earnings remains unclear.

Due to the paucity of empirical investigations on the consequences of social and responsibility disclosures, far more research will have to conduct regarding the consequences of these voluntary disclosures. Put simply, the association between SD and its consequences remains vague, both empirically and theoretically (De Villiers and Marques, 2016). Given this backdrop, the present study intends to find out whether the communication through SD has an effect on the EI of firms in an emerging market. The literature attests that communication through social and environmental disclosures provide additional information to market participants to better assess EI (Bona-Sánchez *et al.*, 2017; Chen *et al.*, 2002; Kim *et al.*, 2012; Riahi-Belkaoui, 2015). In addition, social and environmental disclosures contribute to reduce the uncertainty (risk) faced by market participants, by assisting them to interpret the financial information more accurately (Bona-Sánchez *et al.*, 2017; Francis *et al.*, 2008). Thus, CSR disclosures and EI are assumed to be

positively associated. As a reading of the academic literature shows, although the significance of sustainability information is mounting, satisfactory corroboration of the true benefits of SD, mainly the extent (or the degree) to which providing information relating to sustainability may influence stockholders' perceptions, has not been properly established, as a reading of the academic literature shows (Bona-Sánchez *et al.*, 2017). This is mainly due to firms have not yet fully understood the value-relevance of information along with the way stakeholders react to sustainability and other social information disclosures (Moser and Martin, 2012).

This study is motivated by the favorable conditions that exist here to clarify the connection between SD and EI. First of all, this study helps to analyze the role of sustainability information in determining earnings credibility. Second, the Sri Lankan environment is particularly amenable to an examination of this association due to certain reasons. Compared with firms in the Western countries, Asian firms operate in an environment with weaker investor protection, less developed capital markets, and a heavier presence of dominant owners with the ability and means to influence corporate decisions. Further, Sri Lankan companies have had a traditionally greater understanding of the impact of socio-environmental issues on their businesses from the early days as a result of the country's religious and cultural ethos. To the best of the researcher's knowledge, except for the seminal effort carried out by Bona-Sánchez *et al.* (2017), no other researchers have made an effort to investigate the influence that SD exerts over EI. Moreover, insufficient attention has been paid to the consequences of CSR disclosures made in the emerging capital markets, in particular the Asia-Pacific economies, including Sri Lanka. Therefore, owing to the above gaps, the objective of this study is to investigate the association between SD and EI. It is fortuitous that the Colombo Stock Exchange (CSE) in Sri Lanka, an emerging capital market, provides the ideal venue for this study.

2. Literature review

Greater transparency, as well as accountability as insisted upon by a larger set of stakeholders (interested parties), have now become vital necessities for corporate success. In this notion, SD is acknowledged as an essential corporate practice that contributes toward satisfying stakeholders' diverse demands (Hahn and Kühnen, 2013). Similarly, Adams and Zutshi (2004) note that firms tend to use CSR disclosure mechanism as a channel for conveying socio-environmental issues to their stakeholders. In the same vein, they emphasize the importance of ethical conduct (behavior) as a means of ensuring the firms' long-standing survival. Alternatively, the corporate sector is being urged to behave in an environmentally and socially responsible way as active members of society, with the intention of meeting the profound challenges resulting from climate change, sustainable development (Murray *et al.*, 2010) and, rapid population growth. Consequently, stakeholders' awareness of the need for socially responsible conduct has been aroused and, their attitude toward socio-environmental concerns has turn into more positive in recent decades (Kim *et al.*, 2012), and in fact, is continuing to develop.

Although firms prepare financial statements by following the Generally Accepted Accounting Principles, there is a noticeable difference in the quality of financial reporting, even among entities that are functioning (operating) under the similar accounting disclosure rules (Choi and Pae, 2011). To understand the reasons for these differences, prior scholars examined closely the nexus between CSR concerns and earnings quality (i.e. Francis *et al.*, 2008; Kim *et al.*, 2012; Muttakin *et al.*, 2015; Pyo and Lee, 2013). After examining the relationship between business ethics and financial reporting quality, Choi and Pae (2011) confirmed that firms that are committed to good business ethics produce better quality financial reporting. Therefore, "different insiders' motivations for CSR might affect the relationship between CSR engagement and financial reporting practices" (Bona-Sánchez *et al.*, 2017, p. 627).

