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The impact of introducing new regulations on the quality of CSR reporting: Evidence from the UK

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Abstract

This study examines the adoption of mandatory corporate social responsibility (CSR) regulation in the United Kingdom (UK). Specifically, we investigate whether adopting new CSR regulations impacts the quality of firms' CSR reporting and explore whether that quality depends on a firms' characteristics. Our empirical results suggest that the UK's mandatory CSR reporting regulation significantly enhances CSR reporting quality. We further find that firms' characteristics, particularly corporate governance and firm size, improve mandatory CSR reporting quality. Our results are robust to the use of an alternative proxy of CSR quality assessment and testing for endogeneity. These findings suggest that committing to CSR can substantially benefit stakeholders, who will be better informed regarding the firms' CSR performance through improved reporting quality. This factor can influence investors' beliefs and market valuations, which may subsequently guide firms' investment decisions.

Keywords: *Mandatory CSR, Firm Characteristics, Corporate Governance, High and Low CSR Quality*.

1. Introduction

Previous research examined which factors drive managers to engage in corporate social responsibility (CSR) reporting for their stakeholders (Bebbington et al., 2009). Within this literature, researchers report that CSR reporting is a channel that firms use to communicate their ethical activities to stakeholders (Halme et al., 2014). This then enhances the

organisation's image and reputation (Popoli, 2011), and satisfies investors' increasing desire to receive more information about such activities (Cohen et al., 2011). Moreover, an extensive literature investigates voluntary CSR reporting from various core aspects, such as determinants of CSR reporting (Rodrigue et al., 2013), the relationship between CSR reporting and financial performance (Dhaliwal et al., 2011; Plumlee et al., 2015), and the consequences of CSR reporting (Kim et al., 2012). However, little evidence exists on the influence of mandatory CSR reporting regulations on the quality of CSR reporting (Kühn et al., 2014; Wang et al., 2017). This is because only a few countries, including China, Denmark, Malaysia, South Africa, and the United Kingdom (UK), mandate such reporting. Thus, this study investigates the impact of mandatory CSR reporting on the quality of CSR reporting in the UK.

This study focuses on the UK as it is one of the few countries enforcing CSR reporting regulations. The UK Companies Act of 2006 (Regulation 2013) requirements differ from those of other countries that mandate CSR reporting. For example, in China, only cross-listed firms and financial industry firms are required to disclose their environmental, social, and governance (ESG) practices. Also, in Finland and Sweden only state-owned firms are required to issue CSR reports. This contrasts with the London Stock Exchange (LSE) that mandates CSR reporting (which includes only environmental and social information) for all firms listed on its Main Market.

This research contributes to the literature in several ways. First, we increase understanding of the UK's new CSR reporting regulations by exploring their requirements and the settings in which such reporting occurs. Past research on the relationship between CSR reporting and different research streams has, for the most part, concentrated on voluntary CSR reporting, and there are inconsistencies in these findings (Dhaliwal et al., 2011; O'Dwyer, 2011; Kim et al., 2012; Rodrigue et al., 2013; Plumlee et al., 2015). One problem with voluntary CSR disclosure

studies[1] is that although voluntary disclosures are covered extensively in the literature, an increasing number of countries are adopting mandatory regulation/legislation; although the extent and scope of these actions differ from one country to another (Fifka, 2013). Thus, the literature investigating mandatory CSR reporting needs to be expanded (Christensen, 2016).

Second, our study differs from much of the prior research that focuses on the association of mandatory CSR reporting with the firm value and market responses to disclosures (Grewal et al., 2018; Chen et al., 2018; Wang et al., 2018). Other studies examine firms subject to mandatory CSR reporting but focus on disclosure activities and environmental impacts (Ioannou & Serefeim, 2017). Although Wang et al. (2017) investigate the impact of mandatory CSR reporting on reporting quality, their research interest is in emerging markets, specifically Chinese companies. Our study makes a significant contribution by complementing this prior research. We explore whether the new CSR reporting regulation leads firms to improve their CSR reporting or whether firms simply comply with the new regulation without improving the quality of their CSR reporting. This contributes to the literature because governments (regulators) are interested in the change of reporting activities (ends) through mandatory CSR reporting requirements (means). Accordingly, we find that the new regulation strongly contributes to enhanced CSR reporting quality in the UK.

Third, Cooper and Owen (2007) assert that the quality of CSR reporting is country-specific. Corporations change and develop their strategies and competitive advantages in response to the institutional environment around them (Cahan et al., 2016). Thus, our research contributes to the literature by investigating the quality of mandatory CSR reporting in the UK, which is a high-profile market. To assist them with investment decision-making, UK institutional investors consider CSR reporting as value-relevant for collecting traditionally private

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[1] Throughout the rest of this study "CSR disclosure" is used interchangeably with "CSR reporting."

information about a firm's social behaviors (Solomon & Solomon, 2006). Our findings present details about a major change in an important institutional environment and provide generalizable insights about mandatory CSR reporting in developed markets.

Finally, this study adds to the literature on the determinants of CSR reporting. We find that firms' characteristics under mandatory CSR reporting are different from those under voluntary reporting, thereby suggesting that CSR reporting by firms with higher-quality corporate governance (CG) is greater than that of lower-quality CG firms. Moreover, firms cross-listed in multiple countries produce higher quality CSR reports than those reported by firms listed only domestically. We also find that higher-quality CSR reporting is delivered by higher-risk industries (sensitive industries). Thus, our results increase understanding of the factors associated with CSR reporting quality when mandatory.

The remainder of the study is structured as follows: Section 2 describes the institutional background, reviews the related literature, and presents the main hypotheses. Section 3 discusses the data and methodology used. Section 4 presents the results, additional analyses, and robustness checks, whereas Section 5 concludes the study and addresses limitations and suggestions for future research.

2. Institutional background, literature review, and hypotheses development

2.1. Institutional background on UK CSR reporting

In 2005, the UK witnessed the approval of the Operating and Financial Review (OFR) proposal that requires corporate directors to include an assessment of firms' relationships with their employees, customers, and suppliers, in addition to their environmental and social impacts, which was to be directed principally to shareholders rather than to all stakeholders. This approval was followed by repealing portions and additional amendments in until the final

version came into force in 2009. These amendments and provisions affected the beneficiaries of this reporting and the requirements of the disclosures[2] (Rowbottom & Schroeder, 2014).

After repealing the initial version of the OFR, the Business Review Report (under the OFR and Directors' Report) passed through two stages – Old Business Review and New Business Review. The first stage started with the OFR in 2005, which required the director's large-sized firms to prepare a director's report, including the business review. Under this section, two main points were clarified:

"*(a) analysis using financial key performance indicators, and (b) where appropriate, analysis using other key performance indicators, including information relating to environmental matters and employee matters*" (The Companies Act 1985 (Operating and Financial Review) (Repeal) Regulations 2005).

The second stage of amendments was applied through The Companies Act 2006, which required the directors of large firms to reveal the following information:

"*(a) environmental matters (including the impact of the company's business on the environment), (b) the company's employees, and (c) social and community issues, including information about any policies of the company in relation to those matters and the effectiveness of those policies*" (Companies Act 2006 (c. 46) Part 15, Accounts and reports, Chapter 5, Directors' report). If the review does not contain information on these issues, it must state the type of information omitted.

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[2] The Companies Act 1985 (Operating and Financial Review) (Repeal) Regulations 2005) required directors of large-sized firms to prepare a director's report including two main points: (a) analysis using financial key performance indicators, and (b) where appropriate, analysis using other key performance indicators, including information relating to environmental matters and employee matters.

The Companies Act 2006 (c. 46) Part 15, Accounts and reports, Chapter 5, Directors' report) required (voluntary) the directors to reveal information about: (a) environmental matters (including the impact of the company's business on the environment), (b) the company's employees, and (c) social and community issues, including information about any policies of the company in relation to those matters and the effectiveness of those policies.

In July 2013, the UK Parliament approved the Strategic Report and Directors' Report Regulations 2013 as the latest amendments for the Companies Act 2006 to be applied in the financial year 'ending on or after' September 30, 2013. These amendments were in line with the Business Review reporting requirements (which replaced the OFR as discussed previously) for large and medium sized quoted firms[3] to disclose information about their environmental policies and impact.

In addition to further details about gender diversity, human rights, and the firm's strategy business model (The Companies Act 2006/414c),[4] the new rules require companies to include this information in the strategic report rather than in the business review[5],. A section on Greenhouse gas emissions was introduced to the new provision as part of the Directors' report and applied to large and medium sized quoted firms. This section requires disclosure about a firm's annual quantity of emission. Along with these new regulations, the risk of non-compliance increased. The Companies Act 2006/414c clarified that failure to report on the environmental, social, and employee matters in the strategic report might incur a risk of penalty for the firm. The Companies Act 2006/414c mentions the following:

"… *the strategic report must be approved by the board of directors and signed on behalf of the board by a director or the secretary of the company.*" "*If a strategic report is approved that does not comply with the requirements of this Act, every director of the company who…*" "*knew that it did not comply, or was reckless as to whether it complied,*" and "*failed to take reasonable steps to secure compliance with those requirements or, as the case may be, to prevent the report*

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[3] A Quoted Firm is a firm whose equity share capital was included in the official list; or is officially listed in a European Economic Area (EEA) State; or is accepted to deal on either the New York Stock Exchange or NASDAQ (http://www.legislation.gov.uk/ukpga/2006/46/part/15/chapter/1/crossheading/quoted-and-unquoted-companies).

