Environmental, Social and Governance Performance: Continuous Improvement Matters

Woei Chyuan Wong[a]
Abd Halim Ahmad[b]
Shamsul Bahrain Mohamed-Arshad[c]
Sabariah Nordin[d]
Azira Abdul Adzis[e]
Universiti Utara Malaysia

Abstract: This paper examines the determinants of Malaysian listed firms' environmental, social and governance (ESG) performance during the period 2005–2018. We focus on individual firms' continuous efforts to improve their ESG scores once they are ESG rated. Panel fixed effect results reveal that the number of years since a firm was first included in Bloomberg's ESG score is positive and significantly related to its ESG performance. We interpret this as evidence of firms' deliberate efforts to improve their ESG scores once they fall under the radar of a third-party ESG rating agency. This finding underscores the importance of third-party rating agency in fostering greater corporate sustainability. We contribute to the literature that posits that ESG third-party rating agency can lead to higher level of ESG practices of the rated firms.

Keywords: Corporate social responsibility, emerging markets, environmental, social and governance (ESG), certification, Malaysia
JEL classification: G32

1. Introduction

The issue of environmental, social and governance (ESG)[1] compliance has received considerable attention in the society in recent years. Sustainability concerned investors have been relying on ESG ratings to screen for investment opportunities that fulfill their sustainable agenda. Ratings disclosed by third-party ESG rating providers such as Bloomberg, MSCI and Refinitiv (formerly known as Thomson Reuters) are informative

[a] Economics and Financial Policy Institute (ECoFI), School of Economics, Finance & Banking, Universiti Utara Malaysia. Email: wwchyuan@uum.edu.my (Corresponding author)
[b] School of Economics, Finance & Banking, Universiti Utara Malaysia. Email: abd.halim@uum.edu.my
[c] School of Economics, Finance & Banking, Universiti Utara Malaysia. Email: sham961@uum.edu.my
[d] School of Economics, Finance & Banking, Universiti Utara Malaysia. Email: norsabariah@uum.edu.my
[e] School of Economics, Finance & Banking, Universiti Utara Malaysia. Email: azira@uum.edu.my
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[1] ESG is a widely accepted term by global investment professionals for the sustainability and ethical impact of investments in recent years. This term is also used interchangeably with corporate social responsibility in the literature.

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as they provide objective evaluation of firm's ESG performance that is difficult for public to observe. Previous studies on ESG rating disclosures by third-party rating providers are found to improve firm's performance (Buchanan et al., 2018; Sahut & Pasquini-Descomps, 2015; Wong et al., 2021), reduce default risk (Atif & Ali, 2021) and financial risk (Lee & Faff, 2009; Oikonomou et al., 2012).

Similar to the roles played by credit rating agencies in assessing the credit-worthiness of debt instruments of a firm, independent ESG rating signals a firm's commitment to the ESG agenda. ESG scores for individual rated firms allow investors and other stakeholders to have an objective measure of firms' ESG performance over time relative to their peers. Globally, firms have strived to integrate ESG into their day-to-day investment practice and decision making (Kell, 2018). ESG rating is perceived by investors as a reliable form of institutional communication to convey good governance practices (Garcia et al., 2017).

Literature has shown firm's inclusion into an ESG rating to affect its stock value (Fatemi et al., 2015; Malik, 2015; Porter & Kramer, 2011; Wong et al., 2021). A meta-analysis conducted by Margolis et al. (2009) using findings from 214 empirical studies from 1972 through 2007 reveals the positive impact of ESG rating on firm's performance. Firms that engage in environmentally friendly or social interest activities could improve their corporate reputation publicly (Branco & Rodrigues, 2006). Therefore, firms have the motivation to continually improve their ESG performance once they are included into an ESG rating.[2] A drop in ESG rating due to reasons such as violation of environmental laws could negatively affect the stock performance (Fatemi et al., 2018; Wong & Zhang, 2022). Moreover, studies have shown that firms with high corporate social responsibility (CSR) commitments tend to perform better during period of high economic uncertainty (Rjiba et al., 2020). This suggests the existence of insurance value of ESG reputation (e.g., continued access to external capital) during a crisis period.

The above backdrop motivates us to examine how inclusion in a third-party rating incentivizes firms to improve their ESG performance during the initial years after the inclusion event. The answer to this research question will have policy implications for countries that strive to integrate ESG into capital markets as encouraged by the United Nations Global Compact's sustainable development goals.[3] Slager and Chapple (2016) provided three plausible mechanisms that drive firms' continuous improvement in ESG performance once they are ESG rated; firstly, the threat of being excluded from the ESG rating due to failing to comply with the minimum criteria required by the ESG rating agency. Secondly, the fact that the existence of the ESG score confers legitimacy and reputation to firms in ESG practice. Wong and Zhang (2022) showed empirically how undesirable ESG media coverage leads to a decrease in firm's value suggesting that investors do care about firm's ESG reputation value. Thirdly, the establishment of engagement between firms and ESG rating providers that make rated firms more informed about the ESG score requirements. These lines of reasoning imply that the top

[2] The continuous improvement in this study refers to the ongoing efforts to improve the ESG ratings once the company has been included into the rating.

