ESG disclosure and firm performance before and after IR: The moderating role of governance mechanisms

Khaldoon Albitar
University of Portsmouth
Department of Accounting and Financial Management
khaldoon.albitar@port.ac.uk

Khaled Hussainey
University of Portsmouth
Department of Accounting and Financial Management
khaled.hussainey@port.ac.uk

Nas Kolade
University of Northampton
Nas.Kolade@northampton.ac.uk

Ali M Gerged
De Montfort University
Leicester Castle Business School
Department of Accounting and Finance
Ali.gerged@dmu.ac.ik

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Abstract

Purpose

This paper aims to investigate the effect of environmental, social, and governance disclosure (ESGD) on firm performance (FP) before and after the introduction of integrated reporting (IR) further to exploring a potential moderation effect of corporate governance (CG) mechanisms on this relationship.

Design/methodology/approach

Ordinary least squares (OLS) and firm-fixed effects models were estimated based on data related to FTSE 350 between 2009 and 2018. The data has been mainly collected from Bloomberg and Capital IQ. This analysis was supplemented with applying a two-stage least squares (2 SLS) model to address any concerns regarding the expected occurrence of endogeneity problems.

Findings

The results show a positive and significant relationship between ESGD score and firm performance before and after 2013, among a sample of FTSE 350. Furthermore, the study is suggestive of a moderation effect of CG mechanisms (i.e., ownership concentration, gender diversity and board size) on the ESGD-FP nexus. Additionally, this paper finds that firms voluntarily associated with IR have a tendency to achieve better firm financial performance.

Practical implications

The findings of the present study have several policy and practitioner implications. For example, managers may engage in ESGD to enhance their firms' financial performance by the voluntary involvement in IR, which believed to help investors to rationalise their investment decisions. Likewise, the results reiterate the crucial need to integrate more social, environmental and economic regulations to promote sustainability in the UK. The paper also offers a systematic picture for policymakers in the UK as well as future researchers.

Social implications

The findings of this paper indicate that IR plays a significant role in the relationship between ESGD and FP, where IR firms seemed to be achieving better FP as compared with their non-IR counterparts. This implies that stakeholders may have played a magnificent effort to encourage firms' voluntary engagement in IR in the UK.

Originality/value

To the best of the authors' knowledge, this is the first study to explore the potential moderating effect of ownership concentration, gender diversity and board size on the relationship between ESGD and FP and to examine whether firms' voluntary involvement in IR can lead to better FP after the introduction of IR in 2013 in the UK.

Keywords: Environmental disclosure; social disclosure; governance disclosure; integrated reporting; ownership concentration; gender diversity; board size.

1. Introduction

As sustainability is increasingly significant to economic development, corporate environmental and social responsibility has become an international trend, and this was

accompanied with a lack of firms' non-financial disclosure such as environmental, social and governance (ESG) information and practice (Li et al., 2018). Recently, there is a growing demand for improving business reporting, with more focus on encouraging firms to provide more non-financial information (Lai et al., 2018). Sustainable development is not only related to CSR and accounting standards but also associated with customer satisfaction (Akisik and Gal, 2011). Previous research focuses on the effect of corporate social responsibility (CSR) on firm value or the concept of socially responsible investing (SRI) and lacks the perspective of sustainability and integrated reporting (Kimbro and Cao, 2011; Li et al., 2019).

Environmental, social, and governance disclosures (ESGD) offer a more significant opportunity to understand firms' non-financial reporting. Non-financial information can help corporate managers in the fulfilment of their strategic environmental objectives (Alewine and Stone, 2013). Furthermore, corporate ESGD appeared to be of imperative importance to both academics and practitioners. In addition to this, stakeholders began to raise questions about managers' credentials in integrating environmental, social and governance considerations (Husted and Sousa-Filho, 2018). According to the arguments of stakeholder and agency theories, firms have to adopt a more sustainable and long-term value view as stakeholders are concerned about a company's ESG factors to know where the firm invests and how the firm conducts business (Eccles et al., 2014; Atan et al., 2018). For instance, the environmental concerns of stakeholders might be related to natural environment protection, climate change, and environmental impacts arising from a business operation.

Moreover, social factors, which are important to stakeholders could be human rights, equality, diversity in the workplace, and contribution to society. Further, concerns related to governance issues are ownership structure, board independence, minority shareholders' rights, transparency, and disclosure quality. Investors may have a preference for products that consider and reflect the relationship between their investments and ESG challenging (Li et al., 2018). Further to this, by 2030, all firms are expected to disclose information related to their environmental and social effect according to the United Nations (UN) Sustainable Stock Exchange (SSE) initiative (SSE, 2015).

