

RESEARCH ARTICLE

A need for assurance: Do internal control systems integrate environmental, social, and governance factors?

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Abstract

In the article, we provide an original linkage between the corporate environmental, social, and governance (ESG) rating and the cost of internal control system (ICSC) stemmed from two closely related frameworks: the 2017 CoSO Framework, which calls to strengthen internal control systems to integrate ESG issues, and the EU directive on nonfinancial reporting (2014/95/EU) that entered into force in 2017. Thus, we evaluate both introductions showing ESG integration in the internal control activities. We cover firms listed on Milan Exchange from 2016 to 2019, providing a thorough analysis with robustness tests. The findings imply that firms should consider both ESG rating and the internal control system cost as strategic corporate tools for value enhancement; therefore, companies should allocate the resources appropriately to internal control activities to incorporate ESG issues and create value since internal control provides the first assurance for ESG integration. The limitations of this study pave the way for further research directions; incorporating the new amendment of the EU directive on nonfinancial disclosure, allowing for a better valuation creation assessment; and whether there is a substitution between sustainability performance and other corporate issues such as taxes and marketing expenditure.

KEYWORDS

corporate governance, CoSO framework, ESG rating, internal audit function, internal control cost, Italian governance bodies, nonfinancial disclosure

JEL CLASSIFICATION

M10, M21, M40, M48

1 | INTRODUCTION

Auditing scholars consider internal auditing the most advanced and excellent form of control originated as a product of many regulations due to the most significant financial frauds of the last century (Heier et al., 2005). There is well-established literature exploring the benefit of the internal audit function as a central part of corporate governance (Allegrini et al., 2006; Sarens, 2009). Many studies attest that an efficient internal control system (ICS) can provide reasonable

assurance regarding the reliability of financial reporting by avoiding such scandals (Lenz & Sarens, 2012; Selim et al., 2009). Recently, by introducing the new directive on nonfinancial disclosure (NFD),¹ the internal audit also serves as a preliminary assurance for the quality of

¹Currently, EU rules on nonfinancial reporting apply to large public-interest companies with more than 500 employees. However, On April 21, 2021, the Commission adopted a proposal for a Corporate Sustainability Reporting Directive (CSRD), which would amend the existing reporting requirements to include all companies listed on regulated markets (except listed micro-enterprises).

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NFD and the integration of environmental, social, and governance (ESG) issues before being approved by external parties. The ICS appears to be a central tool able to respond efficiently to the various stakeholders by offering assurance and a proactive approach to improve corporate sustainability performance.

Previous studies show the internal auditing function added value to the stakeholders (D'Onza & Sarens, 2018). On the other hand, limited studies on the relationship between Internal Audit and ESG integration have been conducted; therefore, this would be a pioneering article investigating such an issue.

Therefore, the present article aims to provide exploratory evidence of the Italian Internal Audit Setting due to the coexistence of different bodies and actors integrated within the control system. Second, to investigate the variability of the fees paid to ICS subjects according to four parameters (capitalization, total personnel costs, revenues, and assets), and finally, to empirically test the relationship between internal control cost and ESG integration.

Furthermore, this study contributes to the internal control system research field by introducing the importance of identifying a suitable procedure for determining the total ICS costs. We also contribute to the corporate governance literature by examining the institutional context of listed Italian companies and their changes in the last decade. Moreover, this article provides valuable insights into the role of internal control systems in assuring the integration of ESG issues, providing a direct evaluation of the introduction of the CoSO-2017 framework and the E.U. directive on NFD. Thus, the internal assurance of ESG integration can be considered a strategic tool for value creation.

A brief reconstruction of the historical origin of the internal control system confirmed its first introduction after the default of Wall Street in 1929 (Galbraith, 2003) and the issuance of the Securities Exchange Act—Sec. 2 attesting “the obligation to set up an internal control system for listed and/or medium-large companies.” The updates of the regulations for internal auditing have been continuous due to the most innovative financial fraudulent techniques and global complex economic systems (Matthews, 2013). In 1992, the CoSO (The Committee of Sponsoring Organizations) Report laid the milestone for internal control system rules. This framework introduced a new philosophy for internal control: from a pyramidal approach to a cubic vision toward a greater pervasiveness of the rules as they are not imposed but proposed and shared by the entire organization. This model was subsequently updated in 2004 by a second framework named “Enterprise Risk Management (ERM)-CoSO Report,” which inserts the internal control system in the more general risk management process. In 2013 an updated version of the model whose structure, components, and functions are disciplined by the rules stated by 17 new principles. Finally, in the 2017 version, The CoSO ERM-Integrating Strategy and Performance focused on risks and strongly integrated with the contemporary regulatory context of social accountability disclosure. The new framework is dedicated to designing a new internal control system to improve organizational performance. It highlights the importance of risks in both the strategy-setting process and in driving performances considering the aims of all stakeholders.

According to (Committee of Sponsoring Organizations [CoSO], 2017), “Stakeholders are more engaged today seeking greater transparency and accountability for managing the impact of risks while also critically evaluating leadership's ability to crystalize opportunities.” Based on the internal control system, the enterprise should reshape the governance structure and build a mechanism that promotes social responsibility. The framework refers explicitly that NFD objectives can be integrated into an organization's existing internal framework (Herz & Monterio, 2017).

So, there is no doubt that the control system has a positive effect on corporate sustainability as it enhances the effectiveness and efficiency of operations, ensuring compliance with laws and regulations and increasing the reliability of reports and disclosure, helping stakeholders evaluate the firm's sustainability. This new role assumed by the ICS, which will undoubtedly be strengthened in the coming years concerning the provisions established by the new European directive, could give rise to difficulties for Italian companies.

Numerous researchers (Bianchi et al., 2011; Gasparri, 2013) stated that Italy represents a special corporate governance case and is not directly comparable to other countries. First, the development of the internal control culture in the Italian corporate governance system is relatively recent and dates back only to 1998. Furthermore, unlike the practice envisaged at an international level, a specific department dedicated to internal control functions is missing; when present, it is not easy to acquire information related to its specific tasks and especially about the costs incurred for the same function. Finally, another relevant aspect, the definition, and monitoring of internal controls, are the responsibilities of several bodies and actors involved in the internal audit functions according to Italian regulations. For these reasons, some studies (Arena & Azzone, 2007) refer to the difficulties Italian companies face when implementing the provisions of the CoSO Framework. Almost all Italian companies have implemented a traditional Italian corporate governance model. Such a model is characterized by the board of statutory auditors, which also performs internal control functions, making it challenging to implement an internal control system defined according to international standards.

Based on these arguments, we study the Italian internal control system and its determinants and how it could assure ESG integration by verifying whether the ICS current structure has incorporated ESG issues and whether they have been redesigned for such a purpose. Our analysis helps compare different governance structures and the ways of calculating the internal control system cost (ICSC), particularly several personnel and bodies involved in the Italian corporate governance system, to assure the quality of financial and nonfinancial performance. We support the particularity of the Italian corporate governance model, in which an essential governance body—the Board of Statutory Auditors—plays a decisive role in the internal control system.

The rest of the article is organized as follows: Section 2 covers the Italian internal audit setting, Section 3 covers the related literature and hypotheses, Section 4 deals with the data and research methodology, Section 5 is dedicated to the analysis and discussions, and Section 6 is for conclusions, implications, and limitations.