The informativeness of accounting earnings in clarifying stock return appears to be highly dependent on the extent of corporate responsibility shown by the company;

i.e. greater the corporate responsibility demonstrated at corporate gatherings of people, greater the importance they are likely to attach to the EI (Riahi-Belkaoui, 2015). With certain exemptions, the majority of accounting valuation models linking earnings to price did not limit the EI. One of the dominant restrictions is the extent of social responsibility, as it may reinforce the EI, i.e. the ability to describe changes in stock return (Riahi-Belkaoui, 2015). Moreover, positive CSR ratings tend to create positive circumstances for entities, economically, socially and politically (Healy and Palepu, 2001), because, with the formation of a better image, they can gain easier access to capital markets and attract more potential investors (Riahi-Belkaoui, 1976 as cited in Riahi-Belkaoui, 2015). Besides, SD being an integral part of a firm's voluntary disclosure activities, it becomes a vital resource of addressing the informational asymmetry issues (Fuhrmann *et al.*, 2016; Lopatta *et al.*, 2016). These favorable manifestations of corporate responsibility as perceived by the company's customers and stakeholders may affect their actions positively in regard to the earnings and the determination of stock returns (Belkaoui and Karpik, 1989). However, under the existing accounting standards, firms may not be able to capitalize on all the information such as investments in human capital and in optimally managing environmental risks. Therefore, accounting earnings may not be able to capture the true value of the firm and at that juncture, financial information will be less informative. Hence, firms that disseminate sustainability and related information liberally will be more worthwhile to market participants who wish to evaluate such firms (Bona-Sánchez *et al.*, 2017).

In agreement with the legitimacy theory, reputation related and, ethical considerations prompt managers to produce and release high-quality financial information. SD is anticipated to favorably affect the earnings credibility (Kim *et al.*, 2012) and EI of companies to the extent that market participants interpret and understand this disclosure policy as something designed for maximizing the firm value over the long-term period (Bona-Sánchez *et al.*, 2017). This favorable relationship is consistent with the insider legitimacy threats, thereby eliminating reputation concerns during the SD. Prior scholars (Bozzolan *et al.*, 2015; Pyo and Lee, 2013) concluded that firms that are CSR oriented are more likely to provide extensive financial disclosures in one hand and less likely to manipulate earnings in another hand since they are intrinsically more committed toward both institutional role and transparent disclosure policies. Consistent with this notion, Kim *et al.* (2012) affirmed that CSR focused firms engage less in earnings manipulations, compared to non-CSR focused firms. In fact, the key secret behind the above findings may be that willingness to disclose sustainability and other voluntary information inspires transparency, thereby reducing the tendency to manipulate EM (Bozzolan *et al.*, 2015). Moreover, SD could be used as a tool that mitigates the information asymmetry problem and thereby intensifies the value of the firm (Lopatta *et al.*, 2016). Theoretically, firms do have the incentive to disclose value relevant information to their investors (Lennox and Park, 2006; Dhaliwal *et al.*, 2012). In this sense, SD is assumed to positively influence EI when it increases the number of market participants who interpret the given corporate disclosure policy as leading to an enhancement of the value of the business (Bona-Sánchez *et al.*, 2017). Using data from Spain, Bona-Sánchez *et al.* (2017) supported this argument and concluded that SD had a positive effect on the EI. Based on these sentiments, it can be hypothesized that EI is the explanatory variable for the economic consequences in an economy that is positively related to SD.