ESG is a commonly researched concept, which has been considered as an important part of the strategy of the firm because it might have a crucial effect on firm performance (Aouadi and Marsat, 2018; Fatemi et al., 2017; Baldini et al., 2016; El Ghoul et al., 2017; Nekhili et al., 2017; Aboud and Diab, 2018). ESG integration has become an essential issue for investors, governments, regulators, firms, non-governmental organisations (Lee et al., 2013). Understanding what motivates integrated reporting, therefore, is crucial following stakeholders demand. However, understanding what motivates sustainability reporting could be developed by the concept of reputation risk management (Hogan and Lodhia, 2011). Various studies examine the relationship between ESG and FP; the findings are inconclusive (Cho et al., 2006; Garay and Font, 2012; Madsen and Rodgers, 2015; Revelli and Viviani, 2015; Bernardi and Stark, 2018; Li et al., 2018).

Integrated reporting (IR) concept has attracted the attention of academics and practitioners since it had been introduced in 2013 (Velte and Stawinoga, 2016); however, there is an on-going discussion on the benefits and the ability to meet the needs of stakeholders. According to value-creating theory, it is predicted that the integration of environmental and

social responsibility into corporate strategies and practices reduces firm risk and promotes long-term value creation (Yu and Zhao, 2015). Since IR is voluntary in the UK, companies are motivated by the fact that stakeholders have demanded extensive disclosure on ESG issues. Thus, firms in the UK have enough incentive to voluntarily engage in integrating ESG information into corporate reports to meet the demands of stakeholders.

In addition to this, governance mechanisms would play a crucial role in the relationship between ESGD and FP; thus this paper investigates the role of three governance mechanisms in the ESG-FP nexus namely ownership concentration, gender diversity and board size. Concentrated ownership could lead to specific ESGD because of the efforts from the principal owners, and it can also affect decisions on firms' policies related to ESGD (Dam and Scholtens, 2013; Akben-Selcuk, 2019). Further, research on board gender diversity, ESGD and FP are very rare; however, board size and more women on the board can improve the processes of decision-making, including decisions and strategies about ESGD by providing different approaches in board discussions; thus more women on the board of directors would help to generate new ideas and to have different opinions related to the decision making process, this might ultimately result in a positive impact on financial performance (Adams and Ferreira, 2009; Allegrini and Greco, 2011; Giannarakis et al., 2014; and Husted and Sousa-Filho, 2018).

Previous research focuses on the effect of social responsibility disclosure or ESGD on FP, although it lacks the perspective of IR and other governance attributes which would substantially affect this relationship. Furthermore, there is an ongoing debate on the effect of ESGD on FP. Therefore, this paper aims to study the effect of ESGD on FP before and after the introduction of IR in the UK. In addition, it attempts to explore the underlying drivers of this relationship between ESGD and FP by investigating three potential moderators, namely, ownership concentration, gender diversity and board size. This study also seeks to examine whether IR acts as a moderator on the association between ESGD and FP after 2013. To the best of our knowledge, this is the first study that compares the effect of ESGD on FP before and after the introduction of IR as well as explores potential moderators on this relationship. This study contributes to the dearth of extant literature in three ways. First, unlike previous studies, the current research considers the potential impact of IR introduction in 2013 on the ESGD-FP nexus. Second, to the best of our knowledge, this is the first study to explore the potential moderating roles of ownership concentration, gender diversity and board size on the relationship between ESGD and FP. Third, by focusing on the period after the introduction of IR in 2013, this paper exclusively investigates the voluntary adoption of IR and whether it has played a positive effect on the relationship between ESGD and FP.

The rest of the paper is structured as follows: Section 2 introduces the research hypotheses based on analysing the literature of the relationship between ESG, firm performance, IR and three governance mechanisms. Section 3 presents the sample and variables measurement for empirical research. Section 4 provides a discussion on the empirical results; then section 5 provides some additional analysis and section 6 summarises the main conclusions and puts forward policy recommendations.