2 | THE ITALIAN INTERNAL AUDIT SETTING

Internal control has been the subject of multiple interventions in Italy, starting from separating legality and accounting control in listed companies with the law 2016/1974. However, the expression “Internal Control System” emerged for the first time in 1998 (Draghi Law) for the listed companies; this new Legislative Decree aimed to restore market confidence by encouraging information and communication transparency to improve the internal control system (Melis & Rombi, 2018). In 1999, the first edition of the Italian Corporate Governance Code defined the importance of the internal control system and introduced the definition provided by the CoSO Report. In 2001, as for the provisions established by the Foreign Corrupt Practice Act of 1997, the Legislative Decree n. 231/2001 was issued stating “companies are responsible for crimes committed by managers and employees in the company's interest.” For the evolution of the Italian internal control system, two provisions are relevant (article n.6, DL 231/2001):

1. if the company is equipped with an “organization, management and control model suitable for preventing crimes of the kind that occurred, the entity's liability is lost”;

2. the introduction of a new internal body called the Supervisory Body (known as ODV 231–Organismo Di Vigilanza) is required to oversee the functioning and observance of the organization, management, and control model and its updates.

Later, in 2003 the Civil Code was reformed, as the Italian system was characterized by a highly inefficient control system and an inadequate institutional structure (Cortesi et al., 2009). The Company's Law Reform introduced the possibility for listed companies to incorporate both the dualistic and monistic governance model. Still, the traditional model, in which shareholders appoint the administrative body (Board of Directors [BoD]) and control bodies, both the Board of Statutory Auditors and the external auditors, remains the most chosen by Italian listed companies. After the Parmalat scandal, “Draghi Law” was modified by Savings Law (Law 262/2005, the Italian's SOX Act) to protect savings and regulate financial markets. These rules were inspired by the provisions of section 404 of the SOX promulgated in the United States in 2002 (Rice & Weber, 2012). Furthermore, it introduced a new institute for controlling the “manager in charge of drafting the corporate accounting documents.” In addition to applying these laws, Italian companies must comply with the new versions of the Corporate Governance Code published in March 2006, aiming to provide best practices to increase the protection of minorities by improving the structure of corporate governance and its bodies (Rizzato et al., 2019).

In recent decades, several scandals have hit large enterprises, including Italian ones, that unveiled the inefficiencies in the internal corporate controls, thus triggering for revising the corporate governance system (Munro & Stewart, 2011). Enhancing the effectiveness of controls, particularly internal control, has become a crucial issue for international and national legislators.

So during the last years, the Italian Corporate Governance Code has been subject to several updates to converge with international

models (especially the new provisions introduced by the CoSO framework). Such a framework calls for establishing internal controls as an essential tool to achieve business goals, avoid waste of resources, safeguard corporate assets, and ensure compliance with laws and regulations. The Italian Corporate Code (edition updated in 2020) reinforces directors' role, disciplines the gender quotas, underlines the importance of ESG issues, and defines an emancipated internal control system that is also a risk management system. So, it must be integrated into the organizational structure to ensure the adequacy of the control models assuring mutual coordination and interdependence (Rija & Ernesto Rubino, 2018).

The code specifies that the internal control system is also a system of risk management; it so enables organizations to take advantage of the opportunity and generate value for stakeholders. For these reasons, the Italian Internal Control System is an integrated system involving different subjects making up the mutually coordinated and interdependent system as indicated by the same Code of Corporate Governance.

It can be said that there is no internal control system equal to another; the architecture and the operation always depend on the specific context where the firm operates (Baglioni & Colombo, 2013). Specifically, the Italian Internal Control System is characterized by the presence of two bodies, typical of the Italian Corporate Governance model that are not similar to other legal systems:

1. The Board of Statutory Auditors: an independent body appointed by the shareholders, its functions are governed by art. 2403 Civil Code, stating that it must monitor the adequacy of the company's internal structure, the administrative and accounting procedures, and the functioning of the internal control system. Supervising the internal control system is not limited to a simple check over the functioning of the system but also elaborates a judgment on its overall design and effectiveness. This involves a lot of knowledge and a regular exchange of information among the organs and functions regarding internal controls, as the Corporate Governance Code recommended.
2. The Supervisory Body (Organo di Vigilanza ODV 231) was introduced by the Legislative Decree 231/2001; it verifies and monitors an organizational model suitable for preventing the risks of administrative crimes. The Supervisory Board is responsible for internal control of more limited scope, corporate decision coverage, execution, and control of several sensitive activities identified to minimize adverse governance actions. The Supervisory Body is appointed by the BoD, located at the highest levels of organizational structure, equipped with significant autonomy.

Other actors involved in the Italian Internal Control System, provided by the Corporate Governance Code, are also recognizable in the international models:

- a. The BoD, appointed at the shareholders' meeting, carries out strategic supervision primarily to define the line of direction of the control system. It defines and evaluates the adequacy of the

internal control system, referring to the best practices tested at the national and international levels. The code attests that the BoD comprises executive and non-executive directors. More independent directors would more effectively monitor boards, prohibit opportunistic behaviors, and reduce potential agency conflicts. The code also suggests the introduction of different committees for risk control, compensation, and remuneration. Referring to the praxis, the board identifies the director in charge of internal control and risk management. It appoints a specific Internal Control Committee that includes the internal auditor and the manager in charge of drafting corporate accounting documents as anticipated by art. 14 law 262/2005.

- b. Internal Control Committee: composed of independent directors, it performs several functions, including monitoring the adequacy, autonomy, effectiveness, and efficiency of the internal audit function; it can ask the internal auditor to carry out specific checks on some operations, examine the periodic reports concerning assessing the Internal Control Risk Management System (SCIGR) prepared by the internal auditor. It reports to the BoD at least every 6 months.
- c. The person in charge of drafting corporate accounting documents ensures adequate administrative and accounting procedures for budget formation and certification. It is responsible for producing corporate accounting reports submitted to the administrative body.
- d. The internal auditor is the head of the internal audit function, directly dependent on the BoD. It implements the guidelines defined by the BoD, taking care of the design, and implementation and constantly checking the effectiveness and adequacy of the system. It is obliged to identify the main business risks and bring them to the attention of the board. This figure can be entrusted to an external professional.

Figure 1 outlines the various actors involved in the Italian Internal Control System in compliance with the provisions established by the Corporate Governance Code.

In this context, we demonstrate how the internal control system of Italian companies has evolved considerably due to the numerous legislative interventions that have made it possible to reconcile the characteristics of the Italian model with the shared international provisions on corporate controls.

