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Research article

Do corporate anti-bribery and corruption commitments enhance environmental management performance? The moderating role of corporate social responsibility accountability and executive compensation governance

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ABSTRACT

This study aims to examine the potential impact (substantive or symbolic) of firms' anti-bribery and corruption commitments (ABCC) on environmental management performance (ENVS). We also seek to explore whether this link is contingent on corporate social responsibility (CSR) accountability and executive compensation governance. To achieve these aims, we use a sample of 2151 firm-year observations representing 214 FTSE 350 non-financial companies from 2002 to 2016. Our findings support a positive association between firms' ABCC and ENVS. In addition, our evidence shows that CSR accountability and executive compensation governance are significant substitutes for ABCC to engender enhanced ENVS. Our study highlights practical implications for organisations, regulators and policymakers, and suggests several avenues for future environmental management research. Overall, our findings are unsensitive to alternative measures of ENVS, different types of multivariate regression methods, namely ordinary least squares (OLS) and two-step generalized method of moments (GMM) regressions, and controlling for industry environmental risk and the implementation of the UK Bribery Act 2010.

1. Introduction

Anti-bribery and corruption commitments (ABCC) of firms have been receiving increased attention in recent years as the negative effects of corruption on both the economy and the environment have become more widely recognised (Sundström, 2016; Ren et al., 2021; Chen et al., 2022; Hao et al., 2022). Many firms have committed to anti-bribery and corruption policies to reduce the prevalence of these practices within their organisations (Sundström, 2015). Firms can take several steps to reduce bribery and corruption risk. For example, they can adopt codes of conduct and ethics, establish clear policies and procedures for reporting and addressing corruption instances, and provide employees with training and education on the importance of ABCC policies (Garcia--Sanchez et al., 2011). Another essential aspect of firms' ABCC is their commitment to corporate environmental management performance (aka ENVS) (Blanc et al., 2017; Chen et al., 2022). In recent years, there has been growing recognition of the link between corruption and environmental degradation, as corrupt practices often abuse natural resources and destroy ecosystems (Sundström, 2016; Candau and Dienesch, 2017; Ren et al., 2021; Hao et al., 2022). For example, a study by Papyrakis et al. (2017) found that corruption in the extractive industries can lead to the over-exploitation of natural resources, such as oil, gas, and minerals, which also results in environmental pollution and degradation.

To address this issue, many firms have committed to high ENVS to reduce their environmental impact and promote sustainable development (Lisciandra and Migliardo, 2017; Yousefi et al., 2021; Mahdi et al., 2022; Mehdizadeh et al., 2023). For example, they may adopt environmental management systems and standards, such as ISO 14001, and engage in environmental reporting and disclosure to increase transparency and accountability (Chen et al., 2022). Generally, firms' ABCC is an essential step towards reducing the negative impacts of corruption

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on the economy and the environment.

Although bribery and corruption have been discussed in several prior studies as significant sources of environmental deterioration, a few limitations can be highlighted. First, there are very few recent systematic empirical analyses of the environmental effects of bribery and corruption (Vazquez et al., 2020; Wang et al., 2020; Ren et al., 2021). For instance, while Chen et al. (2022) examined the impact of China's anti-corruption initiative on environmental responsibility, Wei and He (2022) explored the nexus between anti-corruption and the environmental disclosure quality of firms in China. Accordingly, we argue that prior literature lacks sufficient empirical investigation of the link between ABCC and ENVS. Hence, we pose the first critical policy question of whether anti-bribery and corruption programmes stimulate or inhibit the ecological performance of firms. Accordingly, the first aim to achieve in the current study is to examine the impact of firms' ABCC on ENVS.

Second, the literature on the association between ABCC and ENVS is mixed. While some studies suggest that anti-corruption measures can lead to improved environmental outcomes (Lopez and Mitra, 2000; Welsch, 2004; Vazquez et al., 2020), other research highlights such approaches' potential limitations and challenges (Cole, 2007; Lisciandra and Migliardo, 2017). For example, Lisciandra and Migliardo (2017) found that the relationship between anti-corruption engagements and ENVS is not straightforward. The authors argue that the benefits of anti-corruption measures for improving environmental outcomes may depend on the specific context and the nature of the corruption problem. In some cases, the implementation of anti-corruption policies may actually lead to negative environmental consequences, such as reducing the availability of resources for environmental protection. In other instances, ABCC could be used by organisations as an impression management practice without significant impact on ENVS. This mixed evidence suggests that other contingency factors might be at play. Hence further studies are required to explore the conditions under which ABCC can influence ENVS. Given this, the second aim of this study is to explore the conditions under which firms' ABCC can facilitate better ENVS.

Corporate social responsibility (CSR) accountability has been identified as potentially playing a role in enhancing the impact of ABCC on ENVS (Kong et al., 2021). We believe that CSR accountability moderates the ABCC-ENVS nexus in several ways. For example, we argue that CSR may moderate the impact of ABCC on ENVS by enhancing transparency and accountability (Xu et al., 2019). Crucially, firms can demonstrate their commitment to responsible environmental management by publicly disclosing information about their ENVS in standalone CSR reports and engaging in dialogue with stakeholders (Lu et al., 2019). This can help to build trust and enhance the credibility of their anti-bribery and anti-corruption efforts.

Likewise, the existence of a CSR committee can play a critical role in ensuring that firms implement their anti-bribery and corruption policies effectively (Sarhan and Al-Najjar, 2022) and align them with their environmental goals (Gerged et al., 2022). One key way in which the CSR committee can enhance the impact of ABCC on ENVS is by ensuring the integration of these commitments into the overall CSR strategy of the firm. This can help to prevent potential conflicts and inconsistencies between a firm's anti-bribery and corruption policies and its environmental goals. Also, by regularly reviewing and assessing the effectiveness of these commitments, the CSR committee can provide valuable feedback and recommendations for improvement to the firm's management (Tingbani et al., 2020). This can help to ensure that the firm's anti-bribery and corruption policies are effectively implemented and aligned with its environmental goals, ultimately leading to improved ENVS. However, no study examines the potential moderating role of CSR accountability on the impact of ABCC on ENVS. Thus, we pose the following question: Can CSR accountability help firms overcome the negative impacts of bribery and corruption on the environment and support more responsible environmental management by promoting transparency, accountability, and ethical behaviour? In other words, we aim to explore the contingency role of CSR accountability on the impact of firms' ABCC on ENVS.

Executive compensation governance is another critical factor in determining the success of ABCC (Kong et al., 2022). Evidence suggests that the structure of executive incentives enhances the impact of such commitments on a firm's overall performance (García-Sánchez and Martínez-Ferrero, 2019; Saha et al., 2020). CEOs incentivised with high compensation packages are more likely to prioritise their firms' long-term success and sustainability, leading to a stronger commitment to anti-bribery and corruption practices (Jian and Lee, 2015). This, in turn, can lead to improved environmental performance, as firms can avoid potential fines and sanctions for corrupt behaviour and instead focus on implementing sustainable business practices (Petrenko et al., 2016; García-Sánchez and Martínez-Ferrero, 2019). This highlights the importance of aligning executive compensation with the firm's sustainability goals (via CSR-related compensation and stock-based compensation) in order to effectively promote sustainable business practices and combat corruption.

Nevertheless, extant research has devoted little attention to exploring the role that executive compensation structure plays in enhancing the impact of ABCC on ENVS. Thus, we pose the following question: Can firms effectively promote environmental sustainability by aligning executive incentives with fighting bribery and corruption? Stated differently, we aim to explore the moderating effect of executive CSR-related compensation and stock-based compensation policies on the relationship between firms' ABCC and ENVS.

Finally, a study examining ABCC as an antecedent of ENVS in the UK is virtually non-existent, to the best of our knowledge. Thus, we explore the conditions under which ABCC engender better ENVS in the UK. The UK has a well-established anti-bribery and corruption legal framework (Prevention of Corruption Acts 1889 to 1916; Bribery Act 2010; Criminal Finances Act 2017). This makes the UK a unique setting to explore the potential relationship between ABCC and ENVS.

Using a sample of 2151 firm-year observations representing 214 FTSE 350 non-financial companies from 2002 to 2016, our empirical evidence suggests that ABCC positively influences ENVS, and this link is contingent on both CSR accountability and executive compensation governance in the UK. Our results are robust to alternative measures of ENVS, different types of multivariate regression methods (i.e., ordinary least squares (OLS) and two-step generalized method of moments (GMM) regressions), and controlling for industry environmental risk and the issue of the UK Bribery Act 2010.

Our paper contributes to the environmental management literature in different ways. First, to the best of the authors' knowledge, this is the first study to examine the association between ABCC and ENVS in the UK. In doing so, we provide additional evidence supporting the idea that eco-friendly activities are primarily driven by ethical motives as proxied by the fight against bribery and corruption. Second, our study adds to the ongoing debate by exploring the conditions under which ABCC can engender positive environmental outcomes. Specifically, we examined the moderating impact of CSR accountability and executive compensation governance on the ABCC-ENVS nexus. In doing so, we provide evidence on extending the traditional role of CSR committees and executive compensation structure beyond the financial interests of shareholders to the other stakeholders' non-financial preferences for ethical (ABCC) and environmental (ENVS) practices. Additionally, our study examines these associations from the perspectives of stakeholder, agency and legitimacy theories as complementary, not contradicting, theories to give a wider understanding of these business phenomena.

The rest of the paper is designed as follows: Section 2 discusses the theoretical background and hypotheses development; Section 3 provides details of the study design. Sections 5 and 6 present the empirical results, robustness test and conclusion.

