Does ESG contracting align or compete with stakeholder interests?

J. Int. Financ. Markets Inst. Money 96 (2024) 102058

Contents lists available at ScienceDirect

Journal of International Financial Markets, Institutions & Money

journal homepage: www.elsevier.com/locate/intfin

Does ESG contracting align or compete with stakeholder interests?

Maria Gaia Soana

University of Parma, Via Kennedy 6, Parma, Italy

ARTICLE INFO

JEL code:
G21
G34

Keywords:
ESG-linked incentives
Bank stakeholders
ESG performance
ESG controversies

ABSTRACT

The paper investigates whether ESG-linked managerial incentives, also known as ESG contracting, align or compete with stakeholder interests in the banking sector. The few related literature, focussed on non-financial companies, shows arguments both pro and against pay for sustainability. Using a panel data set of 595 worldwide listed banks for the period 2010–2021, the paper studies the effectiveness of ESG incentives in improving ESG performance and limiting ESG controversies. ESG contracting is shown to improve both ESG performance and ESG disputes, thus suggesting that it is more symbolic than substantial in meeting stakeholder interests. ESG strategy, ESG committee and managerial risk-taking are significant channels through which ESG incentives affect ESG performance and ESG controversies in the banking sector.

1. Introduction

In recent years, the growing attention in the financial industry toward environmental, social, and governance (ESG) issues has led many banks to integrate ESG dimensions into their strategies and processes (Finger et al., 2018; Chiaramonte et al., 2024). Supervisory authorities play an essential role in this transition, as they require financial companies all over the world to take a forward-looking view in adopting proactive actions to build their resilience to ESG risks (European Central Bank (ECB), 2021a; Basel Committee on Banking Supervision (BCBS), 2022), and especially environmental risks (ECB, 2020, 2021b; Monetary Authority of Singapore, 2020; Central Bank of Malaysia, 2021; US Federal Reserve Bank (FED), 2022).

Specifically, the European Banking Authority (EBA, 2021) recommends that financial institutions incorporate ESG factors and ESG risk-related considerations into their strategies and internal governance arrangements, thus suggesting that remuneration policy should be aligned with ESG objectives. This "*would facilitate the implementation of ESG risk-related objectives and/or limits, as the staff members would benefit from meeting these (long-term) targets,* e.g.*, in the context of green credit granting or reducing exposures that are highly affected by transition risk*" (EBA, 2021). Moreover, SEC Commissioner Allison Herren Lee (2021) in a public speech, recognizing executive compensation as "*a powerful tool for achieving strategic company goals aside from financial ones*," advocated tying managerial incentives to the achievement of ESG metrics.[1] Major institutional investors (Lu, 2023) have also recently stressed the importance of selecting companies that use ESG contracting, i.e., incorporating ESG objectives into executive compensation contracts.

ESG contracting has, therefore, become frequent in recent years (Gillan et al., 2021). Spierings (2022) reports that in 2020 and 2021, respectively, 66 % and 73 % of S&P 500 companies tied executive compensation to some form of ESG performance. Further studies show that, since 2020, a growing number of senior corporate leaders worldwide have been assigned ESG targets in their pay (Cohen et al., 2023; Lu, 2023). Spierings (2022) uncovers other interesting evidence. First, in 2021, ESG goals were mainly included as part of a broader scorecard of non-financial business priorities or integrated into executives' individual performance assessments

E-mail address: mariagaia.soana@unipr.it.

[1] https://www.law360.com/articles/1398383/*sec*-commissioner-says-exec-comp-should-be-tied-to-esg.

https://doi.org/10.1016/j.intfin.2024.102058
Received 23 January 2024; Accepted 12 September 2024
Available online 19 September 2024

discretionally assigned by the company's compensation committee. In only a few firms (24 % of the sample), ESG was incorporated through specific, often quantitative, metrics. Moreover, only 12 % of S&P 500 companies placed ESG measures in their executives' long-term plans in 2021, and most firms placed them in executives' short-term incentive plans. Finally, in the same period, after the utilities and energy sectors, real estate and finance were the sectors making the most significant use of ESG-based managerial incentives.

Despite the growing popularity of ESG contracting, there is little academic agreement on its usefulness in aligning management practices to stakeholder interests. On the one hand, some authors argue that ESG-linked pay is consistent with shareholder and stakeholder interests, as they may break the focus on short-term shareholder profit maximization in favour of long-term innovation and value creation (Qin and Yang, 2022; Cohen et al., 2023). On the other hand, other authors express serious doubts about the effectiveness of ESG-based compensation systems and identify their main theoretical limits, assumed to exacerbate the agency problem of executive pay (Walker, 2022; Bebchuk and Tallarita, 2023). These limits are related to the ambiguity of the 'ESG' definitions, the risk of corporate greenwashing (Zhang, 2022), the breadth and vagueness of ESG goals, and the difficulty of measurement related to ESG targets (Barontini and Hill, 2023; Lu, 2023). Such criticisms are partially supported by the United Nations Principles for Responsible Investment's Report on ESG-linked pay (2016). The report details discussions with important extractives and utility companies around the world. It shows that in 2016, there were still significant gaps in company practice, mainly related to difficulties in identifying ESG metrics to be integrated into CEO pay and lack of disclosure that could exacerbate existing concerns about misalignment of ESG incentives and performance.

Moving from theory to practice, it would be useful to establish empirically whether ESG managerial incentives align or compete with stakeholder interests today. This paper tries to answer this question, which the literature has not yet addressed from an empirical point of view. Specifically, the study tests for the first time whether managerial ESG-based compensations are effective in improving ESG performance and limiting ESG controversies in the banking sector.

Studying the effectiveness of ESG contracting in the banking sector is interesting for various reasons. First, banks make a significant contribution to the development of a sustainable financial system, as they are recognized by the European Commission (2021) as key instruments to channel private financial flows into sustainable economic activities. Second, banks play a crucial role in ensuring the stability of financial and real markets. Both ESG performance and ESG controversies impact bank performance, risk, and reputation (Aouadi and Marsat, 2018), and these affect the stability of the financial system and the economy as a whole.

The paper investigates whether managerial ESG-based compensations effectively improve ESG performance and limit ESG controversies on a sample of 595 worldwide listed banks from 43 countries, observed from 2010 to 2021. The study demonstrates that bank ESG contracting improves ESG performance but raises the number of ESG disputes. Given that bank executives can control ESG performance but cannot control ESG controversies, the findings suggest that banks so far might have adopted ESG contracting more for symbolic and self-serving purposes than for substantial aims. Therefore, managerial ESG-based compensations appear nowadays as a window-dressing vehicle used to improve banks' reputation among stakeholders sensitive to ESG issues avoiding costly ESG efforts.

The study innovates previous literature from different points of view. First, the paper adds to the body of knowledge about ESG contracting. Although most studies in this area suggest that ESG-linked executive remunerations provide benefits to firms, such that they increase ESG performance, improve corporate value, and promote innovation (e.g., Flammer et al., 2019; Tsang et al., 2021; Ikram et al., 2023; Liu et al., 2023), this analysis highlights both their light and dark side. Specifically, the paper demonstrates for the first time in the literature that ESG contracting adopted by banks enhances ESG performance but also raises the number of ESG disputes. This indicates that this compensation practice can be more symbolic than substantial in meeting stakeholder interests, as suggested by Liu et al. (2024). Second, the study contributes to the emerging literature on corporate governance in banks by examining one of the most important internal governance instruments: managerial incentives. So far, most academics have focussed on the role of managerial financial incentives, i.e., contracting linked to the balance sheet and stock-market indicators, in explaining bank risk-taking and bank financial and non-financial performance (Anderson et al., 2004; Francis et al., 2015; Galletta et al., 2021; Ongena et al., 2022). However, nowadays, the study of the impact of ESG-linked executive compensation on non-financial performance in the banking sector seems totally unexplored. Third, the paper adds value to the previous findings that examine the determinants of ESG performance in the financial industry (Birindelli et al., 2018; Galletta et al., 2022). To date, no study appears to have investigated the effect of ESG-based incentives on banks' non-financial performance. Fourth, the paper enriches the nascent literature on ESG controversies in the financial sector (Agnese et al., 2023; Cicchiello et al., 2023; Agnese et al., 2024). Previous studies have demonstrated that media coverage of firms' negative ESG incidents can damage corporate reputation and increase financial and litigation risks (Gao et al., 2024), but global high-quality corporate governance can significantly reduce the exposure to ESG disputes, especially in banks (Agnese et al., 2023). However, so far, the relationship between ESG-linked remuneration plans and ESG controversies in the banking sector has remained unexplored. Further, the paper contributes to the literature on the channels through which ESG practices adopted by banks affect their performance. Extant studies are nowadays exclusively focused on economic-financial outcomes (Azmi et al., 2021; Chiaramonte et al., 2024), thus neglecting non-financial performance. To our knowledge, this is the first study specifically focused on investigating the mechanisms through which a specific ESG practice, i.e., ESG managerial compensation, affects ESG performance in banks. Lastly, the study contributes to the emerging discussion on whether ESG managerial compensation should be adopted by banks, providing interesting evidence for financial regulators about the usefulness of ESG incentives in implementing bank ESG objectives.

The remainder of the paper is organized as follows. Section 2 reviews the existing literature and develops the research hypotheses. Section 3 describes the data and the methodology, while Section 4 shows the results of the study, the robustness tests, and the additional analyses. Finally, Section 5 concludes the paper.

2. Literature review and hypothesis development

Executive compensation is a complex and controversial subject and can be tied to both financial and non-financial performance measures (Ittner et al., 1997). By linking managers' remuneration to their performance, the board of directors signals to investors that it obtains information on the firm's activities and the executives' efforts (Armstrong et al., 2010). Moreover, linking managerial compensation to non-financial indicators, specifically to ESG factors, signals to the market that financial performance is not the only issue for which executives are held responsible, and thus the firm's commitment to broader stakeholder benefits, which may attract similarly valued investors (Qin and Yang, 2022). Although ESG-linked managerial incentives have recently become popular among stakeholders and practitioners, there is little academic literature on the topic, and the existing research focuses almost exclusively on non-financial companies.

From a theoretical point of view, Botosan (2006) argues that ESG criteria can contribute to increasing transparency in executive compensation, thus globally protecting both shareholder and stakeholder interests. ESG contracting may also stimulate firms to break the focus on short-term shareholder profit maximization in favour of long-term innovation and value creation (Qin and Yang, 2022; Cohen et al., 2023). Other authors show great scepticism on this (Walker, 2022; Barontini and Hill, 2023; Bebchuk and Tallarita, 2023; Lu, 2023). First, Walker (2022) and Bebchuk and Tallarita (2023) argue that considering the difficulties in identifying appropriate measures for aligning the numerous stakeholder interests and aggregating and balancing this myriad of interests, ESG metrics are necessarily focused on limited dimensions of a subset of key stakeholders. Therefore, ESG-based incentives would have a narrow scope, which could disincentivize managers from attending to other important aspects of stakeholder welfare. Second, in the absence of effective external scrutiny to ensure that ESG contracting is designed to provide ESG benefits for the company rather than to serve the interests of executives, this type of compensation could decrease shareholder oversight and, therefore, exacerbate the agency problem of executive pay (Bebchuk and Tallarita, 2023; Lu, 2023). Furthermore, Barontini and Hill (2023) argue that extrinsic monetary rewards might diminish authentic motivations for pro-social behaviour, and that since ESG is already in line with long-term business strategy, there is no necessity to assess and reward it separately. The extant empirical literature on non-financial companies has focussed on the impact that introducing ESG items into managerial incentives exerts on some firm-specific variables. A few empirical studies investigate the effects of ESG-linked managerial incentives on earnings management (Li and Thibodeau, 2019; Khenissi et al., 2022). Li and Thibodeau (2019) show that executives are more likely to manipulate earnings when the share of ESG criteria in their compensation is low. This is confirmed by Khenissi et al. (2022), who demonstrate that including ESG criteria in compensation contracts reduces the extent of earnings management. Moreover, Tsang et al. (2021) find that integrating ESG factors into executive compensation is associated with greater innovation output in countries around the world. Flammer et al. (2019) confirm this positive effect of ESG contracting on green innovations and demonstrate that adopting ESG-linked managerial incentives leads to an increase in long-term orientation and firm value.

A further strand of literature studies the link between ESG contracting and firm ESG performance. Tsang et al. (2021) find that improvements in the ESG outcomes of 2,523 non-financial companies accompany the introduction of ESG targets in executive remuneration systems in 30 countries between 2004 and 2015. This evidence is supported by Liu et al. (2023) who, using a sample of 6,691 firms in 59 countries from 2002 to 2018, show that, with greater female director representation, the use of ESG-based executive compensation is more conducive to enhancing ESG performance.

Moreover, Flammer et al. (2019), studying S&P 500 companies from 2004 to 2013, find that integrating ESG criteria into executive compensation leads to an increase in social and environmental initiatives and a reduction in polluting emissions. Similarly, Cohen et al. (2023) demonstrate that the adoption of ESG variables in managerial performance measures by 4,395 public firms from 21 countries is accompanied by improvements in ESG performance between 2011 and 2020. However, when their sample is split, the association is shown to be statistically significant only for European firms and not for US and Rest-of-the-World firms. Moreover, Ikram et al. (2019), studying S&P 500 companies in the period 2009–2013, find that CSR-contingent compensation, both in the form of objective contracts (when the executive knows *ex-ante* the expected amount to be earned from pursuing pre-specified ESG-related activities) and subjective contracts (when the executive is *ex-ante* unaware of how much he/she can expect to gain), helps improve companies' social performance. Otherwise, Haque and Ntim (2020) show that ESG-based compensation policies adopted by 494 non-financial companies did not significantly affect firm environmental performance in 13 industrialized European countries from 2002 to 2016. Similarly, Maas (2018), studying S&P 500 companies in the period 2008–2012, demonstrates that introducing generic ESG targets into executive compensation does not automatically improve corporate ESG results. However, Maas (2018) also finds that using quantitative and hard ESG targets is effective for reaching better firm ESG outcomes and especially for reducing ESG weaknesses.[2] Similarly, Qin and Yang (2022) focus specifically on substantive ESG contracting adopted by S&P 500 companies from 2004 to 2018. They show that ESG-based management remuneration is associated with lower turnover-performance sensitivity. Although the vast majority of the aforementioned empirical studies demonstrate the positive effects of ESG contracting, Liu et al. (2024) highlight its dark side. Using a comprehensive sample of 6,135 multi-industry firms from 53 countries from 2003 to 2019, the authors demonstrate a significantly positive relationship between ESG-based management remuneration and corporate stock crash risk.

To our knowledge, so far, only Galletta et al. (2021) have studied ESG contracting specifically focusing on the banking sector. Their contribution, limited to the analysis of the environmental factor, using 330 bank-year observations from 25 countries in the period

[2] Maas (2018) estimates firm ESG performance by calculating an aggregate total score on the basis of the summated scores of six MSCI ESG STATS categories: Employee Relations, Product Quality, Community Relations, Natural Environment, Human Rights, and Diversity. She also disaggregates scores for weaknesses and strengths by differencing the scores on the strength and weakness dimension of each category.

2011–2015, shows that managerial incentives related to climate change increase bank environmental performance. However, to my knowledge, no study has so far investigated the effects of introducing ESG criteria, including the "S" and the "G" as well as the "E," into executive compensation on ESG performance in the banking sector.

This is surprising both operationally and academically. From the practical point of view, banks are, in fact, increasingly adopting ESG contracting.[3] Moreover, banks could derive many potential benefits from ESG investments boosted by managers incentivized to promote ESG practices. ESG investments, in fact, would allow banks not only to align with regulatory requirements and standards that are increasingly being enforced worldwide but also enhance corporate reputation (Wang et al., 2024) and mitigate both corporate (Gillan et al., 2021; Chen et al., 2024; Palmieri et al., 2023; Palmieri et al., 2024) and financial risk (Shakil, 2021). Other potential benefits related to the adoption of ESG practices by banks are related to the attraction of institutional investors and funds, which are increasingly prioritizing ESG criteria in their investment decisions (Qin and Yang, 2022), and the improvement of employee retention and customer loyalty (Chiaramonte et al., 2024). Furthermore, from an academic point of view, both academics and supervisors recognize that the corporate governance of banks is 'special' compared to non-financial companies (Beltratti and Stulz, 2012; BCBS, 2015). Corporate governance of banks is, in fact, affected by the specific characteristics of banks' balance sheets, the nature of the banking business, the complexity of banking organizations, the systemic risks caused by bank failures, and the necessary depositor safety nets, such as additional regulatory capital and deposit insurance systems, which often lead to weak stakeholder control (Mehran et al., 2011). In the presence of often ineffective external control governance mechanisms, internal control governance tools, including managerial incentive plans (Aggarwal et al., 2011), have a strategic importance (Fahlenbrach and Stulz, 2011). Hence, analyzing the effectiveness of ESG-linked managerial remuneration systems in the banking sector is particularly innovative and interesting.