[4] The Companies Act 2006/414c refers to The Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013, section 414c.

[5] The Business Review Report (formerly a part of the directors' report) is now separated into two sections: The Strategic Report (which includes the original disclosure from the business review in addition to new requirements), and the Directors' Report (which discusses the greenhouse gas emissions disclosure requirements).

from being approved..." "*A person guilty of an offense under this section is liable...*" "*on conviction on indictment, to a fine,*" "*on summary conviction, to a fine not exceeding the statutory maximum.*"

The UK government took major steps regarding Environmental, Social, and Governance (ESG) reporting, and compels firms to comply with this regulation rather than just explaining why they are not disclosing it. These legislative actions reflect stakeholders' increased desire to receive extensive information about the ESG practices of firms. However, the Companies Act 2006 (Strategic Report and Directors' Report Regulations 2013) does not provide clear guidance on CSR reporting metrics that a firm needs to quantify and disclose in their reports, apart from the Global Reporting Initiative (GRI) reporting guidelines. In addition, there are no clear penalties for non-compliance and no requirements for auditing CSR reports by external auditing bodies. These latter concerns could increase pressure and mislead firms and impact their CSR reporting quality.

2.2. Literature review and hypotheses development

Studies of CSR reporting are often based on two theories: legitimacy theory and stakeholder theory. While the former provides broad justification for conforming to socially constructed norms (Suchman, 1995), the latter deals explicitly with salient stakeholders' different interests (Freeman, 1984). Gray et al. (1996, p. 45) state that legitimacy theory is a '*systems-oriented*' theory that facilitates exploring "*the role of information and disclosure in the relationship(s) between organizations, the State, individuals, and groups.*" Deegan (2002, p. 292) adds that system-oriented theories view disclosure as an "*important means by which management can influence external perceptions about their organization.*" When firms are faced with political and social processes that confer and monitor social legitimacy (Patten, 1992), they are more likely to improve their legitimacy by engaging in disclosure. Deegan (2002, p. 297) notes significant evidence that "*corporate social and environmental disclosure strategies have been*

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linked to legitimizing intentions" (also see Deegan, 2007; Hummel & Schlick, 2016). Stakeholder theory holds that a firm can be described as a set of interdependent relationships through which stakeholders can impact or influence the firm's practices (Freeman, 1984). This perspective asserts that stakeholder satisfaction is the main factor for firm success. Thus, our study is founded on stakeholder and legitimacy theories, implying that firms publish CSR data to obtain, maintain, or increase their legitimacy (Hummel & Schlick, 2016) and inaugurate or sustain mutually beneficial relationships with stakeholders (Neu et al., 1998).

Existing studies on voluntary CSR reporting have documented that CSR motivates productivity in a firm, which affects the firm's competitive situation due to the effective management of resources. Reduced resource inefficiencies would decrease the firm's costs and enhance the firm's financial performance (Porter & van der Linde, 1995). CSR is important for the firm's long-term profitability, affecting the firm's strategy and risk management, and it takes time for such an impact to be observed in the firm's performance (Heal, 2005). Consequently, CSR should improve the firm's relationship with its creditors, investors, and regulators, reflecting positively on its financial performance (Porter & van der Linde, 1995). In the literature, Dhaliwal et al. (2011) provide evidence from the United States (US) about benefits associated with the cost of equity capital related to CSR reporting initiation. Those authors argue that firms experience a decrease in capital cost the year after initiating extensive CSR reporting. Also, firms that experienced an increase in capital cost in the prior year were found to initiate superior CSR reports in the current year, thereby enhancing the firm's future value. In their next study, Dhaliwal et al. (2012) further verified the usefulness of CSR reporting for shareholders, by showing that among other benefits it enhances the firm's value through reducing the cost of capital, increasing sales, enhancing operational efficiency, and mitigating against litigation risk. They further find that issuing a standalone CSR report enhances analysts' expectations with respect to the firm's performance.

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Cheng et al. (2014) document that firms with greater ESG disclosure gain better access to finance, particularly when capital constraints are reduced. Lys et al. (2015) report similar results, arguing that firms are more likely to spend financial resources on CSR activities and reporting to communicate a positive private vision about the firm's future financial performance to stakeholders. Plumlee et al. (2015) find that US firms document both positive and negative relationships with environmental disclosures, depending on the other specific factors on the nature and type of disclosures. Cahan et al. (2016) show evidence of CSR reporting's positive impact on the firm's market valuation. Furthermore, Christensen (2016) presents protection of firm value in the event of misconduct as another incentive to report CSR activities. Firms may also voluntarily report CSR information to legitimize themselves against any potential penalties resulting from misconduct. He points out that firms are less likely to experience a high-profile misconduct case if they report their CSR, clarifying that CSR reporting would enhance their "*reporting and compliance system.*"

Boubakri et al. (2016) emphasize that cross-listed firms provide better CSR reports, which consequently significantly enhances investors' evaluations of the firm. Consistent with that perspective, Kiessling et al. (2016) investigate the relationship between CSR practices and firm value by utilizing a Swedish CSR index to document a positive association. Nekhili et al. (2017) present similar evidence regarding the positive relationship between CSR reporting and market-based financial performance relating to specific factors regarding the firm's ownership structure. Liu and Zhang (2017) investigate the Chinese market regarding CSR reporting on firm performance and find that "*social responsibility information relates to the long-term development of enterprise*" (Liu & Zhang, 2017, p.1075). This finding implies that a firm's main aim in reporting CSR information is to send a positive signal to the market and increase their legitimacy.

By contrast, Richardson and Welker (2001) observe that increasing CSR activities and its reporting increases a firm's cost of capital. Jones et al. (2007) also document a negative association between CSR reporting and firm value. Moreover, Matsumura et al. (2014) focus on CSR reporting with respect to carbon emissions. Their evidence indicates that managers balance the benefits and costs of reporting carbon emissions. In particular, they find that markets underprice firms with high emissions, and regulations penalize those who do not report their environmental impact. Thus, a negative relationship is found between CSR reporting and the market value of the firm. Additionally, in replicating Waddock and Graves' (1997) study, Zhao and Muller (2016) revisit the relationship between prior CSR reporting and its impact on subsequent financial performance. Using a longer period and larger sample size, they show that CSR reporting does not positively impact a firm's financial performance, thereby explaining that stakeholders may not react positively to better CSR reporting.

According to Fifka (2013), the UK has the largest number of studies on CSR reporting problems. The focal issues include disclosing equal opportunities (Brammer & Pavelin, 2008), the link between reporting and social performance (Moore, 2001), the ways in which an industry can influence reporting practices (Campbell, 2007; Brammer & Pavelin, 2008), the influence of managerial attitudes (Collison et al., 2003), and external variables (Campbell, 2007).

Compared to voluntary CSR regimes, several studies find numerous positive results after the introduction of mandatory CSR reporting on reporting quality and other outcomes (Hąbek & Wolniak, 2016; Fiechter et al., 2017; Ioannou & Serafeim, 2017; Wang et al., 2017; Wang et al., 2018; Mion et al., 2019). However, some studies reveal contradictory results (Chauvey et al., 2015; Chen et al., 2018; Grewal et al., 2018). For example, Mion et al. (2019) find an increase in sustainability reporting quality in Germany and Italy after implementing the mandatory regulations of the European Union (EU). Their study was conducted over a one year

period around 2016 and 2017, which might not be long enough to observe the new regulation's effect. Wang et al. (2018) conduct a quasi-natural study examining mandatory CSR disclosure in China and its impact on firms' financial reporting. They reveal that mandating CSR reporting enhances the quality of firms' financial reporting, which reduces information asymmetry and restricts earnings manipulation practices. Their study's quasi-experimental design raises concerns regarding its internal validity as it cannot compare the control and treatment groups at the baseline. In a similar vein, Wang et al. (2017) investigate the impact of mandatory regulation on the quality of CSR reporting in China. They argue that mandatory regulation leads to an overall enhancement in CSR reporting quality. However, this quasi-natural experiment may not capture the entire impact of government regulation through the employed methodology.

Ioannou and Serafeim (2017) examine how CSR regulations, particularly those that make ESG reporting mandatory, influence firms' valuations and disclosure practices in different countries. Their findings show that after the regulations were introduced, there was an increase in CSR reporting and a greater ability to compare the credibility of the data disclosed and the firm's valuation. Their research compares four different countries' reporting requirements to ensure that sustainability disclosure regulations would have different effects on companies in different countries. Each country has different ESG reporting requirements; therefore, with varying levels of detail companies may already disclose ESG information. There may also be differences between how companies compete through their ESG reporting. Furthermore, although those authors report a positive correlation between Tobin's Q and instrumented disclosure, their research design does not enable them to identify the underlying mechanisms behind this positive impact.