2. Theoretical background and hypotheses development

2.1. Anti-bribery and corruption commitment and environmental performance

The world is witnessing radical changes in climate conditions, which cause severe economic costs and social consequences. Firms' economic activities are considered among the main contributors to environmental damage and negative climate changes (Tran and Adomako, 2022). This increases public expectations toward corporate environmental responsibilities and performance (Gerged, 2021). In addition, shareholders around the world have become more concerned about investing in ethical, sustainable and eco-friendly businesses (Rodrigue et al., 2013). Therefore, organisations are expected to legitimise their operations and gain social acceptance and sustainability via initiations, practices and measures to improve and save the environment and to communicate their environmental effects to the public (Helfaya and Moussa, 2017; Gerged, 2021; Tran and Adomako, 2022).[1]

Business corruption scandals show that corruption is a global phenomenon which threatens both developing and developed countries (Islam et al., 2018; Lombardi et al., 2019: Blanc et al., 2019). Bribery and corruption can be considered unethical and irresponsible social behaviour because of the destructive consequences of bribery and corruption on businesses, society and the economy (Lopatta et al., 2017). Therefore, international organisations and countries have issued anti-bribery and corruption initiatives (e.g., United Nations Global Compact, 2009; Global Reporting Initiative 205: Anti-corruption, 2016), anti-bribery and corruption acts (e.g. UK Bribery Act 2010; US Foreign Corrupt Practices Act 1977) and corporate governance (CG) guidelines to encourage organisations to incorporate measures into their strategy to fight bribery and corruption (Branco and Delgado, 2012; Zainul Abidin et al., 2022).

Consequently, anti-bribery and corruption policies and strategies, among other ethical engagements, are considered modern governance mechanisms which are integrated into the overall CG structure to prevent/detect unethical behaviours and to legitimise corporate businesses (Zainul Abidin et al., 2022). In this scenario, ABCC is expected to strengthen the effectiveness of governance mechanisms to ensure a firm's integrity, compliance and transparency. This will also support companies' efforts towards sustainability and growth (Branco and Delgado, 2012; Blanc et al., 2019; Zainul Abidin et al., 2022), as corruption could result in legal costs, penalties, fines, reputational damage and deterioration of corporate culture (Branco and Delgado, 2012; Islam et al., 2018). Corporate management could pursue firm legitimisation either via substantive or symbolic approaches (Ashforth and Gibbs, 1990; Rodrigue et al., 2013; Islam et al., 2018). A substantive legitimacy approach indicates that companies tend to promote the adoption of actual and sincere ethical measures and practices to protect stakeholders' interests. On the other hand, under the assumption of symbolic legitimacy, firms engage with ethical practices, such as ABCC, to gain stakeholders' acceptance and show compliance with social norms but without significant change in firm activities and practices.

Given that firms' voluntary engagements with anti-bribery and corruption practices are rapidly evolving to dampen the negative consequences of such a harmful phenomenon on the economy and society, the merits of such practices have started to gain momentum among academicians and the general public (Islam et al., 2018). Therefore, this study aims to examine whether ABCC reflects substantive/symbolic corporate ethical dedication and thus leads to high/low/no impact on ENVS.

2.2. Hypotheses development

On the one hand, stakeholder theory posits that corporate ethical commitment, including dedication to fighting bribery and corruption, is one of the main CSR pillars which aims to align corporate financial activities with the wider stakeholders' interests (Branco and Delgado, 2012; Blanc et al., 2019; Zainul Abidin et al., 2022). ABCC, as a corporate ethical commitment, could direct organisational resources toward magnifying ENVS (Nguyen and Adomako, 2021; Tran and Adomako, 2022). Furthermore, firms committed to fighting bribery and corruption are keen to build their reputation and image as social citizens. Stakeholders pay more attention to ethically committed organisations. This can help companies to gain a competitive advantage, create values and achieve sustainability (Zainul Abidin et al., 2022). In the same vein, stakeholders compensate firms for their environmentally friendly activities and performance through several channels, such as customer loyalty, reduction in the cost of capital, enhancing positive reputation and governmental support (Michelon and Parbonetti, 2012; Liao et al., 2015; Sharma et al., 2018; Tran and Adomako, 2022). This also promotes corporate legitimacy and sustainability. Thus, it could be argued that ENVS would support stakeholders' perception of corporate ethical commitment (including ABCC) (Fombrun and Shanley, 1990; Tran and Adomako, 2022). This means ABCC and ENVS can be used by firms as complementary practices to develop strong relations with stakeholders. This argument is supported by the CSR literature, which refers to incorporating ethical and environmental governance/accountability as part of the director's fiduciary duties to stakeholders (Rodrigue et al., 2013; Zainul Abidin et al., 2022).

In contrast, agency theory posits that firms over-spending on CSR activities, including environmental practices, could be perceived as managerial opportunistic/non-ethical behaviour to transfer shareholders' wealth and to harm the firm's value (Liao et al., 2015; Zainul Abidin et al., 2022; Sarhan and Al-Najjar, 2022). Executives could build their own empires and maintain their market reputation and prestige by investing more in non-value-added environmental activities (Harjoto and Jo, 2015; Zainul Abidin et al., 2022). Furthermore, Sharma et al. (2018) and Helfaya and Moussa (2017) argued that environmental initiatives are usually accompanied by excessive costs, high financial risks, manipulating environmental and financial reporting, and opportunistic managerial behaviours, which may negatively affect a firm's value and sustainability. Therefore, it could be argued that ethical firms, that are committed to fighting bribery and corruption, are less likely to invest in environmental activities and thus have low ENVS.

Our third argument is that ABCC could be a symbolic behaviour used by organisations to manage stakeholders' perceptions (impression management) of corporate commitment toward CSR and ethics. Therefore, organisations will be seen as ethical and responsible citizens (Islam et al., 2018). This will help firms to legitimise their operations, avoid litigation risks and gain reputation and public relations without significant impact on ENVS or to greenwash their poor/contra-environmental performance (Michelon and Parbonetti, 2012; Rodrigue et al., 2013; Islam et al., 2018).

Very few recent studies have documented the effect of corporate ethical commitment/behaviour (including ABCC) on ENVS. For example, Tran and Adomako (2022) find that organisational ethical behaviour moderates the relationship between environmental regulation enforcement and ENVS. Specifically, organisational ethical behaviour supports the positive impact of environmental regulation enforcement on ENVS. Similarly, Chen et al. (2022) indicate a positive influence of China's anti-corruption campaign on ENVS. In the same vein, Vazquez et al. (2020) report a negative link between perceived institutional corruption and ENVS. Based on the above discussed empirical evidence and theoretical arguments, we form our first hypothesis to be as follows:

[1] Corporate investment in environmentally eco-friendly activities, technologies and innovations is expected to have long-term returns and thus increase a firm's value in the future and secure sustainability as a result of minimising potential litigation risk, reducing cost of capital, savings in energy costs, strength of reputation and image as corporate citizens (Michelon and Parbonetti, 2012; Liao et al., 2015; Helfaya and Moussa, 2017; Sharma et al., 2018).

H1. There is a relationship between corporate anti-bribery and corruption commitments and environmental management performance.

The existence of a CSR/environmental committee (CSRCOMT) and issuance of a standalone CSR report (CSRRT) may reflect a firm's orientation toward CSR accountability and commitment to stakeholders' interests (Liao et al., 2015; Helfaya and Moussa, 2017).

Standalone CSR reports disseminate a firm's social, environmental and ethical initiatives for the benefit of its different stakeholders and society at large (Michelon and Parbonetti, 2012; Helfaya and Moussa, 2017; Lopatta et al., 2017; Hummel et al., 2019). Therefore, the issuance of a standalone CSR report reflects corporate citizenship and ethical commitment. This helps companies to gain a reputation and legitimise their businesses (Michelon and Parbonetti, 2012; Helfaya and Moussa, 2017). The information included in such reports (such as corporate CSR activities, policies and strategies) could be helpful for stakeholders' decisions (Liao et al., 2015; Sharma et al., 2018). Recently, sustainability/ESG reporting has become a common business practice in many countries, which helps companies to legitimise their operations and gain social acceptance (Liao et al., 2015; Helfaya and Moussa, 2017; Hummel et al., 2019). Realising the importance of such CSR/sustainability reports, many national and international institutions have issued guidelines/frameworks for preparing such reports (e.g., AA1000, 2008; GRI, 2011). Furthermore, there is a rapid increase in the number of companies seeking independent assurance services to improve the credibility and accountability of such CSR reports (Michelon and Parbonetti, 2012; Hummel et al., 2019).

Corporate board structure and its subcommittees (e.g., nomination, audit, remuneration and CSR committees) reflect the organisational mission and strategic agenda (Michelon and Parbonetti, 2012; Rodrigue et al., 2013; Helfaya and Moussa, 2017; Radu and Smaili, 2021; Gerged et al., 2022). To ensure the efficiency of such committees, they are usually small, include experienced directors, meet more frequently and deal with some specific agendas (Kolev et al., 2019; Gerged et al., 2022). To signal the organisational interest in sustainability and its role in preserving the wide stakeholders' interests, the corporate board of directors voluntarily form CSRCOMT (Rodrigue et al., 2013; Radu and Smaili, 2021). Usually, CSRCOMT includes experienced directors to plan, implement, oversee, report on and discuss the risks and opportunities of environmental and social initiatives. Such committees are also responsible for spreading awareness among employees of the impact of their tasks and activities on the environment and society (Rodrigue et al., 2013; Liao et al., 2015; Sharma et al., 2018; Gerged et al., 2022). Furthermore, this committee could be considered as a proxy for a firm's orientation toward CSR accountability and how serious the company is about protecting stakeholders' CSR interests (Michelon and Parbonetti, 2012; Helfaya and Moussa, 2017; Radu and Smaili, 2021). CSRCOMT can help corporate boards to effectively monitor and advise executives with regard to environmental practices (Rodrigue et al., 2013; Radu and Smaili, 2021).