[3] The United Nations Global Compact is a corporate sustainable initiative that aims to mobilise a global movement of sustainable companies by achieving the 17 Sustainable Development Goals (SDGs) by 2030.

management has an incentive to show improvement in ESG performance once they are on the radar of ESG rating providers.

We offer a new angle to the literature on the determinants of ESG performance by tracking individual firms' deliberate and continuous efforts to improve their ESG performance once they are included in the Bloomberg's ESG score. Specifically, we examine whether the number of years since a firm was first included in Bloomberg's ESG score exerts a positive impact on the firm's ESG performance. Controlling for factors known to affect ESG performance such as firm's characteristics, corporate governance factors and time effects, we argue that the positive relationship between inclusion variable and the ESG score reflects firms' continuous efforts to improve their ESG score over time. This is similar in spirit to banking literature that infer the value of a banking relationship from the positive relationship between number of years a relationship has been established and proxy to firm performance or firm value (Hardin & Wu, 2010; Ongena & Smith, 2001).

Our study adds to the growing literature that examines how firms deliberately adjust their behaviour in order to obtain favourable ESG ratings. Slager and Chapple (2016) found that firms facing the risk of exclusion from the FTSE4Good Index are more likely to improve their performance in the subsequent year.[4] The authors also find that firms that signal their inclusion in the FTSE4Good index to stakeholders and firms that engage extensively with the ESG rating agency exhibit significantly higher levels of ESG performance. Similarly, Chatterji and Toffel (2010) provided evidence that US firms that receive low scores on environmental ratings tend to improve their performance more than their peers. Shvarts et al. (2018) found that the introduction of a third-party environmental rating improves the environmental disclosure quality of Russian oil and gas firms. A more recent paper by Clementino and Perkins (2021), however, did not find that ESG ratings significantly alter firm's behaviour. Specifically, most Italian companies in their sample did not change their actual CSR polices or practices after they were included into the ESG rating.

Our paper also relates to studies in corporate credit rating that examine how firms deliberately adjust their capital structure (Cursio & Baek, 2016; Kemper & Rao, 2013) and earnings management activities (Kim et al., 2013) to influence credit rating change. The general findings from this line of literature support the roles of third-party assessment or certification in influencing firms' policies. The empirical evidence from this study supports firms' deliberate efforts to improve their ESG performance over time. This finding is consistent with the benefits of ESG certification documented by Wong et al. (2021).

The remainder of this paper is organised as follows: Section 2 reviews the extant literature. Section 3 outlines the data and method, Section 4 discusses the empirical results, and Section 5 concludes the study.

2. Literature Review

Our paper belongs to one stream of literature that seeks to explain the determinants of ESG or corporate social responsibilities (CSR) performance (Dang et al. 2021;

[4] FTSE4Good index is a UK-based ESG index maintained by the FTSE Group.

Mohd Ghazali, 2007; Guo et al., 2018; Lau et al., 2016; Luo & Liu, 2020).[5] Luo and Liu (2020) identified four main theoretical perspectives that can be used to explain why a firm might choose to engage in ESG activities. These theories are stakeholder theory, legitimacy theory, resource-based theory, and agency theory. Stakeholder[6] and legitimacy theories state that firms' CSR activities are driven by pressure from stakeholders and their own desire to obtain legitimacy from the government or public. It could also be driven by firm's desire to avoid the negative consequences for not being ESG enough compared to their peers (e.g., litigation risks).

Resource-based theory posits that ESG activities are driven by valuable resources obtained by firms when they successfully integrate ESG into their corporate policies or practices. Firms' ESG performance, which is voluntary and discretionary in nature, generates positive moral capital among communities and stakeholders to the firm (Godfrey, 2005).[7] Agency theory theorises that ESG decision is used as a tool by top management to maximise their private benefits. Managers tend to overinvest in CSR to increase their reputation and to be ingrained as socially responsible managers at the expense of shareholders (Buchanan et al., 2018). This potential conflict of interest is however reduced by corporate governance and helps to improve firms' ESG performance (Gamerschlag et al., 2011; Ntim & Soobaroyen, 2013).

There is a small strand of ESG literature that examines how existence of third-party ESG rating incentivises higher level of ESG performance among the ESG rated firms. Slager and Chapple (2016) found that firms facing exclusion from the FTSE4Good Index following the introduction of a new and stringent criteria are more likely to improve their CSR performance in the subsequent year so that they can comply with the new criteria requirement. In addition, firms that signal their FTSE4Good Index status in their annual reports (through using the name and logo of FTSE4Good) tend to produce higher CSR performance in subsequent years. Similarly, Chatterji and Toffel (2010) provided evidence that US firms which received low scores on environmental ratings improved their ESG performance more than their peers that never rated nor received a more positive evaluation.

Studies employing survey evidence such as Clementino and Perkins (2021), Searcy and Elkhawas (2012) and Shvarts et al. (2018) found firms react differently to being rated, taking actions to be included in and remain within the ESG Index, and disclosing more environment related information following the introduction of a third-party

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[5] Similar to Friede et al. (2015), this paper treats CSR and ESG interchangeably. The common theme underpinning both CSR and ESG is the concept of "sustainability", a significant development in the financial market in corporate scene in recent decades.