In marked contrast to the above doctrine, an alternative perspective was advocated by Prior *et al.* (2008) consistent with the agency perspective. According to that, the agency conflict encourages managers to link ethical concerns to their opportunism (Prior *et al.*, 2008). Thereby the managers who lack integrity (referred to as self-interested managers) may have a habit of to use CSR engagements strategically and opportunistically. In this scenario, sustainability and related activities would be positively linked with managers' opportunistic discretion over financial reporting (Pyo and Lee, 2013). In particular, firms

that are involved in CSR activities might attempt to collude with non-share stakeholders in concealing the corporate misconduct. Managers of such firms may reveal more sustainability-related information than necessary so that their self-interest behavior is overshadowed by the SD (Muttakin *et al.*, 2015). As a result, SD is regarded as an entrenched practice to garner backing from other stakeholder clusters, whose interests are damaged through the EM practices (Chih *et al.*, 2008). Overall, the association between SD and EI has proven inconclusive. Even amidst these controversies, as previously highlighted, SD is expected to affect EI. However, the direction of the relationship is an empirical question. Consequently, the present study is intended to test in particular:

H1. SD affects the informativeness of accounting earnings.

3. Research method
3.1 Data
The initial sample consisted of all publicly listed companies in the CSE in Sri Lanka at the end of 2011 (272 companies). The presence of multinational corporations in Sri Lanka and their role as providers of goods and services and the common practice of SD (> 60 percent in this paper) in an emerging market allow them to contribute significant insights about the value relevance of SD. The sample period commenced with effect from January 1, 2012, the year companies started to prepare their consolidated accounts consistent with the International Financial Reporting Standards. To ensure comparison of accounting data, a recent four-year period from 2012 to 2016 was considered. The exclusion of companies that discontinued operations and did not have complete accounting data resulted in reduction of the sample to 220 companies. Consequently, the final sample consisted of a balanced panel of 880 firm-year observations.

3.2 Variables and model
Managers exercise a certain degree of discretion over the quality of the reported earnings figures. In this respect, managers strive to exceed three thresholds that are rated in priority from highest to lowest (Benos and Rockinger, 2000). As the first option, managers struggle to report positive earnings per share (EPS). In line with the efficient market theory, investors promptly react to the information they receive, which results in stock price changes. In this case, the sign of the actual EPS is used to determine if the information is good news or bad news, according to whether the sign of the actual EPS is positive or negative. The second method involves reporting an increase in EPS. In this method, managers strive to report a higher EPS (maybe a fictional figure) for the current year (EPS_t), compared to what prevailed a year ago (EPS_{t-1}). As in the first method, a positive change in EPS reflects good news whereas a negative change reflects bad news. When using the third option, managers make an effort to meet the market expectation by reporting the current EPS, which exceeds the analysts' forecasted amount. The analysts' forecast error is measured as the difference between the reported EPS of the current year and the analysts' consensus forecast of the current year's EPS. It is considered good news if the analysts' forecast is come across, otherwise it is bad news.

Likewise, unexpected earnings (UE) could be measured in three ways. In the first case, UE equals the current period's earnings (actual earnings), assuming expected earnings are equal to zero; in the second case, UE is defined as the value of the difference between the current year's earnings and the previous year's earnings; in the third case, UE is equal to the value of the difference between the current period's earnings and the analysts' consensus forecast for the current period's earnings. The first two metrics come under less sophisticated UE metrics, while the third metric comes under a sophisticated UE metric (Bamber, 1986; Bamber, 1987). As stated by Bamber (1987), two fundamentally different earnings expectation models; analyst forecast model (aka value-line forecast) and random-walk model (aka random-walk forecast),

are used to capture the UE. Besides, Bamber (1987) said that prior researchers had suggested that EPS estimations based on an analyst forecast model were at least as precise as those generated by statistical models. The above idea is rather appealing as analysts have ready accessibility to time-series models' predictions along with other more recent information. Bamber (1986), who was not in favor of this idea, declared that trading volume based on earnings announcement seems to be more closely associated with UE from the random-walk model than its counterpart, the analyst based model, even if the latter one is more precise.