2. Literature review and hypotheses development

2.1 ESG and firm performance

Many research studies have examined the effect of ESGD on firm performance, although their results were inconsistent. Some researchers (e.g., Qiu et al. 2016) couldn't find any relationship, whereas others confirmed that ESGD could lead to increasing a firm's cost, making it an economic disadvantage (Yoon et al., 2018). From a value-enhancing theory perspective, prior studies indicate that ESGD may positively influence firms performance in both direct and indirect ways; thus this enhance companies' competitive advantages as well as shareholder value (Bernardi and Stark, 2018; Li et al., 2018). Certainly, the benefits of corporate engagement in ESGD seemed to be including inter alia operating efficiency enhancement and improving firm reputation in the capital market (Yoon et al., 2018; Li et al., 2018). A positive relationship between ESGD and FP can be supported by stakeholder theory. Tantalo and Priem (2016) believe that each essential stakeholder group (e.g., investors, debtors, employees, customers, and regulators) considers ESGD as a potential source of value creation. The essential tool for improving FP is managing the core business stakeholders relationships. From a stakeholder theory perspective, firms may enhance their financial performance through indirect benefits by engaging in good relationships with stakeholders (Hamman et al., 2010). Firms with socially and environmentally responsible behaviour along with good governance practice would satisfy the interests of stakeholders and thus improve FP (Aboud and Diab, 2018).

Furthermore, the resource-based theory argues that firms with superior ESGD can gain competitive advantages (Branco et al., 2006; Li et al., 2019). Moreover, resource-based theory is suggestive of a positive relationship between ESGD and FP. This means that investing in ESGD may help firms to develop new internal resources as well as generate external benefits through corporate reputation (Branco et al., 2006).

Furthermore, the majority of the extant studies have used stakeholder theory to explain the positive relationship between ESGD and FP (Yoon et al., 2018; Aboud and Diab, 2018; Brooks and Oikonomou, 2018). This paper, however, combines the concepts of both stakeholders and resource-based theories to gain the richest possible understanding of the nature of the ESGD-FP nexus. -This paper, therefore, argues that firms with superior ESGD may gain a competitive advantage, better reputation and higher firm performance. Thus, the first hypothesis to test is:

H1: ESG disclosure positively related to firm performance.

2.2 Ownership concentration, ESG disclosure and firm performance

Recently, the impact of ownership concentration on the relationship between ESGD and firm performance has become of great interest to shareholders, practitioners, and governance regulators (Peng and Yang, 2014). ESGD might attract large shareholders, and this may result in an extensive investment, as well as concentrated ownership could lead to specific ESGD due to stakeholders' efforts (Dam and Scholtens, 2013; Akben-Selcuk, 2019). Further, the relationship between ESGD and FP can be influenced by firms' ownership concentration (Dam and Scholtens, 2013; Kao et al., 2018; Brooks and Oikonomou, 2018; Akben-Selcuk, 2019). Thus, it is important to consider the role of ownership concentration in the relationship between ESGD and FP because it can affect decisions on firm policies related to ESGD. Large shareholders might have incentives to disclosure more ESG information as well as to use their controlling position to get private benefits and gains at the cost of other minority shareholders'

wealth, which causes agency problems (Dam and Scholtens, 2013; Kao et al., 2018). According to stakeholder theory, large shareholders may have a preference to involve more in ESGD not only for their private interest but also to develop good relationships with stakeholders, which helps in enhancing their reputation and thus improve firm performance (Dam and Scholtens, 2013; Brooks and Oikonomou, 2018). Therefore, the second hypothesis to test in this paper is as follows:

H2: Ownership concentration moderates the relationship between ESG and firm performance.

2.3 Gender diversity, ESGD and firm performance

Recently, board gender diversity has increasingly received more attention in terms of its relation to corporate governance and CSR disclosure (Ullah et al., 2019). Women on the boards of UK firms positively contribute to firm value and reaffirm government emphasis on the need for more women on corporate boards to bring about gender equity (Agyemang-Mintah and Schadewitz, 2019). Previous studies suggest that board gender diversity has a positive effect on ESGD and CSR disclosure (Hafsi and Turgut, 2013; Javaid Lone et al., 2016; Galbreath, 2013; Orazalin, 2019; Gulzar et al., 2019). In this regard, stakeholder theory suggests that board gender diversity may have a positive effect on ESGD. Resource dependence theory, furthermore, suggests that gender diversity improves decision-making and helps align the organisation with its external environment and resources; thereby enhancing the firm's financial performance (Agyemang-Mintah and Schadewitz, 2019). However, Manita et al. (2018) and Alazzani et al. (2018) found no significant relationship between board gender diversity and ESGD. Agency theory tends to support the notion that firms associated with diverse gender in the board have a more increased ability to effectively monitor management behaviour, which will eventually enhance firm performance (Ntim and Soobaroyen, 2013). In general, women on the board can provide different angles in board discussions, which would improve the processes of decision-making, including decisions and strategies about ESGD, so more women (diversity) on the board of directors help to increase the different opinions and the quality of the discussion related to the decision-making process, which is believed to increase the quality of those decisions and this would potentially have a positive impact on financial performance (Adams and Ferreira, 2009; Giannarakis et al., 2014; and Husted and Sousa-Filho, 2018). However, to the best of our knowledge, this is the first study to consider the moderating role of women on the board on the relationship between ESGD and FP among FTSE 350. Therefore, this paper proposes:

H3: Board gender diversity moderates the relationship between ESG and firm performance.

2.4 Board size, ESGD and firm performance

Many researchers believe that more directors on the boards would likely help in bringing more different views in the processes of decision-making. Agency theory proposes that the board of directors acts as representative of the various groups of shareholders for monitoring the performance and controlling the activities of managers. A larger board consists of more directors who serve the interests of shareholders in monitoring and controlling firms'

behaviour and leading, thereby, to increase firm performance. Thus, agency theory suggests that a large-sized board enhances firm performance by offering a better monitoring process. A larger number of directors have to discuss and negotiate more effectively to reach an agreement, which means that they are less likely to make decisions that differ significantly; thus decrease or prevent the variability of firm performance and might lead to better performance. The empirical evidence on the relationship between board size, ESGD and FP is mixed (Kao et al., 2018; Husted and Sousa-Filho, 2018; Orazalin, 2019). Some previous research found a positive and significant effect of board size on ESGD (Allegrini and Greco, 2011; Javaid Lone et al., 2016 and Husted and Sousa-Filho, 2018). However, others (e.g., Giannarakis et al., 2014; Orazalin, 2019) could not find any significant impact of board size on ESGD and CSR disclosure. Thus, we argue that a larger board will bring better perspectives in decision making; thus firms with the large-sized boards are likely to disclose more ESG information, which might, to an extent, lead to better firm performance. Thus, this paper proposes:

H4: Board size moderates the relationship between ESG and firm performance.

2.5 ESG and integrated reporting

Although integrated reporting (IR) concept is gaining remarkable attention; empirical research on this concept is scarce (Robertson and Samy, 2015; Lai et al., 2018; Maniora, 2017). Stakeholders mainly investors have demanded extensive disclosure on ESG related issues; thus, firms in the UK have enough incentive to engage in ESGD and IR to meet stakeholders demands voluntarily. Firms are likely to benefit from "*integrated thinking*" as a possible result of IR; hence firms can have a better understanding of the link between their value drivers and strategic goals (Simnett and Huggins, 2015). Consequently, linking ESGD with financial reporting through an integrated report provides stakeholders with an improved understanding of the firm and its future (Bernardi and Stark, 2018). The integrated reports of firms, which do not disclose much on ESG are unlikely to enhance the understanding of the linkages between ESGD and financial performance (Bernardi and Stark, 2018).

Further to this, there is a potential link between ESGD, and firm performance (Yoon et al., 2018; Aboud and Diab, 2018; Brooks and Oikonomou, 2018) and IR might help to make it more visible. However, this paper assumes that IR introduction in 2013 significantly affects ESGD, which will somehow affect FP. Thus, we proposed that firms voluntarily involved in IR would have higher ESGD and FP.

H5: IR moderates the relationship between ESG and firm performance.

3. Research design

3.1. Sample and data collection

The initial sample of this paper includes all firms that made up the FTSE 350 over the period 2009-2018 except 2013 the year in which IR has been introduced. We exclude firm-years that miss the necessary data for the variables used in our analysis. The final sample consists of 1943 firm-year observations. Furthermore, the data of this paper is collected from

two data sources, which are Bloomberg, S&P Capital IQ. Bloomberg ESG disclosure scores have been commonly used in the academic literature (Nollet et al., 2016, Manita et al., 2018).