Fiechter et al. (2017) investigates the impact of adopting mandatory CSR reporting. They examine stakeholder reactions to mandated CSR reporting in the EU, providing evidence of an

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increase in CSR expenditure after the introduction of this regulation. They find that this increase in expenditure is related to being able to predict unfavorable stakeholder reactions to the mandatory reporting of CSR. As the period examined after introducing the new regulation was only two years, this study cannot report any long-term effects of the regulation, such as changes in firm value and the amount spent on CSR reporting. Furthermore, Fiechter et al.'s (2017) results could have been caused by inter-country differences rather than variations in CSR activities. As each country may have its own accounting standards, CSR reporting may be governed by different legal statuses and with varying levels of investor protection (Reinhardt et al., 2008). Hąbek and Wolniak (2016) find that CSR reports are generally of low quality, but that their quality tended to increase when legally enforced. In a similar study, Boodoo (2016) reports an improvement in CSR reporting after adoption of mandatory reporting regulations in India.

Three other studies examine the consequences of mandating CSR have differing results. Grewal et al. (2018) conduct an event study to capture the market reaction to announcement of the new regulation and its enforcement in EU stock exchange-listed firms. Except for firms with high non-financial disclosure level prior to the announcement, stocks record a negative market reaction (on average) to the regulation announcement, which probably relates to the higher costs associated with regulation compliance. Chen et al. (2018) use a Chinese sample to document an increase in spending for environmental protection, a decrease in the firm's profitability after enforcing the new regulation, and a negative stock market response to the mandated regulations. However, the findings of Grewal et al. (2018) and Chen et al. (2018) are less pertinent to our study's objective. For French firms, Chauvey et al. (2015) report that while compliance increased, reporting quality is not improved. They also note that the number of firms incorporating information on negative performance decreased.

As previous studies have reported inconsistent findings of the effect of introducing CSR regulations on CSR reporting quality, it is not easy to draw firm conclusions regarding this relationship. Nevertheless, it can be posited that firms can use CSR reporting as a strategy to shield themselves from negative stakeholder perceptions (Campbell, 2000). They impress their stakeholders by showing how they are performing socially, and this approval ensures their continued existence (Neu et al., 1998). When firms are mandated to report their CSR activities, they will feel scrutiny from stakeholders, which pushes them to enhance their CSR reporting to legitimize the firm and avoid or decrease any governmental penalties or stakeholder dissatisfaction. This may impact the firms' investments and ultimately their existence. Failure to do so would incur a penalty for not complying with this regulation (Act 2006/414c). This discussion leads us to propose the following hypothesis on the relationship between introducing this new regulation and CSR reporting quality, after controlling for firm characteristics.

H1. A positive association between the new regulation and CSR reporting quality is expected.

Burks et al. (2018, p.1) state that "*Accounting research commonly incorporates interaction terms in a linear regression to examine if hypothesized effects are moderated, or reinforced, by another variable.*" Accordingly, and in a break from previous research that primarily concentrated only on the relationship between the quality of CSR reporting and CSR regulation, our study examines a broad range of financial reporting characteristics that embody the most common factors which may enhance or diminish this relationship, including size, leverage, firm age, auditing, cross-listing, growth, industry sensitivity, and profitability.

CG describes the extensive association between the firm and its stakeholders or between the firm and society. Good governance structures could help firms prevent illegal acts and make them more inclined to disclose CSR information to the public, thereby attracting more investors by disclosing the firm's accomplishments (Khan & Muttakin, 2013). Therefore, the control of an efficient CG structure is the basis for undertaking and reporting high CSR quality because

they work in parallel under the same umbrella (Jo & Harjoto, 2011; Flammer & Luo, 2017). Although high-quality CG could protect stakeholders' rights and safeguard CSR reporting quality (Liu & Zhang, 2017), based on legitimacy theory CG could be utilized by firms to send positive signals to stakeholders for legitimizing their existence (Mathews, 1995).

CG code regulations forms the pillars of the UK's company law with principles that monitor and compelling those who control a company's resources to produce an accurate financial statement (LSE, 2019). Particular characteristics of the companies included in the UK's Financial Times Stock Exchange (FTSE) All-Share's index obligate them to undertake a higher level of CG, which increases the likelihood of reporting more CSR information. Therefore, we expect CG to have a positive impact on the relationship posited in the first hypothesis. We propose the following sub-hypothesis:

H1A. A positive association between the new regulation and CSR reporting quality will be stronger with high-quality CG firms.

Legitimacy theory offers a theoretical basis for treating a firm's age as a moderating variable in the relationship between CSR reporting quality and new CSR regulations. A firm's age can influence its relationships with stakeholders, market share, reputation, and goodwill. Younger firms are less experienced and lack the external connections and legitimacy of older, more established firms (Stinchcombe, 1965). Therefore, younger firms' reputations are less stable than those of more mature firms (Flanagan & O'Shaughnessy, 2005). Therefore, several assumptions can explain the evidence in the literature showing that a firm's CSR reporting quality could be positively affected by the different development levels of financial resources, experience, and reputation across the firm's life cycle (Kim et al., 2012; Cho & Chun, 2016; Christensen, 2016). First, from a financial side, younger firms have limited financial resources to spend and invest in CSR reporting when they are investing their cash flows to expand their business. By contrast, mature firms are likely more stable and tend to have better profitability

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and more accumulated funds to invest in producing higher quality CSR reports (Withisuphakorn & Jiraporn, 2016). Second, younger firms are less experienced in producing high-quality CSR reports than mature firms that may have more experience and expertise to create a high-quality CSR report (Teece et al., 1997).

Finally, a firm's history of CSR reporting is one of the critical factors that impacts interactions with stakeholders. Because mature firms are more likely to have a good CSR reporting history, stakeholders are more likely to have a positive perspective about a firm's commitment toward society. Hence, compared to younger firms, mature firms enjoy greater legitimacy from external stakeholders (Godos-Díez et al., 2011). As a practical matter, this study explores CSR reporting quality from the perspective of firm age in the UK. For UK FTSE All-Share firms, a firm's average age is 28 years, which obligates them to undertake a relatively higher quality of CSR reporting (LSE, 2019). However, this characteristic is critical in assessing a firm's external stakeholders because they are more visible to the public and under greater pressure from stakeholders and analysts than new firms. Therefore, they have incentives to protect their reputations through higher CSR reporting quality (Christensen, 2016; D'Amato & Falivena, 2020). Hence, our second sub-hypothesis is:

H1B. A positive association between the new regulation and CSR reporting quality will be stronger with mature firms.

Legitimacy theory connects the firm to its exterior context by suggesting that different stakeholders' requirements drive CSR reporting, which rewards firms with legitimacy (Hooghiemstra, 2000). Furthermore, drawing from the stakeholder theory, stakeholders scrutinize large firms regarding their social and environmental impact (Wang et al., 2008; Reverte, 2009; Chiu & Wang, 2015). These theories suggest various potential reasons to support arguments for a positive relationship between CSR reporting and firm size. A commonly held view is that larger firms tend to be more visible. Visibility encourages firms to

comply with social pressures as stakeholders are more likely to be interested in firms that directly impact them or firms familiar to them (Udayasankar, 2008). Therefore, visibility drives larger firms to be aware of stakeholders' expectations, thereby making them more likely than smaller firms to issue CSR reports in a more socially responsible manner to legitimize themselves (Brammer & Pavelin, 2008; Reverte, 2009). Financial resources are another factor that affects the relationship between firm size and CSR reporting quality (Brammer & Millington, 2006). Larger firms usually have more financial resources than smaller firms, which positively affects their CSR reporting initiatives. This finding enhances their relationships with stakeholders, and they gain legitimacy and increased credibility. Smaller firms typically have insufficient resources, which may make it less feasible for them to invest in CSR reporting (Johnson & Greening, 1999).

The UK FTSE All-Share Index firms have the largest market capitalization and are required to report more about their CSR activities. These mandatory regulations place larger firms in a sensitive political and governmental regulatory position, which increases the political cost of noncompliance (Watts & Zimmerman, 1978). Accordingly, our third sub-hypothesis suggests:

H1C. A positive association between the new regulation and CSR reporting quality will be stronger with larger firms.

Stakeholder theory can support a positive relationship between CSR reporting and a firm's profitability, as suggested in the literature (Chiu & Wang, 2015; Ioannou & Serafeim, 2017). Clarkson (1995) argues that stakeholder theory emphasizes that a firm can be described as comprising multiple interdependent relationships that involve all significant groups and individuals among its stakeholders and shareholders. This perspective asserts that stakeholder satisfaction is the main factor in a firm's success, and CSR reporting is crucial to gaining stakeholders' satisfaction and support. Extensive CSR reporting would provide critical information that meets shareholders' demands, thereby affecting the firm's future profits and

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cash flows, which could subsequently reduce information asymmetry and agency problems between managers and shareholders (Dhaliwal et al., 2011). Several studies supported by the stakeholder theory perspective (Waddock & Graves, 1997) highlight that CSR reporting quality positively impacts the firm because it may attract better-qualified employees (Greening & Turban, 2000) and more socially responsible customers (Sen & Bhattacharya, 2001). In turn, this reporting brings it more social legitimacy (Hawn et al., 2014). Therefore, more socially responsible investors are attracted (Kapstein, 2001), which ultimately affects the firm's financial performance.