Based on some previous theoretical literature (Botosan, 2006) and the empirical studies about non-financial companies described above, which mainly find a positive impact of ESG contracting on ESG performance, hypothesis 1 assumes that:

H_1: *ESG managerial incentives positively affect ESG performance in the banking sector.*

A further strand of literature focuses on ESG controversies, defined as negative ESG information in the media about harmful practices of companies, such as corporate scandals, frauds, and accounting irregularities (Cai et al., 2012; Aouadi and Marsat, 2018). ESG controversies can significantly threaten firm legitimacy (Schiemann and Tietmeyer, 2022), as they raise financial risk (Kolbel et al., 2017; Galletta and Mazzù, 2023), improve the cost of corporate debt financing (Ma et al., 2022), erode firm profitability (Treepongkaruna et al., 2022) and reduce company stock market returns (Aouadi and Marsat, 2018; Treepongkaruna et al., 2021a; Treepongkaruna et al., 2021b; Gao et al., 2024).

As well as ESG performance, the number of ESG controversies can be a further complementary indicator of company compliance with ESG criteria (Galletta and Mazzù, 2023; Agnese et al., 2024). In fact, if ESG performance is controlled by companies, as they directly disclose it, on the contrary, ESG controversies are disseminated by the media. Media attention to ESG misconduct can severely damage corporate reputation (Cicchiello et al., 2023) and raises the probability of conflicts and lawsuits with corporate stakeholders, which can be followed by administrative and financial penalties, product recalls, and remediation processes (Kölbel et al., 2017).

In the context of the banking industry, the relationship between ESG controversies and risk/performance indicators can be explained by the legitimacy theory (Suchman, 1995). Banks involved in many ESG disputes communicate to their stakeholders that they are not operating in accordance with ESG values, which compromises their social legitimacy (Branco and Rodrigues, 2008). Previous studies have investigated the main determinants of bank ESG controversies. One is the geographical context in which the bank operates. Specifically, Cicchiello et al. (2023) demonstrate a significant positive relationship between market competition and the ESG controversies score of European banks. Other studies identify corporate governance as a crucial determinant of bank ESG disputes. Agnese et al. (2023) find that ESG governance performance significantly reduces ESG controversies in the banking sector. Moreover, Iannuzzi et al. (2023) demonstrate that the presence of young, foreign, and ESG-skilled directors in the nominating committee reduces bank exposure to ESG disputes. Furthermore, Treepongkaruna et al. (2022), although not specifically focusing on the banking sector, find that an exogenous increase in shareholder litigation risk, one of the most distinctive external governance mechanisms, determines a significant increase in ESG controversies. Overall, previous banking literature shows that good corporate governance practices contribute to reducing ESG controversies. However, to my knowledge, ESG-linked managerial incentives have not yet been considered among these practices. Therefore, identifying ESG remuneration systems as good governance practices, hypothesis 2 assumes that:

H_2: *ESG managerial incentives limit ESG controversies in the banking sector.*

3. Data and methodology

3.1. Data and variables

The sample uses data from ASSET4-Refinitiv Eikon, Worldbank, and Bankfocus databases. First, data on the constituents of the

[3] KPMG, in its report "Paying for sustainable growth" (https://assets.kpmg/content/dam/kpmg/uk/pdf/2021/11/paying-for-sustainable-growth.pdf), finds, in fact, that, in 2020, 84% and 26% of financial companies in the FTSE 100 and the FTSE 250, respectively, linked executive bonuses and/or incentive plans to ESG metrics. Moreover, Capital Monitor, in its report "Linking CEO remuneration to ESG targets: The top 100 banks" (https://capitalmonitor.ai/whitepapers/linking-ceo-remuneration-to-esg-targets), shows that, in 2021, among the world's 100 largest banks by asset size, 46% (11 out of 16 from North America, 26 out of 40 from Europe, and 9 out of 40 from Asia-Pacific) had incorporated ESG targets into their CEO remuneration plans).

Refinitiv ESG Bank Index are selected. This index provides 10,176 company-year observations from 848 worldwide listed financial companies between 2010 and 2021. Then, 5,517 observations are removed because financial and/or ESG bank data is missing. Therefore, the final sample consists of 595 listed banks from 43 countries for the period 2010–2021, for a total of 4,659 bank-year observations. Banks from Europe, North America, and Rest-of-the-World (RoW) account for approximately 18 %, 42 %, and 40 % of the sample, respectively.

The sample period begins in 2010. This is because since 2010, turbulences due to the subprime mortgage crisis and Lehman Brothers' bankruptcy have been overcome, and the implementation of ESG practices in banks has been more consolidated. Furthermore, the study period ends in 2021 because in 2022, the European Union published the Corporate Sustainability Reporting Directive (Directive 2022/2464). This Directive substantially changes European companies' ESG reporting standards, making data on European banks' ESG performance less comparable to previous years.

All the ESG and financial variables described below are extracted from the ASSET4-Refinitiv Eikon and Bankfocus databases. The main dependent variables are the ESG performance score (ESG_P) and the ESG controversies score (ESG_C).

Based on bank self-reported information, ESG_P is an overall ESG score, ranging from 0 to 100. ASSET4-Refinitiv Eikon analysts collect objective, relevant, and updated ESG information based on more than 630 company-level ESG measures extracted from their original data sources, such as CSR reports, integrated reports, annual reports, and NGO websites (Refinitiv, 2022). The ESG performance score thus reflects the bank's global ESG performance, commitment, and effectiveness based on publicly reported information. This score is rolled up into three main pillar scores: environmental pillar (E_P), social pillar (S_P), and corporate governance pillar (G_P).[4] The environmental pillar is constructed of three categories: emissions, innovation, and resource use. The governance pillar comprises three categories: management, shareholders, and CSR strategy. Lastly, the social pillar is constructed of four categories: workforce, human rights, community, and product responsibility.

ESG_C measures bank exposure to ESG controversies and negative events reported in global media. ASSET4-Refinitiv Eikon constructs this indicator using public news stories about questionable ESG conduct. The analysts collect information from diverse media sources, including major English-speaking news outlets, NGOs, and trade unions. All new media materials are captured as the controversy progresses. The controversies score also addresses the market cap bias from which large-cap companies suffer, as they attract more media attention than smaller-cap companies. The ESG controversies score is calculated based on 23 ESG controversy topics, grouped under 7 ESG controversy macro-categories, including: (i) community, human rights, product responsibility, and workforce (social controversies); (ii) management and shareholders (governance controversies); and (iii) resource use (environmental controversies). The score ranges from 0 to 100: a higher value indicates fewer ESG controversies. To enrich the empirical analysis, the total number of ESG controversies suffered by the bank (ESG_C_COUNT) is also considered. This variable is further disaggregated into three sub-variables: environmental disputes (E_C), social disputes (S_C), and governance disputes (G_C). As suggested by Aouadi and Marsat (2018), to compare data on different kinds of ESG controversies, environmental disputes (E_C), social disputes (S_C), and governance disputes (G_C) are recoded as dummy variables, which take value 1 for banks facing at least one controversy during the year, and 0 otherwise.

The explanatory variable is ESG-based incentives (ESG_INC): it is a dummy variable that equals 1 if the bank senior executive's compensation is linked to ESG targets, and 0 otherwise. This dummy variable is directly provided by ASSET4-Refinitiv Eikon, according to the answer to the following question: "*Is the senior executive's compensation linked to CSR/H&S (Health and Safety) /Sustainability targets?*".

Some bank-specific control variables are also considered in the empirical analyses. Specifically, size (SIZE), profitability (ROE), and capitalization (TIER1) are used, as previous literature suggests that they can affect both bank ESG performance (Galletta et al., 2021) and ESG controversies (Agnese et al., 2023). Moreover, bank efficiency (CINC) is included, as it can significantly impact bank ESG outcomes (Galletta et al., 2021). Finally, the bank business model (BM) is used as a control variable, as previous literature suggests it can affect both ESG performance (Palmieri et al., 2024) and ESG controversies (Agnese et al., 2023). In detail, size (SIZE) is estimated as the natural logarithm of total assets, while profitability (ROE) is proxied by the return on equity, calculated as net income from average shareholders' equity. Bank efficiency (CINC) is calculated as the total operating expenses against total operating income: the lower the ratio, the higher the bank efficiency. Moreover, capitalization (TIER1) is estimated as the bank's equity capital and disclosed reserves against its total risk-weighted assets, while the bank business model (BM) is proxied by the total loans to total assets: a higher ratio means that the bank is more traditional. As suggested by previous studies (Galletta et al., 2023; Köhler, 2015), financial variables are winsorized at the 1st and 99th percentiles. The macroeconomic variable "GDP growth rates" (GDP), calculated as the annual percentage growth rate of GDP per capita based on constant local currencies, and extracted from the World Bank database, is an additional control, as suggested by Agnese et al. (2023). Table 1 shows definitions, calculation methods, and data sources for all the variables considered.

3.2. Methodology

Dynamic panel estimations with lagged dependent variables are used to capture the impact of ESG-linked managerial incentives on banks' ESG performance and ESG controversies. Following Azmi et al. (2021) and Agnese et al. (2023), the following dynamic panel estimations are run to test, respectively, the effect of bank ESG-based incentives on ESG performance (Model 1) and ESG controversies

[4] The ESG performance score is a relative sum of the category weights, which for the environmental and social categories vary per industry. For governance, the weights are the same across all industries. The pillar weights are normalized to percentages ranging between 0 and 100.

Table 1
Variable definitions.

Variable	Description	Source
ESG performance (ESG_P)	An overall company score based on the self-reported information in the environmental, social and corporate governance pillars.	Refinitiv
Environmental pillar score (E_P)	Measures the bank'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 bank uses best management practices to avoid environmental risks and capitalize on environmental opportunities to generate long-term shareholder value.	Refinitiv
Social pillar Score (S_P)	Measures a bank's capacity to generate trust and loyalty with its workforce, customers, and society through its use of best management practices. It reflects the bank's reputation and the health of its license to operate, which are key factors in determining its ability to generate long-term shareholder value.	Refinitiv
Governance pillar score (G_P)	Measures a bank's systems and processes, which ensure that its board members and executives act in the best interests of its long-term shareholders. The variable reflects a bank's capacity, through its use of best management practices, to direct and control its rights and responsibilities through the creation of incentives and checks and balances to generate long-term shareholder value.	Refinitiv
ESG controversies (ESG_C)	Measures a company's exposure to environmental, social, and governance controversies and adverse events reflected in global media.	Refinitiv
ESG controversies count (ESG_C_COUNT)	The number of controversies published in the media related to the environmental, social, and governance impact of the bank's operations.	Refinitiv
Environmental controversies (E_C)	A dummy variable that takes value 1 when the bank is in the media spotlight because of a controversy linked to the environmental impact of its operations on natural resources or local communities, 0 otherwise.	Refinitiv
Social controversies (S_C)	A dummy variable that takes value 1 when the bank is in the media spotlight because of a controversy linked to the social impact of its operations on local communities, 0 otherwise.	Refinitiv
Governance controversies (G_C)	A dummy variable that takes value 1 when the bank is in the media spotlight because of a controversy linked to the governance impact of its operations on local communities or the general public, 0 otherwise.	Refinitiv
ESG compensation Incentives (ESG_INC)	A dummy variable that takes value 1 when senior executive's compensation is linked to ESG targets, 0 otherwise.	Refinitiv
Environmental performance (E_P)	An overall company score based on the self-reported information in the environmental pillar.	Refinitiv
Social performance (S_P)	An overall company score based on the self-reported information in the social pillar.	Refinitiv
Governance performance (G_P)	An overall company score based on the self-reported information in the governance pillar.	Refinitiv
Size (SIZE)	The natural logarithm of total assets.	BankFocus
Profitability (ROE)	Return on equity, calculated as net income from average shareholders' equity.	BankFocus
Efficiency (CINC)	Calculated as the total operating expenses against total operating income: the lower the ratio, the higher bank efficiency.	BankFocus
Capitalization (TIER1)	Calculated as the bank equity capital and disclosed reserves against its total risk-weighted assets.	BankFocus
Business model (BM)	Calculated as total loans to total assets: a higher ratio means that the bank is more traditional.	BankFocus
GDP growth rate (GDP)	The annual percentage growth rate of GDP per capita based on constant local currencies.	World Bank database

(Model 2):

$$CONTR_{i,t} = \alpha_i + \gamma CONTR_{i,t-1} + \beta_1 ESG\_INC_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROE_{i,t} + \beta_4 CINC_{i,t} + \beta_5 TIER1_{i,t} + \beta_6 BM_{i,t} + \beta_7 GDP_{i,t} + \delta_t + \Omega_t + \varepsilon_{i,t} \quad (1)$$

$$ESG\_C_{i,t} = \alpha_i + \gamma ESG\_C_{i,t-1} + \beta_1 ESG\_INC_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROE_{i,t} + \beta_4 CINC_{i,t} + \beta_5 TIER1_{i,t} + \beta_6 BM_{i,t} + \beta_7 GDP_{i,t} + \delta_t + \Omega_t + \varepsilon_{I,t} \quad (2)$$

where δ_t and Ω_t are year and country dummies. In Models 1 and 2, year and country variables are included to account for unobserved heterogeneity. The lagged variables $ESG\_P_{i,t-1}$ and $ESG\_C_{i,t-1}$ are introduced into Models 1 and 2 to reduce concerns about persistence and potential endogeneity determined by omitted factors (Wooldridge, 2015). However, problems of endogeneity related to selection bias and reverse causality between the chosen variables might remain. To address this concern, the two-step SYS-GMM estimation method (Arellano and Bover, 1995) is applied, where Y_{t-1} and $X_t$covariates are instrumented with their deeper own lags. This approach assumes that the most suitable instruments for financial components are the instruments of their own lags (Köhler, 2015), and makes it possible to avoid unbiased and consistent estimators. The SYS-GMM methodology is supported by a theoretical idea based on a system of equations both in first differences and in levels, which requires certain assumptions of strict orthogonality conditions to be satisfied (Agnese et al., 2023). Some diagnostic tests are therefore conducted to verify the suitability of the SYS-GMM estimations. Specifically, the Arellano-Bond and autocorrelation tests are run to control for the autocorrelation of the residuals. By construction, the first-order differenced residuals (AR(1)) are correlated, but the second-order differenced residuals (AR(2)) should not exhibit any correlation. The Sargan-Hansen and Hansen's J-statistics statistics for over-identification restrictions are also conducted to validate the set of instruments. Moreover, the Wald-chi square test is run to control for the joint significance of the estimated coefficients.

Furthermore, the role of ESG-linked managerial incentives in explaining ESG bank performance is investigated more closely by considering separately environmental (E_P), social (S_P), and governance (G_P) performance. The following dynamic panel estimation (Model 3) with lagged dependent variables is used:

$$PERF_{i,t} = \alpha_i + \gamma PERF_{i,t-1} + \beta_1 ESG\_INC_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROE_{i,t} + \beta_4 CINC_{i,t} + \beta_5 TIER1_{i,t} + \beta_6 BM_{i,t} + \beta_7 GDP_{i,t} + \delta_t + \Omega_t + \varepsilon_{i,t} \quad (3)$$

where $PERF_{i,t}$ is alternatively proxied by environmental (E_P), social (S_P) and governance (G_P) performance. The impact of ESG remuneration plans on ESG controversies is further investigated by disaggregating ESG disputes into environmental (E_C), social (S_C), and governance (G_C) controversies. Hence, Model 4 is developed:

$$CONTR_{i,t} = \alpha_i + \gamma CONTR_{i,t-1} + \beta_1 ESG\_INC_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROE_{i,t} + \beta_4 CINC_{i,t} + \beta_5 TIER1_{i,t} + \beta_6 BM_{i,t} + \beta_7 GDP_{i,t} + \delta_t + \Omega_t + \varepsilon_{i,t} \quad (4)$$

where $CONTR_{i,t}$ is alternatively proxied by environmental (E_C), social (S_C) and governance (G_C) disputes.