In particular, financial accounting researches utilize returns-earnings relations to study the usefulness of the accounting earnings (Ahmed *et al.*, 2006; Chambers *et al.*, 2005), and those investigations are frequently centered on the comparison of earnings response coefficients (ERC). As emphasized by Dechow *et al.* (2010), the terms Investor Responsiveness to Earnings and ERC are used interchangeably. Most often short-window, the ERC is a direct proxy for EI (Dechow *et al.*, 2010). In general, the ERC has been defined in terms of slope coefficients from regressions of unexpected returns on UE (Subramanyam and Wild, 1996; Chambers *et al.*, 2005) and usually, positive ERC has been quoted as evidence of the value relevance (Chambers *et al.*, 2005). In this notion, the present study approach included examining whether UE and share return (risk-return) nexus show a discrepancy as a function of the SD. To be consistent with the prior scholars (i.e. Ahmed *et al.*, 2006; Bona-Sánchez *et al.*, 2017; Fan and Wong, 2002; Subramanyam and Wild, 1996), EI was measured by examining the ERC from a regression of cumulative abnormal stock returns (CAR) on UE. Accordingly, below mentioned equation shows the basic relations between returns and earnings:

$$CAR = \beta_0 + \beta_1 UE + \varepsilon, \tag{1}$$

where CAR is the firm's cumulative market-adjusted stock returns for the three-day disclosure announcement window; UE the difference between actual earnings and expected earnings ($EPS_t - EPS_{t-1}$); ε the error term.

It is expected a positive as well as a significant coefficient on β_1, suggesting that earnings have an information role; that is, the share market incorporates earnings credibility into the price formation process. Thus, the present study employed the event study methodology to investigate the effect of corporate disclosure announcement on the return of stocks. A similar method has been used by most of the prior scholars for gauging the influence of new information on the securities' market value (Collins *et al.*, 2009; Ball and Shivakumar, 2008; Roychowdhury and Sletten, 2012; Landsman and Maydew, 2002). Time window of the event used in this study was short (from one-day before to one-day after the annual corporate disclosure announcement date). CAR is typically used to capture an important event and determine whether there is a significant change in earnings over a given period, which in this case was three days. The short time window is more appropriate for the current analysis since its goal is to measure how fast information converts into the price. A three-day window, which consists of one-day before and one-day after the corporate disclosure announcement day, is considered as the event window to ascertain the volatility of the share price (Ball and Shivakumar, 2008; Landsman and Maydew, 2002; Landsman *et al.*, 2012; Roychowdhury and Sletten, 2012). According to the reasoning of the literature, most of the market reaction takes place during the three-day announcement period (Bamber, 1987; Landsman and Maydew, 2002). It has been corroborate that the three-day trading period captures most of the market reaction in response to a new information release (Bamber, 1986).

Moreover, it seemed that a reaction beyond day +1 was relatively weak and of little significance (Bamber, 1986). It is important to mention here that "short windows are appropriate for measuring the amount of *new* information in public *announcements*" (Ball and Shivakumar, 2008, p. 977). In conformity with the prior works (i.e. Ball and Shivakumar, 2008;

Bamber, 1987; Roychowdhury and Sletten, 2012), this study measured the volatility of stock returns at corporate disclosure announcements by using the short window. Each annual corporate disclosure announcement day from 2012 to 2016 financial years was taken into consideration. This was done according to the rationale put forward by prior scholars. These researchers have argued that there is only a minimal difference between the share price behaviors of firms making quarterly disclosures and those who do it semi-annually, emphasizing that more frequent disclosures do not add substantially to new information (Ball and Shivakumar, 2008; Butler *et al.*, 2007). More specifically, Sri Lankan firms' sustainability or related information is contained only in their annual disclosure reports. In consequence, only the yearly corporate disclosure announcements were taken into account in this analysis:

$$CAR = \beta_0 + \beta_1 UE + \beta_2 SD + \beta_3 UE*SD + \beta_4 MB + \beta_5 UE*MB + \beta_6 FSZ$$
$$+ \beta_7 UE*FSZ + \beta_8 LEV \beta_9 UE*LEV + \beta_{10} Age + \beta_{11} UE*Age$$
$$+ \beta_{12} \text{Year dummies} + \varepsilon. \tag{2}$$