Moreover, the internal control system designated by the code is not free of criticalities. The central problem stems from identifying effective rules for coordinating organs and functions. The responsibilities of the manager in charge of drafting accounting documents are regulated by law. At the same time, the functions of the other supervisory bodies are defined by the BoD according to the company's characteristics to allow an effective presidium on risks and, in any case, in compliance with the provisions of the code. It is clear, then, that the different actors may overlap in managing the same risk areas. However, the Italian legal system is aware of the need for rationalization and simplification of the institutions to solve the problems of overlapping and coordination. Integrating the national governance legislations

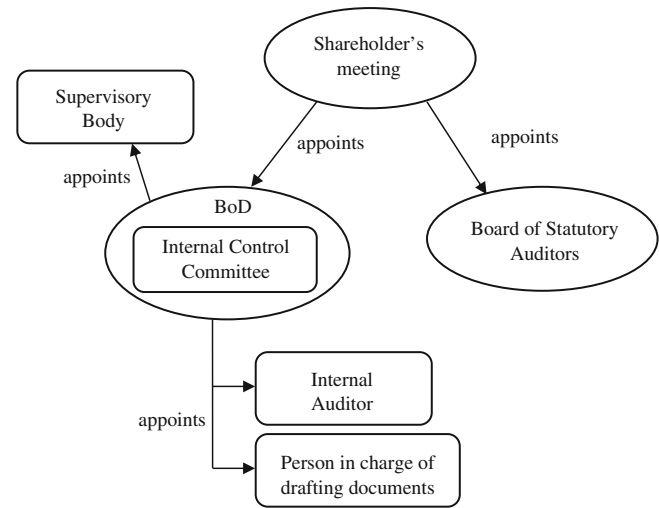


FIGURE 1 Actors of the Italian internal control system

and the ERM frameworks (such as CoSO and ISO 31000) could provide a solid ground for role segregation.

3 | RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

3.1 | Related literature

Corporate governance has received increasing attention (Shleifer & Vishny, 1997). Several studies focused on the drivers for improving the corporate governance model. Recent literature increasingly refers to the benefits of implementing the internal audit function, especially after different corporate scandals triggered by compliance irregularities (Eulerich et al., 2017). With the introduction of the CoSO framework, the internal audit function has been considered one of the pillars of corporate governance for the Italian System despite the difficulties in transposing the framework's provisions (Rizzotti & Greco, 2013).

In this regard, several studies investigate the determinant of audit fees for external auditors, especially for listed companies agreeing on the following factors: number of transactions, size, the complexity of audit and audit risk, the sum of account receivable and inventory, information technology, and subsidiaries (Kuo & Lee, 2018; Cameran, 2005; Amba & Al-Hajeri, 2013; Mohammad Hassan & Naser, 2013). Other studies explore the relationship between the audit fee reduction associated with audit firm rotation (Corbella et al., 2015) and the relation between the audit fee paid and internal audit quality (Cameran et al., 2015; André et al., 2016; Hazami-Ammar, 2019). These studies show a negative relationship between the internal audit function's quality and the external audit fee. The internal auditing function reduces external audit effort and fees: lower external fees are associated with larger internal audit departments and certain activities carried out by internal audit (Ho & Hutchinson, 2010; Rönkkö et al., 2018). According to another



approach, the Audit Committee's functions and composition significantly influence internal auditing costs (Barua et al., 2010; Vafeas & Waagelein, 2007).

Furthermore, internal auditing activities are positively related to several corporate factors such as size, risk, and the relationship between the committee's effectiveness and compensation incentives (Carcello et al., 2005). Others go further by investigating the determinants of the weakness in the internal control system; the results show a negative and significant relationship between board compensation, real earning management, accrual earnings management, capital structure, family ownership, and internal control weakness (Jacoby et al., 2018; Kim et al., 2017).

The available literature is quite limited concerning analyzing the costs incurred for the internal auditing function. Some interesting studies investigate the relationship between internal audit fees and internal audit quality, attesting that high-internal control audit fees can damage the independence and quality of internal control audit (Chen, 2019).

Other prior studies support the development of hypotheses to determine the control costs. For example, transaction cost economics provides a conceptual framework for the internal audit (Sprakman, 1997). At the same time, others focus on the agency theory as a dominant theoretical framework for the existing internal audit (Adams, 1994; Mihret, 2014). Thus, the audit committee function is accountable as a form of agency cost that must be incurred to reduce the conflict of interest between managers and owners. Further research (Anderson et al., 2012; Krishnan et al., 2008) considers internal auditing costs like complying with SOX 404, classified into four categories: internal labor costs, external consulting, technology expenses, and auditor attestation charges. Others investigate the influencing factors of internal control audit fees; they found that firms' size, business complexity, ownership nature, the accounting firm's reputation, and the assurance degree of the internal audit service are contributing factors (Fang et al., 2016).

Regarding evaluating the costs and benefits of internal auditing, some studies refer to the impact of internal audit outsourcing (Pirzada, 2013). A prevalent conclusion is that internal audit outsourcing is commonplace due to cost concerns, recruiting qualified staff issues, and external providers' technical efficiencies.

In recent years, boards of directors and management have been under pressure from stakeholders to demonstrate their companies are operating sustainably and incorporate sustainable business practices into their corporate identities. In this new business contest, it is generally recognized that an internal control system can ensure that enterprise consciously assumes social responsibility for protecting the natural environment and resources and promoting the sustainable development of the national economy (Al-Shaer & Zaman, 2018). (Provasi & Harasheh, 2021) study the Italian context and demonstrate that women's involvement on boards is positively related to corporate sustainability performance, whereas there is less evidence on financial performance. Similarly, (Mazzotta et al., 2020) demonstrated that internal control is a primary component of CSR and plays an important role in strengthening the competitiveness, legitimacy, and reliability of nonfinancial information.

Regarding the assurance of ESG information, internal control systems play a vital role as a first-line assurance to the internal and external stakeholders. In this regard, previous studies investigate the different effects of the internal control system on corporate choices (Gao et al., 2018). However, little evidence on the relationship between internal control systems and ESG. (Koo & Ki, 2020) analyzes the relationship between ESG ratings and internal control weaknesses (ICW), attesting that ICW firms have low-ESG ratings, implying that adequate internal control enhances corporate sustainability.

In this regard, the literature review verifies a gap at the Italian and international levels regarding the role of internal control systems in assuring the quality of ESG performance and reporting. Therefore, our article fills the gap by studying the Italian internal control system, its determinants, and how it could provide assurance for ESG integration.

3.2 | Hypothesis development

Researchers and practitioners affirm that the Italian Corporate Governance System has special characteristics; the family enterprise represents the dominant business model, which determines an inactive takeover market, limited presence of institutional investors, high-ownership concentration, and limited control contestability (Gasparri, 2013).

Most Italian listed companies' internal audit functions are in-house and attributed to some figures by the Code of Conduct or the Civil Code. A few specific services related to the internal audit function are sometimes outsourced, including consultancy for process review and regulatory compliance. The Italian legal system emphasizes the role of the internal control system as an integral part of organizational governance.

So far, the internal audit function has become a significant support function for management, the audit committee, the BoD, the external auditors, and the key stakeholders. Therefore, when properly designed and implemented can play a crucial role in promoting and supporting effective organizational governance. Thus, the internal audit function cost is not considered an operating expense but a long-term investment cost.

So, after analyzing the relevant literature, we understand that investigating determinants of the costs of internal activities is limited and often not applicable to the Italian context. For example, according to the annual survey conducted by PWC, 84% of Italian listed companies do not provide information on the Supervisory Body (PWC, 2020). Recent reports of the Italian Stock Market show the traditional management and control system remains the most widely adopted by Italian listed companies representing 92% of market capitalization. Furthermore, most Italian listed companies show concentrated ownership structures controlled by shareholders with less than 50% share capital.