4. Results and discussion

4.1. Descriptive statistics

The descriptive statistics referring to the global sample are shown in Table 2, and the descriptive statistics of the ESG variables across different geographical areas are shown in Table 3. The time evolution of the mean values of these variables, in both the global sample and in Europe, North America, and RoW, is reported in Table 4. In this Table, the variable ESG_INC% is calculated as the ratio between the number of banks adopting ESG-linked remuneration plans over the total number of banks considered in the year in the same geographical area to show clearly the spread of ESG contracting in the banking sector over time.

The mean value of ESG performance (ESG_P) of the global sample is 45.18 (Table 2), and it shows a significant increase in 2020 and 2021, reaching values of 46.42 and 49.91, respectively (Table 4). Comparing the variable ESG_P across European, North American, and RoW countries (Tables 3 and 4), European banks display, every year between 2010 and 2021, an average score above the global mean and above the scores of the other geographical areas, as shown in Fig. 1.

This evidence is confirmed considering all three ESG pillars shown in Table 4, i.e., environmental performance (E_P), social performance (S_P), and governance performance (G_P). This can be explained by the fact that in the last decade, corporate governance codes in many European countries, like France, the UK, and Italy, have recommended that boards of directors act in the interests of all the firm stakeholders and therefore pursue strategies to improve ESG performance as well as economic-financial performance (Spierings, 2022). Furthermore, European regulators have also made greater efforts to create a regulatory framework for improving sustainability in the financial system in the last decade. These results generally confirm the findings by Cohen et al. (2023), who describe European nations as the most sensitive to ESG issues. In banks in the RoW, as in Europe, ESG performance gradually improved from 2010 to 2021, but this did not happen in North America. In fact, as shown in Fig. 1, between 2015 and 2017, North American banks recorded a significant reduction in their ESG performance, which is specifically attributable to a decrease in their environmental and social performance, which started to recover only from 2019.

In terms of ESG disputes, the findings are decidedly different. The mean value of ESG controversies (ESG_C, where a higher value indicates fewer ESG controversies) of the global sample is 91.51 (Table 2) and is fairly stable between 2015 and 2021 (Table 4). This stability is confirmed by looking at the average number of ESG controversies (ESG_C_COUNT) suffered by banks in the global sample in the same period, which is always lower than one, as shown in Table 4 and in Fig. 2. In the overall sample, 17.3 % (806 banks) of bank-year observations include an ESG controversy. Coherently with a previous study by Aouadi and Marsat (2018), most ESG disputes concern social issues.

Comparing the variable ESG_C and ESG_C_COUNT across European, North American, and RoW countries (Tables 3 and 4), banks from the RoW show stable values, while there are clear differences between Europe and North America. Specifically, as shown in Fig. 2, North American banks saw a much lower number of ESG disputes, particularly social and governance disputes, from 2015 onwards, and the number remained almost stable until 2021. But between 2015 and 2019, the involvement of European banks in ESG disputes, particularly in social and governance disputes, increased significantly and started to decrease only from 2020. This confirms previous findings by Aouadi and Marsat (2018) that European firms appear to be the most affected by ESG disputes, around twice as frequently as firms in North America.

Furthermore, looking at ESG-linked managerial incentives (ESG_INC), the mean value of the global sample is 0.15 (Table 2), and it shows significant growth from 2017 to 2020 (Table 4). Overall, as shown in Fig. 3, banks from Europe, North America, and RoW increased their ESG contracting use from 2017. Comparing the variable ESG_INC across different geographical areas (Tables 3 and 4), European banks display, in every year between 2010 and 2021, an average score significantly above both the mean of the global sample and the mean scores of banks from North America and RoW.

This evidence confirms previous findings by Cohen et al. (2023) and Barontini and Hill (2023) that the use of ESG remuneration is more common in Europe than in other countries. This is probably because, in the last decade, ESG-linked managerial incentives have been encouraged in Europe by both banking regulations (e.g., "say-on-pay" and the "Shareholder Rights Directive II"[5]) and the evolution of corporate governance codes in countries like France, the UK, and Italy. On the other hand, as argued by Spierings (2022),

[5] The Shareholder Rights Directive II provides for increased transparency about non-financial metrics in compensation plans.

Table 2
Descriptive statistics.

Variable	Obs	Minimum	First quartile	Median	Mean	Third quartile	Maximum	Standard deviation
ESG_P	4,659	1.53	29.47	41.78	45.18	61.20	95.49	20.51
E_P	4,659	0.00	11.57	24.94	37.28	64.23	98.10	31.21
S_P	4,659	0.64	26.80	41.33	45.10	63.31	98.61	23.65
G_P	4,659	0.47	35.11	53.31	52.23	69.38	99.34	21.99
ESG_C	4,659	0.49	100	100	91.51	100	100	22.19
ESG_C_COUNT	4,694	0.00	0.0	0.00	0.95	0.00	50	3.62
E_C	4,694	0.00	0.00	0.00	0.01	0.01	1.00	0.08
S_C	4,694	0.00	0.00	0.00	0.17	0.00	1.00	0.23
G_C	4,694	0.00	0.00	0.00	0.06	0.00	1.00	0.37
ESG_INC	4,659	0.00	0.00	0.00	0.15	0.00	1.00	0.36
SIZE	4,658	6.21	14.88	17.12	17.76	20.24	28.17	3.37
ROE	4,646	−42.5	6.76	9.86	8.56	13.31	37.74	41.45
CINC	4,649	16.12	27.21	54.32	57.02	73.56	101.74	23.69
TIER1	3,026	0.00	0.10	0.12	0.21	0.15	0.61	3.76
BM	4,621	0.00	0.60	0.68	0.67	0.76	0.86	0.14
GDP	4,659	−0.41	0.01	0.03	0.03	0.05	0.29	2.61

Note: Number of observations, minimum, first quartile, median, mean, third quartile, maximum, and standard deviation. Definitions of the variables are reported in Table 1.

Table 3
ESG variables across different geographical areas.

Variable	Obs	Minimum	First quartile	Median	Mean	Third quartile	Maximum	Standard deviation
ESG_P								
Europe	842	1.53	41.06	59.02	55.73	73.45	95.49	22.19
North America	1,945	2.99	26.30	33.78	36.85	43.43	89.98	16.41
RoW	1,872	2.50	33.89	49.28	49.09	64.26	92.84	20.22
E_P								
Europe	842	0.00	31.60	69.73	60.28	86.64	98.10	29.70
North America	1,945	0.00	0.00	9.58	17.81	22.22	96.61	24.23
RoW	1,872	0.00	22.38	50.24	47.16	68.15	97.67	26.25
S_P								
Europe	842	0.64	38.73	61.84	56.63	74.94	97.64	23.85
North America	1,945	1.02	23.62	32.44	36.00	43.39	95.11	18.41
RoW	1,872	0.93	29.86	50.40	49.37	68.72	98.61	24.91
G_P								
Europe	842	1.12	35.28	59.25	56.14	76.00	97.00	24.00
North America	1,945	1.13	33.84	49.70	48.65	64.23	94.72	20.22
RoW	1,872	0.47	36.78	55.21	54.18	72.82	99.34	22.29
ESG_C								
Europe	842	0.67	80.00	100	83.44	100	100	29.35
North America	1,945	0.49	100	100	94.10	100	100	19.73
RoW	1,872	0.60	100	100	92.45	100	100	19.93
ESG_C_COUNT								
Europe	853	0.00	0.00	0.00	1.84	2.00	46	4.72
North America	1,957	0.00	0.00	0.00	0.82	0.00	50	4.03
RoW	1,884	0.00	0.00	0.00	0.68	0.00	38	2.30
E_C								
Europe	853	0.00	0.00	0.00	0.01	0.00	1.00	0.10
North America	1,957	0.00	0.00	0.00	0.00	0.00	1.00	0.05
RoW	1,884	0.00	0.00	0.00	0.01	0.00	1.00	0.09
S_C								
Europe	853	0.00	0.00	0.00	0.29	1.00	1.00	0.46
North America	1,957	0.00	0.00	0.00	0.10	0.00	1.00	0.30
RoW	1,884	0.00	0.00	0.00	0.17	0.00	1.00	0.37
G_C								
Europe	853	0.00	0.00	0.00	0.10	0.00	1.00	0.30
North America	1,957	0.00	0.00	0.00	0.05	0.00	1.00	0.21
RoW	1,884	0.00	0.00	0.00	0.04	0.00	1.00	0.21
ESG_INC								
Europe	842	0.00	0.00	0.00	0.28	1.00	1.00	0.45
North America	1,945	0.00	0.00	0.00	0.13	0.00	1.00	0.34
RoW	1,872	0.00	0.00	0.00	0.12	0.00	1.00	0.32

Note: Number of observations, minimum, first quartile, median, mean, third quartile, maximum, and standard deviation. Definitions of the variables are reported in Table 1.

Table 4
Mean values of ESG variables over time.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ESG_P												
Global	44.59	45.32	45.56	45.89	45.94	44.82	43.35	42.35	43.64	44.41	46.42	49.91
Europe	52.20	52.80	52.33	51.00	51.58	52.48	53.88	57.54	58.61	58.37	59.03	63.02
North America	43.91	45.57	44.68	44.51	43.46	37.50	34.73	33.19	33.76	34.64	37.13	40.75
RoW	41.09	41.79	42.81	44.04	44.20	46.15	48.05	50.62	52.38	53.87	55.16	59.49
E_P												
Global	46.97	47.86	48.14	48.65	48.53	47.25	45.47	43.81	23.51	25.61	28.16	32.01
Europe	60.11	62.06	62.55	61.70	61.36	63.70	66.16	68.65	51.48	54.93	54.33	61.73
North America	40.87	42.48	41.89	41.56	40.06	31.36	28.54	27.35	6.23	7.29	9.19	10.80
RoW	42.76	43.17	43.74	45.12	45.64	50.07	55.12	58.78	37.61	41.84	45.76	54.57
S_P												
Global	42.22	43.13	44.12	44.53	45.15	44.48	44.18	43.15	44.30	44.91	46.47	50.27
Europe	52.00	50.88	50.66	50.04	50.43	53.30	55.48	61.28	61.69	60.96	60.20	64.31
North America	45.33	45.97	46.67	45.92	46.02	36.34	34.76	32.48	32.68	33.05	35.33	39.43
RoW	36.28	38.57	40.31	41.59	42.52	45.84	49.38	52.53	54.65	56.66	57.58	62.42
G_P												
Global	53.60	53.90	52.55	52.66	52.05	51.53	49.74	49.52	50.77	51.23	53.66	56.56
Europe	55.04	57.00	55.45	53.13	53.92	52.91	53.78	55.19	57.23	56.18	59.30	61.77
North America	49.28	52.47	48.82	49.29	47.21	48.67	45.57	45.12	46.27	47.77	50.76	54.54
RoW	54.46	52.97	52.50	53.56	52.64	52.82	52.35	54.31	55.17	54.83	55.58	57.43
ESG_C												
Global	88.98	87.34	88.19	85.47	87.20	93.67	91.90	94.35	93.57	92.91	92.32	91.68
Europe	86.23	81.95	86.34	80.58	87.76	90.68	85.77	86.49	83.17	75.13	82.15	79.04
North America	73.14	74.50	72.64	73.12	73.64	93.98	95.88	97.63	97.20	97.52	96.76	96.38
RoW	96.15	94.23	94.25	91.76	91.66	94.81	90.23	92.53	92.65	93.57	90.16	89.28
ESG_C_COUNT												
Global	1.41	1.46	1.46	1.70	1.64	0.51	0.96	0.72	0.90	0.98	0.69	0.49
Europe	1.75	1.73	1.59	1.93	1.66	0.79	2.19	2.04	2.25	3.22	1.58	1.13
North America	3.86	3.80	3.86	4.36	4.04	0.66	0.69	0.42	0.47	0.41	0.32	0.21
RoW	0.34	0.54	0.60	0.71	0.80	0.30	0.72	0.62	0.95	0.86	0.86	0.67
E_C												
Global	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04
Europe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.08
North America	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
RoW	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.06
S_C												
Global	0.21	0.23	0.24	0.30	0.25	0.12	0.16	0.11	0.12	0.14	0.14	0.14
Europe	0.24	0.29	0.25	0.37	0.26	0.17	0.25	0.26	0.28	0.42	0.33	0.34
North America	0.43	0.45	0.43	0.41	0.44	0.09	0.07	0.04	0.05	0.05	0.05	0.06
RoW	0.12	0.13	0.16	0.23	0.18	0.12	0.21	0.16	0.14	0.16	0.21	0.18
G_C												
Global	0.13	0.14	0.14	0.09	0.09	0.04	0.01	0.03	0.05	0.04	0.04	0.04
Europe	0.20	0.15	0.19	0.10	0.08	0.05	0.03	0.07	0.11	0.12	0.05	0.11
North America	0.27	0.30	0.23	0.20	0.23	0.07	0.02	0.01	0.04	0.02	0.02	0.02
RoW	0.03	0.08	0.09	0.05	0.05	0.02	0.01	0.03	0.05	0.04	0.05	0.04
ESG_INC%												
Global	6.22 %	8.07 %	10.25 %	9.08 %	7.39 %	5.55 %	4.71 %	7.73 %	10.92 %	15.46 %	17.31 %	16.47 %
Europe	15.05 %	20.43 %	24.73 %	19.35 %	16.13 %	13.98 %	8.60 %	8.60 %	19.35 %	32.26 %	39.78 %	34.41 %
North America	3.25 %	5.52 %	5.19 %	6.17 %	3.90 %	3.90 %	3.90 %	7.79 %	7.79 %	11.04 %	11.69 %	12.01 %
RoW	6.70 %	6.70 %	11.34 %	8.76 %	8.76 %	4.12 %	4.12 %	7.22 %	12.37 %	14.43 %	15.46 %	13.92 %

Note: Mean values of ESG variables from 2010 to 2021 across countries. Definitions of the variables are reported in Table 1.

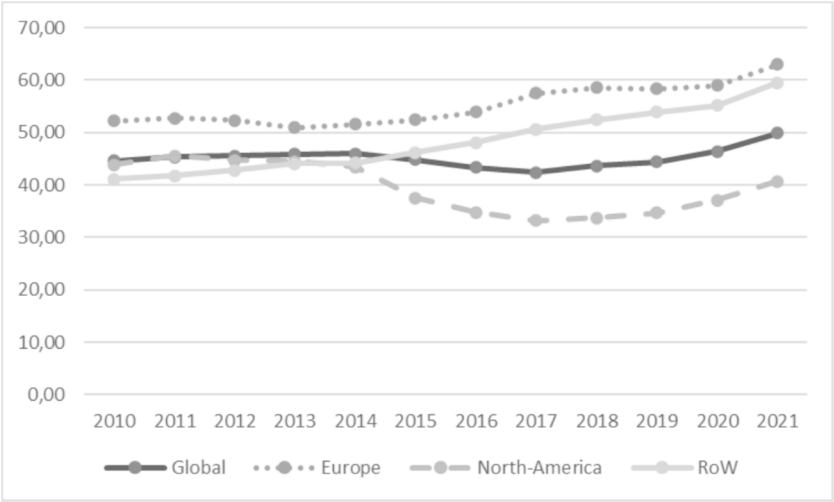

Fig. 1. Mean values of bank ESG performance across geographical areas over time. This figure shows the time evolution, from 2010 to 2021, of the mean values of bank ESG performance in both the global sample and in Europe, North America, and Rest-of-the-World (RoW).

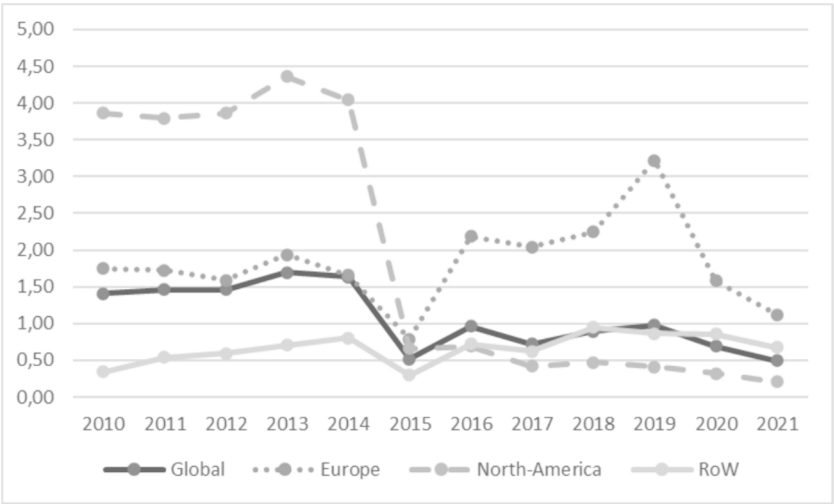

Fig. 2. Mean number of ESG controversies suffered by banks across geographical areas over time. This figure shows the time evolution, from 2010 to 2021, of the mean number of ESG controversies suffered by banks in both the global sample and in Europe, North America, and Rest-of-the-World (RoW).

in the USA, ESG contracting is primarily market-driven, and it is therefore unlikely that the SEC will require the inclusion of ESG factors in management compensation schemes.