On the one hand, stakeholder theory predicts that CSRCOMT and the issuance of CSRRT could help in aligning the shareholders' financial goals with other stakeholders' non-financial interests and thus improve ENVS (Liao et al., 2015; Helfaya and Moussa, 2017). Therefore, the existence of CSRCOMT and the issuance of CSRRT help companies interact more with environmental practices and thus increase their ENVS. It could be argued that corporate ethical commitment to fight bribery and corruption could act as a complement/substitute to CSR accountability to protect the stakeholders' interests and thus it magnifies ENVS.

The counter-argument, which is consistent with agency theory, posits that the existence of CSRCOMT and issuance of CSRRT as effective environmental governance mechanisms and proxies for CSR accountability in an ethical corporate environment could mitigate the executive attempts to invest in unethical opportunistic environmental practices and therefore decrease ENVS (Sharma et al., 2018; Sarhan and Al-Najjar, 2022; Zainul Abidin et al., 2022).

Legitimacy theory argues that the existence of CSRCOMT and the issuance of CSRRT are symbolic governance/accountability mechanisms used by firms to manage stakeholders' perceptions and impressions about their environmental performance, gain reputation and legitimise their businesses (Rodrigue et al., 2013; Helfaya and Moussa, 2017). Thus, following this argument, we can expect an insignificant effect of such symbolic mechanisms on the link between ABCC and ENVS. This conclusion is supported by the findings of some past studies (e.g., Michelon and Parbonetti, 2012). For example, Rodrigue et al. (2013) report that environmental governance mechanisms are used mainly as a symbolic approach to present companies as environmentally committed businesses with little substantial impact on ENVS.

Empirically, based on evidence from 329 UK companies, Liao et al. (2015) report that environmental committee minimises the disparate stakeholders' interests and is thus more likely to promote environmental activities (i.e., disclosure of greenhouse gas emissions information). In their cross-country (five sub-Saharan African countries) study, Gerged et al. (2022) report that the presence of an environmental committee encourages firms to disclose environmental information. In addition, they find that the existence of an environmental committee magnifies the positive effect of board gender diversity on corporate environmental disclosure. Based on the UK sample, Helfaya and Moussa (2017) find that the existence of a CSRCOMT and the publishing of a CSRRT are positively and significantly associated with improving the quantity and quality of environmental disclosure. Radu and Smaili (2021) report that the CSRCOMT has a positive effect on the environmental performance of a sample of Canadian firms. However, Michelon and Parbonetti (2012) report an insignificant link between CSRCOMTs and sustainability disclosure, including disclosing environmental activities. Similarly, Rodrigue et al. (2013) document an insignificant effect of the environmental committee on ENVS. Generally, their findings indicate that environmental governance mechanisms have a symbolic rather than a substantive effect on ENVS.

Given the controversy in the theoretical and empirical literature, we expect that CSR accountability measures are likely to moderate the relationship between ABCC and ENVS if they are substantive measures or have insignificant impact if they are symbolic measures. Therefore, our second hypothesis is as follows:

H2. Existence of a CSR committee and issuance of a standalone report moderate the relationship between corporate anti-bribery and corruption commitments and environmental management performance.

To achieve long-term sustainability, sound CG measures attempt to maintain the economic interests of shareholders along with preserving other interests of various stakeholders, including the firm's social and environmental responsibilities (Jizi, 2017; Gerged, 2021; Sarhan and Al-Najjar, 2022). Executives may be reluctant to invest in environmental activities and innovations because such investments are expensive with uncertain returns in the long term (Mahoney and Thorn, 2006; Liao et al., 2015; Flammer et al., 2019; Tsang et al., 2021). Stakeholder theory argues that compensation structure as an effective CG mechanism plays a crucial role in aligning executive interests with those of stakeholders and thus ensures long-term corporate sustainability through balancing short-term (financial) and long-term (CSR/environmental) objectives. Therefore, recently many firms have structured their compensation schemes to be connected to their CSR performance (CSRCOMP) (Hong et al., 2016; Flammer et al., 2019; Radu and Smaili, 2021; Tsang et al., 2021). Similarly, stock-based compensation (equity pay) schemes (SBCOMP) are becoming more common in corporations nowadays as they connect executive interests with a firm's long-term objectives, including sustainability goals (Mahoney and Thorn, 2006; Rodrigue et al., 2013; Sarhan and Al-Najjar, 2022). This is because SBCOMP is sensitive to corporate long-term financial performance.

The executive compensation literature has reported a positive effect of executive compensation structure (CSRCOMP and/or SBCOMP) on

corporate social and environmental performance (Hong et al., 2016; Rodrigue et al., 2013; Flammer et al., 2019; Radu and Smaili, 2021; Sarhan and Al-Najjar, 2022), indicating that compensation structure can be used by firms as an effective environmental governance and accountability mechanism to protect stakeholders' environmental interests.

On the other hand, agency theory predicts that managers could over-invest in environmental activities to attain personal benefit to the detriment of shareholders' value maximisation (Liao et al., 2015). In addition, environmental initiatives are expensive and have high financial risks, which may decrease the firm's value and threaten its survival (Hong et al., 2016; Sharma et al., 2018). Therefore, in an ethical environment that fights bribery and corruption, executive compensation as an effective CG mechanism could be used to discipline managers' opportunistic behaviour and therefore decrease opportunistic unethical over-investement in firm's environmental activities and performance (Zainul Abidin et al., 2022; Sarhan and Al-Najjar, 2022).

Legitimacy theory assumes that corporate efforts to connect executive compensation to ESG/environmental objectives could be considered as symbolic governance mechanisms by firms for impression management to be perceived by stakeholders as corporate citizens and environmentally friendly organisations without having a substantive effect on CSR/environmental performance (Helfaya and Moussa, 2017; Islam et al., 2018). Thus, following this argument, we can expect an insignificant effect of executive compensation structure on the relationship between ABCC and ENVS. This expectation is supported by findings of some past studies (e.g., Rodrigue et al., 2013; Liao et al., 2015).

Empirically, Liao et al. (2015) show a negative and insignificant effect of CEO share-option and long-term bonuses on the disclosure of greenhouse gas emissions information. Similarly, Rodrigue et al. (2013) find an insignificant effect of environmental compensation incentives on environmental performance measures, except for pollution prevention. Generally, their findings indicate that environmental governance mechanisms, including executives' environmental incentives, have a symbolic rather than a substantive effect on corporate environmental performance. However, Radu and Smaili (2021) report that CSRCOMP has a positive and significant effect on ENVS. In addition, Hong et al. (2016) found a positive effect of CSRCOMP and the actual level of CSR performance. In the same vein, Flammer et al. (2019) report that CSRCOMP has a positive effect on environmental and social performance, green innovations, and reducing emissions. Similarly, Sarhan and Al-Najjar (2022) report a positive effect of SBCOMP and CSRCOMP on CSR performance. Mahoney and Thorn (2006) also document a positive impact of SBCOMP on both CSR and CSR strengths measures.

Based on the previously discussed empirical and theoretical evidence, we expect our third hypothesis to be as follows:

H3. Executive compensation structure moderates the relationship between corporate anti-bribery and corruption commitments and environmental management performance.

3. Research design

3.1. Sample selection

This paper focuses on non-financial companies listed on the FTSE 100 and FTSE 250 for the period 2002 to 2016. Similar to CSR/environmental management and corporate ethical literature, our study excludes financial companies because they have unique governance and financial regulations compared with other industries/sectors (Tauringana and Chithambo, 2015; Gerged, 2021; Sarhan and Al-Najjar, 2022; Zainul Abidin et al., 2022). After excluding 121 financial firms and 15 firms with unavailable ABCC, CG and CSR data, our sample comprises 2151 firm-year observations collected from 214 companies in nine industries (i.e., 20 basic materials, 29 consumer goods, 65 consumer services, 14 health care, 59 industrials, eight oil and gas, seven technology, five telecommunications, and seven utilities). The Refinitiv Eikon database started to provide CSR (including ABCC) and CG data in 2002.

FTSE 350 firms have been used intensively in CSR/environment performance studies in the UK (e.g., Liao et al., 2015; Tauringana and Chithambo, 2015; Alsaifi et al., 2020; Sarhan and Al-Najjar, 2022). This is because the firms included in the FTSE100 and FTSE250 indices are considered good representatives of the economic and environmental/CSR performance of the UK market (Liao et al., 2015; Tauringana and Chithambo, 2015; Helfaya and Moussa, 2017; Alsaifi et al., 2020). In addition, these large companies have diverse stakeholders with heterogeneous interests (Liao et al., 2015). The UK is one of the countries which shows high interest in fighting against activities and practices that pollute and harm the environment. Therefore, different UK governments issued initiatives and legislations to encourage companies to increase their environmentally friendly practices and to allocate capital to sustainable economic activities (Liao et al., 2015; Tauringana and Chithambo, 2015). Therefore, there is an increased interest in environmental practices among UK firms (Helfaya and Moussa, 2017; Alsaifi et al., 2020). Furthermore, the UK, as a common law country with a strong legal environment and law enforcement, showed special interest in fighting bribery and corruption (Prevention of Corruption Acts 1889 to 1916; Bribery Act 2010; Criminal Finances Act 2017).

3.2. Variables measurement

The main dependent (i.e., ABCC), independent (ENVS; CSRCOMT; CSRRT; ESRCOMP; SBCOMP) and control variables have been collected from the Refinitiv Eikon database. This database has been used extensively in CSR/environmental performance and ethical literature (e.g., Liao et al., 2015; Tauringana and Chithambo, 2015; Shaukat et al., 2016; Helfaya and Moussa, 2017; Tsang et al., 2021; Zainul Abidin et al., 2022; Sarhan and Al-Najjar, 2022). The anti-bribery and corruption commitments (ABCC) index consists of six indicators of corporate measures and policies reflecting corporate efforts to prevent and detect corruption and bribery, such as whether the company states fighting bribery and corruption in its code of conduct, has internal management tools to fight bribery and corruption such as whistleblowing systems and/or hotlines, and has relevant employee training. Using Refinitiv Eikon database indicators to assess corporate commitment to fight bribery and corruption is consistent with the corporate ethical commitment literature (e.g., Zainul Abidin et al., 2022). The Cronbach's alpha score of ABCC indicators is 0.869, showing the internal consistency of the measured variable.