If analyst data are available, it is recommended to use the analyst forecast model, whereas the random-walk model (Roychowdhury and Sletten, 2012). As is the case with most emerging capital markets, Sri Lankan companies are not forced to disclose sustainability and CSR related information. There is no statutory regulation in place, but the Code of Best Practices on Corporate Governance issued by the Securities and Exchange Commission of Sri Lanka in 2013 encourages disclosures on sustainability (Shamil *et al.*, 2014). Therefore, many firms now voluntarily disclose this information but they do not follow any particular standard or any prescribed format; the information may be presented as a stand-alone report or as part of the annual report. Unfortunately, a sustainability index was unable to develop as sufficient data were not available. Even the firms that have been recognized SD policies suffered from the lack of sufficient data. Hence, following Bona-Sánchez *et al.* (2017), SD was operationalized as a binary variable and represented by 0 (absence of a SD report) or 1 (existence of a SD report). Additionally, the equation included four more variables to control the effect of other variables that could potentially affect EI. Following similar works carried in the field, market-to-book ratio (MB) was proxied by the value of equity ratio at the year-end (Bona-Sánchez *et al.*, 2017; Muttakin *et al.*, 2015), firm size (FSZ) was measured by the natural logarithm of the total assets, and leverage (LEV) as the ratio of total debt to total assets (Ahmed *et al.*, 2006; Bona-Sánchez *et al.*, 2017; Fan and Wong, 2002; Prior *et al.*, 2008); along with these the firm age (Age) (Bona-Sánchez *et al.*, 2017; Kim *et al.*, 2012; Muttakin *et al.*, 2015) was also included in the model. In addition, the year has been controlled through a dummy variable (Bona-Sánchez *et al.*, 2017; Fan and Wong, 2002). By inserting such control variables into a model, researchers believe it will help to decrease both problems of omitted variable bias and the potential endogeneity (i.e. Kim *et al.*, 2013). It is possible that UE and SD along with any other control variables may interact with and influence the EI. To investigate the expected possibility, an interaction term between UE and SD along with interaction terms between UE and each control variable were included in the model. This approach has been adopted by prior scholars as well.

4. Results and discussion
4.1 Results of descriptive statistics and correlation analysis
Table I reports basic descriptive statistics of the variables considered in the model. To make sure that results are not influenced by outliers, all continuous variables have been winsorized at the 1st and 99th percentiles.

The mean values of CAR and UE are, respectively, as 0.53 and 0.43 percent. Both CAR and UE are statistically insignificant and different from zero owing to their larger standard errors. Thus, the values of CAR and UE show large dispersion in value in the selected

sample. This finding goes hand-in-hand with Fan and Wong's (2002) prediction. The mean value of SD is 0.63, indicating that 63 percent of the sample firms are publishing sustainability reports, which is a considerably high figure. The mean value of MB ratio is 2.21 while, FSZ, LEV and age of the firm are 22.02, 0.40 and 2.95, respectively. Besides the mean (average) value, other statistical values of the control variables are normally distributed within reasonable ranges, demonstrating that the regression results of the current study are unlikely to be plagued by outliers.

Table II presents the result of Pearson correlations among the variables. As per the table, CAR is significantly and positively correlated with UE, SD and, LEV, whereas negatively and insignificantly correlated with the MB ratio, FSZ and, firm age. The positive association of UE, SD and LEV with CAR was significant at the 1 percent level. From the UE and CAR relationship it is evident that earnings play an informational role. As Francis *et al.* (2008) highlighted, the positive association between SD and EI is consistent with the assumption that SD is reducing the information asymmetries of market participants, thereby assisting them to better interpret financial information. Further, Table II indicates that all the variables have a correlation that is lesser than 0.4. Therefore, the correlation result indicates that study data are free from the multicollinearity issue. To further detect any potential multicollinearity, the well-known test of variance inflation factors (VIF) was conducted and, it was reported that the highest VIF value for the model was below two (< 1.230). Simultaneously, the tolerance values (not tabulated) were very high (approximately one), ranging from 0.813 to 0.982. Hence, it was concluded that multicollinearity was not an issue with the tested model.