Table 5 reports Pearson correlations and the variance inflation vector (VIF) values. It shows that no significant multicollinearity problems exist in the sample. The VIF values are all under 2, and most correlation coefficients have an absolute value of less than 0.5.

4.2. Baseline results and discussion

Table 6 displays the baseline results.

First, a positive relationship emerges between ESG contracting and ESG performance (Model 1). Specifically, the positive and statistically significant coefficient on ESG_INC in Table 6, column (a) (16.210) indicates that banks adopting ESG managerial incentives have higher ESG outcomes. This finding is also economically significant[6]: a one-standard-deviation increase in ESG_INC is

[6] Following the most existing literature in corporate finance, we measure economic significance as a one-standard-deviation change in the explanatory variable while measuring the resulting change in the dependent variable as a percentage of its mean (Mitton, 2024).

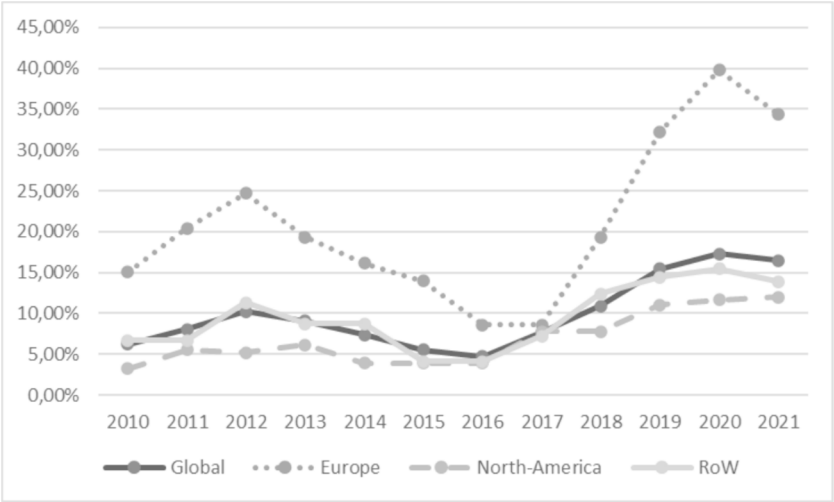

Fig. 3. Number of banks (%) adopting ESG-linked remuneration plans across geographical areas over time. This figure shows the time evolution, from 2010 to 2021, of the percentage of banks adopting ESG-linked remuneration plans in both the global sample and in Europe, North America, and Rest-of-the-World (RoW).

Table 5
VIF analysis and Pearson correlation.

Variable	VIF	ESG_P	ESG_C	ESG_INC	SIZE	ROE	CINC	TIER1	BM	GDP
ESG_P		1.00								
ESG_C		−0.38***	1.00							
ESG_INC	1.12	0.37***	−0.29***	1.00						
SIZE	1.51	0.48***	−0.23***	0.07***	1.00					
ROE	1.03	−0.02**	0.07**	−0.01*	0.02**	1.00				
CINC	1.36	0.21***	−0.13*	0.06***	0.37***	−0.02***	1.00			
TIER1	1.04	−0.03**	0.01***	−0.01***	0.02**	0.01***	−0.01***	1.00		
BM	1.20	−0.21***	0.27**	−0.10***	−0.22***	−0.03*	−0.09***	0.02**	1.00	
GDP	1.03	−0.01**	0.01*	−0.02***	−0.04*	0.04***	−0.07***	0.050*	−0.02*	1.00

Note: This table reports Pearson correlations between ESG performance, ESG controversies, ESG incentives, and the control variables. Coefficients for all correlations are based on 595 listed banks for a total of 4,659 bank-year observations. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Definitions of the variables are reported in Table 1.

associated with a 12.92 % increase in ESG performance (relative to the sample average ESG performance of 45.18) based on the coefficient in column (a). This evidence leads to accepting hypothesis 1 (H_1): ESG incentives adopted by banks are shown to improve their ESG performance significantly.

Second, Model 2 displays a positive relationship between ESG contracting and ESG controversies (higher values of ESG_C indicate fewer ESG disputes). The negative and statistically significant coefficient on ESG_INC in column (b) (−15.625) shows, in fact, that banks applying ESG targets in executive remuneration plans have higher ESG disputes. This result is also economically significant: a one-standard-deviation increase in ESG_INC is associated with a 6.15 % increase in ESG controversies (relative to the sample average ESG controversies of 91.51). This evidence leads to reject hypothesis 2 (H_2): the use of ESG incentives by banks is shown to increase the number of ESG controversies significantly.

Most of the control variables show statistically and economically significant coefficients, and their signs are coherent with the expectations. Specifically, a one-standard-deviation increase in bank size (SIZE) and capitalization (TIER1), respectively, is associated with a 28.25 % and 1.51 % increase in ESG performance based on the coefficient in Table 6, column (a), and a 5.03 % and 0.33 % increase in ESG controversies based on the coefficient in column (b). Furthermore, based on the coefficients shown in Table 6, columns (a) and (b), respectively, a one-standard-deviation increase in the bank business model (BM), where a higher ratio means that the bank is more traditional, is related to a 2.11 % decrease in ESG performance and 6.21 % decrease in ESG disputes. The Arellano-Bond and autocorrelation tests lead to reject first-order autocorrelation (AR1) and accept second-order autocorrelation (AR2). The Sargan-Hansen and Hansen tests confirm the exogeneity of the instruments, while the Wald-chi square test assesses that the set of coefficients in Models 1 and 2 is statistically different from zero.

Overall, Table 6 shows that bank ESG compensation systems, on the one hand, improve ESG performance but, on the other hand, amplify bank exposure to ESG risks related to ESG disputes. These results can be interpreted in light of prior literature. Specifically, previous studies on non-financial companies (Maas, 2018; Flammer, 2019; Ikram et al., 2019; Cohen, 2023) have shown that applying ESG targets in executive remuneration plans might contribute to ESG improvement. The only existing paper on the banking sector

Table 6
ESG performance and ESG controversies: estimation results.

Variable	ESG performance (ESG_P) (Model 1)	ESG controversies (ESG_C) (Model 2)
	(a)	(b)
ESG_P_{t-1}	0.014*	
	(0.009)	
ESG_C_{t-1}		0.008*
		(0.005)
ESG_INC	16.210***	−15.625***
	(1.067)	(2.223)
SIZE	3.788***	−1.366***
	(0.174)	(0.213)
ROE	−0.006	0.350**
	(0.064)	(0.174)
CINC	2.812	−5.444
	(3.896)	(3.649)
TIER1	0.182***	−0.081***
	(0.024)	(0.018)
BM	−6.797**	40.617***
	(3.364)	(6.378)
GDP	11.864	4.298
	(9.871)	(8.851)
Constant	−19.764***	89.692***
	(3.986)	(6.793)
Time dummies	YES	YES
Country dummies	YES	YES
Sargan test	96.007	62.155
(p-value)	(0.74)	(0.542)
Hansen test	63.160	61.539
(p-value)	(0.506)	(0.564)
AR(1)	−8.232***	−6.987***
(p-value)	(0.000)	(0.000)
AR(2)	−5.202	−1.592
(p-value)	(0.127)	(0.111)
Wald-Chi^2	1.785	206
(p-value)	(0.000)	(0.000)
N	2,207	2,207

Note: This table reports the results of dynamic panel estimation models with lagged dependent variables with ESG performance (Model 1) and ESG controversies (Model 2) as the dependent variables, respectively. The two-step SYS-GMM estimation method (Arellano and Bover, 1995) is used. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

(Galletta et al., 2021), exclusively focused on one aspect of ESG, i.e., the "E", demonstrates that environmental executive incentives improve bank environmental performance. Therefore, the findings reported in Table 6, column (a), showing that ESG contracting adopted by banks improves their ESG performance, are very innovative. Specifically, these results extend those by Galletta et al. (2021) and suggest that, in the banking sector, ESG contracting, on the one hand, improves ESG performance but, on the other hand, increases ESG disputes.

These findings can be interpreted from two different points of view. On the one hand, they suggest that, so far, banks have mainly linked their ESG contracting to targets related to ESG performance improvements rather than to ESG risk reduction. If this were so, it would be logical to use ESG-linked managerial incentives to improve ESG performance and, at the same time, to observe a rise in the number of ESG disputes. Banks adopting ESG managerial incentive schemes are, in fact, more likely to be involved in ESG initiatives than other banks and, therefore, also more exposed to media attention when ESG controversies occur. This initial interpretation coherently justifies the acceptance of hypothesis 1 (H_1) and the rejection of hypothesis 2 (H_2). On the other hand, the findings shown in Table 6 can be interpreted from a different perspective. They also suggest that the use of ESG contracting might be more a question of window dressing rather than a real attempt to meet stakeholder interests not only in non-financial companies, as argued by some previous literature (Walker, 2022; Bebchuk and Tallarita, 2023; Liu et al., 2024), but also in the banking sector. In fact, bank executives have no control over ESG controversies, as they are disseminated by the media, but they can quite easily manipulate ESG performance measures because they are very subjective (Maas, 2018; Qin and Yang, 2022; Cohen et al., 2023) and directly disclosed by the bank (Galletta and Mazzù, 2023). Previous literature demonstrates, indeed, that the ESG performance of firms is closely influenced by their own ESG reporting (Bouten et al., 2017), which is currently 'assured' rather than 'audited.' It is "*voluntary and unregulated, with no generally accepted reporting principles and standards*," and therefore, "*managers have much discretion about how to measure and report CSR performance*" (Pinnuck et al., 2021, p. 2378; Potter and Soderstrom, 2017). This explains why companies characterized by a high ESG performance are more likely to subsequently restate their ESG reports (Pinnuck, 2021). Moreover, the low verifiability of ESG reports allows executives greater control over ESG contracting (Qin and Yang, 2022). In this interpretation of the baseline results, which reasonably justifies the acceptance of hypothesis 1 (H_1) and the rejection of hypothesis 2 (H_2), using ESG-linked managerial incentives in the banking sector seems more like a response to external pressures on ESG issues (Maas, 2018) than a genuine attempt to meet

stakeholder interests. More specifically, managerial ESG-based executive compensation appears as a window-dressing vehicle to improve corporate reputation, avoiding costly ESG efforts, not only for non-financial companies, as suggested by Lu (2023), but also for banks. This interpretation is reasonable considering that previous literature (Wang et al., 2024) demonstrates the positive impact of ESG performance on corporate reputation. Hence, ESG-linked executive pay appears like a new soft "money for jam" style of targets not only in non-financial sectors, as argued by Maas (2018) and Barontini and Hill (2023), but also in the financial industry. In this context, bank managers might be incentivized to overinvest in low-quality ESG projects, i.e., projects characterized by negative present values, only to increase bank ESG performance and, in turn, boost their compensation, as suggested by Liu et al. (2024). Hence, the adoption of ESG contracting by banks might result in opportunistic managers' overinvestment in unprofitable ESG activities to the detriment of bank stakeholders' interests.

Furthermore, SYS-GMM estimates are run using the three sub-categories of the ESG pillar score as dependent variables. Table 7 reports the effect of ESG-based incentives (ESG_INC) on the Environmental pillar score (E_P), the Social pillar score (S_P), and the Governance pillar score (G_P). A significant relationship emerges between ESG contracting and environmental, social, and governance performance (Model 3). ESG_INC shows, in fact, statistically significant coefficients equal to 17.107 (Table 7, column (a)), 13.875 (Table 7, column (b)), and 17.669 (Table 7, column (c)), respectively. These results are also economically significant. Specifically, a one-standard-deviation increase in ESG_INC is associated with a 16.5 % increase in environmental performance (relative to the sample average environmental performance of 37.28) based on the coefficient in Table 7, column (a). Moreover, an increase of 1 % in ESG contracting is related to an increase of 11.1 % and 12.2 % in social performance (relative to the sample average environmental performance of 45.1) and governance performance (relative to the sample average environmental performance of 52.23). Overall, this evidence extends previous findings reported in Table 6. The results shown in Table 7 demonstrate, in fact, that the introduction of ESG compensation systems by banks is an effective tool to improve not only the environmental performance, as suggested by Galletta et al. (2021), but also the social and governance outcomes.

Moreover, Model 4 is run to assess the impact of ESG contracting on the number of environmental controversies (E_C), social controversies (S_C), and governance controversies (G_C), respectively. The results are reported in Table 8. They show that the higher the use of ESG-linked remuneration schemes, the higher the number of social and governance disputes. Specifically, the positive and statistically significant coefficients on ESG_INC in Table 8, columns (b) and (c) (0.192 and 0.117, respectively) indicate that adopting ESG managerial incentives by banks increases their probability of suffering a higher number of social and governance controversies. These findings are also economically significant. A one-standard-deviation increase in ESG_INC is, in fact, associated with a 40.7 % and 70.2 % increase in the number of social disputes (relative to the sample average ESG performance of 0.17) and of governance disputes (relative to the sample average ESG performance of 0.06), respectively. On the other hand, neither a statistically nor economically significant relationship emerges between ESG contracting and environmental controversies. This may reflect the growing importance of environmental factors for financial companies in recent years and the various new financial regulations on green banking frameworks introduced at the international level (Financial Stability Board, 2015; European Central Bank, 2020), which may have increased the efforts of bank executives in the prevention of environmental disputes. Overall, these findings extend previous evidence reported in Table 6. They also suggest that adopting ESG contracting leads banks to suffer more social and governance disputes.

4.3. Robustness tests

Some robustness checks are performed to assess the baseline results.

First, two fixed-effect regressions on panel data are run, clustering heteroscedasticity standard errors at the bank level to consider the serial correlation of the dependent variables for each bank (Galletta et al., 2021). This methodology considers omitted or unobserved variables and controls for unobserved heterogeneity in the sample. All regressions are estimated with country and year-fixed effects. The evidence of the regressions, shown in Table A1 in the Appendix, confirms that ESG-linked managerial incentives increase both ESG performance (Table A1, Model 1) and ESG controversies (Table A1, Model 2) in the banking sector.

The endogeneity issue is addressed in the main analysis using the lag term of the dependent variable as an instrument in the SYS-GMM and evaluating the validity of instruments by the Sargan and Hansen tests. However, as some endogeneity concerns remain, the two-stage least squares (2sls) approach is employed as a further robustness check, as suggested by Azmi et al. (2021). In the first stage, ESG contracting (ESG_INC) is predicted by the instruments and all the exogenous variables used in the main analysis. Three instruments are identified to address the endogeneity related to ESG-linked managerial incentives. First, the one bank-year lag of the independent test variable (ESG_INC_{t-1}) is used. This is why, as suggested by Biswas et al. (2018), if a bank adopts ESG-linked managerial incentives at time t-1, it indicates a commitment to addressing ESG issues that is likely to persist in the future, as sustainability initiatives are often long-term. Following El Ghoul et al. (2011) and Cheng et al. (2014), the second instrument is the mean ESG_INC of the year ($ESG\_INC_{industry}$), calculated excluding the bank itself and restricting the sample to countries with at least five banks[7] (Azmi et al., 2021). Finally, the annual mean level of ESG contracting in the country where the bank is headquartered ($ESG\_INC_{country}$) is used as a further instrument. The idea is that the context in which the bank is inserted, both sectorial and geographical, can significantly impact the bank's choice to use ESG contracting, as suggested by Anginer et al. (2018). The three instrumental variables are correlated with the possible endogenous variable and not correlated with the error term. However, this does not guarantee that the three instrumental variables are good instruments within the model. For this reason, the F-test and the Sargan-Hansen (over-identification)

[7] 57 banks are excluded, thus reducing the sample to 538 banks.

Table 7
Environmental, social, and governance performance: estimation results.