Four parameters are considered for testing our hypothesis and identifying the Italian control system characteristics: market capitalization, total personnel cost, firm's size measured by total assets, and revenues. The choice of these determinants for analysis is supported

by the literature and existing theories; previous studies suggested that the internal audit function is strictly related to a firm's size (total assets) (Anderson et al., 2012), total revenues (Wallace & Kreutzfeldt, 1991), and the number of employees (Arena & Azzone, 2009). Moreover, the selection of the variables is also coherent with agency theory (Adams, 1994; Mihret, 2014) and compliance with SOX 404 (Anderson et al., 2012; Krishnan et al., 2008), in which size proxies are essential determinants of the internal control cost. Therefore, coefficients with positive signs are expected.

Several channels and frameworks have been established regarding the relationship between internal control and market value. First, internal control quality can affect corporate investment efficiency, enhance corporate value and protect the interest of shareholders by reducing less efficient investments caused by agency problems and information asymmetry. In this sense, there could be a relationship between internal control system cost and the firms' market capitalization through improved performance (Jacoby et al., 2018; Kim et al., 2017). Second, internal control quality and risk management through financial markets; better internal control quality reduces idiosyncratic risk, systematic risk, and ultimately, the cost of capital, which is positively related to market valuation and investors' perception (Ashbaugh-Skaife et al., 2009).

Hypothesis 1. *A positive relationship exists between firms' market capitalization and internal control cost.*

As for internal control and personnel cost, the studies related to the determinants of internal control systems have been expanding due to the widespread application of the CoSO Framework. It also includes the definition of the persons involved in the internal auditing function, the environment control system, and the management style. In this regard, internal audit quality is also positively associated with an appropriate number and remuneration of internal auditors according to the company's size. Good human resources policies and practices are related to good internal control knowledge and experience to perform duties accurately and responsibly. Scholars analyzed this aspect by examining the relationship between the level of audit fees and the total cost of personnel (Chen, 2019). Concerning the Italian context, Corporate Law Reform and other specific laws aimed at improving corporate governance quality by establishing different internal control bodies to strengthen the control mechanism and the practices to protect minority shareholders. There are many subjects involved in the Italian internal control system to improve the quality of internal control; therefore, a positive relationship is expected between internal control cost and personnel cost.

Hypothesis 2. *A positive relationship exists between firms' personnel and internal control costs.*

Regarding the revenue-internal control relationship, revenue cycles are the primary area of fraud and abuse. Therefore, the internal control system significantly influences revenue collection. An internal control system creates confidence in an organization's ability to perform or

undertake a particular task and prevent errors and losses by monitoring and enhancing the organizational reporting process and ensuring compliance. The existing literature also establishes a connection between current earnings and future earnings after disclosing the internal control report; it can be assumed that internal control can function as a regulator of current earnings and help investors determine their value more accurately (Doyle et al., 2007; Zhou et al., 2016).

Internal control systems are intended primarily to enhance the reliability of corporate performance by increasing accountability among information providers in an organization. Timely and higher-quality financial reporting is positively correlated with organizational success and meeting revenue targets (Wallace & Kreutzfeldt, 1991).

Hypothesis 3. *A positive relationship exists between firms' revenues and internal control cost.*

Lastly, motivated by calls for increased compliance and size-based regulation, firm size could affect the quality of corporate governance and the development of internal control systems. Larger firms are said to be more compliant, and more resources are dedicated to internal control activities to ensure better control and adequate compliance with regulations. CoSO framework identifies several components for a proper internal control system in which larger firms opt to adopt and apply such components. Moreover, earning management could be another insight into the relationship; large firms tend to manage their earnings less than smaller firms, indicating a better internal control system (Ettredge et al., 2011; Jahmani & Niranjani, 2015).

Hypothesis 4. *A positive relationship exists between firms' size and internal control cost.*

On the other hand, few studies have been conducted—with no conclusive findings—on the relationship between internal control and sustainability issues. In the past, corporate social responsibility (CSR) and internal control formed two independent disciplines, each with its theoretical framework. Only a few studies show that a social responsibility-oriented internal control system may be better than maintaining the original internal control objectives. The existing literature often analyzes CSR based on accrual bases or the cash flow system (Li et al., 2018). Others attest that many organizations have begun to establish ad-hoc control around specific sustainability information into a comprehensive system of internal control (Littan, 2020). Sustainability performance has unique characteristics, often referred to as “nonfinancial disclosure (NFD),” or “environmental, social, and governance (ESG)” reporting (Khan et al., 2016). They are less tangible and qualitative, yet there is no standard framework for presenting sustainability-related information.

Implementing an effective control system over sustainability information can generate many benefits, including enhancing NFD quality, comparability, and reliability. So, the internal control system could be used by organizations to improve the confidence and especially the quality of ESG disclosure adding value for internal and external decision making. Besides, internal control effectively detects fraud risks that affect the development of the ESG integration. Such detection safeguards stakeholders' legitimate

rights and interests, prevents improper behaviors that damage the corporate reputation, and thus promotes the successful realization of the strategic goal of social practice (Hao et al., 2018).

Moreover, the updated CoSO Report 2017 focuses on designing a new internal control system to incorporate the concept of CSR into corporate internal control objectives. Adequate internal controls can help companies realize the integration of profit ESG dimensions. So ESG performance could be the driving force for improving internal control. The 2020 edition of the Italian Corporate Governance Code incorporated the same approach. The code introduces significant innovations; the concept of “sustainable success,” defined in section 172 of the Companies Act as “the creation of long-term value for shareholders, also considering the interests of other relevant stakeholders to the company.” It contributes to the realization of the long-term economic goals of the enterprise as a key to the long-term success under the current socio-economic environment.

Hypothesis 5. *A positive relationship exists between firms' internal control cost and the ESG rating.*

4 | METHODOLOGICAL APPROACH

4.1 | Data

We studied 34 companies listed on Milan Exchange belonging to FTSE-MIB index for four single years (2016–2019). Then a panel dataset of 136 observations (36×4). The index comprises 40 companies, capturing approximately 80% of the domestic market capitalization. This index attracts large firms most likely obligated to publish NFD and have available ESG ratings for the entire study period. Then, another purified sample was extracted after the treatment for outliers. Companies chosen in the sample must satisfy the NFD directive. Only large publicly traded companies with more than 500 employees must disclose nonfinancial information.

In addition, those companies are large enough to apply the CoSO guidelines. Therefore, two conditions must be satisfied in the sample selection, while the remaining ones must have data continuity for the study period, especially regarding the availability of ESG ratings and in calculating the internal control cost (manually calculated based on available data, some firms do not provide enough ground to calculate it). Table 1 summarizes the variables of interest.

We divide the analysis into two parts: one is related to the classical analysis of the factors related to the internal control cost and its calculation. The second is devoted to the novel part investigating the relationship between ESG rating and the internal control cost. We analyze single years showing the trend and the evolution of the relationships and a panel data methodology to avoid time bias.