3.2. Research models and variables measurement

This paper uses five regression models to test the hypotheses as follows:

$$\text{Tobins Q} = \beta 0 + \beta 1\ \text{ESGDS} + \beta 2\ \text{Hold} + \beta 3\ \text{Women\%} + \beta 4\ \text{BSize} + \beta 5\ \text{Lev} + \beta 6\ \text{LogFS} + \text{Year/Industry Fixed Effects} + \varepsilon \quad (1)$$

$$\text{Tobins Q} = \beta 0 + \beta 1\ \text{ESGDS} + \beta 2\ \text{Hold} + \beta 3\text{ESGDS*Hold} + \beta 4\ \text{Lev} + \beta 5\ \text{LogFS} + \text{Year/Industry Fixed Effects} + \varepsilon \quad (2)$$

$$\text{Tobins Q} = \beta 0 + \beta 1\ \text{ESGDS} + \beta 2\ \text{Women\%} + \beta 3\text{ESGDS*Women\%} + \beta 4\ \text{Lev} + \beta 5\ \text{LogFS} + \text{Year/Industry Fixed Effects} + \varepsilon \quad (3)$$

$$\text{Tobins Q} = \beta 0 + \beta 1\ \text{ESGDS} + \beta 2\ \text{Bsize} + \beta 3\text{ESGDS*Bsize} + \beta 4\ \text{Lev} + \beta 5\ \text{LogFS} + \text{Year/Industry Fixed Effects} + \varepsilon \quad (4)$$

$$\text{Tobins Q} = \beta 0 + \beta 1\ \text{ESGDS} + \beta 2\ \text{Hold} + \beta 3\ \text{Women\%} + \beta 4\ \text{BSize} + \beta 5\ \text{IR} + \beta 6\text{ESGDS*IR} + \beta 7\ \text{Lev} + \beta 8\ \text{LogFS} + \text{Year/Industry Fixed Effects} + \varepsilon \quad (5)$$

Firm performance: much recent research (El Ghoul et al., 2017; Aboud and Diab, 2018; Li et al., 2018) have confirmed that Tobin's Q is a valid measurement of firm performance. Tobin's Q not only reflects past performance but also represents the firm's future development expectations (Li et al., 2019). Thus, this paper selects Tobin's Q to measure firm performance. ESG Disclosure: ESG Disclosure score provided by Bloomberg is based on the available information in the annual reports, corporate social responsibility reports, and firms' websites. Further, this score ranges from 0.1 for firms that disclose a minimum amount of ESG data to 100 for those that disclose every data point collected by Bloomberg. Recently, ESG disclosure scores provided by Bloomberg have been widely used in the academic literature (Nollet et al., 2016 and Manita et al., 2018). Ownership concentration: This paper uses the sum of holdings of the three largest shareholders as a percentage as a measurement for Ownership concentration in line with prior ESG-to-FP studies (e.g., Dam and Scholtens, 2013; Kao et al., 2018; Brooks and Oikonomou 2018; Akben-Selcuk, 2019). Gender diversity: The percentage of women on board of directors has been used as a measurement for gender diversity (Adams and Ferreira, 2009; Giannarakis et al., 2014; and Husted and Sousa-Filho, 2018). Board Size: The number of directors on the firm's board is used to measure board size (Allegrini and Greco, 2011; Javaid Lone et al., 2016 and Husted and Sousa-Filho, 2018; Orazalin, 2019). Control variables: firm size and leverage are used as control variables (Bernardi and Stark, 2018; Aouadi and Marsat, 2018; Kao et al., 2018; Aboud and Diab, 2018).

4. Empirical results

Table I provides the descriptive statistics of the included variables for pre and post-2013 periods. The mean of ESG disclosure score for the pre-2013 sample is 36.304% which reflects that many firms don't provide high-level of ESG information according to Bloomberg measurement. In addition to this, the results clearly show that there is no company entirely obtained an overall score of more than 70% according to Bloomberg ESG scores. The mean of

the environmental disclosure score is the lowest, with only 25.929%. The descriptive statistics for the period after 2013 are similar to the period before 2013 as it can be seen from Table II; however, the mean of each disclosure score has increased.

INSERT TABLES I/ II HERE.

The correlation matrix for the dependent and independent variables are presented in Tables III and IV. The correlation matrix shows the correlation between firm performance and its explanatory variables, as well as the correlations among other variables. This will help to check the statistical relationship between the dependent and the independent variables, and whether there is any potential sign of Collinearity. It can be decided that Multicollinearity does not appear to be a concern in explaining the regression results from VIF results which tested separately. Furthermore, we test the difference between ESGDS before and after the introduction of IR separately as we noted that ESGDS have increasing trends over time according to Bloomberg measurement so we use two-sample t-tests for the mean difference between the Pre-2013 period and Post-2013 period and the difference is insignificant[1].