Variable	Environmental performance(E_P)	Social performance (S_P)	Governance performance (G_P)
	(a)	(b)	(c)
E_P_{t-1}	0.042*		
	(0.025)		
S_P_{t-1}		0.020***	
		(0.004)	
G_P_{t-1}			0.015*
			(0.009)
ESG_INC	17.107***	13.875***	17.669***
	(1.859)	(1.375)	(1.193)
SIZE	6.054***	4.112***	2.292***
	(0.298)	(0.210)	(0.206)
ROE	−0.162**	−0.012	0.031
	(0.081)	(0.068)	(0.082)
CINC	25.311***	12.372***	−16.816***
	(5.839)	(4.673)	(3.638)
TIER1	0.042	−0.236***	−0.221***
	(0.031)	(0.013)	(0.054)
BM	−23.355***	−6.169*	−3.775
	(5.291)	(3.676)	(3.878)
GDP	−30.490***	−13.370*	−7.591
	(10.226)	(8.043)	(9.320)
Constant	−66.301***	−27.013***	15.161***
	(6.859)	(4.541)	(4.886)
Time dummies	YES	YES	YES
Country dummies	YES	YES	YES
Sargan test	77.347	90.380	79.351
(p-value)	(0.122)	(0.216)	(0.196)
Hansen test	55.920	57.389	65.329
(p-value)	(0.754)	(0.708)	(0.430)
AR(1)	−8.673***	−8.375***	−9.729***
(p-value)	(0.000)	(0.000)	(0.000)
AR(2)	−4.604	−4.760	−3.106
(p-value)	(0.170)	(0.128)	(0.137)
Wald-Chi^2	1.741	4.760	489
(p-value)	(0.000)	(0.000)	(0.000)
N	2,207	2,207	2,207

Note: This table reports the results of dynamic panel estimation models with lagged dependent variables and environmental, social, and governance performance (Model 3) as the dependent variables. The two-step SYS-GMM estimation method (Arellano and Bover, 1995) is used. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

test are run. The first test allows to detect the presence of weak instruments, while the second assesses the validity of instrumental variables. The results of the first stage of the 2sls regression are reported in Table 9, Panel 1, while Table 9, Panel 2, shows the results of the second stage, where the predicted value of ESG contracting is used instead of its actual value. For the sake of brevity, Table 9, Panel 1 (first stage of the 2sls regression) reports only the coefficients for the instruments along with the Shea's Partial R2, the F-test of excluded instruments, and the LM version of the Kleibergen-Paap rank statistic (Kleibergen and Paap, 2006). Overall, the findings shown in Table 9 strongly support the evidence of the main analysis.

To further mitigate the endogeneity problem, the propensity score matching (PSM) methodology is used (Boubaker et al., 2016; Ikram et al., 2019). This approach allows the control of observable differences in bank characteristics between banks with and without ESG-linked managerial incentives. Specifically, each bank adopting ESG contracting is matched with a bank without ESG contracting based on a propensity score that estimates the probability of having ESG contracting. Then, ESG performance and ESG controversies of these two groups of banks are studied.

The propensity score is calculated through a logistic regression, in which the dependent variable is ESG contracting (ESG_INC). The explanatory variables are the following bank-level characteristics, suggested by previous literature (Maas, 2018; Ikram et al., 2019; Cohen et al., 2023): (i) GHG emissions (EMIS), (ii) risk (RWA), (iii) size (SIZE), (iv) profitability (ROE), (v) leverage (LEV) and (vi) board gender diversity (GEND). GHG emissions (EMIS) are estimated by the Emission Category Score provided by ASSET4-Refinitiv Eikon, which measures bank commitment and effectiveness towards reducing environmental emissions. As banks more engaged in limiting GHG emissions demonstrate a high level of attention to environmental issues, they are supposed to have a higher incentive to adopt ESG contracts linked to environmental indicators (Cohen et al., 2023). Risk (RWA) is measured by risk-weighted assets to total assets. When this ratio is higher, banks are assumed to be more interested in adopting ESG pay systems aiming to reduce ESG risks (Ikram et al., 2019; Cohen et al., 2023). Size, estimated by the natural logarithm of total assets, is considered because larger banks face more public scrutiny about their ESG strategies and activities (Maas, 2018; Ikram et al., 2019; Cohen et al., 2023). Profitability (ROE), measured by the return on equity, is included in the model because bank performance affects decisions about ESG-oriented

Table 8
Environmental, social, and governance controversies: estimation results.

Variable	Environmental controversies (E_C)	Social controversies (S_C)	Governance controversies (G_C)
	(a)	(b)	(c)
E_C_{t-1}	0.002*		
	(0.003)		
E_C_{t-1}		0.046**	
		(0.003)	
E_C_{t-1}			0.004*
			(0.001)
ESG_INC	0.001	0.192***	0.117***
	(0.004)	(0.033)	(1.019)
SIZE	0.001**	0.025***	0.004
	(0.001)	(0.004)	(0.002)
ROE	0.000	−0.003**	−0.002***
	(0.000)	(0.001)	(0.000)
CINC	−0.003	0.082	0.014
	(0.007)	(0.063)	(0.033)
TIER1	0.001**	0.001***	0.001***
	(0.000)	(0.000)	(0.000)
BM	−0.013	−0.503***	−0.342***
	(0.010)	(0.084)	(0.074)
GDP	0.006	0.101	−0.073
	(0.008)	(0.136)	(0.080)
Constant	−0.003	−0.004	0.198***
	(0.005)	(0.094)	(0.066)
Time dummies	YES	YES	YES
Country dummies	YES	YES	YES
Sargan test	0.140	62.795	88.172
(p-value)	(1.000)	(0.519)	(0.199)
Hansen test	1.233	57.4934	47.182
(p-value)	(1.000)	(0.704)	(0.932)
AR(1)	−1.425**	−8,224***	−5.563***
(p-value)	(0.042)	(0.000)	(0.000)
AR(2)	−1.130	−2.909	−0.873
(p-value)	(0.259)	(0.117)	(0.382)
Wald-Chi^2	307	208	197
(p-value)	(0.000)	(0.000)	(0.000)
N	1,733	1,733	1,733

Note: This table reports the results of dynamic panel estimation models with lagged dependent variables and environmental, social, and governance controversies (Model 4) as the dependent variables. The two-step SYS-GMM estimation method (Arellano and Bover, 1995) is used. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

management practices (Maas, 2018; Ikram et al., 2019; Cohen et al., 2023). Leverage (LEV), estimated by total debts on common equity, is considered because bank indebtedness can affect the funding of ESG strategies (Ikram et al., 2019; Cohen et al., 2023). Finally, as previous literature demonstrates that female directors are more sensitive to ESG issues (Ikram et al., 2019; Cohen et al., 2023), board gender diversity (GEND) is included in the model. GEND is defined as the percentage of women on the board.

After calibrating the probit model, each bank using ESG contracting is matched, with replacement, to the closest bank with no ESG contracting using the nearest-neighbour technique within a maximum distance of 1 %, as suggested by Boubaker et al. (2016). The procedure leads to a propensity score-matched sample consisting of 1,418 observations. The mean values of all variables used in the PSM model are nearly indistinguishable between the two groups, as shown in Table 10. This contrasts with the original sample. Table 10 shows that the matches are reasonably balanced concerning all the relevant variables, and the reduction in standardized bias relative to the original sample is sizeable, ranging from 66.3 % to 85.7 %.

Table 11 shows the estimation of the probit model in column (a), while columns (b) and (c), respectively, report the results of Models (1) and (2) re-estimated using the PSM sample. The endogenous covariate is ESG contracting (ESG_INC). Table 11 (a) shows that, as expected, the commitment towards reducing GHG emissions, bank size, profitability, and gender diversity has a positive impact on the adoption of ESG contracting, while leverage has a significant negative influence. Bank risk also shows a negative effect on the use of ESG managerial incentives. The multivariate analyses on the matched subsample (Table 11 (b) and (c)) confirm the positive influence of ESG contracting in increasing both ESG performance and ESG controversies. Therefore, banks offering ESG managerial incentives are more likely to improve their ESG performance and ESG disputes than similar banks that do not provide such incentives.

Given that Cohen et al. (2023) find that adopting ESG incentives by non-financial companies improves ESG performance only in Europe and not in the USA or the RoW, as a further check, the sample of banks is split into three subsamples: Europe, North America, and RoW. This cross-country analysis is particularly interesting as it allows to investigate whether regional regulatory and cultural differences influence the effectiveness of ESG incentives on ESG performance and ESG controversies. As shown in Section 4.1, European banks display higher ESG performance, higher ESG disputes, and higher use of ESG remuneration than banks from North

Table 9
2sls test of the relationship between ESG contracting, ESG performance, and ESG controversies.

Variable	*(1) First stage*	*(2) Second stage* ESG_P(a)	E_P(b)	S_P(c)	G_P(d)	ESG_C(e)	E_C(f)	S_C(g)	G_C(h)
ESG_INC_{t-1}	0.319***								
	(0.015)								
$ESG\_INC_{industry}$	0.020***								
	(0.000)								
$ESG\_INC_{country}$	0.015***								
	(0.000)								
ESG_INC_t		19.310***	16.199***	15.421***	13.754***	−18.718***	0.001	0.213***	0.121***
		(1.991)	(1.252)	(1.617)	(1.326)	(2.516)	(0.005)	(0.027)	(0.041)
Bank controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Macro controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.072	−21.794***	−62.431***	−26.321***	15.675***	88.805***	−0.001	0.132***	0.035
	(0.067)	(3.283)	(5.363)	(4.315)	(3.836)	(4.150)	(0.009)	(0.046)	(0.070)
Adj. R-squared	0.236	0.255	0.372	0.276	0.195	0.188	0.245	0.217	0.271
Shea's partial R^2	0.124								
F-test of excluded instruments	98.254***								
Kleibergen-Paap rank LM statistic	47.482***								
F test		239.695	239.695	239.695	239.695	239.695	239.695	239.695	239.695
Sargan test (p-value)		0.306	0.268	0.379	0.283	0.647	0.119	0.329	0.371

Note: This table reports the results of the two-stage least squares regression. In the first stage, ESG contracting (ESG_INC) is regressed on bank-level controls, macroeconomic controls, and three instruments, i.e., the one firm-year lag of the independent test variable (ESG_INC_{t-1}), the mean ESG_INC of the year ($ESG\_INC_{industry}$), and the annual mean level of ESG contracting in the country where the bank is headquartered ($ESG\_INC_{country}$). In the second stage, ESG performance (a) and ESG controversies (e) are regressed on the instrumented measures of ESG contracting and control variables. In columns (b) and (f), respectively, the environmental component of ESG performance and ESG controversies is used. In columns (c) and (g), respectively, the social component of ESG performance and ESG controversies is used. In columns (d) and (h), respectively, the governance component of ESG performance and ESG controversies is used. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

Table 10
Comparison of variables determining the use of ESG contracting.

Variable	Original sample Banks with ESG contracting	Banks without ESG contracting	Difference in means(t-stat)	Propensity score matched sample Banks with ESG contracting	Banks without ESG contracting	Difference in means(t-stat)	Reductionin bias (%)
EMIS	56.983	29.070	27.913***	56.983	54.986	1.997	81.2
			(0.000)			(0.263)	
RWA	0.553	0.658	−0.105***	0.553	0.562	−0.009	75.8
			(0.000)			(0.382)	
SIZE	19.283	17.711	1.572***	19.283	19.097	0.186	69.4
			(0.000)			(0.187)	
ROE	7.745	8.841	−1.096***	7.745	7.935	−0.190	85.7
			(0.000)			(0.586)	
LEV	246.992	200.852	46.140***	246.992	239.476	7.516*	66.3
			(0.000)			(0.064)	
GEND	24.625	15.863	8.762***	24.625	23.751	0.874*	78.5
			(0.000)			(0.052)	

Note: This table compares the mean values of the variables considered to determine the use of ESG contracting in the original and the matched samples. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. P-values are reported in parentheses beneath each difference in means.

America and RoW. This can be explained by considering that, in the last decade, ESG practices have been encouraged in Europe by both banking regulations and the evolution of many national corporate governance codes. In this context, it would be reasonable to expect that in European banks, which operate in a cultural and regulatory environment more sensitive to ESG issues than North America and the RoW, the impact of ESG contracting would be stronger both on ESG performance (Cohen et al., 2023) and ESG controversies (Aouadi and Marsat, 2018).

Therefore, SYS-GMM estimates are performed using these geographical areas separately. The results are reported in Table 12. They show that in all the subsamples, ESG compensation mechanisms raise both ESG performance (Table 12, Model 1) and ESG controversies (Table 12, Model 2). On the one hand, these findings suggest that the regional regulatory and cultural environment in which banks operate does not affect the effectiveness of managerial ESG incentives on ESG performance and ESG disputes. On the other hand, the results shown in Table 12 confirm the robustness of previous evidence reported in Table 6 across all three geographical subsamples.

Table 11
ESG performance and ESG controversies using matched banks.

Variable	Logit for the use of ESG contracting	ESG performance (ESG_P) (Model 1)	ESG controversies (ESG_C) (Model 2)
	(a)	(b)	(c)
ESG_INC		18.148***	−8.535***
		(1.272)	(1.662)
SIZE	0.098***	3.664***	−3.167***
	(0.020)	(0.333)	(0.525)
ROE	0.006**	−0.010	0.539***
	(0.003)	(0.082)	(0.139)
CINC		10.756	−0.710
		(0.402)	(6.301)
TIER1		0.142***	−0.124***
		(0.009)	(0.014)
BM		−12.066***	53.515***
		(3.977)	(7.914)
GDP		3.471	5.202
		(7.618)	(14.521)
EMIS	0.024***		
	(0.002)		
RWA	−1.237***		
	(0.285)		
LEV	−0.001***		
	(0.000)		
GEND	0.031***		
	(0.004)		
Constant	−0.630	−19.711***	95.593***
	(0.453)	(6.957)	(11.529)
Time dummies	YES	YES	YES
Country dummies	YES	YES	YES
N	4,659	1,418	1,418
Chi-2	552.682		
Pseudo R-squared	0.145		
Adj. R-squared		0.689	0.345

Note: This table reports regression results on the effect of ESG managerial incentives (ESG_INC) on ESG performance and ESG controversies using a propensity score-matched sample. In column (a), the adoption of ESG contracting is estimated using a probit regression and the full sample (4,656 observations). The propensity score is the estimated probability of the use of ESG incentives. Each bank with ESG contracting is matched with a bank without ESG contracting whose propensity score is the closest. In columns (b) and (c), this matched sample is used (2 x 709 = 1,418 observations). Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

Next, SYS-GMM models are estimated considering the Environmental pillar score (E_P), the Social pillar score (S_P), and the Governance pillar score (G_P), respectively, as dependent variables across Europe, North America, and RoW. Table A2 in the Appendix reports the results. A statistically significant positive relationship is found between ESG contracting and environmental, social, and governance performance (Model 3) in all the geographical areas investigated. These findings strongly support those reported in Table 7 and suggest that the regional regulatory and cultural environment in which banks operate does not affect the effectiveness of managerial ESG incentives on environmental, social, and governance performance, respectively.

Moreover, Table A3 in the Appendix reports the results of the estimations of Model 4, aiming to investigate the impact of ESG contracting on the number of environmental controversies (E_C), social controversies (S_C), and governance controversies (G_C) across Europe, North America, and RoW. Table A3 shows the existence of a statistically significant positive relationship between ESG contracting and the number of social controversies in all three geographical areas investigated, while no statistically significant relationship emerges between ESG contracting and environmental controversies. Again, these findings strongly support those reported in Table 7. However, Table A3 shows the existence of a positive and statistically significant relationship between ESG-linked incentives and the number of governance controversies in North America and RoW, but not in Europe. The findings in Table 8 relating to governance controversies are thus only partially confirmed. This evidence suggests that, unlike banks from North America and the RoW, European banks, which operate in a regulatory and cultural environment particularly sensitive to corporate governance issues (Agnese et al., 2022), implement ESG contracting, which, although does not limit ESG disputes, at least does not increase them.

Finally, two further analyses are conducted to enrich the robustness checks on the three subsamples divided by geographic area. First, Models 1 and 2 are run considering only banks from the European Union in the European subsample, thus excluding banks from the UK and Switzerland operating under different ESG regulatory environments. The analyses conducted on EU-based banks strongly confirm previous evidence on all European banks reported in Tables 12, A2, and A3. Second, the two-stage least squares (2sls) approach is employed to further investigate geographical robustness by using the three instruments mentioned above, i.e., the one

Table 12
ESG performance and ESG controversies: cross country analysis.