4.1.1 | Internal control system analysis

The dependent variable is the estimation of the ICSC, which is hand-collected from the corporate annual reports and companies' websites

TABLE 1 Definition of variables

| Variable | Symbol | Description |
|------------------------------|----------------------|---|
| Internal control system cost | ICSC | The sum of costs of BoD, CEO, Board of Statutory Auditors, Strategic Managers |
| Market capitalization | CAP. | Is the market capitalization of the company |
| Personnel cost | Pers_cost | Is the total cost of the personnel |
| Revenues | Revenue | Is the total revenues |
| Total assets | Assets | Is the total assets |
| ESG rating | ESG | The sustainability rating as a measure of ESG integration |
| Variable_Normalized | Var/Asst | All variables are normalized by total assets |
| Variable_Ln | Ln(var) | Is the natural logarithm of each variable |
| Variable_Diff | $\Delta(\text{var})$ | Is the first difference of all variables for the entire period (2019–2016) and yearly |

and calculated as the sum of the fee paid to the BoD, CEO, Board of Statutory Auditors, Strategic Managers. Although this calculation is coherent with the definition of internal control according to the CoSO Report framework 2013,² remuneration paid to the internal auditor was not considered due to such information's sensitivity. There is no precise number for the ICSC reported in corporate reports; consequently, the ICSC is an estimation composed of the sum of the mentioned variables. The independent variables are market capitalization, total personnel costs, revenue, and total assets extracted from AIDA,³ a dataset provided by Bureau Van Dijk.

Table 1 shows the definition of the variables.

4.1.2 | ESG analysis

The dependent variable is the ESG rating collected manually from sustainability rating providers. The independent variable is the internal control cost, and the controls are the market capitalization, total personnel costs, revenue, and total assets. The ESG rating,⁴ a rating that takes nine letters as indicators of ethical performance similar to the credit rating, it is provided by the ethical rating agency Standard Ethics and the ratings are as follows: from EEE (very strong) to F

²CoSO Report framework 2013 states that: “internal control is a process, effected by an entity board of directors, management and other personnel designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting and compliance.”

³AIDA (Analisi Informatizzata delle Aziende Italiane)—Bureau Van Dijk. Update 287—Software Version 103.00 Data Update 23/12/2020 (n° 28,704).

⁴The rating scale provided by the rating agency is a benchmark to evaluate the relative risk and also compliance of the applicant using an internally developed but publicly available algorithm. Those entities that do not comply with the values expressed by the UN, OECD, and EU on ESG issues, or that do not release enough information, or are facing major changes, do not receive ratings. Examples of rating are available here: https://standardethicsrating.eu/component/finances/?project_id=1&option=com_finances&view=items&filter_order=-it.date_item&filter_order_Dir=DESC&Itemid=103

(very weak): EEE, EEE−, EE+, E.E., E.E−, E+, E, E−, F. The rating comprises 10 elements (sustainability, independence, systemic approach, credibility, standard, competitive, reputational, comparability, ESG risks, transparency) that capture the ethical and responsible performance of the company. The approach for calculating the ESG rating is stable throughout the study. Still, the rating per each company is subject to periodic revisions (upgrade or downgrade), and the ESG score is taken as a proxy for ESG integration.

Sub-sample analysis. To enhance the validity of the analysis, a new sample with more homogeneous characteristics is defined by excluding the companies that deviate most from the expected value of the internal control cost. We used the interquartile range (IQR) technique based on a median value. IQR measures where the “middle fifty” is in a data set. A range is a measure of where the beginning and end are in a set; an IQR measures where the bulk of the values lie. It is applied to the distances between the actual points (Y) and the expected values ($E(Y)$) on the straight lines of the linear regression, according to the following formula:

$$Distance_i = |E(Y) - Y| = |(\beta_0 + \beta_1 x_i) - ICS'Costs|,$$

β_0 and β_1 are the intercept and the slope of the line, while x_i is the independent variable.

The limits of distances are thus determined as:

$$Lower\ bound = Q_1 - (1.5 * IQR),$$

$$Upper\ bound = Q_3 - (1.5 * IQR),$$

where:

IQR is the interquartile range = 3rd quartile – 1st quartile, or $Q_3 - Q_1$,

$Q_3 = 3rd$ quartile or 75th percentile, and $Q_1 = 1st$ quartile or 25th percentile.

After removing outliers, a reduced sample is created each year for each variable. Then each variable is pooled for the 3 years (pool for each variable); we did so because the outliers eliminated for each variable and each year are different. Then we perform the linear regression models for each single pooled variable based on logarithmic transformation to smooth large values.

4.2 | The models⁵

To test the mentioned hypotheses, we translated the relationships into econometric models to capture the sign and the significance of the

⁵Various diagnostic tests were provided to verify the use of the appropriate model. Multicollinearity test shows that the VIF for each variable under different specifications, a threshold of 10 is adopted (Vittinghoff et al., 2012). Heteroskedasticity is tested using Breusch-Pagan's test suggesting that the OLS is a good estimator, and when homoscedasticity is rejected, we used the robust estimation of the regression.

coefficient of each determinant of the dependent variables in question. Several model specifications are applied to capture the year-by-year analysis, the panel analysis, the change (differential), lag, and the nonlinear analysis.

ICSC models. Measure the relationship between the internal control cost (as a dependent variable) and a set of independent variables that are classically linked to the internal control cost:

1. Market capitalization, as an indicator of investor confidence;
2. Total personnel costs to verify the incidence of the total cost of ICSC;
3. Revenue, as an economic indicator, since the classic ROI and ROE are not suitable for this analysis as they are not directly correlated with the efficiency of the ICSC;
4. Total assets as an indicator of the size of the company.

$$ICSC_{i,t} = \alpha + \beta_1(CAP)_{i,t} + \beta_2(Pers_cost)_{i,t} + \beta_3(Revenues)_{i,t} + \beta_4(Assets)_{i,t} + \varepsilon_{i,t},$$

where *ICSC* is the internal control system cost, *CAP* is the market capitalization, *Pers_cost* is the total cost of the personnel, *Revenues* is the total sales revenues, *Assets* is the total firm's assets, and ε is the error term. The choice of these determinants of the internal control cost is consistent with the agency theory (Adams, 1994; Mihret, 2014) and compliance with SOX 404 (Anderson et al., 2012; Krishnan et al., 2008). Furthermore, previous studies suggest that the internal audit function is also strictly related to total assets (Anderson et al., 2012), total revenues (Wallace & Kreutzfeldt, 1991), and the number of employees (Arena & Azzone, 2009); therefore, coefficients with positive signs are expected.

Moreover, other model specifications are also employed to enhance the validity offering more insights into the relationships

1. Panel analysis aggregates all firms and years, creating a panel of 136 observations (36×4).
2. First-order difference analysis based on yearly differences to see whether companies that growing companies increase spending on control systems?

$$\Delta ICSC_{i,t} = \alpha + \beta_1(\Delta CAP)_{i,t} + \beta_2(\Delta Pers_cost)_{i,t} + \beta_3(\Delta Revenues)_{i,t} + \beta_4(\Delta Assets)_{i,t} + \varepsilon_{i,t}.$$

3. Entire period difference: to remove any noise in the yearly observations, we created a variable of difference covering the whole period ($value_{2019} - value_{2016}$).
4. Normalized values: to remove any size effect, we normalized all variables by the value of total assets.
5. Lag estimation; we regress the delta (dependent variables) at time $t + 1$ on delta independent variables at time t to verify whether

the growth in independent variables (change) in 1 year is reflected in the dependent variable of the subsequent year and to draw a direction for potential causal relationships.

$$\Delta ICSC_{i,t+1} = \alpha + \beta_1(\Delta CAP)_{i,t} + \beta_2(\Delta Pers_cost)_{i,t} + \beta_3(\Delta Revenues)_{i,t} + \beta_4(\Delta Assets)_{i,t} + \varepsilon_{i,t}.$$

ESG rating models. Measure the relationship between the ESG rating (dependent variable) and the internal control cost (independent variable), controlling for market capitalization, personnel cost, revenues, and size. The idea is to verify whether internal control systems provide reasonable assurance to the firm by avoiding scandals and enhancing its ESG integration and rating (Lenz & Sarens, 2012; Selim et al., 2009).

$$ESG_{i,t} = \alpha + \beta_1(ICSC)_{i,t} + \beta_2(CAP)_{i,t} + \beta_3(Pers_cost)_{i,t} + \beta_4(Revenues)_{i,t} + \beta_5(Assets)_{i,t} + \varepsilon_{i,t}.$$

ESG is the ESG rating as a proxy of sustainability performance, and the rest of the variables are the same as above.