The environmental management performance score (ENVS) measures a firm's impact on natural systems such as air, land and water. The existence of a CSR Committee (CSRCOMT) is a dummy variable equal to one if a CSR committee exists and zero otherwise. The issuance of a CSR standalone report (CSRRT) is a dummy variable equal to one if the company issues a standalone CSR report and zero otherwise. CSR-related compensation (CSRCOMP) is a dummy variable equal to one if the company have an ESG-related compensation policy and zero otherwise. Stock-based compensation (SBCOMP) is the natural logarithm of the total value of the stock-based compensation of employees during the year, as reported by the company.

Consistent with previous corporate environmental performance/disclosure literature, our study models control for a number of variables (Michelon and Parbonetti, 2012; Rodrigue et al., 2013; Liao et al., 2015; Tauringana and Chithambo, 2015; Shaukat et al., 2016; Helfaya and Moussa, 2017; Flammer et al., 2019; Gerged, 2021; Radu and Smaili, 2021; Sarhan and Al-Najjar, 2022). This is because these variables could have a possible impact on corporate environmental/ethical behaviours. Board of directors' characteristics (board size and independence) and shareholding structure (institutional shareholding) are efficient CG measures which monitor executives' behaviour to align their interests

with stakeholders. Large boards (BRDSZE) could include independent, experienced and diverse directors who can contribute to the efficient monitoring and advisory roles of the board and therefore stimulate more environmentally friendly activities (Liao et a., 2015; Tauringana and Chithambo, 2015; Jizi, 2017; Gerged, 2021). Motivated by objectivity and maintaining their reputation as experienced calibres, non-executive directors (BRDIND) can effectively monitor management opportunistic behaviour and advise the executive to ensure that they act in the interests of shareholders and other stakeholders. In addition, non-executive directors usually have heterogenous backgrounds, external business connections, active communications with stakeholders, and divergent financial interests compared to internal directors. Therefore, they are more likely intended to maintain/protect the wider stakeholders' interests (Michelon and Parbonetti, 2012; Liao et al., 2015; Helfaya and Moussa, 2017; Gerged, 2021; Sarhan and Al-Najjar, 2022). Consequently, a higher percentage of non-executive directors is likely to increase corporate involvement in environmental activities. Institutional shareholders (INSHR) have better access to corporate internal information and are more likely to monitor executive behaviour to ensure that management operates for the long-term sustainability of businesses, including a firm's environmentally friendly activities (Oh et al., 2017; Gerged, 2021; Sarhan and Al-Najjar, 2022; Tran and Adomako, 2022; Zainul Abidin et al., 2022). The other firm-specific control variables include firm size (FRMSZE), leverage (LEVGE), profitability (ROA), capital expenditure (CAPEX), audit firm size (BIG4) and cash holding (CASHH). See Table 1 for the operational measurement of the variables.

3.3. Research model

Following past ENVS literature (Michelon and Parbonetti, 2012; Rodrigue et al., 2013; Helfaya and Moussa, 2017; Flammer et al., 2019; Sarhan and Al-Najjar, 2022), our study uses OLS regression to examine the effect of corporate ABCC on a firm's environmental performance.

$$ENVS_{it} = \beta_0 + \beta_1 ABCC_{it} + \beta_2 BRDSZE_{it} + \beta_3 BRDIND_{it} + \beta_4 INSHR_{it} + \beta_5 FRMSZE_{it} + \beta_6 LEVGE_{it} + \beta_7 CAPEX_{it} + \beta_8 BIG4_{it} + \beta_9 ROA_{it} + \beta_{10} \mathrm{CASHH}_{it} + \beta_{11}\, IndustryFE + \beta_{12}\, YearsFE + \varepsilon_{it} \quad (1)$$

Where ENVS refers to the environmental management performance score. ABCC is the anti-bribery and corruption commitments index. BRDSZE is the size of the board of directors. BRDIND is board independence. INSHR is the percentage of institutional shareholdings. FRMSZE refers to firm size. LEVGE is firm leverage. BIG4 refers to audit quality. ROA refers to firm profitability. CASHH is cash holding.

To examine the possible moderating effect of CSR accountability and compensation governance on the relationship between ABCC and ENVS, we use the following model:

$$ENVS_{it} = \beta_0 + \beta_1 ABCC_{it} + \beta_2 CSRCOMT_{it} + \beta_3 CSRRT_{it} + \beta_4 CSRCOMP_{it} + \beta_5 SBCOMP_{it} + \beta_5\, ABCC{*}CSRCOMT_{it} + \beta_6\, ABCC{*}CSRRT_{it} + \beta_7\, ABCC{*}CSRCOMP_{it} + \beta_8\, ABCC{*}\mathrm{SBCOMP}_{it} + \beta_9 BRDSZE_{it} + \beta_{10} BRDIND_{it} + \beta_{11} INSHR_{it} + \beta_{12} FRMSZE_{it} + \beta_{13} LEVGE_{it} ++ \beta_{14} CAPEX_{it} + \beta_{15} BIG4_{it} + \beta_{16} ROA_{it} + \beta_{17} \mathrm{CASHH}_{it} + \beta_{18}\, IndustryFE + \beta_{19} YearsFE + \varepsilon_{it} \quad (2)$$

Where, CSRCOMT refers to the existence of a CSR committee. CSRRT refers to the publishing of a standalone CSR report. CSRCOMP refers to CSR-related compensation. SBCOMP is stock-based compensation. The interaction terms are introduced in the second model to measure the possible moderating effect of CSR accountability and compensation governance on the relationship between ABCC and ENVS. ABCC*CSRCOMT refers to the interaction term between ABCC and CSRCOMT. ABCC*CSRRT refers to the interaction term between ABCC and CSRRT. ABCC*CSRCOMP refers to the interaction term between ABCC and CSRCOMP. ABCC*SBCOMP refers to the interaction term between ABCC and SBCOMP.[2] The models of this study are clustering at the company level.

Table 1
Variable definition.

Variable	Measure
Dependent Variable	
ENVS	The environmental management performance score is defined by Refinitive Eikon Datastream as follows: "*The environmental pillar measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalise on environmental opportunities in order to generate long term shareholder value*" (Datastream guide).
ENVINX	The environmental management policies and activities index comprises nine environmental management policies and activities adopted by firms, which are collected from the Refinitive Eikon Datastream. These policies and activities include (1) environment management improvement tools (e.g., whistle-blower, suggestion box, hotline, newsletter), (2) environmental management team, (3) environment management training, (4) investing in environmentally friendly R&D, (5) eco-design products, (6) product dematerialisation policy, (7) product eco-design policy, (8) product life-cycle assessment policy, and (9) environmental product innovation policy. We assign the value of one if the company has this policy/activity and zero otherwise. All values are aggregated, and the total score ranges from zero to nine, scaled to a value between zero and one.
Independent Variables	
ABCC	The anti-corruption and bribery commitments score is constructed with six indicators related to anti-bribery/corruption provisions, which are collected from Refinitiv Eikon Datastream. The indicators are whether the company 1) mentions a public commitment to avoid bribery and corruption at the senior management and the board level, 2) states anti-bribery and anti-corruption in its code of conduct, 3) has internal management tools over bribery and corruption like whistleblowing systems, or hotlines, 4) has a policy to withstand bribery and corruption in its business transactions, 5) has processes in place to avoid bribery and corruption practices at all its operations, and 6) has relevant employee training. Datastream records "Yes" or "No" for each indicator so that we assign the value of one to "Yes" and zero to "No". All values are aggregated, and the total score ranges from zero to six, scaled to a value between zero and one.
Moderating Variables	
CSRCOMT	A dummy variable equal to one if a CSR committee exists and zero otherwise
CSRRT	A dummy variable equal to one if the company issues a standalone CSR report and zero otherwise
CSRCOMP	A dummy variable equal to one if the company has an ESG-related compensation policy and zero otherwise.
SBCOMP	The natural logarithm of the total value of the stock-based compensation of employees during the year as reported by the company.
Control Variables	
BRDSZE	The natural logarithm of the total number of board members at the end of the fiscal year.
BRDIND	The percentage of non-executive board members.
INSHR	The percentage of strategic shareholdings of 5% or more owned by investment banks or institutions and pension funds or endowment funds.
FRMSZE	The natural logarithm of market value.
LEVGE	The ratio of long-term debt to total assets.
CAPEX	The ratio of total capital expenditures (funds used to acquire non-current assets other than those associated with acquisitions) to total assets.
BIG4	A dummy variable is equal to one if the company's external auditor is a Big 4 auditor and zero otherwise.
ROA	The ratio of earnings to total assets.
CASHH	The ratio of cash and cash equivalents to total assets.

[2] Consistent with past studies (e.g., Tran and Adomako, 2022), we centred the variables to their means to create the interaction terms (ABCC*CSRCOMT; ABCC*CSRRT; ABCC*CSRCOMP; ABCC*SBCOMP).