Variable	ESG performance (ESG_P) (Model 1)			ESG controversies (ESG_C)(Model 2)		
	Europe	*North America*	*RoW*	*Europe*	*North America*	*RoW*
ESG_P_{t-1}	0.043**	0.096*	0.072*			
	(0.022)	(0.066)	(0.044)			
ESG_C_{t-1}				0.041*	0.083**	0.076*
				(0.029)	(0.042)	(0.042)
ESG_INC	9.375***	10.651***	19.031***	−9.748**	−2.769***	−9.469***
	(1.932)	(1.510)	(1.834)	(4.165)	(0.221)	(3.213)
SIZE	6.506***	5.625***	2.340***	−6.216***	−2.874***	−0.315
	(0.764)	(0.289)	(0.244)	(1.091)	(0.388)	(0.310)
ROE	−0.022	0.102	0.292**	0.212**	0.115**	0.173*
	(0.039)	(0.081)	(0.137)	(0.121)	(0.058)	(0.094)
CINC	−2.716	−1.767	23.155***	−20.223	−26.470	−10.956***
	(9.592)	(4.367)	(6.806)	(18.881)	(25.874)	(4.242)
TIER1	46.481**	0.109***	26.085**	−3.762***	−0.052***	2.849
	(15.223)	(0.010)	(17.508)	(0.735)	(0.013)	(12.174)
BM	−14.628**	−6.131**	1.400	69.799***	31.083***	9.824*
	(8.500)	(3.796)	(6.540)	(12.558)	(5.230)	(5.212)
GDP	−2.182	6.370	−18.979	−2.225	11.147	0.579
	(16.083)	(10.735)	(16.378)	(19.160)	(17.088)	11.252
Constant	−63.058***	−54.638***	−11.751	166.537***	133.424***	104.845***
	(16.759)	(5.288)	(10.360)	(25.004)	(6.776)	(11.429)
Time dummies	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES
Sargan test	72.776	94.463	70.593	92.900	65.038	65.206
	(0.216)	(0.142)	(0.267)	(0.210)	(0.440)	(0.435)
Hansen test	72.742	77.782	59.141	64.611	57.207	69.011
	(0.212)	(0.115)	(0.649)	(0.455)	(0.714)	(0.312)
AR(1)	−4.306***	−6.364***	−4.674	−3.602***	−5.363***	−2.988***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AR(2)	−0.464	−2.775	−4.082	0.036	−1.120	−1.399
	(0.643)	(0.317)	(0.254)	(0.972)	(0.263)	(0.162)
Wald-Chi^2	388	1.935	229	311	202	254
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	395	995	685	395	995	685

Note: This table reports the results of dynamic panel estimation models with lagged dependent variables with ESG performance (Model 1) and ESG controversies (Model 2) as the dependent variables, respectively. The global sample is split into three subsamples: banks from Europe, North America, and RoW. The two-step SYS-GMM estimation method (Arellano and Bover, 1995) is used. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

bank-year lag of the independent test variable (ESG_INCt-1), the mean ESG_INC of the year (ESG_INCindustry) and the annual mean level of ESG contracting in the country where the bank is headquartered (ESG_INCcountry). These robustness analyses confirm previous results reported in Table 12 .[8]

4.4. Channel analysis and additional tests

4.4.1. Channel analysis

Thus far, the main results show that ESG contracting improves both ESG performance and ESG controversies in the banking sector. In this section, some channel analyses are performed to understand how the documented relationship depends on (i) the implementation of ESG strategies, (ii) the presence of ESG-sensitive boards of directors, and (iii) bank risk-taking. These analyses not only allow for a deeper understanding of the mechanisms through which ESG managerial compensation affects ESG performance and ESG disputes in banks but also support identification, as the main relationship is unlikely to exist if ESG contracting merely reflects unobserved economic forces (Alam et al., 2024).

First, previous studies show that ESG strategies play a key role in improving ESG performance (Azmi et al., 2021; Qin and Yang, 2022) and reducing ESG controversies (Agnese et al., 2023). Furthermore, banks' use of ESG contracting could encourage their future-oriented ESG engagement, thus signaling their commitment to follow long-term ESG strategies (Flammer et al., 2019; Tsang et al., 2021). Therefore, whether banks implement ESG strategies, the positive relationship between ESG contracting and ESG performance is expected to be more relevant. On the contrary, ESG strategies are expected to attenuate the role of ESG contracting in increasing ESG controversies. To assess these predictions, two measures of ESG strategies are used: (i) the adoption of a global ESG strategy (ESG_STR) and (ii) the adoption of a specific climate change & environmental strategy (C&E_STR). The adoption of a global ESG strategy

[8] The findings on these two geographical robustness are available upon request.

(ESG_STR) is proxied by the ESG CSR Strategy score extracted from ASSET4-Refinitiv Eikon. The score, ranging from 0 % (low) to 100 % (high), reflects a bank's practices to communicate that it integrates economic, social, and environmental dimensions into its day-to-day decision-making processes (themes such as ESG strategy as well as ESG reporting and transparency are covered). The adoption of a specific climate change & environmental strategy (C&E_STR) is proxied by the Climate change risk/opportunity score provided by ASSET4-Refinitiv Eikon. The score, ranging from 0 % (low) to 100 % (high), reflects the level of banks' engagement in developing new products/services to overcome the threats of climate change to their business model and strategies.

To empirically assess the moderating role of ESG strategies, the baseline regressions (1) and (2) are re-estimated by adding the interactions between ESG contracting (ESG_INC) and the proxies of ESG strategies (ESG_STR and C&E_STR). Panel A (Table 13) shows significantly positive coefficients of ESG_INCxESG_STR and ESG_INCxC&E_STR. Overall, these findings demonstrate that ESG strategies applied by banks amplify the positive relationship between ESG contracting and ESG performance but attenuate the negative effect of ESG contracting in improving ESG disputes. These results support the ESG strategies-based argument used in this study.

Second, the role of the board of directors' composition is explored. More specifically, this second channel analysis tests whether the presence of ESG-sensitive boards of directors affects, on the one hand, the relationship between ESG contracting and ESG performance and, on the other hand, the linkage between ESG contracting and ESG controversies. Previous literature suggests that firms with higher board gender composition, greater board independence, and sustainability committees tend to have better social and environmental performance (Biswas et al., 2018). Female directors, independent directors, and members of ESG committees are proven, in fact, to provide additional ESG sensitivity and expertise to boards useful to promote ESG policies and advise the management on strategic ESG practices (Hillman et al., 2000). In this context, the presence of ESG-sensitive boards of directors in banks is expected to enhance the positive relationship between ESG contracting and ESG performance and to limit the impact of ESG contracting in improving ESG controversies. To examine the above conjecture, three proxies for ESG-sensitive boards of directors are used: board gender diversity (GEND), board independence (IND), and the presence of the ESG committee (ESG_COM) obtained from ASSET4-Refinitiv Eikon (Biswas et al., 2018). The board gender diversity (GEND), ranging from 0 % to 100 %, is estimated by the number of female directors over the board size. The board independence (IND), ranging from 0 % to 100 %, is measured by the number of independent directors over the board size. The presence of the ESG committee (ESG_COM) is measured by a dummy variable, which takes the value 1 when the bank has an ESG committee or team responsible for decision-making on ESG strategy, and 0 otherwise. To analyze the moderating role of the presence of ESG-sensitive boards of directors, the baseline regressions (1) and (2) are re-estimated by adding the interactions between ESG contracting (ESG_INC) and the proxies of ESG-sensitive board of directors (GEND, IND, and ESG_COM). Panel B (Table 13) shows significantly positive coefficients of ESG_INCxGEND, ESG_INCxIND, and ESG_INCxESG COM. Overall, these results show that when bank boards of directors are characterized by a high sensitivity to ESG issues, ESG contracting is even more effective in improving ESG performance but less effective in increasing ESG controversies. These findings support the explanation based on boards' ESG sensitivity for the impact of ESG contracting on ESG performance and ESG controversies.

Third, another potential channel through which ESG managerial compensation can affect ESG performance and ESG controversies is bank risk-taking. Extant literature suggests that banks showing higher ESG performance are characterized by lower risk-taking (Chiaramonte et al., 2024). Further studies demonstrate that banks with fewer ESG controversies take less risk (Galletta and Mazzù, 2023). Considering that ESG incentives are supposed to signal the long-term orientation of the bank and discourage managerial short-termism (Tsang et al., 2021), when banks have lower risk-taking, the positive relationship between ESG contracting and ESG performance is expected to be more evident, while the positive linkage between ESG contracting and ESG disputes is expected to be less evident. Banks' risk-taking is captured by three variables (Acharya et al., 2011; Tsang et al., 2021) extracted from Refinitiv Eikon and Bankfocus: the volatility of bank stock returns (VOL), bank systematic risk (BETA), and the ratio between risk-weighted assets and total assets (RWA_TA). Panel C (Table 12) shows that the interactive coefficients are all negative and statistically significant at the conventional level. These results suggest, on the one hand, that the positive effect of ESG contracting on ESG performance is exacerbated for banks with lower risk-taking. On the other hand, these findings demonstrate that the positive effect of ESG contracting on ESG disputes is mitigated for banks with lower risk-taking. These results support the risk-based argument used in this study.

4.4.2. Additional analysis

An additional analysis is performed to enrich the results of the main analysis. Specifically, Models 1 and 2 are run with an additional variable extracted from ASSET4-Refinitiv Eikon: policy executive compensation ESG performance (ESG_POL). This dummy variable takes value 1 when the bank has a compensation policy oriented to non-financial outcomes, and 0 otherwise. The compensation policy includes remuneration for the CEO, executive directors, non-board executives, and other management bodies based on ESG or sustainability factors. If a bank uses ESG incentives and implements a specific policy on executive remuneration oriented to non-financial results, the definition of ESG compensations is expected to be more attentive, thereby making them more effective. Hence, it is useful to investigate not only whether ESG remuneration policies, *stand-alone*, are effective in improving ESG performance and containing ESG controversies but also whether their adoption affects the impact of ESG contracting on ESG performance and ESG disputes.

The additional variable policy executive compensation ESG performance (ESG_POL) is introduced into Models 1 and 2 at different stages: (a) without considering ESG compensation incentives (ESG_INC); (b) considering both ESG executive remuneration policies (ESG_POL) and ESG compensation incentives (ESG_INC); (c) considering ESG executive remuneration policies (ESG_POL), ESG compensation incentives (ESG_INC) and the interaction between the two variables (ESG_INC x ESG_POL). The results are reported in Table 14.

They show that the adoption of ESG executive remuneration policies by banks, both in the absence (Model 1, (a)) and in the presence (Model 1, (b)) of an effective implementation of ESG contracting, improves ESG performance. However, ESG executive remuneration policies and ESG compensation incentives do not exert a complementary effect in increasing bank ESG performance

Table 13
The channels through which ESG contracting affects ESG performance and ESG controversies.

Variable	ESG performance (ESG_P) (Model 1)			ESG controversies (ESG_C) (Model 2)		
	(1)	(2)	(3)	(1)	(2)	(3)
Panel A: the effect of ESG strategies						
ESG_INC	10.065***	11.263***		−5.248**	−4.671*	
	(0.000)	(0.000)		(0.019)	(0.079)	
ESG_STR	0.352***			0.099***		
	(0.000)			(0.000)		
ESG_INCxESG_STR	0.005***			0.350***		
	(0.000)			(0.000)		
C&E_STR		16.974***			6.822***	
		(0.000)			(0.000)	
ESG_INCxC&E_STR		2.414***			1.817***	
		(0.000)			(0.000)	
Bank controls	YES	YES		YES	YES	
Time dummies	YES	YES		YES	YES	
Country dummies	YES	YES		YES	YES	
Sargan test (p value)	0.126	0.278		0.893	0.884	
AR(1)	−8.358***	−8.873***		−7.662***	−7.351***	
	(0.000)	(0.000)		(0.000)	(0.000)	
AR(2)	−5.406	−4.117		−1.419	−0.995	
	(0.137)	(0.118)		(0.156)	(0.320)	
Wald-Chi^2	3.202	2.113		348	311	
(p-value)	(0.000)	(0.000)		(0.000)	(0.000)	
N	2,207	2,207		2,207	2,207	
Panel B: the effect of ESG-sensitive boards of directors						
ESG_INC	9.811***	12.940***	12.718***	−4.130***	−2.448***	−4.214***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GEND	0.519***			0.283		
	(0.000)			(0.258)		
ESG_INCxGEND	0.055***			0.622***		
	(0.000)			(0.000)		
IND		0.145***			0.123	
		(0.000)			(0.147)	
ESG_INCxIND		0.017***			0.228***	
		(0.000)			(0.006)	
ESG_COM			17.788***			4.335***
			(0.000)			(0.003)
ESG_INCxESG_COM			1.099***			0.309***
			(0.000)			(0.000)
Bank controls	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES
Sargan test (p value)	0.196	0.161	0.113	0.748	0.863	0.932
AR(1)	−8.221***	−8.344***	−8.169***	−7.698***	−7.577***	−7.511***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AR(2)	−5.609	−5.056	−4.764	−2.585	−1.368	−2.013
	(0.158)	(0.144)	(0.127)	(0.107)	(0.171)	(0.142)
Wald-Chi^2	2.322	1.559	2.569	345	279	302
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	2,207	2,207	2,207	2,207	2,207	2,207
Panel C: the effect of bank risk-taking						
ESG_INC	19.119***	17.489***	19.977***	−15.803***	−16.525***	−48.726***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)
VOL	−12.692			−10.868*		
	(0.248)			(0.081)		
ESG_INCxVOL	−4.688***			−0.030*		
	(0.000)			(0.050)		
BETA		−3.726***			−1.558	
		(0.005)			(0.118)	
ESG_INCxBETA		−1.726***			−0.744**	
		(0.000)			(0.032)	
RWA_TA			−19.687***			−17.160***
			(0.000)			(0.000)
ESG_INCxRWA_TA			−9.514*			−6.429***
			(0.066)			(0.000)
Bank controls	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES

(*continued on next page*)

Table 13 (*continued*)

Variable	ESG performance (ESG_P) (Model 1)			ESG controversies (ESG_C) (Model 2)		
	(1)	(2)	(3)	(1)	(2)	(3)
Sargan test (p value)	0.352	0.467	0.251	0.917	0.902	0.774
AR(1)	−8.291***	−8.447***	−8.126***	−7.604***	−7.615***	−7.381***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AR(2)	−5.199	−5.236	−5.303	−1.103	−1.742	−2.118
	(0.114)	(0.109)	(0.118)	(0.124)	(0.131)	(0.142)
Wald-Chi^2	1.497	1.453	1.914	296	298	404
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	2,207	2,207	2,207	2,207	2,207	2,207

Note: This table reports the results of dynamic panel estimation models with lagged dependent variables with ESG performance (Model 1) and ESG controversies (Model 2) as the dependent variables, respectively. The moderating role of ESG strategies (Panel A), ESG-sensitive board of directors (Panel B), and bank risk-taking (Panel C) in Explaining how ESG contracting affects ESG performance (Model 1) and ESG controversies (Model 2) is explored. The dependent variables are ESG strategy (ESG_STR), climate change & environmental strategy (C&E_STR), board gender diversity (GEND), board independence (IND), the presence of the ESG committee (ESG_COM), the volatility of bank stock returns (VOL), bank systematic risk (BETA), and the ratio between risk-weighted assets and total assets (RWA_TA). The two-step SYS-GMM estimation method (Arellano and Bover, 1995) is used. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

Table 14
Policies on ESG executive compensation and ESG-linked managerial incentives: estimation results.