4.2 Result of panel data analysis

Table III summarizes the results produced by the panel regression analysis with CAR as the dependent variable and SD as the independent variable. To control the unobserved heterogeneity in the data, potential problems relating to the estimation of fixed and random effects were taken into account. A recent study carried out by Pantzalis and Park (2014)

	Mean	Median	SD	Minimum	Maximum	VIF
CAR (%)	0.53	0.18	2.41	−5.13	5.12	
UE (%)	0.43	0.22	2.42	−4.84	5.59	1.021
SD	0.63	1.00	0.48	0.00	1.00	1.039
MB	2.21	1.59	1.64	−0.98	5.80	1.018
FSZ	22.02	22.10	1.51	18.24	25.67	1.141
LEV	0.40	0.37	0.30	−0.01	1.35	1.230
Age	2.95	3.14	0.88	1.00	4.23	1.070

Table I.
Results of descriptive statistics of earnings informativeness

CAR	CAR	UE	SD	MB	FSZ	LEV	Age
CAR	1						
UE	0.229**	1					
SD	0.112**	0.081*	1				
MB	−0.001	0.016	0.084*	1			
FSZ	−0.016	0.033	0.098**	0.087**	1		
LEV	0.137**	0.128**	0.162**	0.098**	0.343**	1	
Age	−0.034	−0.035	−0.078*	−0.056	−0.122**	−0.248**	1

Notes: $n = 880$. *,**Significant at the 0.05 and 0.01 levels (two-tailed), respectively

Table II.
Results of correlation analysis of earnings informativeness

	Pooled OLS		Fixed effects		Random effects	
	Coef.	p (Sig)	Coef.	p (Sig)	Coef.	p (Sig)
Observations	880		880		880	
No. of groups			220		220	
Intercept	2.253	0.066	−6.907	0.520	2.253	0.095
UE	0.285	0.000	0.219	0.000	0.272	0.000
SD	0.398	0.015	0.609	0.022	0.420	0.014
UE × SD	0.168	0.022	0.211	0.008	0.179	0.013
MB	−0.014	0.765	0.088	0.384	−0.008	0.871
UE × MB	0.035	0.098	0.042	0.070	0.037	0.079
FSZ	−0.119	0.030	0.316	0.527	−0.120	0.047
UE × FSZ	0.042	0.074	0.037	0.149	0.042	0.072
LEV	0.827	0.005	1.280	0.259	0.844	0.008
UE × LEV	0.091	0.498	0.161	0.278	0.101	0.447
Age	0.015	0.868	−0.291	0.772	0.014	0.889
UE × Age	−0.181	0.000	−0.114	0.076	−0.170	0.001
Year effect	Yes		Yes		Yes	
R^2 – overall	0.1187		0.0567		0.1186	
F-test						
χ^2			1.34			
Prob.			0.0029			
Hausman test						
χ^2					15.35	
Prob.					0.3544	
LM test						
χ^2					7.47	
Prob.					0.0031	

Notes: CAR is the firm's cumulative market-adjusted stock returns for the three-day earnings announcement window; UE is the difference between the actual earnings and the expected earnings, which measures as the difference between the firm's current year EPS (EPS_t) and firm's last year EPS (EPS_{t-1}); SD is a dichotomous variable that takes 1 if the firm discloses sustainability reports and 0 otherwise; MB is the market-to-book ratio; FSZ is the natural logarithm of total assets; LEV is the total debt to total assets ratio and Age is the natural logarithm of the number of years since the firm's inception

Table III.
Panel data analysis results – relationship between SR and CAR

highlighted that previous researchers had made a considerable effort to find good instrumental variables as a potential solution to the endogeneity problem. Under such a scenario, for their study, they suggested fixed effects panel regression. From this, it is obvious that the key advantage of the fixed effects model (FEM) is in controlling the possible effects of unobservable variables through dummies, a situation of panel data analysis. Consequently, in this study, both the FEM and random effects model (REM) were used while the Hausman test was employed to select the appropriate specification between FEM and REM.