INSERT TABLE III HERE.

INSERT TABLE IV HERE.

Table V shows the regression results for the first model, Model (1) used to test the first hypothesis, which says that ESGDS is positively related to firm performance. The findings of the study discovered that ESDS enhances firm performance before and after the introduction of IR, which can also be explained by stakeholder theory consistent with the results of previous studies (Yoon et al., 2018; Aboud and Diab, 2018; Brooks and Oikonomou, 2018). Following this, as it can be seen from Table VI, we divided our sample into three sub-samples, First, firms with a low level of ESGDS (less than 30%) according to the Bloomberg measurement. Second, firms with a medium level of ESGDS (30% or 40%). Third, firms with a high level of ESGDS (more than 40%). The coefficients of low ESGDS, Medium ESDS and High ESGDS are positive; however, the coefficient of the high ESGDS firms is 0.266, which is larger than the coefficients of the low ESGDS, and the medium ESGDS samples. This means that firms with high ESGDS have the highest firm performance. Further, the coefficients of these variables after the introduction of IR are higher than the coefficients before 2013.

INSERT TABLES V/ VI HERE.

Moreover, the results from Table VII indicate that the coefficient of the interaction between ownership concentration and ESGDS is significant at 5%; so this confirms that ownership concentration moderates the relationship between ESDS and firm performance. This implies that concentrated ownership might lead to a higher ESG disclosure due to the efforts of the major owners (Dam and Scholtens, 2013; Kao et al., 2018; Brooks and Oikonomou 2018; Akben-Selcuk, 2019). Furthermore, the results when running Model 3 show that gender

[1] We don't report VIF and two-sample test in this section for simplicity.

diversity moderates the effect of ESDS on firm performance (Hafsi and Turgut, 2013; Javaid Lone et al., 2016; Galbreath, 2013; Orazalin, 2019; Gulzar et al., 2019; Agyemang-Mintah and Schadewitz, 2019). Moreover, women on boards enhance board monitoring and bring a diversity of ideas, new perspectives, experience and business knowledge to the decision-making process in boardrooms, thereby improving the firm's financial valuation (Agyemang-Mintah and Schadewitz, 2019). Thus, firms are encouraged to have more women on the board. Firms with higher ESG disclosure along with robust governance mechanisms would satisfy the interests of stakeholders and improve firm performance. In addition to this, board size acts as a moderator on the relationship between ESGDS and firm performance pre- and post-2013 as it can be seen from running Model 4.

Further, as it can be seen from Model 5, we run the regression only for the period after 2013 by taking into account IR as a dummy variable equals one if a firm w involved in preparing IR and the report is available for stakeholders and 0 otherwise to test whether firms with IR have higher firm performance as well as to explore whether IR moderates the relationship between ESGDS and firm performance. The results show that IR firms have higher firm performance comparing to those without IR. However, the interaction between IR and ESGDS is positively and significantly attributed to firm performance, which confirms that IR moderates the relationship between ESGDS and firm performance.

INSERT TABLE VII HERE.

5. Additional analysis

Using the main components of the ESG score (i.e., environmental disclosure, social disclosure and governance disclosure) separately in the regression analysis, this paper finds that the associations between environmental, social and governance disclosures and firm performance were consistent with the main results, but, the interaction between governance disclosure and both ownership concentration and board size were statistically insignificant.

Following this, we used ROA and ROE as alternative measurements for firm performance. The results are in line with the main result for both ROE and ROA except we couldn't find a piece of evidence regarding the moderating effect of ownership concentration when using ROA as a dependent variable in all models. Additionally, to address any concerns regarding the potential occurrence of simultaneity and endogeneity issues, we conduct 2SLS regressions using market/book and lagged values, and the findings are consistent with our main results, suggesting that endogeneity does not drive our main findings.

6. Conclusion

This paper examines the impact of ESGD on FP before and after the introduction of integrated reporting in 2013 further to exploring the potential moderating effect of ownership concentration, gender diversity and board size on this relationship among a sample of FTSE 350 over the period 2009-2018. The results show that ESGD is attributed to firm performance. This paper, furthermore, finds that ownership concentration, gender diversity and board size moderate the ESGD-FP nexus. This implies that the primary shareholders of FTSE 350 firms consider ESGD as a strategy of improving firms' image and reputation with the expectation of

value creation in the long-term. Likewise, women on boards may have exercised more effort to push managers towards more engagement in ESGD.