4. Empirical results

4.1. Descriptive statistics

Table 2 shows the univariate analysis of the study variables. The mean (median) value of ENVS is 63.41% (69.72%). This result is consistent with environmental/CSR management performance literature in the UK (Liao et al., 2015; Shaukat et al., 2016; Sarhan and Al-Najjar, 2022). For example, Shaukat et al. (2016) and Sarhan and Al-Najjar (2022) reported that the ENVS and average CSR scores for their sample of UK firms are 59.21% and 63.93%, respectively. Our findings indicate that large UK-listed firms are taking environmental issues seriously. Similarly, ABCC has a mean (median) value of 42.79% (50%). This indicates that UK companies have an average commitment to fighting bribery and corruption and consider anti-bribery and corruption commitments as important items on their sustainability agenda. On average, 63% of our sample firms have established CSR committees, and 67% issued standalone CSR reports. Our results are comparable to past studies. For example, Helfaya and Moussa (2017) find that, on average, 68.75% and 74.75% of FTSE100 firms have CSRCOMT and CSRRT, respectively. With regard to compensation structure, Table 2 shows that, on average, 37% of sample firms have CSRCOMP, and the average SBCOMP is £25,157,736. Our results are comparable to those in executive compensation literature. For example, Hong et al. (2016) reported that, on average, 38% of firms have CSRCOMP.

The descriptive statistics of CG and other firm-specific control variables, presented in Table 2, are comparable with past studies in the UK context (e.g., Liao et al., 2015; Shaukat et al., 2016; Helfaya and Moussa, 2017; Alsaifi et al., 2020; Sarhan and Al-Najjar, 2022). For example, the BRDIND's mean (median) value is 65.89% (66.67%), comparable to 58.77% (60%) and 58.6% (57.1%) values reported by Alsaifi et al. (2020) and Liao et al. (2015), respectively. We find that the mean (median) number of board members is 9.44 (9). Liao et al. (2015) and Alsaifi et al. (2020) reported that the mean (median) value of the number of directors serving on each board is 8.757(8) and 9.31(9) directors, respectively. Liao et al. (2015) also find that the averages (median) of ROA and LEVGE are 9.2% (5.8) and 20.1% (16.7), respectively. These values are comparable with our reported results for ROA and LEVGE, which are 8.67% (6.82%) and 20.67% (18.05%), respectively.

4.2. Bivariate analysis

Table 3 presents the Pearson correlation matrix for the study variables. It shows that ABCC, CSRCOMT, CSRRT, CSRCOMP, SBCOMP, BRDSZE, BRDIND, FRMSZE, LEVGE and BIG4 are positively and significantly related to ENVS, while ISHRS, CAPEX, ROA and CASHH

Table 2
Descriptive statistics.

	Mean	SD	25	Median	75
ENVS	0.6341	0.2610	0.4130	0.6972	0.8755
ABCC	0.4279	0.3599	0	0.5	0.8333
CSRCOMT	0.63	0.484	0	1	1
CSRRT	0.67	0.47	0	1	1
CSRCOMP	0.37	0.484	0	0	1
SBCOMP (£)	25157736	73296992	1800000	4600000	14144500
BRDSZE	9.44	2.519	8	9	11
BRDIND	0.6589	0.1301	0.5714	0.6667	0.75
INSHR	0.1332	0.1473	0	0.09	0.19
FRMSZE (£)	8013180	23629129	591781.5	1408305	4388870
LEVGE	0.2067	0.2039	0.0511	0.1805	0.2927
CAPEX	0.0502	0.0492	0.0180	0.0383	0.068
BIG4	0.96	0.193	1	1	1
ROA	0.0867	0.1766	0.0211	0.0682	0.1245
CASHH	0.1212	0.1278	0.0418	0.0792	0.1502

See Table 1 for the operational definitions of research variables.

Table 3
Person correlation matrix.

	ENVS	ABCC	CSRCOMT	CSRRT	CSRCOMP	SBCOMP	BRDSZE	BRDIND	INSHR	FRMSZE	LEVGE	CAPEX	BIG4	ROA	CASHH
ENVS	1														
ABCC	.493***	1													
CSRCOMT	.458***	.456***	1												
CSRRT	.465***	.553***	.507***	1											
CSRCOMP	.269***	.388***	.310***	.294***	1										
SBCOMP	.439***	.404***	.343***	.337***	.221***	1									
BRDSZE	.342***	.203***	.181***	.121***	.054***	.582***	1								
BRDIND	.209***	.362***	.215***	.259***	.183***	.328***	.199***	1							
INSHR	−.154***	−.346***	−.316***	−.345***	−.171***	−.292***	−.071***	−.225***	1						
FRMSZE	.472***	.395***	.328***	.284***	.237***	.816***	.562***	.402***	−.295***	1					
LEVGE	.064***	.043**	.053**	.04*	.045**	.069***	.073***	.075***	−.032*	.124***	1				
CAPEX	−.043**	−.038*	.006	−.032	.013	.047**	.052**	.051**	−.007	−.01	.024	1			
BIG4	.140***	.087***	.106***	.058***	.011	.015	.088***	−.004	.037	.145***	.118***	−.029*	1		
ROA	−.083***	−.130***	−.102***	−.064***	−.094***	−.004	−.024	−.014	−.003	.086***	−.123***	.012	.005	1	
CASHH	−.236***	−.147***	−.091***	−.115***	−.076***	−.065***	−.089***	.080***	−.015	−.158***	−.224***	.011	−.154***	.130***	1

* Significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level. See Table 1 for the operational definitions of research variables.

have a significant negative link with ENVS. These findings suggest that organisations with a high commitment to fighting bribery and corruption have CSR committees, publish standalone CSR reports, connect executive compensation with CSR performance, have stock-based compensation, with large board size and a high percentage of non-executive directors, have large size and high leverage percentage, and that are audited by Big 4 audit firms are more likely have high environmental management performance. Therefore, these findings support H1. On the other hand, firms with high institutional shareholdings, high capital expenditures, high profitability and financial slack are more likely to have poor environmental management performance.

The results reported in Table 3 show that the multicollinearity is not a significant threat to the reliability of our results. This is supported by the VIF values, which are lower than 10. VIFs are reported in Table 4.

4.3. Multivariate analysis

To examine the effect of ABCC on ENVS, we regress ABCC on our test and control variables (Equation (1)). The results presented in Table 4 show that ABCC is positively and significantly associated with ENVS (Models 1 to 5) at the 1% level, supporting H1. This indicates that firms with ethical commitment to fighting bribery and corruption are more likely to direct their organisational resources toward magnifying ENVS. Our result is consistent with stakeholder theory which suggests that firms with an ethical commitment to fight bribery and corruption are more likely to be dedicated to legitimising their operations and achieving long-term sustainability via engaging in environmentally friendly activities which satisfy stakeholders' interests. Our findings are in line with past papers which reported the positive impact of corporate ethical values on ENVS (e.g., Tran and Adomako, 2022). For example, using a sample of listed Chinese enterprises covering the period 2010–2016, Chen et al. (2022) found that China's anti-corruption campaign implemented in 2013 significantly improved the corporate environmental responsibility performance of high-corruption enterprises.

Models 2 and 4 of Table 4 document that the coefficients of CSRCOMT, CSRRT, CSRCOMP and SBCOMP are positive and significant at the 1% level. This indicates that CSR accountability (CSRCOMT and CSRRT) and executive compensation governance (CSRCOMP and SBCOMP) are effective advisory and/or monitoring tools to align executive behaviours with stakeholders' environmental interests. Our findings are comparable with those in environmental management and practices literature (Helfaya and Moussa, 2017; Flammer et al., 2019). For example, based on a sample of 164 Canadian firms, Radu and Smaili (2021) reported that the existence of a CSR committee and CSR-linked executive compensation are positively associated with environmental performance.

To examine the moderating effect of CSR accountability and compensation governance on the association between ABCC and ENVS, we run Equation (2). The findings demonstrated in Model 3 of Table 4 show negative and significant coefficients of the interaction terms ABCC*CSRCOMT and ABCC*CSRRT at the 1% level and 5% level, respectively, supporting H2. Consistent with stakeholder theory, our findings indicate that the publishing of CSR reports and the existence of CSR committees as proxies for CSR accountability can substitute for corporate ethical practices to fight bribery and corruption in aligning shareholders' and other stakeholders' interests via engaging in more environmentally friendly practices. This explanation is in line with past studies (e.g., Liao et al., 2015; Zainul Abidin et al., 2022). For example, using a sample from FTSE350 listed companies, Sarhan and Al-Najjar (2022) found that CG and institutional ownership have a positive and negative association with CSR performance, respectively. They provided additional evidence suggesting a substitutive relationship between institutional ownership and CG practices in affecting CSR performance. Furthermore, our findings are consistent with agency theory expectations that ethical organisations can use CSRRT and CSRCOMT as effective CSR accountability and CG mechanisms to mitigate opportunistic unethical, expensive and risky environmental practices (Sharma et al., 2018; Sarhan and Al-Najjar, 2022; Zainul Abidin et al., 2022).

Similarly, the interaction terms ABCC*CSRCOMP and ABCC*SBCOMP have significant and negative coefficients at the 1% level (Model 5), supporting H3. This result is in line with stakeholder theory's expectations that CSRCOMP and SBCOMP are effective governance tools that can align executive interests with stakeholders' non-financial environmental objectives and, therefore, can substitute for the corporate ethical practices to fight bribery and corruption to encourage

Table 4
The ABCC-ENVS link and the moderation effect of CSR accountability and executive compensation governance.