[6] Stakeholder theory has been frequently applied in the area of CSR (Clarkson, 1995; Davenport, 2000; Roberts, 1992; Ullmann, 1985) due to changing business environment that creates firms' demand to accept their responsibility to a larger community and to help solve important social issues. According to the stakeholder theory, increased level of environment awareness creates the need for firms to extend their corporate planning to include the non-traditional stakeholders like the regulatory adversarial groups adapting to shifting social demands (Elijido-Ten, 2007).

[7] This positive certification or signal of ESG performance has led the following positive outcomes such as lower levels of idiosyncratic risk (e.g., Boutin-Dufresne & Savaria, 2004; Lee & Faff, 2009), higher market-to-book ratios (e.g., Galema et al., 2008), favourable loan contracts (e.g., Goss & Roberts, 2011; Nandy & Lodh, 2012) and lower cost of equity (Ghoul et al., 2011; Plumlee et al., 2015).

environment rating, respectively. Crespi and Migliavacca (2020) examined 727 firms operating in 22 countries and provide evidence that financial firms' ESG scores are growing on a linear trend over time where such tendency is enhanced by their size and profitability, together with the economic and social development of the country within which they operate.

The above empirical evidence suggest that firms may strive to improve their ESG performance once they are under the coverage of a third-party ESG rating agency. This leads to the following testable hypothesis:

Hypothesis: Firms deliberately improve their ESG performance once they are formally rated by a third-party rating agency.

Living to the expectation of stakeholders and potential benefits that arise from better ESG performance could be the channels underpinning the above hypothesised relationship. The certification of reputation and legitimacy of a firm's ESG performance provided by ESG rating could have driven a firm to improve their ESG performance over time as well. This demand for ESG certification is in line with Holmstrom and Tirole's (1997) theoretical framework which theorised that uninformed lenders will only invest in firms that are monitored by the informed lenders. In the context of ESG rating, ESG score serves as a credible signal helping outside (uninformed) investors to monitor and gauge the firms' commitment toward ESG agenda. In the banking literature, Sufi (2009) found that the availability of loan ratings by Moody's and Standard & Poor change firms' financial and investment policy supporting the certification roles of third-party loan rating.

Meanwhile, the literature has considered the impact of board and firm characteristics on firm's ESG performance. Under the agency theory paradigm, corporate governance helps reduce the manager-owner as well as owner-owner conflicts, hence better CSR disclosures (Gamerschlag et al., 2011; Ntim & Soobaroyen, 2013). This is supported by empirical studies that found board size (Giannarakis, 2014b; Said et al., 2009; Siregar & Bachtiar, 2010), board independence (Chen & Jaggi, 2000; Harjoto & Jo, 2011; Samaha et al., 2012; Velte, 2019), female director ratio (Bear et al., 2010; Dang et al., 2021; Velte, 2016; Wasiuzzaman & Wan-Mohammad, 2020) to be associated with higher ESG disclosure score.

On the contrary, ownership concentration (Cao et al, 2019; Ntim & Soobaroyen, 2013) is found to be negatively related with ESG disclosure. In a similar vein, Fahad and Nidheesh (2021) found that foreign ownership shows a positive influence as opposed to promoter ownership that exerts a negative impact on the CSR disclosure score. These findings on ownership variables are consistent with the prediction of agency theory which posits that firms that are prone to conflict of interest (ownership concentration) are less committed towards ESG agenda and vice versa for firms that are less exposed to agency issues (high foreign ownership).

Similarly, firm characteristics such as size (Chiu & Wang, 2015; Giannarakis, 2014a; Klapper & Love, 2004; Ting, 2021; Velte, 2016), leverage (Ahmed & Courtis, 1999; Baldini et al., 2018; Barako et al., 2006; Khanchel, 2007), cash holdings (Arouri & Pijourlet, 2017; Cheung, 2016; Jadiyappa et al., 2021; Lu et al., 2017), and profitability (Collett & Hrasky, 2005; Cormier & Magnan, 1999; Gamerschlag et al., 2011; Giannarakis, 2014a) are found to be related to ESG ratings. A recent study by Abdul Rahman and Alsayegh (2021) who

examine the Asian listed firms indicate that economic performance, size, leverage and profitability are found to be positively related to firms' disclosure of additional ESG information. The above findings collectively suggest firms that are more resourceful in terms of financial strength, reputation, and access to external fundings are more able to commit to ESG investment.

3. Data, Variable Description and Method

3.1 Data and Variable Description

Data used in this study is obtained from Bloomberg. The final sample consists of 71 firms (about 8.7% of total listed firms in Malaysia) with Bloomberg's ESG score during the period from 2005–2018. The sample consists of listed firms in 11 business sectors according to the Global Industry Classification Standard (GICS). The Bloomberg ESG score disclosures are used as a proxy to ESG performance, as in Buchanan et al. (2018), Dang et al. (2021) and Nollet et al. (2016). Bloomberg collects ESG-related information from public sources, such as CSR or sustainability reports, annual reports and websites, as well as from direct contact with the firm. The ESG score, which ranges from 0 to 100, is computed from 120 quantitative and qualitative measures across environment, social and governance dimensions using Bloomberg's proprietary calculation.