The F-test result appearing in Table III permits identification of the group effect on the suggested model and compares the pooled OLS and FEM to decide which model is best. The FEM is preferred over the pooled OLS model, because the F-test value of χ ($\chi^2 = 1.34$) was significant at 1 percent level (p-value = 0.0029).

The Breusch-Pagan LM test was utilized to test the relevance of the REM. The null hypothesis (H_0) assumes that there are no random effects. Hence, if the H_0 is accepted, then the pooled OLS model is better than the REM and vice versa (Park, 2005). Larger χ-values (χ^2) indicate that there is a possibility to reject the H_0 supportive of accepting the REM instead of the pooled OLS model. As per Table III, the χ^2 value produced through the LM test

is very large (7.47) as well as significant (p-value of $\chi^2 = 0.0031$), which calls for the rejection of the H_0 and acceptance of the REM as more appropriate for the selected model.

The two tests discussed above produced two results. In line with the F-test, FEM has been selected as the better model, although the LM test has selected REM as the favored model over the pooled OLS model. Next, the Hausman test was conducted to recognize the significant model from the FEM and the REM. Table III summarizes the result of the Hausman test, and it shows an insignificant p-value (0.3544). Since the probability χ^2 is insignificant, it rejected the alternative hypothesis ($H1$) and accepted the H_0. It further confirmed that fixed effects are biased, which meant that the REM is preferred to FEM.

The results of the specification tests attested that REM is the most suitable model to understand the EI-SD relationship. Therefore, the results of REM used when discussing and interpreting the implications of the effect of SD on EI. The findings of the basic returns-earnings relationship, together with findings on the effect of SD on EI are, reported in Table III. According to this, the R^2 value for the REM is 11.86 percent. As anticipated, UE was positive and statistically significant, which confirms that the stock market incorporates earnings information into the share price information process. Moreover, it was confirmed that the relationship between returns-earnings was strong (p-value $= 0.000$). This result is consistent with previous studies of Bona-Sánchez et al. (2017) as well as Fan and Wong (2002).

With conforming to the expectation, the REM results present a positive and significant impact of SD on EI with $\beta_2 = 0.420$ (p-value $= 0.014$), contributing the notion that stock market participants appreciate the additional non-financial information available in sustainability reports. Furthermore, as expected, the SD variable and its interaction with the UE variable (UE×SD) also indicated a positive and significant association. It implies the existence of an association between SD and ERC, confirming the prediction made in the study. The present result is consistent with the finding of Bona-Sánchez et al. (2017), denoting that SD has a significant positive impact on EI. As a result, it is rational to conclude that sustainability reports often make available interesting and useful supplementary information, in addition to the purely financial data required for interpreting the quality of financial reporting. SD mitigates investors' and other stock market participants' uncertainties and risks, assisting them to better assess financial information.