Internal control effectively detects fraud risks that affect the development of the ESG integration. Such detection safeguards stakeholders' legitimate rights and interests, prevents improper behaviors that damage the corporate reputation and thus could promote the successful realization of the strategic goal of social practice (Hao et al., 2018). Therefore, we expect a positive relationship between internal control cost and the ESG performance, while the rest could take positive or negative signs.

Other model specifications are also used:

1. Panel models
2. First-order difference analysis based on yearly differences to see whether companies that increase spending on internal controls would enjoy ESG rating upgrades?

$$\Delta ESG_{i,t} = \alpha + \beta_1(\Delta ICSC)_{i,t} + \beta_2(\Delta CAP)_{i,t} + \beta_3(\Delta Pers_cost)_{i,t} + \beta_4(\Delta Revenues)_{i,t} + \beta_5(\Delta Assets)_{i,t} + \varepsilon_{i,t}.$$

3. Entire period difference
4. Normalized values
5. Lag estimation;

$$\Delta ESG_{i,t+1} = \alpha + \beta_1(\Delta ICSC)_{i,t} + \beta_2(\Delta CAP)_{i,t} + \beta_3(\Delta Pers_cost)_{i,t} + \beta_4(\Delta Revenues)_{i,t} + \beta_5(\Delta Assets)_{i,t} + \varepsilon_{i,t}.$$

6. We also perform a nonlinear analysis showing whether the relationship between ESG and internal control cost remains linear or inverts at a certain level of internal control spending? We introduced the quadratic terms of the ICSC $(ICSC)^2$ to capture the potential nonlinear relationship. The model is tested on absolute, logarithmic, and the first difference of values and log. (values)

controlling for market capitalizations, personal cost, revenues, and assets.

$$ESG_{i,t} = \alpha + \beta_1(ICSC)_{i,t} + \beta_2(ICSC)_{i,t}^2 + \beta_3(CAP)_{i,t} + \beta_4(Pers_cost)_{i,t} + \beta_5(Revenues)_{i,t} + \beta_6(Assets)_{i,t} + \varepsilon_{i,t}.$$

7. Since the independent variables of the ICSC model are included in the ESG rating, endogeneity issues could arise in which financial variables could affect both the ESG rating and the ICSC. To overcome this issue, we apply the 2SLS (two-stage least square) to incorporate the endogeneity effect.⁶ Then, we perform endogeneity tests to check whether there exist endogenous variables. In particular, we included the Durbin test and the Wu-Hausman test for endogeneity. Both tests reject the existence of endogenous variables; therefore, the standard OLS regressions provide sufficient estimators in our case.

4.3 | Descriptive statistics and correlations

In this section, we show the descriptive statistics for each year, then a correlation matrix based on the panel data of the complete sample (yearly correlations are provided in the Appendix Table A2).

Table 2 shows that the average cost of internal control is about 14 million euros with a 20.5% average annual increase; it remained stable in 2017, then a slight increase in 2018 and 2019. Market capitalization shows growth from 2016 to 2019, reflecting the stock market growth for the same period. The total cost of the personnel is somehow stable. On average, revenues and assets are growing, reflecting how healthy the companies are since they represent the well-established traded firms on Milan Exchange.

The table provides preliminary results of possible associations among the variables of interest by observing trends. First, consistent with prior studies (Chambers & Odar, 2015), greater attention by Italian listed companies to internal controls and the tendency to invest in strengthening the internal control system. Among other variables, the CoSO ERM 2017 and NFD directive (2014/95/E.U.) implementation could possibly drive the increase in internal control costs, which will be investigated in the regression analysis.

The correlation matrix offers a glimpse of the relationships among the variables of interest, presented by the pairwise correlation coefficients and the degree of significance. The matrix is divided into three parts: correlations of absolute values, the differential value (2019–2016), and normalized values by assets. (Table 3).

In the three parts of the matrix, consistent with (Anderson et al., 2012; Arena & Azzone, 2009; Wallace & Kreutzfeldt 1991), financial variables are positively correlated with the internal control cost. However, the correlation between ESG rating and the internal system cost becomes significant after normalization and differential values.

⁶The endogeneity test and the rest of the statistical analysis were performed using STATA package, version 17.

**TABLE 2** Descriptive statistics

| Variable | 2016 | | | | 2017 | | | |
|-----------|--------|------|---------|---------|--------|------|---------|---------|
| | Mean | Min | Max | SD | Mean | Min | Max | SD |
| ICSC | 14.2 | 1.2 | 50.2 | 12.7 | 14 | 1.4 | 53.7 | 13.6 |
| CAP. | 9460 | 53.3 | 56,100 | 13,600 | 11,200 | 90.1 | 52,400 | 15,000 |
| Pers_cost | 1750 | 16.8 | 11,800 | 2810 | 1740 | 20.6 | 11,700 | 2700 |
| Revenue | 12,800 | 62.7 | 106,000 | 24,700 | 13,300 | 79.7 | 106,000 | 25,600 |
| Assets | 84,500 | 90.6 | 860,000 | 205,000 | 86,200 | 99.5 | 837,000 | 211,000 |
| Rating | 6.17 | 4 | 8 | 0.94 | 6.66 | 4 | 8 | 1.06 |
| Variable | 2018 | | | | 2019 | | | |
| | Mean | Min | Max | SD | Mean | Min | Max | SD |
| ICSC | 15.1 | 1.4 | 65.4 | 14.7 | 15.4 | 1.5 | 65.6 | 14.8 |
| CAP. | 9750 | 44.0 | 51,400 | 13,500 | 9880 | 43.5 | 52,000 | 14,400 |
| Pers_cost | 1700 | 38.6 | 11,700 | 2600 | 1720 | 38.3 | 11,800 | 2750 |
| Revenue | 13,900 | 97.5 | 110,000 | 26,700 | 14,100 | 97.3 | 109,000 | 25,800 |
| Assets | 87,000 | 131 | 831,000 | 208,000 | 87,700 | 133 | 830,000 | 203,000 |
| Rating | 6.78 | 4 | 9 | 1.2 | 7.12 | 4 | 9 | 1.22 |

Note: The descriptive statistics (mean, minimum, maximum, and standard deviation) are expressed in Euro millions of ICSC (internal control system cost), CAP (market capitalization), Pers_cost (cost of personnel), revenues, and total assets, while ESG is the ESG score.