Following Wong et al. (2021), we chose to focus on Malaysia due to the gradual inclusion of Malaysian firms in the ESG rating since 2005. The lack of ESG empirical studies in emerging countries such as Malaysia, with its unique legal standards and regulatory framework, institutional structures and heterogeneity in the economic environment, merits a separate analysis of its ESG performance in a single-country setting. Even though the disclosure of ESG or corporate social responsibility (CSR) reporting has been made compulsory for all publicly listed companies since 2006, the practice of CSR itself is not compulsory.[8] For instance, firms can choose to provide a negative statement indicating no CSR activity was conducted during the financial year. Moreover, the regulation does not prescribe the contents of CSR information that these firms should disclose in their annual reports.[9] This implies the current CSR/ESG reporting in Malaysia is largely on a voluntary basis, as it is in China (Cao et al., 2019).

Figure 1 shows the rising trend of Malaysian firms' ESG scores since 2005, which is consistent with the improvement over time in CSR disclosure scores documented in China (Guo et al., 2018; Luo & Liu, 2020). Figure 2 shows that the improvement is driven by the social dimension of ESG, followed by the environmental and governance dimensions.

Table 1 defines the variables used in the regression analysis. Table 2 displays the summary statistics, and Table 3 shows the correlations. The results show that the average ESG score of Malaysian listed firms is 28.89, with an environmental

[8] The disclosure obligations under the Listing Requirements of Bursa Malaysia require a listed company to include a Sustainability Statement in its annual report. The statement provides a narrative of the listed issuer's management of material economic, environmental and social risks and opportunities.

[9] Retrieved on August 30, 2020, from http://customer.bursamalaysia.com:8080/MainLR/Pages/FAQ%209.51.aspx