	ENVS	ENVS	VIF	ENVS	ENVS	VIF	ENVS
	(1)	(2)		(3)	(4)		(5)
ABCC	.306*** (8.09)	.224*** (6.35)	2.24	.251*** (7.39)	.282*** (7.09)	2.05	.264*** (7.13)
CSRCOMT	–	.097*** (5.67)	1.61	.086*** (5.09)	–	–	–
CSRRT	–	.150*** (8.02)	1.99	.122*** (6.17)	–	–	–
CSRCOMP	–	–	–	–	.048*** (2.68)	1.34	.069*** (3.47)
SBCOMP	–	–	–	–	.022** (2.20)	3.63	.025** (2.38)
ABCC *CSRCOMT	–	–	–	−.117*** (−2.68)	–	–	–
ABCC *CSRRT	–	–	–	−.104** (−2.00)	–	–	–
ABCC *CSRCOMP	–	–	–	–	–	–	−.129*** (−2.70)
ABCC *SBCOMP	–	–	–	–	–	–	−.057*** (−3.14)
BRDSZE	.075 (1.53)	.063 (1.45)	1.62	.065 (1.50)	.044 (0.82)	1.77	.048 (0.89)
BRDIND	.043 (0.52)	.061 (0.84)	1.49	.050 (0.67)	−.014 (−0.15)	1.40	−.021 (−0.24)
INSHR	−.015 (−0.20)	−.022 (−0.31)	2.26	−.021 (−0.30)	.009 (0.10)	1.44	.021 (0.24)
FRMSZE	.050*** (5.52)	.038*** (4.68)	2.35	.039*** (4.86)	.031*** (2.77)	4.11	.038*** (3.36)
LEVGE	−.056 (−0.91)	−.065 (−1.20)	1.21	−.066 (−1.24)	−.010 (−0.15)	1.25	−.030 (−0.44)
CAPEX	−.062 (−0.27)	−.045 (−0.24)	1.26	−.097 (−0.52)	.125 (0.48)	1.23	.131 (0.54)
BIG4	.151*** (4.24)	.104*** (3.03)	1.07	.087** (2.58)	.152*** (4.38)	1.09	.153*** (4.33)
ROA	−.014 (−0.48)	.018 (0.74)	1.13	.022 (0.94)	−.002 (−0.08)	1.12	.006 (0.22)
CASHH	−.265*** (−2.71)	−.228*** (−2.70)	1.21	−.213** (−2.58)	−.255** (−2.57)	1.22	.282*** (−2.99)
Constant	−.466*** (−2.95)	−.282* (−1.94)	–	−.230* (−1.62)	−.447*** (−2.63)	–	−.523*** (−3.00)
Year FE	Included	Included	–	Included	Included	–	Included
Industry FE	Included	Included	–	Included	Included	–	Included
Obs.	2151	2151	–	2151	1738	–	1738
Adj. R2	0.453	0.524	–	0.532	0.482	–	0.503

* Significant at the 10% level, ** significant at the 5% level, and *** significant at the1% level. See Table 1 for the operational definitions of research variables. Table shows coefficient estimates and t-statistics (in parentheses) for dependent and control variables.

organisations to become involved with environmental initiatives (Hong et al., 2016; Rodrigue et al., 2013; Flammer et al., 2019; Radu and Smaili, 2021; Sarhan and Al-Najjar, 2022). This finding is also consistent with agency theory and CG-CSR nexus literature (e.g., Sharma et al., 2018; Sarhan and Al-Najjar, 2022; Zainul Abidin et al., 2022), which argue that executive compensation structure (CSRCOMP and SBCOMP) as an effective CG measure in ethical businesses can reduce managerial unethical opportunistic practices and risky activities such as over-investment in environmental activities.

With regard to control variables, Table 4 shows that FRMSZE and BIG4 are positively and significantly (at the 1% level) associated with ENVS. Our results are consistent with past studies which document the positive effect of firm size (e.g., Michelon and Parbonetti, 2012; Liao et al., 2015; Shaukat et al., 2016; Gerged, 2021; Gerged et al., 2022) and BIG4 (Gerged, 2021) on corporate engagement with environmental activities. These results indicate that large companies may have the resources and are more likely to be subject to stakeholders' pressures to invest in environmental activities (Liao et al., 2015; Tran and Adomako, 2022). Similarly, companies audited by large audit firms are more likely to engage in sustainable and environment-friendly activities and to avoid harming the environment because of its negative consequences to the firm's survival (e.g., litigations, fines and negative reputation). Furthermore, CASHH has a significant negative coefficient at the 1% level. This indicates that firms with large financial slack are less likely to invest in environmental initiatives. This contradicts the argument that companies with higher financial slack can invest more in social and environmental initiatives (Shaukat et al., 2016; Helfaya and Moussa, 2017). This could be explained by the argument that such companies with excess cash holdings are more likely to be subject to high levels of scrutiny; therefore, they are less likely to invest in environmental initiatives.

Other control variables show an insignificant link with ENVS. Our CG variables (i.e., BRDSZE, BRDIND, INSHR) also show insignificant coefficients. These results are consistent with other studies showing the insignificant impact of such CG variables on firm CSR/environmental practices. For example, Zainul Abidin et al. (2022) document the insignificant influence of institution shareholding on corporate performance, arguing that this may be because institutional investors may pursue short-term objectives or their monitoring function becomes questionable following recent improvements in CG systems. Tauringana and Chithambo (2015) find an insignificant effect of the proportion of board independence on greenhouse gas disclosure. They suggest that NEDs may be busy with other financial matters and thus not paying much attention to environmental disclosure. Similarly, Michelon and Parbonetti (2012) find an insignificant effect of board size and board independence on environmental disclosure.

On the other hand, our results are inconsistent with other past environmental performance/disclosure studies which reported a significant link with such CG variables (i.e., BRDSZE, BRDIND, INSHR) (e.g., Liao et al., 2015; Helfaya and Moussa, 2017; Gerged, 2021; Gerged et al., 2022). This could be explained by using different measures of environmental management performance or different contexts. For example, Gerged (2021) examines the effect of CG structures on corporate environmental disclosure (measured by an index of 55 items) in Jordan. Liao et al. (2015) use a dummy variable that is equal to one if the firm participated in the Carbon Disclosure Project and zero otherwise.

4.4. Additional and robustness tests

To check the resilience of our results to different factors, we carry out the following additional tests. First, we extend our primary analysis to examine the effect of ABCC on engagement with some main corporate environmental policies and activities disclosed by organisations (ENVINX) that may have an impact on corporate environmental management performance. Therefore, we will rerun our two main Equations, 1 and 2, using ENVINX as an alternative to ENVS to proxy for environmental management performance/commitment. We create an index of environmental policies and activities (ENVINX) that comprises nine environmental policies and activities adopted by firms, which are collected from the Refinitive Eikon database.[3] These policies and activities include (1) environment management improvement tools (e.g., whistleblower, suggestion box, hotline, newsletter), (2) environmental management team, (3) environment management training, (4) investing in environmentally friendly R&D, (5) eco-design products, (6) product dematerialisation policy, (7) product eco-design policy, (8) product life-cycle assessment policy, and (9) environmental product innovation policy. We assign the value of one if the company has this policy/activity and zero otherwise. All values are aggregated, and the total score ranges from zero to nine, scaled to a value between zero and one. We use Cronbach's alpha to test the internal consistency and construct validity of ENVINX. The coefficient for the nine items used to construct ENVINX is 0.760, indicating the validity and internal consistency of the index. The results of running ENVINX on the test and control variables are shown in Table 5. The findings are similar to our main modules reported in Table 4. Specifically, the coefficients of ABCC are positive and significant at the 1% level. In addition, the coefficients of the interaction term ABCC*CSRCOMT and ABCC*CSRCOMP are negative and significant at the 5% level. However, the coefficients of the other interaction terms ABCC*CSRRT and ABCC*SBCOMP are positive at the level of 10% and insignificant, respectively. This provides additional support to our main finding that ABCC promotes corporate environmental policies and activities. In addition, CSRCOMT and CSRCOMP are moderating this association. The positive coefficient of the interaction term ABCC *CSRRT indicates that CSRRT as a CSR accountability tool complements ABCC to induce firms to incorporate environmental policies and activities.

Second, in our models, we have controlled for industry-fixed effects; however, our main findings may be sensitive to the differences in a firm's environmental risk. Past studies suggest that environmental practices may be affected by the level of a firm's environmental risk (Rodrigue et al., 2013; Liao et al., 2015; Tauringana and Chithambo, 2015; Helfaya and Moussa, 2017). Therefore, we rerun Equations (1) and (2) after splitting our sample based on the level of a firm's environmental risk into two sub-groups. The first sub-group is industries with high environmental sensitivity/carbon intensive (HIGHES) (e.g., basic materials, consumer goods, industrials, oil and gas, and utilities). The second subgroup is industries with low environmental sensitivity (LOWES). The results reported in Table 6 show that the positive effect of ABCC on the ENVS and the moderation impact of CSR accountability and executive compensation governance on this association are more prevalent in highly environmentally sensitive industries (HIGHES). Our findings indicate that a firm's ethical commitment, CSR accountability, and executive compensation governance are effective tools to motivate corporate activities to satisfy stakeholders' environmental interests, particularly in environmentally sensitive industries which are subject to high levels of public and governmental scrutiny.

Third, there is a probability that the issuance of the UK Bribery Act 2010 may affect corporate practices in fighting bribery and corruption. Therefore, and to test the robustness of our findings on the issuance of the UK Bribery Act 2010, we rerun Equations (1) and (2) using a sample of pre (2002–2009) and post (2011–2016) the Act. Table 7 shows that ABCC has positive and significant coefficients before and after the Act. Similarly, the moderating effect of executive governance mechanisms (CSRCOMP and SBCOMP) is still mostly not changed because of the Act, as the coefficients of the two interaction terms (ABCC *CSRCOMP and

[3] It is common practice in environmental and CSR literature to create indices from a number or dummy variables reflecting environmental initiatives and activities to measure environmental performance/responsibility (e.g., Sharma et al., 2018; Tran and Adomako, 2022).

Table 5
The ABCC-ENVINX nexus and the moderation effect of CSR accountability and executive compensation governance.