The primary assumption behind this theoretical argument can explain the suggested positive relationship between CSR reporting quality and firm profitability. In general, CSR reporting depends on the level of funding available to firms given that firms' financial resources are limited and unable to meet all stakeholders' requirements and concerns (Reverte, 2009). Firms with greater profitability and better performance generate a financial surplus that can be spent on higher quality CSR reporting compared with less profitable firms (Chiu & Wang, 2015; Ioannou & Serafeim, 2017). Introducing this new CSR reporting regulation in the UK complicates this argument. Both stakeholders and shareholders scrutinize firms' CSR reporting, which highlights both benefits and costs for society, investors, and the firm itself. This regulation has several benefits, such as enhancing a firm's operational efficiency and signaling to the market the firm's positive attitude towards sustainability issues (Grewal et al., 2018). Therefore, we develop our fourth sub-hypothesis:

H1D. A positive association between the new regulation and CSR reporting quality will be stronger with profitable firms.

Using legitimacy theory, several arguments about leverage are relevant to its relationship with CSR reporting. For instance, highly leveraged firms are more likely to direct their financial resources towards enhancing earnings rather than on reporting more about their CSR

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activities, thereby suggesting a negative relationship between leverage and CSR reporting quality (Branco & Rodrigues, 2008; Chiu & Wang, 2015). Therefore, due to a higher level of debt, these firms are more reluctant to incur additional costs to invest in reporting their CSR activities.

Conversely, other studies have indicated that creditors will apply less pressure to restrict managers' decisions regarding CSR reporting in firms with less leverage, thereby suggesting a positive relationship between CSR reporting quality and leverage (Ioannou & Serafeim, 2017). According to this argument, highly leveraged firms are more likely to engage in higher CSR reporting quality to earn creditor support (Richardson & Welker, 2001). Nevertheless, other studies find that the relationship between leverage and CSR is not significant (Brammer & Pavelin, 2008; Wang et al., 2008; Reverte, 2009).

In the context of mandatory CSR reporting in the UK, firms are motivated to comply with legislation to avoid penalties (Act 2006/414c). Even when highly leveraged, firms are likely to devote financial resources to enhance and legitimize their image among stakeholders and creditors. This informs our fifth sub-hypothesis:

H1E. A positive association between the new regulation and CSR reporting quality will be stronger with higher leveraged firms.

The signaling literature suggests that the choice of an external auditor can serve as a signal of firm value. In general, smaller firms are likely to choose a large audit firm (Big 4) because this signals to investors their acceptance of the auditor's demands for higher quality CSR reporting (Datar et al., 1991). This finding is also consistent with agency theory, thereby positing that large auditors have a stronger incentive to maintain their independence and impose stringent and extensive CSR reporting on firms to avoid the risk of reputational damage.

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Moreover, research finds that Big 4 accounting firms employ stricter audit procedures to avoid legal claims, increase reputation, and enhance firms' internal control systems (DeAngelo, 1981). Therefore, firm using Big 4 auditors may have a stronger motivation to report extensive information about its CSR activities to enhance its reputation (Wang et al., 2008), which subsequently sends positive signals to the market regarding a firm's performance (Joshi & Said, 2012). Thus, the literature indicates that firms deliver higher quality CSR reports when their financial auditor is a Big 4 firm (Fernandez-Feijoo et al., 2018). For example, Wang et al. (2008) find that the level of CSR reporting is positively related to the employed auditor. The findings of Xiao et al. (2004) also support this proposition and showed a positive association between firms hiring former Big 4 auditing firms and the scopes of their voluntary CSR reporting. Firms that are mandated to report CSR in the UK, particularly the FTSE All-Share firms, are also likely to employ Big 4 auditors to enhance and legitimize their image among their stakeholders and creditors (Elshandidy et al., 2013). Hence, our sixth sub-hypothesis:

H1F. A positive association between the new regulation and CSR reporting quality will be stronger with Big 4-audited firms.

Regarding the relationship between cross-listing firms and CSR reporting, there are two suggested views. One is that managers desire to impress stakeholders for self-interest, such as to protect their positions (the opportunistic perspective of legitimacy theory). The second is that managers desire to increase stakeholders' wealth and enhance the firm's performance in the view of investors and analysts (the "doing well by doing good" perspective of stakeholder theory). Both perspectives would improve the firm and stakeholder wealth. Thus, a firm is likely to report more CSR information when operating in foreign markets, where it needs to consider the reporting rules of two or more stock markets (Reverte, 2009; Chiu & Wang, 2015).

With an international listing, firms become more visible to the public and face greater pressure from stakeholders and analysts. Subsequently, they are motivated to increase their

CSR reporting quality in order to enhance their reputation (Boubakri et al., 2016) as a mechanism against the external scrutiny and pressure of stakeholders (El Ghoul et al., 2011), and to mitigate litigation risks and fines (Hong & Liskovich, 2016). Therefore, satisfying CSR expectations helps cross-listed firms gain legitimacy, thereby supporting foreign firms to enter new markets (Kostova & Zaheer, 1999). Thus, a positive relationship between CSR reporting quality and the international listing status of a firm is expected, as cross-listing enhances the stakeholders' wealth (Boubakri et al., 2016).

In the UK, international listings represent as much as 19% of the total stock circulating on the LSE's Main Market (LSE, 2019). All firms listed on the LSE's Main Market are generally required to comply with the exchange's financial reporting rules and relevant provisions outlined in The Companies Act 2006, including CSR reporting requirements. This informs our seventh sub-hypothesis:

H1G. A positive association between the new regulation and CSR reporting quality will be stronger with internationally listed firms.

Being classified as a sensitive industry is another factor that may influence CSR reporting. According to Branco and Rodrigues (2008), firms in sensitive industries have a direct, negative impact on the environment. Sensitive industries are mining, oil and gas, chemicals, construction, building materials, forestry and paper, steel and other metals, electricity, gas distribution, and water. All other industries are considered less sensitive. Firms with a high-risk impact on the environment are subject to greater pressure from stakeholders than less risky firms. Less risky firms, including service firms that do not impact the environment but may have water consumption or carbon emissions issues, still have higher CSR reporting requirements. Nevertheless, compared to firms in sensitive industries, firms in less sensitive industries incur little additional reporting cost to satisfy stakeholders.

The relationship between CSR reporting quality and industry affiliation can be interpreted through the lens of legitimacy theory. Firms engage in CSR reporting to conform to stakeholder expectations about how they should conduct their operations, thus establishing a legitimacy instrument used for expressing its desire to comply with these expectations and norms. As a result, sensitive industries report more CSR information than other industries due to pressure from stakeholders to legitimize and enhance their image in society and among their stakeholders (Gao et al., 2005; Brammer & Pavelin, 2008; Reverte, 2009). Accordingly, this study suggests refining the classifications of the UK industries to sensitive and less sensitive industries. In the UK, sensitive industries represent 18% of the market capitalization of LSE-listed firms (LSE, 2019). This informs our eighth sub-hypothesis:

H1H. A positive association between the new regulation and CSR reporting quality will be stronger with firms in sensitive industry.

3. Data and methodology

3.1. Sample selection

Our sample comprises 402 FTSE All-Share Index firms listed on the LSE Main Market from 2009 to 2017. This period is chosen based on the criterion of capturing four years before and after new regulations mandating CSR reporting in the UK were introduced in 2013. As in the prior literature (Reverte, 2009; Chen et al., 2018), financial institutions, including banks, insurance, and investment firms (Standard Industrial Classification (SIC) codes 6000-6799), and the utilities industry (SIC codes 4400-4999) are excluded[6]. Later literature suggests that excluding these sectors enhances the comparability of the results. Financial institutions and utilities are highly regulated, and their financial statements differ from those in other industries.

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[6] Each industry is defined by the first two digits of an SIC code.

Thus reduces the initial sample from 3,390 observations to 2,395 observations (see Table 1). Following previous studies, the sample variables are winsorized in both tails at the 1% level of their distributions to avoid the influence of extreme observations (Boubakri et al., 2016).

<center>Insert Table 1 About Here</center>

Our dataset is collected from following sources: (1) financial data for all firms, the control variables, and SIC codes are obtained from the *DataStream* and *WorldScope* databases; (2) the *CSR_Score*, and *CG_Score* variables are extracted from the *Bloomberg* database; and (3) firms were identified using the list of FTSE All-Share firms on the LSE website during 2009-2017.

3.2. Descriptive statistics of the sample by industry and year

Panel A in Table 2 shows the industry distribution of the sample over 2009-2017. Eight main industries are included covering 281 firms. The manufacturing and service industries account for the largest percentage of firms, with 35.45% and 24.38%, respectively, of the sample. The agriculture, forestry, and fishing industries, and transportation and public utilities industries provide the fewest CSR reports, with 0.38% and 3.97%, respectively, of the sample firms. Table 2, Panel B presents the trend in the number of firms with CSR reports over the study period, which increased from 9.85% of the sample firms in 2009 to 11.65% in 2017.