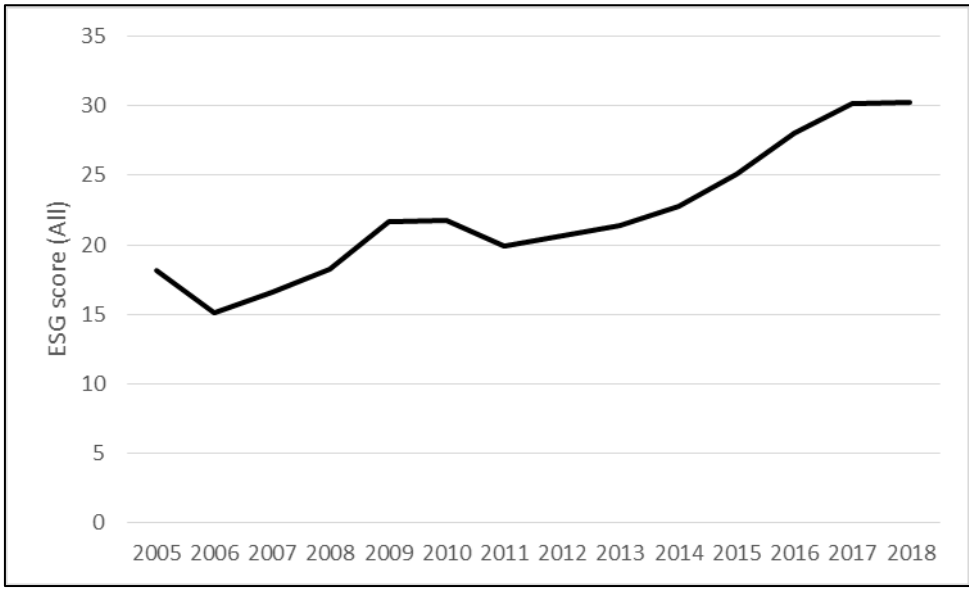

Figure 1. Evolution of ESG score from 2005–2018

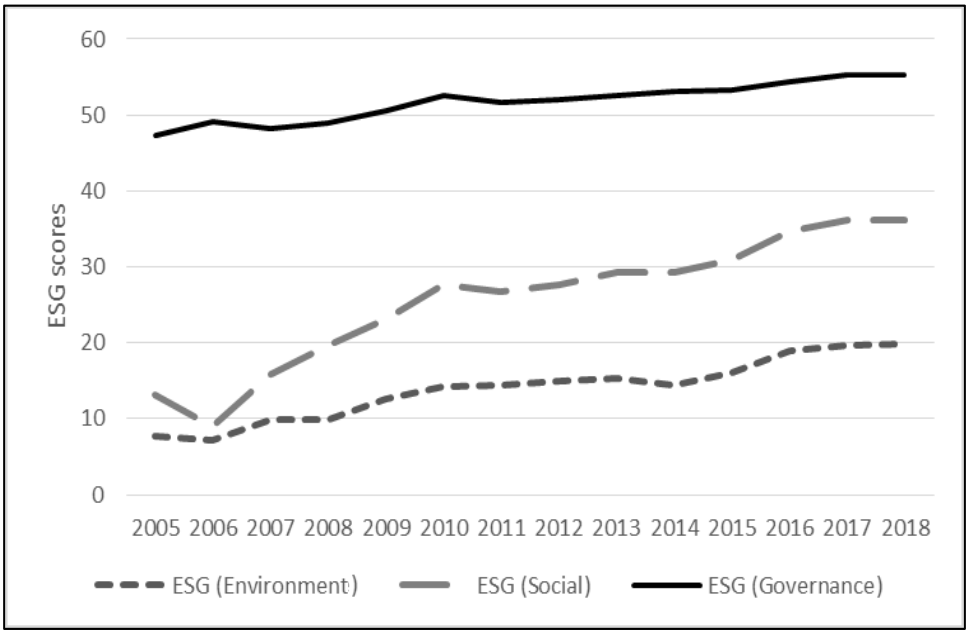

Figure 2. Evolution of ESG sub-score from 2005–2018

Table 1. Description of variables

Variable	Description
ESG (All)	Proprietary Bloomberg score based on the extent of a company's environmental, social, and governance disclosure.
ESG (Environment)	Proprietary Bloomberg score based on the extent of a company's environmental disclosure.
ESG (Social)	Proprietary Bloomberg score based on the extent of a company's social disclosure.
ESG (Governance)	Proprietary Bloomberg score based on the extent of a company's governance disclosure.
ESG inclusion years	Number of years being included into Bloomberg's ESG score.
Firm age (0,1)	A dummy variable equals to one if firm age is equal and above 30 years old (median value) and zero otherwise.
Board size	The total number of board members.
Board independence	The ratio of independent directors over total directors.
Female director	The ratio of female directors over total directors.
Ownership concentration	The percentage of shareholding by the largest shareholders.
GLC	A dummy variable that equals to one if the largest shareholders are government or state related entities.
Firm size	Total assets (in USD million) as reported on the balance sheet.
Cash holdings	Cash and cash equivalents divided by total assets.
Debt ratio	Total debt divided by total assets.
ROA	Net income divided by total assets.
Asset growth	One-year total assets growth.
KLCI return	KLCI index annual return

Table 2. Descriptive statistics for the full sample from 2005 to 2018 (525 firm-year observations)

	Mean	Median	Std. Dev	Min	Max
ESG (All)	28.893	27.193	9.816	12.397	58.678
ESG (Environment)	16.245	13.178	11.540	1.550	53.488
ESG (Social)	31.536	31.579	14.516	3.333	64.063
ESG (Governance)	54.673	51.786	5.694	33.929	73.214
ESG inclusion years	6.659	7.000	3.117	1	14
Firm age (0,1)	0.646	1.000	0.479	0	1
Board size	8.918	9.000	1.842	5	14
Board independence	0.500	0.500	0.129	0.070	1
Female director	0.174	0.167	0.131	0	0.625
Ownership concentration	0.426	0.464	0.166	0.057	0.771
GLC	0.474	0.000	0.500	0	1
Firm size (USD million)	14,022.58	4,381.20	29,414.46	39.181	195,208.40
Cash holdings	0.120	0.097	0.080	0.002	0.463
Debt ratio	0.239	0.222	0.167	0	0.668
ROA	0.072	0.047	0.112	-0.348	0.731
Asset growth	0.078	0.058	0.184	-0.654	1.734
KLCI return	0.036	-0.030	0.157	-0.393	0.452

Table 3. Pairwise correlation

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. ESG (All)	1.0													
2. ESG inclusion years	0.3*	1.0												
3. Firm age (0,1)	0.0	0.2*	1.0											
4. Board size	0.1*	-0.0	-0.2*	1.0										
5. Board independence	0.2*	0.3*	0.1	-0.2*	1.0									
6. Female director	0.2*	0.2*	0.2*	0.0	-0.0	1.0								
7. Ownership concentration	0.1	0.1*	0.1*	-0.1	-0.1	0.2*	1.0							
8. GLC	0.1*	-0.0	-0.0	0.1*	0.2*	0.1	-0.1*	1.0						
9. Firm size	-0.1	0.1*	0.1*	0.2*	0.1*	-0.1	-0.0	0.1*	1.0					
10. Cash holdings	-0.1*	-0.2*	-0.2*	0.1	-0.0	0.1	-0.0	0.1*	0.0	1.0				
11. Debt ratio	0.0	-0.0	-0.0	0.3*	-0.3*	-0.0	-0.1*	-0.2*	0.1	-0.0	1.0			
12. ROA	0.2*	-0.1*	-0.1*	-0.2*	-0.1*	0.1	0.3*	-0.3*	-0.4*	-0.1	-0.1	1.0		
13. Asset growth	-0.1*	-0.2*	-0.2*	0.0	-0.1*	-0.1	-0.1	0.0	0.1	0.0	-0.0	0.0	1.0	
14. KLCI return	-0.0	-0.2*	-0.2*	0.0	-0.0	-0.0	0.1	0.0	0.0	0.2*	-0.0	0.1*	0.0	1.0

Note: * indicates significance at the 5% level.

score of 16.25, social score of 31.54, and governance score of 54.67. The low ESG scores suggest that there is ample room for Malaysian firms to improve their ESG performance. The key variable of interest, ESG inclusion years, ranged from 1 to 14 years, with an average of 6.6 years. The pairwise correlations among the independent variables ranged from -0.4 to 0.3, indicating that there is no serious multicollinearity problem. The final sample consists of 525 firm-year observations during the period from 2005 to 2018.