	ENVINX	ENVINX	ENVINX	ENVINX	ENVINX
	(1)	(2)	(3)	(4)	(5)
ABCC	.231*** (7.60)	.189*** (6.40)	.187*** (6.46)	.221*** (6.46)	.221*** (6.68)
CSRCOMT	–	.063*** (3.82)	.053*** (2.99)	–	–
CSRRT	–	.062*** (4.12)	.076*** (4.42)	–	–
CSRCOMP	–	–	–	.039** (2.43)	.051*** (3.02)
SBCOMP	–	–	–	.011 (1.29)	.011 (1.37)
ABCC *CSRCOMT	–	–	−.109** (−2.45)	–	–
ABCC *CSRRT	–	–	.090* (1.92)	–	–
ABCC *CSRCOMP	–	–	–	–	−.094** (−2.12)
ABCC *SBCOMP	–	–	–	–	.006 (0.38)
BRDSZE	.030 (0.81)	.024 (0.70)	.023 (0.66)	.013 (0.31)	.015 (0.37)
BRDIND	.082 (1.16)	.093 (1.39)	.094 (1.42)	.061 (0.77)	.049 (0.62)
INSHR	.069 (1.05)	.068 (1.09)	.071 (1.14)	.083 (1.06)	.090 (1.15)
FRMSZE	.035*** (4.55)	.028*** (3.78)	.029*** (3.91)	.031*** (2.85)	.031*** (2.81)
LEVGE	−.045 (−0.73)	−.050 (−0.84)	−.052 (−0.88)	−.048 (−0.63)	−.055 (−0.72)
CAPEX	−.068 (−0.40)	−.062 (−0.38)	−.071 (−0.43)	−.007 (−0.03)	−.005 (−0.03)
BIG4	.069** (2.12)	.043 (1.40)	.033 (1.13)	.081** (1.98)	.077* (1.86)
ROA	−.076*** (−3.37)	−.057*** (−2.71)	−.051** (−2.44)	−.061*** (−2.85)	−.058*** (−2.67)
CASHH	−.149** (−2.02)	−.133* (−1.91)	−.131* (−1.91)	−.144* (−1.88)	−.149* (−1.95)
Constant	−.616*** (−4.75)	−.517*** (−3.97)	−.514*** (−3.94)	−.660*** (−4.53)	−.643*** (−4.46)
Year FE	Included	Included	Included	Included	Included
Industry FE	Included	Included	Included	Included	Included
Obs.	2151	2151	2151	1738	1738
Adj. R2	0.472	0.498	0.502	0.487	0.491

* Significant at the 10% level, ** significant at the 5% level, and *** significant at the1% level. See Table 1 for the operational definitions of research variables. ENVINX is the environmental index of the main environmentally friendly activities and policies disclosed by the firm. Table shows coefficient estimates and t-statistics (in parentheses) for dependent and control variables.

Table 6
The ABCC-ENVS link and the moderation effect of CSR accountability and executive compensation governance: Industry environmental sensitivity.

	High-sensitive industries			Low-sensitive industries		
	ENVS	ENVS	ENVS	ENVS	ENVS	ENVS
	(1)	(2)	(3)	(4)	(5)	(6)
ABCC	.328*** (15.68)	.292*** (13.89)	.264*** (10.91)	.245*** (9.38)	.174*** (6.35)	.232*** (8.61)
CSRCOMT	–	.069*** (5.24)	–	–	.104*** (5.71)	–
CSRRT	–	.106*** (5.95)	–	–	.128*** (5.68)	–
CSRCOMP	–	–	.060*** (3.52)	–	–	.078*** (5.18)
SBCOMP	–	–	.019*** (2.80)	–	–	.025*** (2.90)
ABCC*CSRCOMT	–	−.079** (−2.17)	–	–	−.110** (−2.17)	–
ABCC*CSRRT	–	−.202*** (−4.39)	–	–	−.017 (−0.27)	–
ABCC*CSRCOMP	–	–	−.139*** (−3.25)	–	–	−.048 (−1.10)
ABCC*SBCOMP	–	–	−.048*** (−3.94)	–	–	−.041*** (−3.07)
BRDSZE	.032 (1.12)	.0124 (0.45)	.036 (1.11)	.082*** (2.78)	.092*** (3.41)	.042 (1.31)
BRDIND	.005 (0.09)	−.011 (−0.22)	−.090 (−1.50)	.108* (1.82)	.106** (1.96)	.066 (1.02)
INSHR	.065 (1.04)	.049 (0.82)	.054 (0.74)	−.082 (−1.03)	−.101 (−1.40)	.011 (0.12)
FRMSZE	.039*** (7.03)	.034*** (6.42)	.031*** (4.05)	.086*** (11.78)	.063*** (9.13)	.070*** (6.37)
LEVGE	−.092*** (−2.70)	−.086*** (−2.69)	−.052 (−1.28)	.020 (0.46)	−.023 (−0.58)	.019 (0.43)
CAPEX	−.624*** (−4.28)	−.611*** (−4.42)	−.379** (−2.37)	.781*** (4.52)	.637*** (4.04)	.873*** (4.95)
BIG4	.101* (1.95)	.047 (0.96)	.111** (2.03)	.160*** (3.64)	.085** (2.08)	.142*** (2.90)
ROA	−.099* (−1.64)	−.063 (−1.11)	−.100 (−1.57)	.0143 (0.53)	.042* (1.69)	.035 (1.36)
CASHH	−.263*** (−4.13)	−.276*** (−4.59)	−.284*** (−3.99)	−.261*** (−3.95)	−.143*** (−2.36)	−.304*** (−4.66)
Constant	−.144 (−1.44)	.040 (0.42)	−.241** (−2.00)	−1.118*** (−8.36)	−.632*** (−4.95)	−1.132*** (−7.63)
Year FE	Included	Included	Included	Included	Included	Included
Industry FE	Included	Included	Included	Included	Included	Included
Obs.	1319	1319	1050	832	832	688
Adj. R2	0.405	0.474	0.418	0.517	0.600	0.571

* Significant at the 10% level, ** significant at the 5% level, and *** significant at the1% level. See Table 1 for the operational definitions of research variables. Table shows coefficient estimates and t-statistics (in parentheses) for dependent and control variables.

ABCC *SBCOMP) are negative and significant. Likewise, the interaction term of the publishing of the CSR standalone report (ABCC *CSRRT) is significant before and after the Act. On the other hand, the moderation effect of the CSR committee as a substitute for ABCC is more prevalent in the period after the Act. This may indicate that the monitoring and advisory roles of the corporate board of directors and their subcommittees (including the CSR committee) for promoting environmental initiatives interact more with ABCC after the issuance of the Law. This is because the board of directors and their subcommittees are expected to respond proactively to the issuance of the law and show more commitment to it by getting more involved in ethical activities, including environmental initiatives.

Finally, we conduct a two-step dynamic GMM estimator to address the potential existence of endogeneity concerns. We similarly estimate the GMM model to Blundell and Bond (1998). The two-step GMM model is specified as follows, with all research variables operationally defined

Table 7
The ABCC-ENVS nexus and the moderation effect of CSR accountability and executive compensation governance: Before and after the 2010 Act.

	Before 2010			After 2010		
	ENVS	ENVS	ENVS	ENVS	ENVS	ENVS
	(1)	(2)	(3)	(4)	(5)	(6)
ABCC	.233*** (7.49)	.167*** (5.63)	.252*** (7.07)	.373*** (18.34)	.318*** (13.76)	.288*** (12.89)
CSRCOMT	–	.077*** (3.95)	–	–	.087*** (5.98)	–
CSRRT	–	.096*** (4.60)	–	–	.124*** (5.94)	–
CSRCOMP	–	–	.020 (0.91)	–	–	.100*** (7.03)
SBCOMP	–	–	.004 (0.39)	–	–	.030*** (4.60)
ABCC*CSRCOMT	–	−.087 (−1.60)	–	–	−.151*** (−3.66)	–
ABCC*CSRRT	–	−.178*** (−3.13)	–	–	−.097* (−1.66)	–
ABCC*CSRCOMP	–	–	−.133** (−2.11)	–	–	−.160*** (−4.23)
ABCC*SBCOMP	–	–	−.076*** (−4.34)	–	–	−.042*** (−3.24)
BRDSZE	.108*** (3.28)	.102*** (3.29)	.049 (1.16)	.048* (1.67)	.037 (1.40)	.049* (1.68)
BRDIND	.104 (1.65)	.085 (1.44)	.032 (0.39)	−.070 (−1.26)	−.041 (−0.80)	−.102* (−1.77)
INSHR	.042 (0.61)	−.014 (−0.21)	.144 (1.62)	−.022 (0.792)	.022 (0.28)	−.063 (−0.78)
FRMSZE	.061*** (7.97)	.043*** (5.79)	.064*** (5.00)	.043*** (7.85)	.041*** (7.86)	.027*** (3.63)
LEVGE	−.052 (−1.09)	.088* (−1.95)	−.061 (−1.07)	−.053 (−1.58)	−.049 (−1.58)	−.018 (−0.50)
CAPEX	−.126 (−0.68)	−.167 (−0.97)	.043 (0.20)	.051 (0.34)	−.025 (−0.18)	.303** (2.00)
BIG4	.192*** (3.20)	.099* (1.74)	.199** (2.47)	.127*** (3.04)	.076* (1.91)	.136*** (3.22)
ROA	−.136** (−2.06)	−.068 (−1.09)	−.126* (−1.73)	.013 (0.51)	.040* (1.66)	.035 (1.42)
CASHH	−.321*** (−4.12)	−.293*** (−4.01)	−.363*** (−3.97)	−.170*** (−2.79)	−.096* (−1.66)	−.197*** (−3.25)
Constant	−.726*** (−5.75)	−.344*** (−2.80)	−.628*** (−4.03)	−.439*** (−5.18)	−.492*** (−6.16)	−.633*** (−6.32)
Year FE	Included	Included	Included	Included	Included	Included
Industry FE	Included	Included	Included	Included	Included	Included
Obs.	888	888	581	1104	1104	1007
Adj. R2	0.420	0.495	0.473	0.490	0.557	0.516