Moreover, we found that IR moderates the relationship between ESGD and FP for the period after 2013, and the firms which have voluntarily involved in IR have a tendency to achieve higher firm financial performance. However, this paper couldn't find significant differences in ESGD when comparing the two periods. Besides, the interaction between governance disclosure and both of ownership concentration and board size were insignificant when running the regression for each individual disclosure score of ESG separately.

This paper contributes to the ESG-to-FP literature by considering the potential effect of IR introduction in 2013 further to exploring the potential moderating roles of ownership concentration, gender diversity and board size on such a relationship. In addition to this, this paper provides a shred of early evidence on the voluntary adoption of IR and its impact on the ESGD-FP nexus following the introduction of IR.

The findings of this paper would be extremely relevant to the government, investors and firm's managers. For instance, firms may improve ESGD along with integrating their ESG information within their financial reports in order to enhance their financial performance, which may help investors to understand and make their investment decision easily. Additionally, our findings recommend policymakers to develop more effective enforcement mechanisms for list firms to be mandatorily engaged in integrating their ESG information within their financial reports.

This paper mainly focuses on the impact of ESGD on FP before and after the introduction of IR as well as the role of ownership concentration, gender diversity and board size on this association. Future researchers, therefore, can further investigate this issue by considering another country or using content analysis to check each IR provided by firms or whether ESGD from different countries would heterogeneously affect FP when taking IR issue into account. Further studies can also consider the industry-level firm performance while investigating the role of ownership concentration, gender diversity and board size.

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Appendix 1

Variables description

Variables	Description	Reference
Tobin's Q	The market value of assets divided by the replacement value of assets.	Aboud and Diab, 2018; El Ghoul et al., 2017; Li et al., 2018.
ESGDS	Zero to 100 is the range of the Bloomberg ESG disclosure score.	Nollet et al., 2016, Manita et al., 2018; Bernardi and Stark, 2018.
Hold	The sum of holdings of the three largest shareholders as a percentage.	Dam and Scholtens, 2013; Kao et al., 2018; Brooks and Oikonomou 2018; Akben-Selcuk, 2019.
Women%	The percentage of women on board of directors.	Adams and Ferreira, 2009; Giannarakis et al., 2014; and Husted and Sousa-Filho, 2018.
BSize	The number of directors on the firm's board.	Aboud and Diab, 2018; Bernardi and Stark, 2018.
Lev	The total debt divided by total assets.	Bernardi and Stark, 2018; Aouadi and Marsat, 2018; Kao et al., 2018; Aboud and Diab, 2018.
LogFS	The natural logarithm of total assets.	Bernardi and Stark, 2018; Aouadi and Marsat, 2018; Kao et al., 2018; Aboud and Diab, 2018.
IR	A dummy variable equals 1 if the firm was involved in preparing IR, and the report is available for stakeholders and 0 otherwise.	

Table I Descriptive Statistics pre-2013

Variable	Obs	Mean	Std.Dev.	Min	Max
ESGDS	1032	36.304	11.339	11.157	69.421
ENV	1032	25.929	14.617	1.55	74.419
Soc	1032	38.324	12.992	3.509	84.21
Gov	1032	57.352	7.31	39.286	82.143
Hold	1017	28.315	15.49	21.152	78.11
Women%	1032	18.068	11.048	0	57.143
Bsize	1032	9.365	2.455	3	21
Lev (control)	1032	6.433	33.517	1.035	240.33
LogFS(control)	1032	3.642	2.856	1.634	6.229

Table II Descriptive Statistics post-2013

Variable	Obs	Mean	Std.Dev.	Min	Max
TobinsQ	911	1.975	3.51	.674	80.938
ESGDS	911	37.418	10.873	15.636	70.124
ENV	911	28.814	14.161	7.525	73.595
Soc	911	40.941	12.487	8.843	88.21
Gov	911	57.515	7.102	39.943	83.143
Hold	911	29.535	16.14	20.221	79.02
Women%	911	19.787	11.099	0	60
Bsize	911	9.341	2.27	5	17
Lev (control)	911	6.188	18.923	1.005	241.153
LogFS (control)	911	3.812	2.247	1.021	8.521