<center>Insert Table 2 About Here</center>

3.3. Measurement of dependent variable

3.3.1. CSR reporting quality

The Bloomberg database is the source of data on ESG reporting. This database is recognized as the most commonly used provider of financial market and corporate data globally. The ESG data are taken from information filed by companies, including sustainability or CSR reports, firm websites, annual reports, and a proprietary Bloomberg survey completed directly by corporations. One of the main differences between Bloomberg and other corporate data

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providers is that none of Bloomberg's ESG data is estimated or generated from mathematical models. The database is completely transparent as all of the data can be traced back to a source document filed by the company. It is also important to note that Bloomberg incorporates data on over 100,000 companies worldwide, thereby making it among the most comprehensive of all ESG datasets.

The Bloomberg database evaluates CSR across various dimensions, including ESG. The data shows how transparent a company has been in its reporting of ESG information based on a score normalized to a maximum of 100, with a maximum raw score of 219. The raw data points are weighted according to the data fields that are most generally disclosed. A score of 0 is assigned to firms that disclose no ESG data at all, and companies that disclose all data points have a score of 100. Bloomberg adjusts the ESG score for each industry to ensure that each firm is assessed based on data relevant to its specific industry and weights each item's score by its importance (Ioannou & Serafeim, 2017; Grewal et al., 2018).

The Bloomberg ESG score includes the following items for its environmental dimension: CO_2 emissions, energy consumption, water use, and total waste. The social dimension items are the number of employees, contract type and turnover, community service spending, and human rights. The CG dimension comprises information about board structure, board independence, board executives and diversity, board committees, audit committee, compensation committee, and others. These scores are employed as our main dependent variables. Previous studies report that among all ESG-related data fields, these scores are of greatest interest to investors (Eccles et al., 2011).

The new regulations for CSR reporting in the UK require firms to report on (1) the impact of the firm's business on the environment, (2) the company's policies toward its employees, and (3) social, community, and human rights issues (Act 2006, s414 (7)). Hence, this regulation includes two dimensions of the main ESG score, namely environmental and social scores.

However, we control for CG quality; therefore, to understand the effect of mandating CSR reporting, we exclude (to be used separately) the Governance dimension from the total score by using only the scores for environmental and social (E&S) reporting. The total score for CSR reporting is measured as the average of the E&S scores.

3.4. Measurement of independent variable

3.4.1. New regulations of mandated CSR

This study investigates the effect of the new UK regulation in the Act 2006 (regulation 2013) that mandates CSR reporting. The regulation is represented by a dummy variable that takes the value of 1 if the observation for firm *i* is included in a mandatory reporting year's group and 0 if it occurs before the mandatory reporting year.

3.5. Measurement of control variables

This section provides the justification for each control variable used in the analysis. For brevity, we describe how the control variables are measured in the Appendix. We control for the firm's CG score (*CG_Score*) because we expect firms with higher scores to be more likely to produce higher CSR reporting quality (Jo & Harjoto, 2011). Because there are no agreed-upon methods to capture the quality of corporate governance, we use the Bloomberg CG score as a summary measure of a firm's governance practices. Because older firms tend to have better reputations than younger firms, we control for a firm's age (*Age*) as an indication that a firm may be more likely to use CSR reporting quality to protect its reputational capital (Christensen, 2016). Because large firms are likely to release better quality CSR reports to legitimize themselves, we also control for the firm's size (*Size*) (Branco & Rodrigues, 2008). We also control for the firm's financial performance by using its return on assets (*ROA*), as a motivation to engage in CSR reporting may increase with improving financial performance.

We control for the firm debt ratio (leverage) (*Lev*) because the likelihood of CSR reporting should be higher for highly leveraged firms given that such reporting can increase creditor support. Firms using one of the Big 4 auditors may have a stronger motivation to report extensive CSR information and apply more reporting standards to protect their reputation. Thus, we include Big 4 auditors (*BigN*) in our model (Wang et al., 2008). We control for international listing (*Cross_Listed*) because cross-listed firms must consider the reporting rules of two or more stock markets (Reverte, 2009), which should motivate them to increase their CSR reporting quality. Finally, because the probability of providing CSR reports may differ across industries, we include an industry dummy variable and dummies for year fixed effects.

3.6. Empirical Models

First, to examine the first hypothesis, "*CSR reporting regulation will improve the quality of CSR reporting*," Model 1examines the relationship concerning the year of mandating CSR reporting (2013):

$$CSR\_Score_{i,t} = \alpha_0 + \beta_1 * Reg_{i,t} + \beta_2 * CG\_Score_{i,t} + \beta_3 * Age_{i,t} + \beta_4 * Size_{i,t} + \beta_5 * ROA_{i,t}$$
$$+ \beta_6 * Lev_{i,t} + \beta_7 * BigN_{i,t} + \beta_8 * Cross\_Listing_{i,t} + \beta_9 * Ind\_Sens_{i,t} + \sum Year$$
$$+ \varepsilon_{i,t,}$$

(1)

Second, to examine our sub-hypotheses, which independently investigate the influence of each factor on the relationship between the new reporting regulation and CSR reporting quality, we use the following model around the year when CSR reporting was mandated (i.e., 2013) thereby capturing these effects through the interaction terms:

$$CSR\_Score_{i,t} = \alpha_0 + \beta_1 * Reg_{i,t} + \beta_2 * CG\_Score_{i,t} + \beta_3 * Age_{i,t} + \beta_4 * Size_{i,t} + \beta_5 * ROA_{i,t} + \beta_6 * Lev_{i,t} + \beta_7 * BigN_{i,t} + \beta_8 * Cross\_Listing_{i,t} + \beta_9 * Ind\_Sens_{i,t} + \beta_{10} * (Reg_{i,t} * CG\_Score_{i,t}) + \beta_{11} * (Reg_{i,t} * Age_{i,t}) + \beta_{12} * (Reg_{i,t} * Size_{i,t}) + \beta_{13} * (Reg_{i,t} * ROA_{i,t}) + \beta_{14} * (Reg_{i,t} * Lev_{i,t}) + \beta_{15} * (Reg_{i,t} * BigN_{i,t}) + \beta_{16} * (Reg_{i,t} * Cross\_Listing_{i,t}) + \beta_{17} * (Reg_{i,t} * Ind\_Sens_{i,t}) + \Sigma Year + \varepsilon_{i,t,} \ (\mathbf{2})$$

Where $CSR\_Score_{i,t}$ is the CSR reporting score at the end of the year; $Reg_{i,t}$ is the new regulation in the 2006 Act (Regulation 2013); $CG\_Score_{i,t}$ is the corporate governance score at the end of the year; $Age_{i,t}$ is the firm age; $Size_{i,t}$ is the size of the firm; $ROA_{i,t}$ is the profitability of the firm based on the return on assets ratio; $Lev_{i,t}$ is the leverage (debt) of the firm; $BigN_{i,t}$ is the auditor type for the firm (Big 4 or not); $Cross\_Listing_{i,t}$ is the cross-listing status of the firm; and $Ind\_Sens_{i,t}$ is the sensitivity of the industry in which a firm is classified.

3.6.1. Self-selection bias

We control for selection bias by adopting the Heckman two-stage procedure. We repeat our main analyses to include CSR reporting in the first stage of a probit regression. However, we employed the estimated parameters to compute the inverse Mill's ratio to be added as a control variable in the second stage of the Heckman regression to control sample selection bias related to CSR reporting. The untabulated results reveal that our results presented in Table 5 are not driven by sample selection bias, because the coefficients of the inverse Mill's ratio are not significant.

4. Results

4.1. Descriptive statistics and correlations

Table 3 reports the descriptive statistics of the core variables employed in this study. First, the average (median) CSR reporting quality score is 30.47 (29) out of a full score of 100, thus showing the relatively low CSR reporting quality of FTSE All-Share firms. However, the firm's average CG reporting is 57 out of 100, which is significantly higher than the CSR reporting score. The average age of the firms in the sample is 32 years. The mean firm size score is 14.315 (equivalent to approximately £4,697 million market value in equity) with a median score of 14.083. On average, the sample firms are more profitable, with 0.2% greater profitability than their peers in the same industry, and the average level of firm debt is 22%.

Approximately 72% of sample firms are audited by one of the Big 4 auditing firms. Around 96% are listed in one or more international markets, and 19% are classified as in sensitive industries.

Insert Table 3 About Here

Before conducting the multivariate analysis, we performed a series of sample tests to verify the reliability of the regression results. A multicollinearity test found it not to be an issue in the context of this study. A Huber/White estimator and Newey-West procedure were used to ensure that the model was free of autocorrelation and heteroscedasticity problems, and both gave similar results.