3.2 Method

Our regression model is designed in spirit with Cao et al. (2019) and Dang et al. (2021) on the determinants of CSR and ESG scores, respectively. We adopt a two-way fixed-effects panel regression model to examine the determinants of firm level ESG score with the number of years since a firm is included in Bloomberg's ESG score as the key variable of interest. Specifically, we control for firm characteristics and corporate governance variables that are found to affect firms' ESG performance. The regression model is estimated as follows:

$$ESG\ score_{it} = \alpha_0 + \alpha_1 ESG\ inclusion\ years_{it} + \theta_2 \boldsymbol{Corporate\ governance\ characteristics_{it}} + \theta_3 \boldsymbol{Firm\ characteristics_{it}} + \alpha_4 Year\ dummies_t + f_i + \varepsilon_{it} \quad (1)$$

The dependent variable is the natural logarithm of ESG score measured in each year (*t*) for each individual firm (*i*). ESG inclusion years is a continuous variable measuring the number of years a firm has been included in the Bloomberg's ESG rating. A positive relationship between inclusion year variable and ESG score reflect firms' deliberate efforts to improve their ESG performance. Since the inclusion variable is perfectly correlated with firm age, we created a firm age dummy variable that is equal to one if firm age is equal and above 30 years old (median value) and zero otherwise. This dummy serves to tease the firm's maturity impact from the ESG inclusion variable in the regression model. It is worth noting that the hypothesised positive relationship between inclusion years and ESG score is not mechanical (spurious) as only 43.8% of the firm-year observations show increase in ESG score while the remaining 41.1% has no change and 15.1% experience a decrease in ESG score.

Corporate governance characteristics consist of a vector of five corporate governance variables: board size, board independence, ratio of female to male directors, ownership concentration, and a dummy for government-linked company (GLC). We control for these variables since prior studies found that firms with better corporate governance structure tend to perform better in terms of ESG (Lau et al., 2016). Board size is measured by the total number of board of directors. Larger board size may influence the level of ESG performance due to greater diversity of ideas (Guo et al., 2018). Board independence is measured by the ratio of independent directors over total directors. A more independent board may be more able to play their key function in monitoring firm's sustainable practices (Dang et al., 2021). Female to male directors is measured by the ratio of female directors over total directors. Women directors are found to be more sensitive in leading CSR activities (Bear et al., 2010) and tend to be supportive of long-term sustainable projects (Galbreath, 2011).

Ownership concentration is measured by the ownership of top three largest shareholders manually collected from firms' annual reports. Seen through the lens of the agency theory, a concentrated ownership structure may lead to lower ESG performance as public accountability may not be the priority of the controlling shareholders (Mohd Ghazali, 2007). GLC is measured by a dummy equal to one if the largest shareholders are the federal or the state government. GLCs may engage more in ESG than non-GLCs to accommodate the political or social agenda of the government.

Firm characteristics consist of a vector of five firm characteristic variables: firm size, firm age, cash holdings, debt ratio, return on asset (ROA) and asset growth. Firm size is measured as the logarithm of a firm's total assets. Firm age is a dummy variable equal to one if firm age is equal and above 30 years old (median value) and zero otherwise. Cash holdings is measured by cash and cash equivalents divided by total assets. Return on asset (ROA) is measured as net income divided by total assets. Asset growth is measured as annual asset growth. We expect firms with the following characteristics to achieve better ESG performance: larger in size, more financial resources (cash holdings and ROA), higher debt capacity (lower debt ratio), higher reputation (older). As stated by Cao et al. (2019), the impact of asset growth can go both directions. On one hand, growing firms may have fewer financial resources to pursue ESG agenda. On the other hand, firms with more growth opportunities may engage more in ESG to impress potential investors.

All continuous explanatory variables used in the regression analysis were winsorised at the 1st and 99th percentile to avoid the influence of extreme observations. We also adopt the following filters to omit observations with extreme values: cash holdings more than 50%, asset growth more than 300%, ROA greater than 100% or less than -100% and total assets less than USD100,000. The firm-level fixed effects and time effects are absorbed by f_i and year dummies, respectively. We also control for stock market performance to further capture the common time trend effects that may influence firms' ESG performance. ε is an error term.

4. Empirical Results

This section examines the impact of ESG inclusion years on ESG performance using a two-way fixed-effects estimator. Consistent with the univariate analysis in the previous section, the number of ESG inclusion years is positive and significantly related to the overall ESG score, as shown in Model 1 in Table 4. This suggests that firms tend to improve their ESG performance once they are being rated by a third-party ESG rating agency. The coefficient value of inclusion year variable in Model 1 implies that firms improve their ESG score by 1.8% p.a. since the year they were included in the Bloomberg's ESG rating. We argue that this result is not due to firm age effects since we have controlled for firm age dummy in the regression model. In addition, we have controlled for year dummies that captured the increasing ESG score trend during the study period (see Figures 1 and 2).