Table III Matrix of correlations pre-2013 sample

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)TobinsQ	1.000						
(2) ESGDS	0.111	1.000					
(3) Hold	0.010	0.880	1.000				
(4) Women%	0.026	0.251	0.204	0.292			
(5) Bsize	0.013	0.320	0.319	0.175	0.185		
(6) Lev	0.096	0.009	0.014	-0.017	0.022	0.053	
(7) LogFS	0.232	0.220	0.219	0.275	0.285	0.162	0.220

Table IV Matrix of correlations post-2013 sample

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)TobinsQ	1.000						
(2) ESGDS	0.034	0.034					
(3) Hold	0.096	0.096	0.096				
(4) Women%	0.079	0.079	0.079	0.079			
(5) Bsize	0.014	0.014	0.014	0.014	0.014		
(6) Lev	0.288	0.288	0.288	0.288	0.288	0.288	
(7) LogFS	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Table V ESG disclosure and firm performance before and after 2013

TobinsQ			
Model 1	2009-2012	2014-2018	Pooled Sample
ESGDS	0.056***	0.064***	0.023***
	(2.52)	(3.21)	(4.51)
Hold	0.96**	0.132**	0.178**
	(1.76)	(1.91)	(2.06)
Women%	0.028***	0.019***	0.023***
	(3.93)	(2.67)	(2.96)
Bsize	0.062***	0.053***	0.067***
	(2.221)	(1.731)	(1.621)
Lev	1.817***	0.0780***	0.0962***
	(-11.65)	(-3.23)	(-3.74)
LogFS	7.787***	1.179***	1.175***
	(-11.79)	(-10.05)	(-9.59)
_cons	178.0***	31.62***	79.08***
	(-13.37)	(-12.7)	(-10.84)
Observations	1032	911	1943
Adjusted R^2	20.56%	23.21%	22.51%
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Firm fixed-effects	Yes	Yes	Yes

* p<0.10, ** p<0.05, *** p<0.01

Table VI ESG disclosure and firm performance before and after 2013- Sub-samples

TobinsQ			
Sub-samples	2009-2012	2014-2018	Pooled Sample
LowESG	0.008*	0.009*	0.007*
	(1.13)	(1.02)	(0.54)
MediumESG	0.079***	0.086***	0.095***
	(2.47)	(2.82)	(2.58)
HighESG	0.174***	0.197***	0.166***
	(2.58)	(2.49)	(2.31)
Hold	0.96***	0.132**	0.131**
	(2.88)	(1.91)	(2.41)
Women%	0.128***	0.024***	0.063***
	(2.97)	(2.41)	(2.80)
Bsize	0.062***	0.053***	0.067***
	(1.92)	(1.731)	(1.621)
Lev	1.945***	0.058***	0.046***
	(-10.45)	(-2.83)	(-2.15)
LogFS	2.951***	2.512***	3.162***
	(-11.79)	(-10.05)	(-9.529)
_cons	177.8***	27.62***	63.15***
	(-11.57)	(-13.7)	(-11.02)
Observations	1032	911	1943
Adjusted R^2	17.86%	19.93%	20.85%
Year effect	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes

* p<0.10, ** p<0.05, *** p<0.01

Table VII Potential moderators on ESG disclosure and firm performance (Pooled Sample)

Tobin's Q	2	3	4	5
ESGDS	0.079***	0.077***	0.158***	0.063***
	(3.40)	(2.82)	(4.54)	(2.20)
Hold	0.176**			0.006*
	(2.76)			(1.06)
ESGDS*Hold	0.096			0.098
	(0.76)			(0.63)
		0.371***		0.362***
Women%		(3.43)		(2.66)
ESGDS*		0.067***		0.081***
Wom%		(2.59)		(2.59)
			0.072***	0.058***
Bsize			(4.44)	(3.80)
			0.522***	0.012***
ESGDS* Bsize			(2.24)	(2.65)
Lev	0.070***	0.065***	0.068***	0.088***
	(-2.98)	(-2.71)	(-2.88)	(-3.848)
LogFS	-1.052***	-1.158***	-1.080***	-1.211***
	(-9.06)	(-9.99)	(-9.36)	(-8.84)
IR				0.007*
				(1.10)
ESGDS*IR				0.189**
				(1.81)
_cons	18.7***	15.26***	23.78***	21.38***
	(-12.6)	(-13.17)	(-10.13)	(-11.15)
Observations	1943	1943	1943	911
Adjusted R^2	20.02%	21.21%	22.31%	24.55%
Year effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes

* p<0.10, ** p<0.05, *** p<0.01