Table 4 presents the pairwise Pearson correlation matrix, which includes all variables employed in this study, thereby reflecting the multicollinearity test results and tests of the variance inflation factor (VIF), which does not exceed the acceptable threshold of 10. The pairwise Pearson correlation matrix shows three results worth noting. First, CSR reporting quality and CG are highly correlated, at 68%, which indicates that firms interested in reporting their CSR activities are also interested in reporting their CG. Second, the correlation between CSR reporting and firm size is 57%, demonstrating that large firms are more likely to engage in CSR reporting; this finding is parallel with a high correlation of 55.9% between size and CG. Finally, CSR reporting quality and auditing firm type (Big 4 or not) are essentially uncorrelated (1%), which indicates that firms audited by one of the Big 4 are not necessarily more engaged in CSR activities or at least are not more likely to report on such activities. Generally, the results of these statistical tests do not present any concerns regarding the variables used and model specification.

Insert Table 4 About Here

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4.2. Main results

4.2.1 Mandatory CSR reporting and the quality of CSR reporting

To investigate the impact of the mandatory adoption of CSR reporting on CSR reporting quality, we run a series of analyses by using ordinary least squares (OLS) regression, mean differences before and after adopting the new regulation, and a Wilcoxon test. Our variable of interest is β_1, the coefficient on the variable *Reg*, which captures the change in CSR reporting quality for firms after the new CSR reporting regulation. A negative (positive) coefficient on β_1 implies an increase (decrease) in the firm's reporting quality after the mandate.

Table 5 reports the multivariate regression results of Model 1. According to legitimacy theory and consistent with the expectations in our first hypothesis, and also consistent with the findings of Ioannou and Serafeim (2017) and Wang et al. (2017), β_1 has a positive coefficient of 3.88, which is significant at the 1% level ($t = 2.92$). This indicates that firms' engagement in CSR reporting is enhanced after the adoption of mandatory CSR reporting, and that the quality of CSR reports increased. We interpret these results as meaning that firms responded positively to the mandate.

Insert Table 5 About Here

The variable CG_Score is also strongly related to CSR reporting quality, with a positive coefficient of 0.83 that is significant at the 1% level ($t = 14.34$). This outcome is in accordance with the correlations reported in Table 4, which indicates that better-governed firms are more likely to report their CSR activities. This is consistent with prior literature (Flammer & Luo, 2017; Liu & Zhang, 2017). Although CG is not one of the ESG-mandated reporting items (as discussed previously), it is still considered an important element that is working in parallel with CSR under the same umbrella (Jamali et al., 2008). Regarding the impact of the remaining variables and consistent with prior literature, the firm age and size (Reverte, 2009), leverage

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(Richardson & Welker, 2001), and industry sensitivity (Gao et al., 2005) are all positively related to CSR reporting quality. These results indicate that older firms with high market capitalization, higher debt ratios, and classified as in sensitive industries, are more likely to engage in CSR reporting and offer higher quality CSR reporting. However, profitability and international cross-listing are not significant.

4.2.2. Differences before and after the new regulation

4.2.2.1 Mean difference

As discussed earlier, in 2013 the UK Companies Act 2006/414c requires firms to report their CSR activities and the impact of their business on society and the environment. This study divides the pooled sample into two clusters, namely pre- and post-new regulation, to understand the impact of mandating CSR reporting on CSR reporting quality. We examine the mean t-test difference between pre- and post-new regulation adoption. The untabulated results show the mean for the first cluster (pre-adoption) is approximately 27 (out of a full score of 100), and the mean for the second cluster (post-adoption) is approximately 32 (out of 100). Moreover, the difference between the two clusters is statistically significant. Consistent with Wang et al. (2017), these results indicate that firms are more compliant post-new regulation, and CSR reporting quality increased after adopting the new regulation, thereby supporting our results and the study's first hypothesis.

4.2.2.2 Wilcoxon test

We use the Wilcoxon rank-sum test, also known as the Mann-Whitney two-sample statistic, to determine the significance of the differences in CSR reporting quality before and after introducing the UK Companies Act 2006/414c. This analysis is a good fit for this study because the relevant data on UK firms' CSR reporting quality are available and measurable. In untabulated results, the Wilcoxon rank test indicates significant differences between the CSR

scores before and after introducing the new regulation for mandatory CSR reporting in the UK (Z = 9.15, P = 0.00). Hence, it confirms that adopting the new regulation affected the sample firms' CSR reporting quality. As a result, firms in this study are more likely to enhance their CSR reporting quality more strategically to protect themselves from stakeholder scrutiny and governmental penalties.

4.2.3. Factors affecting CSR reporting quality

Table 5 also presents the results of a cross-sectional data regression testing the original relationships in Model 1 regarding firm-specific characteristics developed into the form of Model 2, which is developed and employed to examine our sub-hypotheses by using interaction terms for each factor to be tested. Consistent with legitimacy theories, prior literature suggests that CG has a strong impact on CSR reporting quality (Flammer & Luo, 2017; Liu & Zhang, 2017). Our finding that adopting the new CSR reporting regulation enhances CSR reporting quality supports the findings from Model 2 as reported in Table 5. The positive coefficient of 0.121 for the interaction term (*Reg*CG_Score*) is significant at the 1% level (t = 2.65), which indicates that the effect of adopting the new regulations on CSR reporting quality is greater in firms with relatively stronger CG, which supports sub-hypothesis 1A.

The negative coefficient (−0.887) for the interaction term *Reg*Size* is statistically significant at the 10% level (t = -1.82), which indicates that the effect of adopting new CSR reporting regulation was greater for small firms compared to larger firms. These results support the position that both pre- and post-new regulation, larger firms are more likely to report on their CSR activities and act in a more socially responsible manner to legitimize themselves than smaller firms (Reverte, 2009). The impact of adopting the new regulation on small firms can be observed where there is a motivation for them to increase their reporting quality.

Based on the interaction terms, the results in Table 5 Model 2 indicate that none of the other variables, including cross-listing, firm age, profitability, debt ratio, external auditor type, and industry sensitivity, has a significant effect on the relationship between adopting the new CSR regulation and CSR reporting quality. Thus, the remaining sub-hypotheses are rejected. These results demonstrate that more mature firms have a higher debt ratio than younger firms, and that mature firms are not in sensitive industries, are audited by the large auditing firms, participate in CSR activities, and produce high quality CSR reports due to a desire to legitimize themselves. This tendency is observed both before and after the new regulation, so they are not affected by it. Nonetheless, profitability and international cross-listing are not significant in terms of hypothesis H1.

4.3. Endogeneity concerns and additional analyses

4.3.1. Lead-lag approach

As some studies argue, firms simultaneously determine CSR reporting quality and volume; thus, our results may suffer from an endogeneity problem (Michelon et al., 2015; Ballou et al., 2018). Moreover, firms may vary in their motivation to become involved in CSR, motivation to document and formally disclose their procedures formally, and capability to report them. Accordingly, firms' tendencies in this area can be driven by changes in other unobservable variables. Therefore, we repeat the main analysis in Table 5, thereby employing a lead-lag approach to check the for possible impact of endogeneity by estimating results with the lagged values of independent variables (Dhaliwal et al., 2011; Christensen, 2016). The lagged results shown in Table 6 are consistent with the OLS results reported earlier. Some variables are at a somewhat lower or higher level of significance, but direction (sign) and relative significance stayed the same. Thus, we concluded that endogeneity does not affect our study's findings (Brammer & Pavelin, 2008; Branco & Rodrigues, 2008; Wang et al., 2008; Reverte, 2009; Chiu & Wang, 2015; Ioannou & Serafeim, 2017; Chen et al., 2018).

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Insert Table 6 About Here

To address this issue more fully, we also re-estimate this analysis by using several alternative methods, including two-stage least squares, (2SLS) (Jo & Harjoto, 2011; Koh et al., 2014; Christensen, 2016) and firm fixed effects (Michelon et al., 2015; Christensen, 2016). The results obtained from these alternative methods are similar to the original results and are discussed in the following sections.

4.3.2 Two-stage least squares (2SLS) approach

Our results may be a function of an unobserved variable (i.e., a correlated omitted variable). To address this concern, we perform a 2SLS regression that employs instrumental variables to control for unobservable elements that may impact the results. After rigorously reviewing prior research, we chose three instrumental variables: firm size (Koh et al., 2014), firm age (Koh et al., 2014; Christensen, 2016), and the industry-median *CSR_Score* variable[7] (Jo & Harjoto, 2011; Koh et al., 2014).

In the first stage of the 2SLS regression, firm size and age are included along with the industry-median CSR_Score as well as year and industry dummies to predict a firm's regulation (*Reg*) coefficient. Validity testing reveals that in the first-stage model, all of the instruments are positive and statistically significant, with a highly significant t-statistic ($t > 2.50$), which validates that the instruments are robust (Larcker & Rusticus, 2010). Additionally, tests of the Sargan statistic and Hansen J-statistic show the suitability of our instruments and indicate that Equation 1 is appropriately specified (Davidson & MacKinnon, 2004). We can, therefore, be confident of the integrity of the 2SLS model results.

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[7] The industry-median CSR_Score is employed as an instrumental variable, as it can likely meet the conditions of relevancy and exclusion (Jo & Harjoto, 2011).

In the second stage, the predicted value of *Reg* from the first-stage estimation replaces the *Reg* variable in Equation 1. Subsequently, the estimation is repeated for all the principal analyses in Table 5. Table 7 shows that the results remain consistent, thereby leading to qualitatively identical conclusions.