The reputational and certification effects of ESG rating could have motivated firms to improve their ESG performance over time (Slager & Chapple, 2016). In particular, ESG scores may convey valuable private information about firms' ESG practices to their stakeholders. Thus, ESG-rated firms may strive not only to comply but also to improve

Table 4. The determinants of ESG score

	(1) ESG (All)	(2) ESG (Environment)	(3) ESG (Social)	(4) ESG (Governance)
Intercept	2.349*** (5.67)	0.128 (0.11)	1.850** (2.35)	3.890*** (26.87)
ESG inclusion years	0.018*** (5.12)	0.030*** (3.14)	0.007 (1.08)	0.010*** (6.09)
Firm age (0,1)	0.045 (0.93)	0.110 (0.80)	-0.036 (-0.37)	-0.016 (-0.87)
Board size	0.023* (1.85)	0.018 (0.61)	0.044** (2.24)	0.012*** (2.95)
Board independence	0.391** (2.42)	0.776* (1.82)	0.462 (1.62)	0.153*** (2.71)
Female director	0.341*** (2.68)	0.705** (2.02)	0.494** (2.35)	0.056 (1.17)
Ownership concentration	-0.102* (-1.75)	-0.103 (-0.64)	-0.076 (-0.54)	-0.056** (-2.44)
GLC	0.091** (2.22)	-0.062 (-0.39)	0.367*** (2.80)	-0.013 (-0.54)
Firm size	0.036 (0.69)	0.207 (1.39)	0.086 (0.89)	-0.025 (-1.24)
Cash holdings	0.283 (1.27)	0.317 (0.60)	0.387 (1.01)	0.104 (1.16)
Debt ratio	-0.177 (-1.13)	-0.582 (-1.43)	-0.243 (-0.78)	-0.010 (-0.21)
ROA	0.135 (1.14)	0.017 (0.07)	0.370* (1.79)	0.031 (0.43)
Asset growth	-0.019 (-0.41)	-0.189 (-1.18)	0.028 (0.36)	-0.003 (-0.16)
KLCI return	0.146** (2.60)	0.315** (2.11)	-0.009 (-0.09)	0.091*** (3.74)
Year effects	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes
No. of observations	525	525	525	525
R^2 (within)	0.46	0.38	0.38	0.31

Note: The table presents the estimation results on the determinant of ESG performance using fixed effect panel regressions. Our key variable of interest is ESG inclusion years, a continuous variable that measure number of years a firm has been included in Bloomberg's ESG score. Variables are defined in Table 1. *t*-statistics are reported in parentheses, while ***, ** and * refer to statistical significance at 1%, 5% and 10% levels, respectively.

their ESG scores to avoid the reputational costs associated with downgrading or exclusion from ESG rating (Rhee & Valdez, 2009).

Regression results using ESG sub-scores, as shown in Models 2-4, reveal that the positive impact of inclusion years is mainly driven by environment and governance sub-scores. The coefficient of inclusion years is not significant in the social sub-score regression. These findings suggest that firms in our sample invest more of their resources to improve the environment component of ESG followed by governance component as evidenced by the size of the coefficient values of inclusion years. Compared to the governance structure that has already been made compulsory in existing disclosure requirements, environment issues such as air quality, climate change, water and energy management may receive more attention from the stakeholders. The insignificant social component (e.g., health and safety) implies that this is not the top priority of firms in our sample.

Turning to corporate governance variables, board independence is positive and significant in Models 1 (Overall), 2 (Environment) and 4 (Governance), supporting independent directors' role in encouraging firms to be ESG-responsible. This finding corroborates with Khan et al.'s (2013) and Webb's (2004) findings of a positive relationship between board independence and CSR disclosure. The ratio of female directors is positive and significant in Models 1-3 (Overall, Environment, Social), implying that board gender diversity contributes to better ESG performance (Dang et al., 2021; Williams, 2003). The literature has shown that women are more concerned about ethical values (Pan & Sparks, 2012; Proença et al., 2020) and seek to improve firms' disclosures to improve the reputations of the firms for which they work (Brammer et al., 2009). Government-linked companies (GLCs) exhibit higher ESG scores than do their non-GLC counterparts, as shown in Models 1 (Overall) and 3 (Social). Since the government is the largest shareholder in GLCs, it is logical to expect GLCs to conform to the government's agenda by acting as the role models for ESG activity. Ownership concentration is negatively and significantly related to ESG performance in Models 1 (Overall) and 4 (Governance). This finding is consistent with the CSR literature, which documents the entrenchment effect of controlling shareholders, that in turn results in poor CSR performance (Cao et al., 2019).

Firm-level characteristics have a limited explanatory power with regard to ESG performance. ROA is positive and marginally significant in Model 3 (Social) suggesting that profitable firms tend to perform better in ESG practices. This finding is in line with Cao et al. (2019) and Guo et al.'s (2018) using Chinese firms. Similarly, KLCI returns are positive and significant in Models 1 (Overall), 2 (Environment) and 4 (Governance), suggesting that firms' ability to engage in ESG is enhanced during a booming stock market. The positive signs of these performance variables are consistent with Leong and Yang's (2021) finding that financially constrained firms tend to exhibit lower CSR performance.