Keeping other variables constant, this observation could suggest how companies improve their internal control systems to integrate ESG issues reflected in their ESG ratings. They are also considering the new CoSO elements to strengthen internal control systems. We can also notice that financial variables are correlated, which might impose a multicollinearity issue. However, the VIFs (Variance Inflation Factors) lay within the acceptable range suggesting the absence of multicollinearity (please refer to the appendix Tables A1 and A2 where yearly correlations and VIF values are provided).

5 | ANALYSIS AND DISCUSSION OF RESULTS

5.1 | Results of internal control model

Table 4 presents the results of the determinants of the internal control cost. The model is tested with different specifications, yearly (models 1–4), panel (model 5), differential (models 6–7), normalized values (model 8), and lag (model 9).

We can notice that not all the financial variables are statistically significant in explaining the internal control cost. In all models in Table 4, assets and revenues are not determinants. Those variables could represent the dimension of the firm. Therefore, there is no evidence that bigger firms have higher internal control costs; thus, hypotheses 3 and 4 are rejected. However, market capitalizations appear to be positively significant (in 2016, panel, and normalized models) in explaining the level of the internal control cost suggesting the positive perception of the internal control cost by market investors as an essential governance tool; therefore, hypothesis 1 is accepted.

Similarly, the personnel cost (in 2017, 2018, panel, and normalized models) is a strong determinant of the internal control cost suggesting the acceptance of hypothesis 2. The results are consistent with the previous literature (Arena & Azzone, 2009; Anderson et al., 2012; Wallace & Kreutzfeldt, 1991) on the importance of market capitalization and personnel cost in determining the cost of the internal control in the Italian listed corporations. However, at this point (in models 6 and 7), there is no proof that the growth in the independent variables—measured by the change in values—is associated with the increase in the internal control cost for the same period, suggesting that there is no immediate pass-through of a firm's growth in the financial variables into its internal control system.

The cost of personnel represents an important element in the internal control systems. This finding is consistent with agency cost (Adams, 1994; Mihret, 2014), which states that internal audit cost could be attributable to the agency cost to reduce the agency problem; this is also consistent with (Anderson et al., 2012; Krishnan et al., 2008) in which internal auditing costs like the cost to comply with SOX 404.

5.2 | Results of the ESG rating model

Table 5 provides the results of the regression models concerning the relationship between ESG rating and the internal control cost. The relationship is tested with the following specifications: yearly (models 1–4), the panel (model 5), normalized by assets (model 6), the entire difference (model 7), the yearly difference (model 8), and for the lag of the difference effect (model 9).

The table provides interesting insights into the role of internal control systems in integrating ESG issues. Four years are analyzed to

TABLE 3 Correlation matrix

| Values | ICSC | CAP. | Pers_cost | Revenue | Assets | ESG |
|------------|---------|--------|-----------|---------|--------|-----|
| ICSC | 1 | | | | | |
| CAP. | 0.61** | 1 | | | | |
| Pers_cost | 0.61** | 0.56 | 1 | | | |
| Revenue | 0.61** | 0.68* | 0.73* | 1 | | |
| Assets | 0.56** | 0.56* | 0.61 | 0.35 | 1 | |
| ESG | 0.044 | -0.147 | 0.009 | 0.005 | -0.063 | 1 |
| Δ values | ICSC | CAP. | Pers_cost | Revenue | Assets | ESG |
| ICSC | 1 | | | | | |
| CAP. | -0.028 | 1 | | | | |
| Pers_cost | 0.33** | -0.34* | 1 | | | |
| Revenue | 0.21 | -0.14 | 0.03 | 1 | | |
| Assets | 0.17 | -0.37* | 0.5* | -0.05 | 1 | |
| ESG | 0.46*** | -0.03 | 0.22 | 0.078 | 0.21 | 1 |
| Normalized | ICSC | CAP. | Pers_cost | Revenue | ESG | |
| ICSC | 1 | | | | | |
| CAP. | 0.25*** | 1 | | | | |
| Pers_cost | 0.57*** | 0.17 | 1 | | | |
| Revenue | 0.47*** | 0.35* | 0.76* | 1 | | |
| ESG | 0.19** | -0.015 | 0.26* | 0.30 | 1 | |

Note: ICSC (internal control system cost), CAP (market capitalization), Pers_cost (cost of personnel), revenues, total assets, and ESG rating.

* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

TABLE 4 Results of the internal control COST models

| Variables | (1)-OLS 2016 | (2)-OLS 2017 | (3)-OLS 2018 | (4)-OLS 2019 | (5)-OLS Panel | (6)-OLS Δ(19-16) | (7)-OLS Δyear | (8)-robust By assets | (9)-OLS Lag.Δ |
|--------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------------|--------------------|
| CAP | 0.202** (0.0927) | 0.144 (0.118) | 0.0446 (0.0935) | 0.0478 (0.0951) | 0.108* (0.0553) | -0.162 (0.173) | -0.157 (0.122) | 0.00061* (0.00035) | 0.0202 (0.188) |
| Pers_cost | 0.133 (0.156) | 0.234* (0.202) | 0.243* (0.210) | 0.247 (0.210) | 0.196* (0.105) | 0.426 (0.840) | -0.0932 (0.571) | 0.022** (0.008) | 0.356 (1.134) |
| Revenues | 0.0603 (0.153) | 0.0978 (0.186) | 0.251 (0.186) | 0.311 (0.191) | 0.157 (0.0971) | 0.637 (0.982) | 0.375 (0.788) | -3.10e-05 (0.0019) | 1.171 (1.622) |
| Assets | 0.0655 (0.0956) | 0.0140 (0.120) | -0.0538 (0.120) | 0.0215 (0.120) | 0.0127 (0.0624) | -0.0739 (0.643) | -0.0671 (0.456) | | -0.173 (0.656) |
| Constant | 6.241*** (1.126) | 5.712*** (1.486) | 5.979*** (1.509) | 6.023*** (1.529) | 6.076*** (0.762) | -0.0562 (0.121) | 0.00435 (0.0609) | 0.00083 (0.00075) | -0.0910 (0.112) |
| Observations | 34 | 34 | 34 | 34 | 136 | 34 | 100 | 136 | 66 |
| R-squared | 0.803 | 0.715 | 0.676 | 0.663 | 0.722 | 0.087 | 0.027 | 0.350 | 0.102 |
| Hetero test | 0.643 | 0.777 | 0.951 | 0.732 | 0.942 | 0.894 | 0.148 | 0.000 | 0.955 |

Note: The dependent variable is ICSC (internal control system cost), the independent variables are: CAP (market capitalization), Pers_cost (cost of personnel), revenues, and assets. Standard errors in parentheses. Hetero test is the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity reported as Prob > chi-square, and a robust estimation is used when homoscedasticity is rejected. Variables are expressed in logarithm except for normalized values by assets.