Insert Table 7 About Here

4.3.3 Firm fixed effects approach

To mitigate the concern that some persistent, correlated omitted variables could be driving our results, we run the main model controlling for firm fixed effects (Michelon et al., 2015). The results, shown in Table 6, reveal that even when firm fixed effects are used, the coefficient for the variable *Reg* is positive and statistically significant, thereby matching our prediction. Our findings are consistent with the main results shown in Table 5.

4.4. Subsample tests on high and low CSR reporting quality

We conduct the following test to validate the main regression results and assess whether those results hold when using an alternative dependent variable. This analysis replaces CSR reporting quality's net score with high and low CSR reporting scores as a substitute dependent variable. Following Schleicher et al. (2007), the main sample is divided into two sub-samples, namely firms with high CSR reporting score and low CSR reporting score as are measured based on the upper and lower quartiles. High-CSR scores comprise the two upper quartiles, whereas Low-CSR scores contain the lower two quartiles of the main sample.

Table 8 presents the OLS regression results of adopting the new regulation on the subsamples based on high and low CSR reporting quality, and includes all independent and control variables used in the original tests. The results of Model 3 (High-CSR_Score subsample) for the regulation variable *Reg* presents a positive coefficient of 3.302, which is statistically significant at the 10% level ($t = 1.76$). This indicates a positive impact from the

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new regulation on firms issuing high-quality CSR reports. This finding could be attributed to firms that generally produce high-quality CSR reports boosting their reporting quality after the new regulation. In other words, firms that voluntarily produce high-quality CSR reports may be motivated to increase their reporting quality to an even higher level after CSR reporting is mandated because they are under greater scrutiny and seek to distinguish themselves from their competitors. The positive coefficient on the *Reg* variable of Model 4 (Low-CSR_Score subsample) is 8.562, which is significant at the 1% level ($t = 8.52$). This indicates that the new regulation had a significant positive impact on firms with low quality CSR reporting. Therefore, mandating CSR reporting enhances CSR reporting quality for firms with low-quality CSR reporting. This improvement likely occurs because firms with low-quality CSR reports must now adhere to CSR reporting requirements or incur penalties.

Insert Table 8 About Here

Table 9 presents the results from a cross-sectional data regression that tests the original relationships in Model 2 by using the alternative sub-samples of high and low quality CSR reporting. The results of testing model 5 indicates that for the high-quality CSR reporting subsample, the coefficient of the interaction term *Reg*Age* is positive at 2.638 and significant at the 10% level ($t = 1.93$). This suggests that the effect of adopting new CSR regulations on high CSR reporting quality boosts CSR reporting quality more in older firms. Consistent with the results in Model 2, the coefficient of the interaction term *Reg*Size* is negative at −8.636 and significant at the 10% level ($t = -1.75$). This finding indicates that the impact of adopting the new regulation is observed in smaller firms, where it is a motivation for them to increase the quality of their CSR reporting.

Insert Table 9 About Here

Table 9 shows that none of the interaction terms of *CG_Score* – profitability, debt ratio, external auditor type, cross-listed firms, and industry sensitivity – significantly affects the relationship between adopting new CSR regulations and high CSR reporting quality. This is consistent with the results presented in section 4.2.2.2, which shows that firms with high-quality CSR reporting maintain that quality before and after new regulations are introduced.

Model 6 in Table 9 reports the regression results of adopting the new regulation on firms with low CSR reporting quality. The interaction term *Reg*Age* has a negative coefficient of 1.398, which is statistically significant at the 5% level ($t = -1.99$), thus, indicating that adopting the new regulations affected younger firms more than older firms. These results could be explained through the fact that older firms are more likely to report and act in a more socially responsible manner to legitimise themselves (Reverte, 2009). On the other hand, the impact of adopting the new regulation is more evident among younger firms where it is a motivation for them to enhance the quality of their CSR reporting. The interaction term *Reg*Cross_Listing* shows a positive coefficient of 0.177 and is significant at the 5% level ($t = 2.32$). This indicates that adopting new CSR regulations has a greater impact on low CSR reporting quality firms if they are cross-listed.

5. Conclusion

This study examined whether new CSR regulations implemented in the UK to enforce CSR reporting motivated firms to change their behavior to adhere to the regulations and improve their reporting quality. Our hypothesis states that companies in the UK would devote greater effort to reporting high quality CSR information to meet the new requirements and society's expectations. Such improvements could influence investors' beliefs and valuations, which would then affect the firm's investment decisions. These investment decisions affect the stock price and return, and the stock price feeds back into the firm's investment choices (Gao, 2010).

This study demonstrates that companies affected by the 2013 reporting mandate improved CSR reporting quality. Moreover, our results denote that CSR reporting quality is driven by the quality of firms' CG characteristics when reporting is mandatory and that firms with high-quality CG are more likely to issue high-quality CSR reports. Moreover, our observed increase in CSR reporting quality is driven by firm size. Larger firms issue higher quality CSR reports than smaller firms, which is supported by the legitimacy perspective because larger firms are under more scrutiny from stakeholders than their smaller peers.

Our results suggest that adopting the new regulation plays an important role in various dimensions of high and low CSR quality reporting. Our findings indicate that mandated regulation enhances the low quality of CSR reports and increases high-quality CSR reporting to even higher levels. The results indicate that mandatory regulation influences high-quality CSR reports producers, specifically smaller firms and older firms. For firms with low quality CSR reporting, the findings imply that younger cross-listed firms are more likely to improve their low CSR reporting quality after implementation of mandatory regulation. Our results are robust due to our endogeneity tests.

In summary, our findings are consistent with the notion that adopting new CSR reporting regulation changes firm behavior and generates positive consequences for regulators and society. Our results provide policymakers and regulators who enforce new regulations or are willing to do so with feedback to understand the effect of such policies in their efforts to improve communication between firms and stakeholders through the CSR section of the annual report (FASB 2013, FRC 2013)[8]. Future research could separately assess CSR reporting's different dimensions to discover the new regulation's impact on each of its components. Another promising research direction would involve investigating what benefits CSR's

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[8] FASB: Financial Accounting Standard Board; FRC: Financial Reporting Council.

mandatory reporting provides for other firm stakeholders, such as regulatory bodies, the community, and employees. Furthermore, questions about the amount of resources utilized by firms, the costs versus benefits to comply with this new regulation, and the strength of regulatory enforcement are still to be addressed.

Acknowledgements

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Table 1
Sample construction

Sample Selection Criteria	Number of Firms	Number of Observations
Firm-year Observations with Sufficient Data from the Bloomberg Database from 2009 to 2017 for CSR Reporting Quality	402	3,390
Less:		
Firms in the Financial and Utilities Industries	121	995
The Final Sample Used for Testing the Hypotheses	281	2,395

Table 1
Sample construction

Table 2
Industry and time distribution for CSR reporting quality sample (2009-2017)

Panel A: Industry Distribution			
Industry Type	Number	Percent	Cumulative
Agriculture, Forestry, Fishing	9	0.38	0.38
Mining	228	9.52	9.90
Construction	140	5.85	15.74
Manufacturing	849	35.45	51.19
Transportation & Public Utilities	95	3.97	55.16
Wholesale Trade	97	4.05	59.21
Retail Trade	393	16.41	75.62
Services	584	24.38	100.00
Total	2,395	100.00	
Panel B: Time Distribution			
Year	Number	Percent	Cumulative
2009	236	9.85	9.85
2010	240	10.02	19.87
2011	256	10.69	30.56
2012	266	11.11	41.67
2013	277	11.57	53.24
2014	280	11.69	64.93
2015	280	11.69	76.62
2016	281	11.73	88.35
2017	279	11.65	100.00
Total	2,395	100.00	

Notes: This table presents industry and time distribution for CSR reporting quality sample (2009-2017).

Table 3
Descriptive statistics of firm-level variables

	Mean	Median	SD	Min	Max	N
Variable of Interest						
CSR_Score	30.472	29.000	11.259	11.000	65.000	1,378
Dependent and Control Variables						
Reg	0.482	0.000	0.499	0.000	1.000	1,378
CG_Score	56.674	57.000	6.940	39.000	77.000	1,378
Age	3.301	3.367	0.653	0.693	3.989	1,378
Age in Years	32.365	29.000	16.685	2.000	54.000	1,378
Size	14.315	14.083	1.433	10.496	18.127	1,378
ROA	0.002	0.001	0.003	0.000	0.029	1,378
Lev	0.220	0.212	0.169	0.000	1.014	1,378
BigN	0.723	1.000	0.448	0.000	1.000	1,378
Cross_Listing	0.957	1.000	0.203	0.000	1.000	1,378
Ind_Sens	0.188	0.000	0.391	0.000	1.000	1,378

Notes: All variables are winsorized at 1% of their distribution. See Appendix for variable definitions.