4.1 Further Tests

We conduct further tests as shown in Table 5 to examine the robustness of the main results of the positive impact of inclusion years on ESG performance. First, we re-estimate our results using a random regression estimator that control for industry

Table 5. Further tests

	(1) ESG (All) (Random effects)	(2) ESG (All) (1–5) years	(3) ESG (All) (5–10) years	(4) ESG (11–14) years	(5) ESG (All) (Interactive) effects
Intercept	2.819*** (15.68)	4.843*** (3.58)	2.019*** (3.07)	-0.379 (-0.19)	2.879*** (5.94)
ESG inclusion years	0.042*** (3.31)	0.049*** (2.76)	0.052*** (5.67)	-0.025 (-0.23)	-0.033 (-1.18)
Board size*ESG inclusion years		–	–		0.002 (-1.58)
Board independence*ESG inclusion years					0.052* (1.68)
Concentration*ESG inclusion years					-0.005 (-0.62)
Female director*ESG inclusion years					2.365*** (8.93)
Firm size*ESG inclusion years					0.005** (2.44)
Cash holdings*ESG inclusion years					0.024 (0.52)
Debt ratio*ESG inclusion years					-0.001 (-0.03)
ROA*ESG inclusion years					0.016 (0.61)
Asset growth*ESG inclusion years					0.006 (0.42)
Control variables	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	No	No	No	No
Year effects	Yes	Yes	Yes	Yes	Yes
Firm effects	No	Yes	Yes	Yes	Yes
No. of observations	525	200	253	72	525
R^2 (within)	0.45	0.36	0.34	0.21	0.68

Note: The table presents further tests to the main results. Model 1 shows the random effects results controlling for industry dummies. Models 2-4 are subsample tests divided by the length of ESG inclusion years. Model 5 shows the interactive effects results of board/firm characteristics and ESG inclusion years. t-statistics are reported in parentheses, while ***, ** and * refer to statistical significance at 1%, 5% and 10% levels, respectively.

dummies. As shown in Model 1, the coefficient of ESG inclusion years remains positive and significant under this specification. Second, we conduct subsample analysis by breaking down the full sample into three equally divided subsamples based on the length of ESG inclusion years. Intuitively, the positive impact of inclusion years should decrease over time, as there is less scope for firms to improve their ESG practices. As shown in Models 2-4 in Table 5, the coefficient values of ESG inclusion years remain strongly positive during the first 10 years of ESG inclusion. The impact of ESG inclusion only turns insignificant after 10 years of inclusion in ESG rating. This implies that firms in our sample continually improved their ESG performance during the first 10 years of their ESG status. This piece of finding provides further credence to our claim of inclusion years as proxy for managerial efforts instead of firm age.

Next, we attempt to uncover firm and board characteristics that are associated with higher levels of effort to improve ESG scores by interacting ESG scores with each of these explanatory variables. As shown in Model 5, the positive coefficient value of these interaction terms suggests that larger firms and firms with higher ratios of independent directors and female directors tend to invest more efforts to improve their ESG score. These findings suggest that firms that are larger in size (more resources) and firms with stronger corporate governance structure (board independence and female directorship) are significantly more likely to improve their ESG score than small firms and firms with weaker corporate governance structure. Combined with findings from Table 4, our results suggest that independent directors and female directors play an important role in advocating the ESG agenda of Malaysian firms.

5. Conclusion

This study contributes to the burgeoning literature on the determinants of ESG performance. We extend this line of literature by investigating firms' efforts to improve their ESG scores once they are under the radar of a third-party rating agency. The results show that, on average, firms increased their ESG score by 1.8% each year after they were formally included into the Bloomberg's ESG score. Further tests reveal firms focus on improving their environmental and governance performance. Interaction variable results suggest that large firms and firms with stronger corporate governance structure (board independence and female directorship) tend to improve their ESG performance over time.

Our paper adds to the small strand of literature that investigate the roles of ESG third-party rating agency in improving ESG performance of the rated firms over time besides their main role of provision of ESG performance information to investors and stakeholders. This finding demonstrates the benefits of third-party rating certification in fostering firms' socially responsible investment (SRI) or ESG agenda. Specifically, a third-party certification can be used as a policy tool by the regulator to encourage ESG activities by corporations in addition to tightening up regulations on ESG disclosure. Presently, there is only a handful of listed firms (about 10%) in Malaysia being rated by third-party ESG rating providers such as Bloomberg, Refinitiv and FTSE. Policymakers could provide financial incentive (e.g., lower tax rate) to encourage firms to be ESG rated. Awareness programs such as engagement dialogue session between corporation

and ESG rating agencies could be organised to make firms more aware of the standards and requirements of ESG rating.

This study carries the following two limitations. First, it is prone to sample selection problem since we only focused on a small sample of firms that are rated by Bloomberg. Not reported here, these sample firms tend to be larger and more profitable than non-ESG rated Malaysian firms during the sample period. Hence, our findings of continuous ESG improvement may not be generalisable to non-rated firms that may have lesser financial resources to improve their ESG performance once they are rated. Second, it is not able to pinpoint specific efforts or causes leading to the improvement of ESG score by our sample firms. Slager and Chapple (2016) for instance show that firms facing exclusion threats from FTSE4Good Index and those that attach more value to FTSE4Good Index tend to improve their ESG performance. With these caveats, we contribute to literature by showing for the first-time firms' continual improvement in ESG performance during the first 10 years since obtaining ESG endorsement from a third-party rating agency.

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