Variable	ESG performance (ESG_P) (Model 1)			ESG controversies (ESG_C) (Model 2)		
	(a)	(b)	(c)	(a)	(b)	(c)
ESG_P_{t-1}	0.025*	0.013*	0.013*			
	(−0.004)	(0.002)	(0.003)			
ESG_C_{t-1}				0.101*	0.101*	0.014*
				(0.008)	(0.007)	(0.002)
ESG_INC		12.260***	13.393***		−12.218***	−5.055***
		(1.097)	(1.971)		(2.202)	(2.271)
ESG_POL	12.775***	9.165***	9.537***	−12.597***	−8.630***	−6.126***
	(0.944)	(0.969)	(1.134)	(1.546)	(1.466)	(1.583)
ESG_INC x ESG_POL			−1.955			−12.642***
			(2.391)			(3.877)
SIZE	3.692***	3.623***	3.624***	−1.286***	−1.180***	−1.168***
	(0.183)	(0.170)	(0.170)	(0.206)	(0.204)	(0.201)
ROE	0.000	−0.008	−0.008	0.331**	0.350**	0.337**
	(0.059)	(0.063)	(0.063)	(0.164)	(0.164)	(0.159)
CINC	3.173	0.787	0.901	−6.636*	−5.664	−4.974
	(3.897)	(3.669)	(3.665)	(3.597)	(3.580)	(3.578)
TIER1	0.195***	0.191***	0.191***	−0.190***	−0.086***	−0.080***
	(0.014)	(0.014)	(0.014)	(0.028)	(0.029)	(0.028)
BM	−6.951**	−5.582*	−5.603*	40.048***	39.444***	38.277***
	(3.101)	(3.039)	(3.046)	(6.385)	(6.397)	(6.378)
GDP	−7.410	−8.922	−8.808	3.024	2.580	2.539
	(6.876)	(6.415)	(6.410)	(8.492)	(8.496)	(8.552)
Constant	−20.657***	−20.061***	−20.153***	89.709***	88.505***	88.283***
	(3.877)	(3.695)	(3.693)	(6.796)	(6.805)	(6.738)
Time dummies	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES
Sargan test	97.841	98.612	98.623	66.441	65.581	67.390
	(0.410)	(0.361)	(0.350)	(0.393)	(0.422)	(0.362)
Hansen test	63.054	63.737	64.159	61.409	64.353	66.588
	(0.510)	(0.486)	(0.471)	(0.569)	(0.464)	(0.388)
AR(1)	−9.007***	−8.542***	−8.528***	−6.993***	−6.878***	−6.799***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AR(2)	−4.873	−5.210	−5.168	−1.645	−1.664	−1.571
	(0.121)	(0.154)	(0.102)	(0.101)	(0.096)	(0.116)
Wald-Chi^2	2.253	2.881	2.886	198	208	210
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	2,013	2,013	2,013	2,013	2,013	2,013

Note: This table reports the results of dynamic panel estimation models with lagged dependent variables with ESG performance (Model 1) and ESG controversies (Model 2) as the dependent variables, respectively. The two-step SYS-GMM estimation method (Arellano and Bover, 1995) is used. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

since the coefficient of the interacted variable ESG_INC x ESG_POL is not statistically significant (Model 1, (c)). Therefore, ESG executive remuneration policies appear to be a useful tool for improving ESG performance in banks, but they do not seem to be effective in increasing the positive effect that ESG compensation has on ESG performance.

Moreover, Table 14 shows that the adoption of ESG executive remuneration policies by banks, both in the absence (Model 2, (a)) and in the presence (Model 2, (b)) of effective adoption of ESG-linked managerial incentives, significantly contributes to increase bank involvement in ESG disputes. The coefficient of the interacted variable ESG_INC x ESG_POL is negative and statistically significant (Model 2, (c)). This means that ESG executive remuneration policies and ESG compensation incentives exert a complementary effect in increasing bank ESG controversies. This evidence exacerbates previous findings on the linkage between ESG contracting and ESG disputes shown in Table 6 (Model 2). ESG managerial incentives, in fact, also when implemented together with ESG executive remuneration policies, continue to improve bank ESG controversies, and their combined interaction amplifies this effect.

Overall, these results reported in Table 14 support the findings shown in Table 6 and suggest that not only the use of ESG contracting but also the use of ESG executive remuneration policies might be more a question of window dressing than a real attempt to meet stakeholder interests in the banking sector.

5. Conclusions

Recognizing that ESG-linked managerial incentives are an important tool to drive ESG goals, the EBA (2021) and some international institutional investors have recently advised banks to integrate ESG factors into their executive compensation systems. However, it is unclear whether ESG contracting is an effective governance tool and whether it can really drive corporate strategy to meet stakeholder interests. The extant theoretical and empirical literature is divided on this issue.

This paper investigates for the first time the effectiveness of ESG managerial incentives in affecting ESG performance and ESG controversies in the banking sector. Using a sample of 595 global banks from 43 countries in the period 2010–2021, it shows that bank ESG contracting improves ESG performance, but raises the number of ESG disputes. The findings are confirmed when banks from Europe, North America, and RoW are evaluated separately and when environmental, social, and governance outcomes are considered separately.

Given that ESG performance is disclosed by bank executives and is thus under their control, while ESG controversies are disseminated by the media, the results suggest that the adoption of ESG contracting in the banking sector might so far have been more symbolic than substantial. It appears, as previously suggested by Walker (2022), Bebchuk and Tallarita (2023), and Liu et al. (2024), that ESG-linked management compensation could nowadays be a sort of greenwashing for banks, an attempt at window-dressing rather than a genuine attempt to meet stakeholder interests. ESG contracting seems, therefore, to constitute a new soft "money for jam" style of targets (Maas, 2018; Barontini and Hill, 2023). This does not, of course, mean that ESG contracting in the banking sector has no value at all. As suggested by Maas (2018), banks can use ESG-linked management compensation systems to signal stakeholders their attention to these issues and internally to raise awareness and motivate managers in this field.

The study has interesting implications for banks, market participants, and financial regulators.

From the managerial point of view, it suggests that banks may be using ESG contracting linking managerial incentives to ESG performance, which can be manipulated by the bank, and not linking it to ESG risks, which cannot. Therefore, the most important practical implication of the study is that banks should better identify their ESG compensation targets to incentivize the mitigation of their ESG risks and not only the improvements in their ESG performance. In fact, it could be useful to consider ESG risk-adjusted indicators among other standardized and measurable ESG metrics to limit the number of ESG disputes. This would help make ESG contracting an effective governance tool.

From the market participants' point of view, by shedding light on the potential dark side of ESG-linked remuneration, our results are interesting for investors who are sensitive to ESG issues. These investors should exercise greater vigilance regarding banks adopting ESG contracting, which might be more interested in window dressing rather than in really meeting stakeholder interests.

From a policy point of view, this study suggests that financial regulators should be cautious when encouraging banks to adopt ESG-based managerial incentives. New regulations might usefully link bank management compensation to material, clear, and risk-adjusted ESG targets, which could be reviewable by outsiders, as argued by Bebchuk and Tallarita (2023). On this point, the United Nations Principles for Responsible Investment (2021), in supporting a proposal by the EU to include ESG issues into executive pay under the Sustainable Corporate Governance initiative, recommend that ESG contracting be appropriately structured. The principles specifically suggest that ESG targets should be objective, long-term oriented, neither too easily achievable nor too complex, and be clearly disclosed. It is likely that targets showing all these characteristics could help reduce the number of ESG controversies and improve ESG performance in the banking sector.

This study shows certain limitations. First, there is potential for testing whether ESG managerial incentives adopted by banks align or compete with stakeholder interests by considering different kinds of ESG contracting. Specifically, future scholars could investigate how the degree of substantiveness of ESG contracting affects non-financial performance. Other researchers could study whether short-term and long-term ESG managerial incentives exert a different impact on ESG performance and ESG disputes and how ESG outcomes are influenced by the adoption of ESG-linked remunerations aligned to various non-financial metrics (e.g., environmental, customer, employee, supplier). Second, there is room for improvement in measuring bank ESG performance. The results on the relationship between ESG contracting and ESG performance may depend on the measure of ESG performance used. The paper proxies ESG performance by the score provided by ASSET4-Refinitiv Eikon. This score is based on bank self-reported information, which is not externally verified. However, external ESG ratings, provided by third-party rating institutions, nowadays adopt different and unofficial approaches to measure ESG performance, which may not comprehensively reflect all aspects of banks' ESG practices. Therefore, future

studies are needed to refine bank ESG performance with more objective data. Third, there is a need for more extensive research on ESG disputes in the banking sector. Specifically, future scholars could investigate how ESG contracting affects different kinds of ESG controversies in the banking sector.

CRediT authorship contribution statement

Maria Gaia Soana: Writing – review & editing, Writing – original draft, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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

The authors do not have permission to share data.

Acknowledgements

The author thanks Jonathan A. Batten and Peter G. Szilagyi (the editors), as well as three anonymous reviewers, for their constructive comments. I am also grateful for the helpful suggestions received from participants at the 2023 International Conference in Banking and Financial Studies (ICBFS) on earlier drafts of this paper.

Appendix

.

Table A1
ESG performance and ESG controversies: robustness test.

Variable	ESG performance (ESG_P) (Model 1)	ESG controversies (ESG_C) (Model 2)
	(a)	(b)
ESG_P_{t-1}	0.895***	
	(0.009)	
ESG_C_{t-1}		0.646***
		(0.025)
ESG_INC	2.842***	−5.614***
	(0.332)	(1.293)
SIZE	0.384***	−0.471***
	(0.059)	(0.147)
ROE	−0.006	0.108***
	(0.018)	(0.032)
CINC	−0.512	−5.705**
	(0.921)	(2.746)
TIER1	0.020***	0.116***
	(0.004)	(0.014)
BM	1.146	21.061***
	(0.990)	(3.722)
GDP	2.869	15.778
	(2.639)	(9.254)
Constant	−1.238	27.169***
	(1.267)	(4.244)
Year FE	YES	YES
Country FE	YES	YES
Adj. R-squared	0.933	0.634
N	2,207	2,207

Note: This table reports the results of fixed-effect regressions on panel data, with ESG performance (Model 1) and ESG controversies (Model 2) as the dependent variables. Clustered heteroscedasticity standard errors at the bank level account for serial correlation in parentheses. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

Table A2
Environmental, social, and governance performance: cross country analysis.

Variable	Environmental performance (E_P)			Social performance (S_P)			Governance performance (G_P)		
	Europe	North America	RoW	Europe	North America	RoW	Europe	North America	RoW
E_P_{t-1}	−0.120***	−0.021*	0.055						
	(0.042)	(0.002)	(0.068)						
S_P_{t-1}				−0.054*	−0.041	−0.036*			
				(0.003)	(0.031)	(0.004)			
G_P_{t-1}							0.024*	0.055*	0.039*
							(0.004)	(0.005)	(0.003)
ESG_INC	0.466*	12.938***	19.333***	6.441***	6.445***	17.523***	17.642***	13.243***	21.460***
	(0.283)	(2.125)	(2.669)	(2.187)	(1.572)	(2.461)	(1.884)	(2.326)	(2.649)
SIZE	11.110***	7.083***	2.715***	6.986***	6.726***	2.634***	3.652***	3.564***	1.429***
	(0.898)	(0.418)	(0.460)	(0.991)	(0.334)	(0.236)	(0.670)	(0.450)	(0.290)
ROE	−0.145*	0.010	0.328	−0.022	0.175*	0.259*	−0.007	0.040	0.273*
	(0.078)	(0.095)	(0.209)	(0.041)	(0.092)	(0.156)	(0.045)	(0.153)	(0.163)
CINC	1.266	16.941***	31.113***	−6.770	9.482*	36.598***	0.548	–32.079***	7.627
	(9.582)	(5.856)	(10.065)	(11.495)	(5.234)	(8.032)	(8.564)	(7.796)	(6.407)
TIER1	22.593	0.043*	−56.887	8.858	−0.084***	28.583	123.718***	−0.226***	−72.486***
	(42.298)	(0.023)	(35.964)	(32.278)	(0.010)	(27.627)	(26.542)	(0.038)	(23.970)
BM	−10.559	−25.706***	−24.387**	−15.853	−10.507**	15.092**	−11.829	21.391***	−12.862
	(11.793)	(5.007)	(9.988)	(9.899)	(4.748)	(6.959)	(7.438)	(6.261)	(9.037)
GDP	−27.849	−27.243	−25.130*	4.620	5.100	−20.421**	−12.663	−0.928	−28.094***
	(17.545)	(21.040)	(13.723)	(16.602)	(12.523)	(10.166)	(14.155)	(16.256)	(10.707)
Constant	−138.636***	−85.290***	−6.429	−61.996***	−66.760***	–32.712***	−29.418**	−21.696**	14.481
	(20.979)	(7.821)	(18.653)	(22.999)	(7.114)	(11.517)	(14.941)	(9.514)	(10.597)
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sargan test	96.082	76.682	73.422	78.539	95.561	71.501	77.506	90.994	83.233
	(0.128)	(0.133)	(0.197)	(0.104)	(0.064)	(0.243)	(0.120)	(0.149)	(0.153)
Hansen test	56.434	65.673	65.368	67.493	76.576	62.993	64.34	78.412	62.018
	(0.738)	(0.419)	(0.429)	(0.359)	(0.135)	(0.512)	(0.465)	(0.106)	(0.547)
AR(1)	−3.909***	−5.155***	−4.589***	−4.405***	−5.711***	−4.547***	−3.267***	−7.242***	−4.932***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
AR(2)	0.497	−2.893	−1.331	−0.985	−1.361	−4.135	−1.155	−1.998	−3.360
	(0.619)	(0.381)	(0.183)	(0.325)	(0.174)	(0.092)	(0.248)	(0.457)	(0.121)
Wald-Chi^2	439	712	118	309	225	232	284	129	112
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	395	995	685	395	995	685	395	995	685

Note: This table reports the results of dynamic panel estimation models with lagged dependent variables and environmental, social, and governance performance (Model 3) as the dependent variables. The global sample is split into three subsamples: banks from Europe, North America, and RoW. The two-step SYS-GMM estimation method (Arellano and Bover, 1995) is used. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

Table A3
Environmental, social, and governance controversies: cross country analysis.

Variable	Environmental controversies (E_C)			Social controversies (S_C)			Governance controversies (G_C)		
	Europe	North America	RoW	Europe	North America	RoW	Europe	North America	RoW
E_C_{t-1}	−0.029*	−0.050*	0.000						
	(0.008)	(0.009)	(0.011)						
S_C_{t-1}				0.194**	−0.058***	−0.020			
				(0.083)	(0.021)	(0.051)			
G_C_{t-1}							0.212**	−0.029**	0.029
							(0.099)	(0.013)	(0.049)
ESG_INC	0.034	0.014	0.000	0.075**	0.099***	0.150***	0.012	0.042*	0.053**
	(0.115)	(0.009)	(0.011)	(0.034)	(0.034)	(0.037)	(0.023)	(0.021)	(0.022)
SIZE	0.007***	0.002*	0.002***	0.107***	0.044***	0.009*	0.038**	0.017***	0.000
	(0.002)	(0.001)	(0.001)	(0.022)	(0.006)	(0.005)	(0.015)	(0.003)	(0.002)
ROE	0.000	0.000	−0.001**	−0.003*	0.000	0.000	−0.001	0.000	0.001
	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)
CINC	−0.041*	0.005	0.004	0.027	0.317***	0.182*	−0.043	0.116**	0.053
	(0.023)	(0.018)	(0.013)	(0.123)	(0.102)	(0.097)	(0.081)	(0.051)	(0.045)

(*continued on next page*)

Table A3 (*continued*)

Variable	Environmental controversies (E_C)			Social controversies (S_C)			Governance controversies (G_C)		
	Europe	North America	RoW	Europe	North America	RoW	Europe	North America	RoW
TIER1	−0.017	0.000	0.125*	−0.414	0.001***	−0.700	−0.095	0.001***	0.054
	(0.046)	(0.000)	(0.064)	(0.550)	(0.000)	(0.437)	(0.340)	(0.000)	(0.163)
BM	−0.046*	−0.018**	−0.053*	−0.527***	−0.414***	−0.204*	−0.137	−0.151***	0.058*
	(0.024)	(0.009)	(0.028)	(0.185)	(0.089)	(0.109)	(0.170)	(0.053)	(0.034)
GDP	0.121*	0.121	0.013	0.304*	0.031	0.225	0.071	−0.014	0.104
	(0.065)	(0.119)	(0.038)	(0.169)	(0.186)	(0.188)	(0.082)	(0.141)	(0.076)
Constant	−0.087*	−0.028	−0.016	−1.395***	−0.422***	0.085	−0.544*	−0.179***	−0.055
	(0.050)	(0.021)	(0.025)	(0.423)	(0.112)	(0.176)	(0.304)	(0.051)	(0.096)
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sargan test	2.322	2.142	14.565	127.089	51.626	83.589	125.436	17.666	49.113
	(0.803)	(0.999)	(0.090)	(0.113)	(0.798)	(0.128)	(0.154)	(0.999)	(0.762)
Hansen test	0.361	0.851	3.154	36.661	45.725	59.173	24.734	12.348	18.703
	(0.996)	(1.000)	(0.998)	(0.998)	(0.928)	(0.648)	(0.998)	(0.999)	(0.997)
AR(1)	−1.449**	−1.370**	−2.016**	−3.432***	−5.228***	−4.817***	−2.943***	−4.744***	−2.884***
	(0.023)	(0.041)	(0.044)	(0.001)	(0.000)	(0.000)	(0.003)	(0.000)	(0.004)
AR(2)	1.373	0.255	−0.999	−0.124	−0.408	−0.398	−0.827	−0.675	−1.544
	(0.170)	(0.799)	(0.317)	(0.901)	(0.683)	(0.691)	(0.408)	(0.450)	(0.128)
Wald-Chi^2	251	178	137	372	147	135	197	129	111
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	517	1,001	691	517	1,001	691	517	1,001	691

Note: This table reports the results of dynamic panel estimation models with lagged dependent variables and environmental, social, and governance controversies (Model 4) as the dependent variables, respectively. The global sample is split into three subsamples: banks from Europe, North America, and RoW. The two-step SYS-GMM estimation method (Arellano and Bover, 1995) is used. Financial variables are winsorized at the 1 % and 99 % levels to mitigate the influence of outliers. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ denote significant levels. Standard errors are reported below the coefficients. Definitions of the variables are shown in Table 1.