* Significant at the 10% level, ** significant at the 5% level, and *** significant at the1% level. See Table 1 for the operational definitions of research variables. Table shows coefficient estimates and t-statistics (in parentheses) for dependent and control variables.

as in Table 1:

$$ENVS_{it} = \beta_0 + \beta_1\, ENVS_{it\text{-}1} + \beta_2\, ENVS_{it\text{-}2} + \beta_3\, ABCC_{it} + \beta_4\, CSRCOMT_{it} + \beta_5\, CSRRT_{it} + \beta_6\, CSRCOMP_{it} + \beta_7\, SBCOMP_{it} + \beta_8\, ABCC{*}CSRCOMT_{it} + \beta_9\, ABCC{*}\mathrm{CSRRT}_{it} + \beta_{10}\, ABCC{*}CSRCOMP_{it} + \beta_{11}\, ABCC{*}\mathrm{SBCOMP}_{it} + \beta_{12}\, BRDSZE_{it} + \beta_{13}\, BRDIND_{it} + \beta_{14}\, INSHR_{it} + \beta_{15}\, FRMSZE_{it} + \beta_{16}\, LEVGE_{it} ++ \beta_{17}\, CAPEX_{\ it} + \beta_{18}\, BIG4_{it} + \beta_{19}\, ROA_{it} + \beta_{20}\, \mathrm{CASHH}_{it} + \varepsilon_{it} \quad (3)$$

In Equation (3), $\mathrm{ENVS}_{it\text{-}1}$ and $\mathrm{ENVS}_{it\text{-}2}$ represent the one-year and two-year lags in ENVS, respectively. Roodman (2009) indicates that incorporating the lagged versions of the dependent variable as explanatory variables allows the GMM model to address the endogeneity concern by internally transforming the data. Table 8 presents the results of estimating the two-step GMM method.

Models 1, 2 and 4 of Table 8 show a positive direct effect of ABCC on ENVS. Similarly, Model 2 of Table 8 shows a positive impact of CSR accountability measures (CSRCOMT and CSRRT) on ENVS. Likewise, Model 4 of Table 8 presents a positive association between executive compensation governance (CSRCOMP and SBCOMP) and ENVS. At the same time, Models 3 and 5 suggest a moderation effect of both CSR accountability and executive compensation governance proxies on the ENVS. All interaction terms have significant negative coefficients, except ABCC* CSRCOMT has a significant but positive coefficient which suggests that CSRCOMT complements ABCC to support ENVS. Given the noted, to a large extent, consistency of the GMM findings with those of our main analysis in Table 4, we are sufficiently confident that our earlier inferences are not sensitive to the probable presence of endogeneity problems.

5. Conclusion

The primary aim of this paper is to examine the impact of firms' commitment to fighting bribery and corruption on their environmental management performance in the context of the UK. After reviewing relevant environmental management literature, we noted two main points. First, previous studies examining the impact of ABCC on ENVS are scarce, and no attention has been paid to the UK – a common law context with a strong institutional and law empowerment framework for fighting bribery and corruption. Second, existing evidence offers inconclusive results regarding the environmental outcomes of compacting bribery and corruption, suggesting that other contingencies might be at play. Thus, we add to the ongoing debate by examining the moderating effect of CSR accountability and executive compensation governance on such associations.

Using a sample of 2151 firm-year observations for 214 FTSE 350 non-financial companies from 2002 to 2016 and drawing on stakeholder theory, our findings indicate that UK firms' commitment to using policies and measures to fight bribery and corruption can strengthen their environmental performance in an attempt to satisfy the expectations of influential stakeholders. The results of the moderation effect of CSR accountability and executive compensation governance on the relationship between ABCC and ENVS resonate with the agency's theoretical perspective. Our findings indicate that effective CG measures in organisations embracing ethical practices (such as fighting bribery and corruption) help them to avoid engaging in unethical non-value-added environmental activities. This helps control managers' opportunistic behaviour that is related to over-investing in environmental management performance to achieve reputational gains at the expense of shareholders' interests. The other explanation is in line with the stakeholder theory argument that CSR accountability and executive compensation governance substitute ABCC for promoting ENVS.

Our empirical evidence contributes to existing environmental management literature in several ways. First, from an empirical perspective, our study is the first to explore the contingency role of CSR accountability and executive compensation governance in explaining the link between anti-bribery and corruption measures and the ENVS of firms. By doing so, we help companies to realise the crucial role of ABCC in meeting the requirements of salient stakeholders for improved environmental management performance and how this relationship is contingent on CSR accountability and executive compensation structures. Second, from a theoretical view, our study adds to the ongoing debate by employing a multi-theoretical perspective comprising stakeholder, agency and legitimacy theories that provides the richest possible understanding of the channels through which firms' ABCC can foster better ENVS.

Table 8
Endogeneity checks using a two-staged GMM regression models.

	(1)	(2)	(3)	(4)	(5)
	ENVS	ENVS	ENVS	ENVS	ENVS
ABCC	.276***	.190***	.202***	.243***	.225***
	(.034)	(.038)	(.035)	(.041)	(.038)
CSRCOMT	–	.094***	.096***	–	–
		(.022)	(.02)		
CSRRT	–	.049**	.039*	–	–
		(.021)	(.023)		
CSRCOMP	–	–	–	.034***	.044***
				(.009)	(.009)
SBCOMP	–	–	–	.021	.031
				(.02)	(.022)
ABCC*CSRCOMT	–	–	.003*	–	–
			(.051)		
ABCC*CSRRT	–	–	−.113*	–	–
			(.063)		
ABCC*CSRCOMP	–	–	–	–	−.046**
					(.018)
ABCC*SBCOMP	–	–	–	–	−.038*
					(.058)
BRDSZE	.290***	.318***	.325***	.122*	.103
	(.059)	(.056)	(.056)	(.065)	(.064)
BRDIND	−.075	−.031	−.061	.000	.029
	(.096)	(.091)	(.09)	(.11)	(.109)
INSHR	.125	.186**	.183**	.105	.089
	(.083)	(.074)	(.076)	(.101)	(.098)
FRMSZE	.000*	.000	.000	.000	.000
	(.000)	(.000)	(.000)	(.000)	(.000)
LEVGE	.03	.054	.095	.033	.054
	(.086)	(.077)	(.074)	(.084)	(.082)
CAPEX	−.803***	−.59**	−.574**	−.479*	−.493*
	(.259)	(.256)	(.246)	(.278)	(.272)
BIG4	.208*	.267**	.263**	.314**	.27**
	(.111)	(.127)	(.131)	(.155)	(.132)
ROA	−.009	.003	.006	−.003	−.015
	(.029)	(.026)	(.026)	(.033)	(.032)
CASHH	−.327***	−.381***	−.361***	−.343***	−.309***
	(.117)	(.109)	(.109)	(.121)	(.115)
Constant	−.22	−.443**	−.436**	−.534**	−.621***
	(.192)	(.197)	(.195)	(.242)	(.214)
Observations	1972	1972	1972	1671	1671
Arellano-Bond test for AR (1) (P-value)	0.000	0.000	0.000	0.000	0.000
Arellano-Bond test for AR (2) (P-value)	0.912	0.939	0.837	0.402	0.472
Hansen test of overid.	187.47	183.45	185.77	184.38	185.20

* Significant at the 10% level, ** significant at the 5% level, and *** significant at the1% level. See Table 1 for the operational definitions of research variables. Robust standard errors are in parentheses.

Our empirical findings highlight a number of implications for companies, policymakers and regulators. For companies, our evidence shows that anti-bribery and corruption efforts, CSR accountability and executive compensation governance can stimulate better ENVS in the long term. Hence, we recommend that corporate managers include fighting bribery and corruption practices, CSR accountability and executive compensation governance into their strategic agenda to maintain long-term sustainability via engaging in more ethical initiatives, including environmentally friendly practices. For regulators and policymakers, our evidence suggests that CSR accountability and executive compensation governance can substitute for the effect of ABCC of firms on the ENVS. Therefore, and aligned with their efforts to achieve sustainable development goals including better ENVS, we recommend that regulators and policymakers promote fighting bribery and corruption activities among companies and to enhance the enforcement mechanism of CSR accountability and executive compensation governance.

The current study uses many robustness checks to make sure that the results hold with changes in variables measurement, industry environmental sensitivity, issuance of the UK Bribery Act 2010 and using alternative regression methods. However, similar to environmental/ethical management performance literature, our study has some limitations to be acknowledged. First, our study focuses on examining the ABCC-ENVS nexus in large listed firms in the UK. Future studies are invited to examine this association in small and medium companies and/or in a cross-country setting. Second, in studying the association between ABCC and ENVS, the current study focuses on firm-level factors. Future studies can thus investigate the industry and country-level factors (macro-foundations), such as industry-corruption sensitivity, national corruption fighting governance and policies and law enforcement characteristics. Third, the current analysis ended in 2016, so future studies are invited to use updated data to examine the robustness of the results of the current study to recent changes, particularly within and after the COVID-19 era. Fourth, our study depends on quantitative empirical analysis of archival data; future studies could benefit from using qualitative (e.g., case studies; interviews; focus groups) or mixed methods to dig deep into the executives' sociological and behavioural motives to engage in environmentally friendly activities and policies.

Credit author statement

Ahmed Sarhan: Conceptualization, Methodology, Formal analysis, Writing - Original Draft, Writing - Review & Editing, Data Curation, Investigation, Ali Gerged: Conceptualization, Writing - Original Draft, Writing - Review & Editing, additional analysis.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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