As for the control variables, FSZ and LEV revealed statistically significant impacts on EI as their main effects. As per the results that appear in Table III, the earnings of small firms are more informative as they show an inverse relation with a negative estimated coefficient ($\beta_6 = -0.120$, p-value $= 0.047$). Conversely, the interaction effect of FSZ with UE (UE×FSZ) produced a weak but positive coefficient, which is statistically significant at the 10 percent level. In addition, the result indicated a strong positive coefficient for LEV (p-value $= 0.008$), demonstrating that higher the LEV of a firm, higher the EI. In contrast, the interaction term of the LEV variable with UE generated an insignificant result which completely deviated from the result received for the main effect. The insignificant coefficient of UE×LEV suggests that the uncertainty and the LEV effects were offset by each other. Similarly, the main effects of market-to-book ratio and firm age on EI were insignificant. An interesting finding was that when these two variables interacted with the UE variable, it produced statistically significant results with even the signs of their coefficients changing. The estimated coefficient of UE×MB was significantly positive at the 10 percent level (p-value $= 0.079$), highlighting that a higher growth rate leads to a greater EI. In the same vein, the coefficient of UE×Age was negative and statistically significant at the 1 percent level (p-value $= 0.001$), suggesting that older listed firms report less informative earnings than newly listed firms. The findings relating to the intersection of UE and Age is contrary to the findings of Bona-Sánchez et al. (2017), who reported a positive coefficient for UE×Age. Signs of the coefficients in relation to MB and FSZ variables also changed from negative to positive when those variables interacted with the UE variable, whereas the sign of the age coefficient changed from positive to negative

when the age variable interacted with the UE variable. One possible reason for this is that the coefficients of interaction terms are driven by the uncertainty of the earnings (UE) component, which has a strong association with CAR. However, the results related to the interaction effects were quite different from the results found from their main effects. In a nutshell, the findings relating to the control variables of the current analysis are somewhat dissimilar from the findings of Bona-Sánchez et al. (2017).

In a context where scholars continue to search for appropriate applications of existing theories and to develop new theories that will explain the corporate ethical, social and environmental reporting practices, this finding contributes to the ongoing debate on the effect of SD in the capital markets by showing that CSR reporting plays an informative role in those markets. Under this notion, this finding is consistent with those obtained by Bona-Sánchez et al. (2017) and Dhaliwal et al. (2012), confirming that SCR disclosures lead to a better information environment. The finding confirms earlier research findings that indicate a positive association between SD and EI, suggesting that capital market participants are gradually becoming aware of the value relevance of sustainability reports. Consequently, the hypothesis formulated for the present study was accepted. The findings of the study also have implications for disclosure policy, suggesting that, the Ceylon Chamber of Commerce, Sri Lankan environmental authority, the Sri Lankan government, non-governmental organizations and other authorities should include consideration of sustainability activities and their disclosure procedure in their decision making. Moreover, this study can be used as an initial step for firms to be involved in the disclosure of sustainability activities. Prior studies have proved that SD could enhance firms' image, longevity and reputation and could offer financial benefits to the business. In the same vein, SD does much to reduce investors' and other capital market participants' uncertainties, thereby aiding them to assess financial information better.

5. Conclusion

Consequences of SD have been continuously researched by many scholars, particularly in developed countries, yet more empirical evidence is needed to arrive at firm conclusions. Since EI as a consequence of SD has not been addressed well, this study aimed to determine the influence of SD on EI. Taking CAR as the proxy for EI, it confirmed that firms that provide sustainability information are more informative, thus indicating a positive association between SD and EI. The crux of this finding is that SD plays an informative role (which cannot be made solely by financial information) in capital markets by creating a better information environment. At this juncture, SD can be regarded as a communication channel that reduces information asymmetries (which increase the information symmetries) by delivering more transparent and reliable financial information, thereby enhancing the information environment.

This paper makes two major contributions to the corporate disclosure literature. For a start, this is the first study that examined EI of SD in the Sri Lankan context. Second, except for the study done by Bona-Sánchez et al. (2017), no other empirical study has attempted to investigate the association between EI and SD. As the existing state of knowledge on this matter is inadequate, the examination of EI of SD in the current study is certainly bound to shed some fresh light on it that will help narrow down the wide research gap.

As this is common with many other studies, particularly those conducted in emerging and developing capital markets, the results should be considered with caution. This is because the measure of the independent variable (SD) represents only whether the respective entity discloses sustainability information or not, without providing an adequate insight into the quality of the reporting. In consequence, the results revealed in this study may not suffice to confirm the causality. However, this measurement issue is not something encountered by only this study, as it is a common issue faced by many other international researchers around the globe. In order to replicate this finding, further studies are warranted in other institutional settings.

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