Table 4

Pairwise Pearson correlation among all variables

	1	2	3	4	5	6	7	8	9
1. CSR_Score	1.000								
2. CG_Score	0.678*	1.000							
3. Age	0.110*	0.213*	1.000						
4. Size	0.567*	0.559*	0.116*	1.000					
5. ROA	-0.290*	-0.242*	-0.135*	-0.507*	1.000				
6. Lev	0.077*	0.052*	-0.250*	0.127*	-0.156*	1.000			
7. BigN	-0.010	0.100*	-0.060*	0.135*	-0.112*	0.045*	1.000		
8. Cross_Listing	0.083*	0.102*	-0.090*	0.285*	-0.151*	0.021	0.067*	1.000	
9. Ind_Sens	0.185*	0.196*	0.007	0.080*	−0.168*	-0.108*	−0.016	−0.038	1.000

Notes: *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively. See Appendix for variable definitions.

Table 5

Regression of Mandatory CSR Reporting Regulation on the CSR Reporting Quality

Dependent Variable = CSR Reporting Quality (CSR_Score)

	Model 1		**Model 2**	
	Coef.	*t*-test	Coef.	*t*-test
Reg	3.884	2.92***	13.613	2.04**
CG_Score	0.832	14.34***	0.775	10.79***
Age	2.100	4.02***	2.718	3.87***
Size	1.930	6.61***	2.345	6.10***
ROA	−67.673	−0.71	−61.127	−0.58
Lev	3.174	1.80*	4.051	1.67*
BigN	−2.011	−2.97***	−2.121	−2.31**
Cross_Listing	0.455	0.36	0.604	0.37
Ind_Sens	2.877	3.05***	3.128	2.56**
Reg*CG_Score			0.121	2.65***
Reg*Age			−1.091	−1.27
Reg*Size			−0.887	−1.82*
Reg*ROA			94.683	0.56
Reg*Lev			−1.480	−0.47
Reg*BigN			0.319	0.28
Reg*Cross_Listing			−0.150	−0.07
Reg*Ind_Sens			−0.512	−0.32
constant	−53.910	−13.92***	−59.002	−11.34
N (firm-years)	1,378		1,378	
Year effect	Yes		Yes	

Notes: *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.
See Appendix for variable definitions.

Table 6

Regression of Mandatory CSR Reporting Regulation on the Quality of CSR Reporting: Controlling for Endogeneity using Lead–Lag Design and Firm Fixed Effect

Dependent Variable = CSR Reporting Quality (CSR_Score)

	Lead–Lag Design		**Firm Fixed Effect**	
	Coef.	*t*-test	Coef.	*t*-test
Reg	2.190	4.17***	4.326	9.48***
CG_Score	0.762	12.60***	0.171	3.39***
Age	1.818	3.15***	9.670	2.22**
Size	1.995	6.30***	2.064	4.32***
ROA	−23.182	−0.23	−40.568	0.62
Lev	2.758	1.46	4.426	1.84*
BigN	−1.682	−2.42**	1.060	1.63
Cross_Listing	0.346	0.25	7.389	2.86***
Ind_Sens	2.563	2.59***	7.744	2.07**
constant	−48.019	−11.28***	−53.157	−3.59***
N (firm-years)	1,378		1,378	
Year effect	Yes		Yes	
Firm fixed effect			Yes	

Notes: This table presents OLS regression results considering the potential endogeneity problem. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively. See Appendix for variable definitions.

Table 7

Regression of Mandatory CSR Reporting Regulation on the Quality of CSR Reporting:
Controlling for Endogeneity using 2SLS Method

	First-Stage Regulation		Second Stage CSR Reporting Quality	
	Coef.	*t*-test	Coef.	*t*-test
Reg			9.357	11.91***
Instruments				
Age	−0.080	−5.06***		
Size	0.027	2.81***		
MICSR	0.058	25.08***		
Controls				
CG_Score			1.085	33.83***
ROA			−32.298	−0.41
Lev			0.748	1.58
BigN			−2.378	−5.00***
Cross_Listing			0.909	0.83
Ind_Sens			1.232	2.13**
constant			−34.492	−16.49***
N (firm-years)	1,378			
Year effect	Yes		Yes	
Sargan statistic			0.303	
Hansen J-statistics			< 0.001	

Notes. This table presents 2SLS regression results considering the potential endogeneity problem. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively. See Appendix for variable definitions.

Table 8

Regression of Mandatory CSR Reporting Regulation on the Quality of High/Low CSR Reporting

Dependent Variable = CSR Reporting Quality (High and Low)						
	Model 1 CSR_Score		**Model 3** High-CSR_Score		**Model 4** Low-CSR_Score	
	Coef.	*t*-test	Coef.	*t*-test	Coef.	*t*-test
Reg	3.884	2.92***	3.302	1.76*	8.562	8.52***
CG_Score	0.832	14.34***	0.725	11.03***	0.177	3.99***
Age	2.100	4.02***	−0.624	−0.70	1.190	4.51***
Size	1.930	6.61***	1.052	3.18***	0.887	4.45***
ROA	−67.673	−0.71	−122.050	−0.61	35.656	0.56
Lev	3.174	1.80*	−0.734	−0.26	2.049	2.13**
BigN	−2.011	−2.97***	−1.731	−2.18**	−0.745	−1.77*
Cross_Listing	0.455	0.36	1.304	0.80	−0.827	−1.09
Ind_Sens	2.877	3.05***	2.026	1.77*	0.031	0.05
constant	−53.910	−13.92***	−20.504	−3.59***	−7.076	−2.33**
N (firm-years)	1,378		684		694	
Year effect	Yes		Yes		Yes	

Notes: High (Low) CSR is the net score divided using a dummy variable equal to 1 (0) if upper (lower) quantile. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively. See Appendix for variable definitions.

Table 9

Regression of Mandatory CSR Reporting Regulation on the Quality of High/Low CSR Reporting in Terms of Specific Factors

Dependent Variable = CSR Reporting Quality						
	Model 2 CSR_Score		**Model 5** High-CSR_Score		**Model 6** Low-CSR_Score	
	Coef.	*t*-test	Coef.	*t*-test	Coef.	*t*-test
Reg	13.613	2.04**	9.921	1.01	−0.468	−0.09
CG_Score	0.775	10.79***	0.690	8.85***	0.099	1.88*
Age	2.718	3.87***	0.287	0.33	0.814	1.87*
Size	2.345	6.10***	1.245	2.94***	0.944	3.59***
ROA	−61.127	−0.58	−45.528	−0.76	29.799	0.43
Lev	4.051	1.67*	3.826	1.06	2.483	2.10**
BigN	−2.121	−2.31**	−2.828	−2.73***	−0.229	−0.44
Cross_Listing	0.604	0.37	0.829	0.49	−0.916	−0.87
Ind_Sens	3.128	2.56**	3.154	2.06**	−0.101	−0.13
Reg*CG_Score	0.121	2.65***	−0.451	−0.77	−0.119	−0.35
Reg*Age	−1.091	−1.27	2.638	1.93*	−1.398	−1.99**
Reg*Size	−0.887	−1.82*	−8.636	−1.75*	0.068	0.04
Reg*ROA	94.683	0.56	−1.855	−1.33	0.561	1.16
Reg*Lev	−1.480	−0.47	0.776	0.31	0.340	0.28
Reg*BigN	0.319	0.28	43.010	0.59	69.382	0.66
Reg*Cross_Listing	−0.150	−0.07	0.107	0.88	0.177	2.32**
Reg*Ind_Sens	−0.512	−0.32	−2.340	−1.14	0.200	0.20
constant	−59.002	−11.34***	−24.665	−3.65***	−2.915	−0.73
N (firm-years)	1,378		684		694	
Year effect	Yes		Yes		Yes	

Notes: *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively. See Appendix for variable definitions.

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Appendix. Variables' definitions and measurement

Variable	Definition	Measurement
CSR_Score	CSR disclosure net score at the end of the year.	Net reporting score ranges from zero to 100.
Reg	New regulation of Act 2006 (Regulation 2013).	Indicator variable equals one if the year is after 2013 and zero otherwise.
CG_Score	Corporate governance score at the end of the year.	Corporate governance net score ranges from 0 to 100.
Age	Firm age.	Natural logarithm of the number of the firm's listing year plus one.
Size	Size of firm.	Natural logarithm of the market value of equity of firm i, measured in year t.
ROA	Profitability of firm by Return on Assets ratio.	Net income before extraordinary items scaled by total assets.
Lev	Leverage (debt) of firm.	Total debt scaled by total assets of firm i in year t.
BigN	Auditor type of firm (Big 4 or not).	Indicator variable equals one if a firm is audited by one of the Big 4 auditing firms and zero otherwise.
Cross_Listing	International listing status of firm.	Indicator variable equals one if a firm is listed in one or more non-UK markets and zero otherwise.
Ind_Sens	Being part of a sensitive industry.	Indicator variable equals one if a firm is classified as in a sensitive industry and zero otherwise. Sensitive industries are mining, oil and gas, chemicals, construction, building materials, forestry and paper, steel and other metals, electricity, gas distribution, and water.
High-CSR_Score	High CSR score.	Indicator variable equals one if in the upper two quartiles of CSR scores and zero otherwise.
Low-CSR_Score	Low CSR score.	Indicator variable equal to one if in the lower two quartiles of CSR scores and zero otherwise.
MICSR	Industry median CSR score.	Industry median of the CSR score.