References

Acharya, V.V., Amihud, Y., Litov, L., 2011. Creditor rights and corporate risk-taking. Journal of Financial Economics 102 (1), 150–166.

Aggarwal, R., Erel, I., Ferreira, M., Matos, P., 2011. Does governance travel around the world? Evidence from institutional investors. Journal of Financial Economics 100, 154–181.

Agnese, P., Battaglia, F., Busato, F., Taddeo, S., 2023. ESG controversies and governance: Evidence from the banking industry. Finance Research Letters 53, 103397.

Agnese, P., Cerciello, M., Oriani, R., Taddeo, S., 2024. ESG controversies and profitability in the European banking sector. Finance Research Letters 61, 105042.

Alam, N., Boubaker, S., Chen, X.C., Hasan, M.M., 2024. Brand capital and debt choice. International Review of Financial Analysis 93, 103160.

Anderson, C.W., Becher, D., Campbell, T., 2004. Bank mergers, the market for bank CEOs, and managerial incentives. Journal of Financial Intermediation 13 (1), 6–27.

Anginer, D., Demirguc-Kunt, A., Huizinga, H., Ma, K., 2018. Corporate governance of banks and financial stability. Journal of Financial Economics 130 (2), 327–346.

Aouadi, A., Marsat, S., 2018. Do ESG controversies matter for firm value? Evidence from international data. Journal of Business Ethics 151 (4), 1027–1047.

Arellano, M., Bover, O., 1995. Another look at the instrumental variable estimation of error-components models. Journal of Econometrics 68 (1), 29–51.

Armstrong, C.S., Guay, W.R., Weber, J.P., 2010. The role of information and financial reporting in corporate governance and debt contracting. Journal of Accounting and Economics 50 (2), 179–234.

Azmi, W., Hassan, M.K., Houston, R., Karim, M.S., 2021. ESG activities and banking performance: International evidence from emerging economies. Journal of International Financial Markets, Institutions & Money 70, 101277.

Barontini, R., Hill, J.G., 2023. Sustainability and executive compensation. European Corporate Governance Institute - Law Working Paper No. 747/2023.

Basel Committee on Banking Supervision, July 2015. 2015. Corporate governance principles for banks, Basel https://www.bis.org/bcbs/publ/d328.htm.

Bebchuk, L.A., Tallarita, R., 2023. The perils and questionable promise of ESG-based compensation. Journal of Corporation Law 48 (1), 37–75.

Beltratti, A., Stulz, R.M., 2012. The credit crisis around the globe: why did some banks perform better? Journal of Financial Economics 105 (1), 1–17.

Birindelli, G., Dell'Atti, S., Iannuzzi, A.P., Savioli, M., 2018. Composition and Activity of the Board of Directors: Impact on ESG Performance in the Banking System. Sustainability 10, 4699.

Biswas, P.K., Mansi, M., Pandey, R., 2018. Board composition, sustainability committee and corporate social and environmental performance in Australia. Pacific Accounting Review 30 (4), 517–540.

Botosan, C.A., 2006. Disclosure and the cost of capital: what do we know? Accounting and Business Research 36 (1), 31–40.

Boubaker, S., Nguyen, P., Rouatbi, W., 2016. Multiple large shareholders and corporate risk-taking: evidence from French family firms. European Financial Management 22 (4), 697–745.

Bouten, L., Cho, C.H., Michelon, G., Roberts, R.W., 2017. CSR performance proxies in large-sample studies: 'Umbrella advocates', construct clarity and the 'validity police'. In: Working paper: IESEG School of Management. York University, University of Bristol, and University of Central Florida.

Branco, M.C., Rodrigues, L.L., 2008. Social responsibility disclosure: a study of proxies for the public visibility of Portuguese banks. The British Accounting Review 40 (2), 161–181.

Cai, Y., Jo, H., Pan, C., 2012. Doing well while doing bad? CSR in controversial industry sectors. Journal of Business Ethics 108 (4), 467–480.

Central Bank of Malaysia, 2021. Climate Change and Principle-based Taxonomy. https://www.bnm.gov.my/documents/20124/938039/Climate+Change+and+Principle-based+Taxonomy.pdf.

Chen, J., Keasey, K., Mascia, D.V., Ta, H., 2024. Stakeholder-oriented Incentives in Managerial Compensation and Corporate Risk-taking. Available at. https://ssrn.com/abstract=4705153.

Cheng, B., Ioannou, I., Serafeim, G., 2014. Corporate social responsibility and access to finance. Strategic Management Journal 35 (1), 1–23.

Chiaramonte, L., Dreassi, A., Goodell, J.W., Paltrinieri, A., Piserà, S., 2024. Banks' environmental policies and banks' financial stability. Journal of International Financial Markets, Institutions and Money 91, 101927.

Cicchiello, A.F., Cotugno, M., Foroni, C., 2023. Does competition affect ESG controversies? Evidence from the banking industry. *Finance Research Letters* 55(B), 103972.
Cohen, S., Kadach, I., Ormazabal, G., Reichelstein, S., 2023. Executive compensation tied to ESG performance: international evidence. Journal of Accounting Research 61 (3), 691–978.
European Commission (2021). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions - Strategy for Financing the Transition to a Sustainable Economy. COM/2021/390 final. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0390.
Basel Committee on Banking Supervision (BCBS), 2022. Basel Committee on Banking Supervision Principles for the effective management and supervision of climate-related financial risks. https://www.bis.org/bcbs/publ/d532.pdf.
El Ghoul, S., Guedhami, O., Kwok, C.C., Mishra, D.R., 2011. Does corporate social responsibility affect the cost of capital? Journal of Banking & Finance 35 (9), 2388–2406.
European Banking Authority (EBA), 2021. Report on management and supervision of ESG risks for credit institutions and investment firms. https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2021/1015656/EBA%20Report%20on%20ESG%20risks%20management%20and%20supervision.pdf.
European Central Bank, 2021. The state of climate and environmental risk management in the banking sector. Report on the Supervisory Review of banks' Approaches to Manage Climate and Environmental Risks Frankfurt am. Germany Main. https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.202111guideonclimate-relatedandenvironmentalrisks~4b25454055.en.pdf.
European Central Bank, 2020. Guide on climate-related and environmental risks. Frankfurt am Main, Germany. https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr201127~5642b6e68d.en.html.
European Central Bank, 2021a. Opinion of the European Central Bank of 7 September 2021 on a proposal for a directive amending Directive 2013/34/EU, Directive 2004/109/EC, Directive2006/43/EC and Regulation, EU No 537/2014, as regards corporate sustainability reporting. ECB. CON/2021/27. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021AB0027.
Fahlenbrach, R., Stulz, R.M., 2011. Bank CEO incentives and the credit crisis. Journal of Financial Economics 99, 11–26.
FED, 2022. Principles for climate-related financial risk management for large financial institutions, https://www.govinfo.gov/content/pkg/FR-2022-12-08/pdf/2022-26648.pdf.
Financial stability Board, 2015. Proposal for a disclosure task force on climate-related risks. https://www.fsb.org/wp-content/uploads/Disclosure-task-force-on-climate-related-risks.pdf.
Finger, M., Gavious, I., Manos, R., 2018. Environmental risk management and financial performance in the banking industry: a cross-country comparison. Journal of International Financial Markets, Institutions and Money 52, 240–261.
Flammer, C., Hong, B., Minor, D., 2019. Corporate governance and the rise of integrating corporate social responsibility criteria in executive compensation: Effectiveness and implications for firm outcomes. Strategic Management Journal 40, 1097–1122.
Francis, B., Gupta, A., Hasan, I., 2015. Impact of compensation structure and managerial incentives on bank risk taking. European Journal of Operational Research 242 (2), 651–676.
Galletta, S., Goodell, J.W., Mazzù, S., Paltrinieri, A., 2023. Bank reputation and operational risk: The impact of ESG. Finance Research Letters 51, 103494.
Galletta, S., Mazzù, S., 2023. ESG controversies and bank risk taking. Business Strategy and the Environment 32 (1), 274–288.
Galletta, S., Mazzù, S., Naciti, V., 2021. Bank's business strategy and environmental effectiveness: the monitoring role of the board of directors and the managerial incentives. Business Strategy and the Environment 30, 2656–2670.
Galletta, S., Mazzù, S., Naciti, V., 2022. A bibliometric analysis of ESG performance in the banking industry: From the current status to future directions. Research in International Business and Finance 62, 101684.
Gao, N., Jiang, W., Jin, J., 2024. Unravelling investors' diverging responses to U.S. firms' global ESG incidents. Journal of International Financial Markets, Institutions and Money 91, 101906.
Gillan, S.L., Koch, A., Starks, L.T., 2021. Firms and social responsibility: A review of ESG and CSR research in corporate finance. Journal of Corporate Finance 66, 101889.
Haque, F., Ntim, C.G., 2020. Executive Compensation, Sustainable Compensation Policy, Carbon Performance and Market Value. British Journal of Management 31 (3), 525–546.
Hillman, A.J., Cannella, A.A.J., Paetzold, R.L., 2000. The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change. Journal of Management Studies 37 (2), 235–255.
Iannuzzi, A.P., Dell'Atti, S., D'Apolito, E., Galletta, S., 2023. Nomination committee characteristics and exposure to environmental, social and governance (ESG) controversies: evidence from European global systemically important banks. Corporate Governance 23 (6), 1314–1338.
Ikram, A., Li, Z.F., Minor, D., 2019. CSR-contingent executive compensation contracts. Journal of Banking and Finance 105655.
Ittner, C.D., Larcker, D.F., Rajan, M.V., 1997. The choice of performance measures in annual bonus contracts. Accounting Review 72 (2), 231–255.
Khenissi, M., Jahmane, A., Hofaidhllaoui, M., 2022. Does the introduction of CSR criteria into CEO incentive pay reduce their earnings management? The case of companies listed in the SBF 120. Finance Research Letters 48, 102880.
Kleibergen, F., Paap, R., 2006. Generalized reduced rank tests using the singular value decomposition. Journal of Econometrics 133, 97–126.
Köhler, M., 2015. Which banks are more risky? The impact of business models on bank stability. Journal of Financial Stability 16, 195–212.
Kolbel, J.F., Busch, T., Jancso, L.M., 2017. How media coverage of corporate social irresponsibility increases financial risk. Strategic Management Journal 38 (11), 2266–2284.
Li, Z.F., Thibodeau, C., 2019. CSR-contingent executive compensation incentive and earnings management. Sustainability 11 (12), 3421.
Liu, S., Wang, K.T., Walpola, S., 2023. Female board representation and the adoption of corporate social responsibility criteria in executive compensation contracts: International evidence. Journal of International Financial Markets, Institutions and Money 82, 101685.
Liu, S., Wang, K.T., Walpola, S., Zhu, N.Z., 2024. CSR contracting and stock price crash risk: International evidence. Journal of International Financial Markets, Institutions and Money 93, 101999.
Lu, L., 2023. ESG-based remuneration in the wave of sustainability. Journal of Corporate Law Studies 23 (1), 297–339.
Ma, R., Ji, Q., Zhai, P., Yang, R., 2022. Environmental violations, refinancing risk, and the corporate bond cost in China. Journal of International Financial Management and Accounting 33 (3), 480–504.
Maas, K., 2018. Do corporate social performance targets in executive compensation contribute to corporate social performance? Journal of Business Ethics 148, 573–585.
Mehran, H., Morrison, A., Shapiro, J., 2011. Corporate governance and banks: What have we learned from the financial crisis? Federal Reserve Bank of New York, In Staff report. Available at: https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr502.pdf%3B.
Mitton, T., 2024. Economic significance in corporate finance. Review of Corporate Finance Studies 13 (1), 38–79.
Monetary Authority of Singapore, 2020. Guidelines on Environmental Risk Management (Banks). https://www.mas.gov.sg/-/media/MAS/Regulations-and-Financial-Stability/Regulations-Guidance-and-Licensing/Commercial-Banks/Regulations-Guidance-and-Licensing/Guidelines/Guidelines-on-Environmental-Risk—Banks/Guidelines-on-Environmental-Risk-Management-for-Banks.pdf.
Ongena, S., Savaşer, T., Ciamarra, E.S., 2022. CEO incentives and bank risk over the business cycle. Journal of Banking & Finance 138, 106460.
Palmieri, E., Ferilli, G.B., Stefanelli, V., Geretto, E.F., Polato, M., 2023. Assessing the influence of ESG score, industry, and stock index on firm default risk: A sustainable bank lending perspective. Finance Research Letters 57, 104274.
Palmieri, E., Ferilli, G.B., Altunbas, Y., Stefanelli, V., Geretto, E.F., 2024. Business model and ESG pillars: The impacts on banking default risk. International Review of Financial Analysis 91, 102978.

Pinnuck, M., Ranasinghe, A., Soderstrom, N., Zhou, J., 2021. Restatement of CSR reports: frequency, magnitude, and determinants. Contemporary Accounting Research 38 (3), 2376–2416.
Potter, B., Soderstrom, N., 2017. Exploring the challenges of broadening accounting reports: Insights from research. In: Hitt, M.A., Jackson, S.E., Carmona, S., Bierman, L., Shalley, C.E., Wright, M. (Eds.), Oxford Handbook of Strategy Implementation. Oxford University Press, New York, pp. 419–450.
Qin, B., Yang, L., 2022. CSR contracting and performance-induced CEO turnover. Journal of Corporate Finance 73, 102173.
Refinitiv, 2022. Environmental, Social and Governance (ESG) Scores from Refinitiv. May 2022. Available at https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf.
Schiemann, F., Tietmeyer, R., 2022. ESG Controversies, ESG disclosure and analyst forecast accuracy. International Review of Financial Analysis 84, 102373.
Shakil, M.H., 2021. Environmental, social and governance performance and financial risk: Moderating role of ESG controversies and board gender diversity. Resources Policy 72, 102144.
Spierings, M., 2022. Linking executive compensation to ESG performance. Available at. https://corpgov.law.harvard.edu/2022/11/27/linking-executive-compensation-to-esg-performance/#6.
Suchman, M.C., 1995. Managing legitimacy: strategic and institutional approaches. Academy of Management Review 20 (3), 571–610.
Treepongkaruna, S., Kyaw, K., Jiraporn, P., 2021a. ESG controversies, corporate governance, and the market for corporate control. Pennsylvania State University and The University of Western Australia. Working paper.
Treepongkaruna, S., Kyaw, K., Jiraporn, P., 2021b. ESG controversies and corporate governance, evidence from board size. Pennsylvania State University and The University of Western Australia. Working paper.
Treepongkaruna, S., Kyaw, K., Jiraporn, P., 2022. Shareholder litigation rights and ESG controversies: a quasi-natural experiment. International Review of Financial Analysis 84, 102396.
Tsang, A., Wang, K.T., Liu, S., Yu, L., 2021. Integrating corporate social responsibility criteria into executive compensation and firm innovation: International evidence. Journal of Corporate Finance 70, 102070.
United Nations Principles for Responsible Investment, 2016. Integrating ESG issues into executive pay. A Review of Global Utilities and Extractive Companies. https://www.unpri.org/download?ac=1798.
United Nations Principles for Responsible Investment, 2021. ESG-Linked pay: recommendations for investors. https://www.unpri.org/executive-pay/esg-linked-pay-recommendations-for-investors/7864.article.
Walker, D.I., 2022. The Economic (In) Significance of Executive Pay ESG Incentives. Stanford Journal of Law, Business and Finance 27 (2), 318–351.
Wang, X., Ren, K., Li, L., Qiao, Y., Wu, B., 2024. How does ESG performance impact corporate outward foreign direct investment? Journal of International Financial Management & Accounting 35 (2), 534–583.
Wooldridge, J.M., 2015. Introductory econometrics: A modern approach. South-Western Cengage Learning 5191 Natorp Boulevard, Mason, OH 45040, USA. ISBN-13: 978-0-324-58162-1.
Zhang, D., 2022. Are firms motivated to greenwash by financial constraints? Evidence from global firms' data. Journal of International Financial Management & Accounting 33 (3), 459–479.