*** $p < 0.01$. ** $p < 0.05$. * $p < 0.1$.

show the evolution of the relationship, especially in 2017 after the CoSO framework was adopted and the enactment of the E.U. directive on NFD. Thus, the analysis provides a preliminary evaluation of the effect of both frameworks because we assume that the effect

is incorporated in the development of corporate internal control systems. In the first four models (single years), there is no evidence that ESG rating is associated with the size of internal control cost; this is also confirmed in the panel model. This means that small

TABLE 5 Results of the ESG rating models

| Variables | (1)-OLS 2016 | (2)-OLS 2017 | (3)-robust 2018 | (4)-OLS 2019 | (5)-OLS Panel | (6)-OLS By assets | (7)-OLS $\Delta(19-16)$ | (8)-robust Δ .year | (9)-OLS Lag. Δ |
|--------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------------|------------------------------|--------------------------|
| ICSC | 0.0118 (0.0691) | -0.0316 (0.0607) | -0.0165 (0.0690) | -0.0215 (0.0615) | -0.00561 (0.0340) | 16.68 (25.47) | 0.195*** (0.0599) | 0.218*** (0.0664) | -0.1061 (0.0966) |
| CAP | -0.0152 (0.0372) | -0.0142 (0.0397) | -0.0358 (0.0310) | -0.0426 (0.0321) | -0.0263 (0.0189) | -0.123 (0.0906) | 0.00664 (0.0567) | -0.0181 (0.0336) | -0.0108 (0.0808) |
| Pers_cost | -0.00927 (0.0588) | 0.0543 (0.0676) | 0.0762 (0.0628) | 0.0820 (0.0718) | 0.0368 (0.0360) | 0.102 (1.389) | 0.432 (0.272) | 0.1130 (0.1506) | 0.5511 (0.4795) |
| Revenues | 0.0335 (0.0571) | 0.0177 (0.0610) | 0.0508 (0.0698) | 0.0611 (0.0603) | 0.0370 (0.0330) | 0.768* (0.392) | -0.0245 (0.319) | 0.153 (0.2716) | -0.565 (0.686) |
| Assets | -0.0181 (0.0359) | -0.0371 (0.0392) | -0.0729* (0.0499) | -0.0532* (0.0398) | -0.042** (0.0209) | | -0.303 (0.208) | -0.1654 (0.1519) | 0.2176 (0.2973) |
| Constant | 1.814*** (0.601) | 1.972*** (0.597) | 1.878*** (0.6877) | 1.887*** (0.621) | 1.871*** (0.329) | 5.703*** (0.211) | 0.0203 (0.0392) | 0.000807 (0.0215) | -0.018 (0.047) |
| Observations | 34 | 34 | 34 | 34 | 136 | 136 | 34 | 100 | 66 |
| R-squared | 0.028 | 0.068 | 0.192 | 0.212 | 0.084 | 0.111 | 0.382 | 0.299 | 0.138 |
| Hetero test | 0.173 | 0.321 | 0.035 | 0.232 | 0.797 | 0.230 | 0.725 | 0.038 | 0.421 |

Note: The dependent variable is ESG rating; the independent variable is: ICSC (internal control system cost), controlling for CAP (market capitalization), Pers_cost (cost of personnel), revenues, and assets. Standard errors in parentheses. Hetero test is the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity reported as Prob > chi-square, and a robust estimation is used when homoscedasticity is rejected. Variables are expressed in logarithm except for normalized values by assets.

*** $p < 0.01$. ** $p < 0.05$. * $p < 0.1$.

firms with small ICSC could have high-ESG ratings, so the rating is not a function of size. However, although ESG rating is not related to size, it is significantly associated with the change in internal control cost. This is evidenced in models 7 and 8, in which model 8 uses the yearly difference in ICSC, whereas, in model 7, we use the entire period change (2019–2016) to capture the long-term development. Such findings show that companies with more growth in spending to develop their internal control systems enjoy upgrades in their ESG ratings. These findings also provide preliminary positive effects of adopting the new CoSO framework and that companies tend to comply with the E.U. directive on non-financial reporting.

Furthermore, it highlights the importance of internal control systems as the first line for assuring ESG integration and enhancing strategic value creation. The lag model (model 9) does not show any significance, which means that the effect of the change in the cost of developing internal control systems appears in the ESG rating of the same year without any lag effect. This could highlight the market reaction to integrating ESG issues in corporate practices, and the market reward is immediate; thus, companies could consider improving their internal systems to integrate ESG issues as a strategic approach to value enhancement.

5.2.1 | Quadratic test

The nonlinearity test is based on the complete sample using the panel data. The rationale is to verify whether the relationship between

internal control cost (as an independent variable) and the ESG rating remains constant or inverts at a certain level of the internal control cost. As shown in Table 6, the quadratic term of the ICSC is inserted to capture the nonlinear effect besides other control variables.

The interpretation of the relationship depends on the model specification. Models 1 and 3 do not support the nonlinear relationship since the squared term's coefficients approach zero. Whereas model 3 (log model) reveals such a U-shape relationship, a negative then a positive relationship between ESG rating and the size of internal control cost. This could suggest that the larger the internal control cost, the lower the ESG rating, and the relationship could invert at a certain level of internal control cost. Then, in model 4 (difference), we notice an increasing function of the growth in internal control cost then decreasing when growth in ICSC exceeds a certain level, suggesting that excessive spending on internal control could lead to misallocation of corporate financial resources, which translates into ESG rating downgrades.

*Sub-sample analysis*⁷. A set of pool regression models applied to the purified sample, based on logarithmic values. Regarding the ICSC determinants, results generally are not significantly different from the main sample reported earlier, partially confirming a positive relationship between financial variables and the internal control system cost.

In the ESG rating analysis, findings align with the previous analysis, supporting the inconclusive evidence on the relationship between

⁷Detailed results are not reported here since they are not significantly different from the previous analysis but they are available.

TABLE 6 Quadratic test results

| VARIABLES | (1) Absolute | (2) Log | (3) Δ (absolute) | (4) Δ Log |
|---------------------|---------------------------|-----------------------|----------------------------|----------------------|
| ICSC | −8.56e-08** (3.32e-08) | −2.09*** (0.564) | 1.16e−07*** (3.37e-08) | 0.195*** (0.069) |
| (ICSC) ² | 0*** (0) | 0.0648*** (0.0175) | −0** (0) | −0.0595* (0.0698) |
| CAP | −1.32e-11 1.30e-11 | −0.0113 (0.0182) | −2.47e-11 6.24e-11 | 0.0013 0.0573 |
| Pers_cost | 6.08e-11 7.36e-11 | 0.059* 0.0343 | −3.28e-10 4.78e-10 | 0.443 0.273 |
| Revenues | 7.99e-12 7.57e-12 | 0.027 0.0311 | −2.44e-11 5.40e-11 | 0.015 0.324 |
| Assets | −3.01e-13 7.59e-13 | −0.060*** 0.0202 | 7.65e-12 1.56e-11 | −0.357 0.218 |
| Constant | 6.737*** (0.226) | 18.40*** (4.447) | 0.286 (0.211) | 0.0062 (0.0427) |
| Observations | 136 | 136 | 34 | 34 |
| R-squared | 0.165 | 0.199 | 0.365 | 0.398 |
| Hetero test | 0.604 | 0.495 | 0.601 | 0.656 |

Note: The dependent variable is the ESG rating, the independent variables are the ICSC (internal control cost) and its quadratic terms (ICSC)² to capture the nonlinear effect, controlling for CAP (market capitalization), Pers_cost (cost of personnel), revenues, and assets. Standard errors in parentheses. Hetero test is the Breusch–Pagan/Cook–Weisberg test for heteroskedasticity reported as Prob > chi-square, and a robust estimation is used when homoscedasticity is rejected.

*** $p < 0.01$. ** $p < 0.05$. * $p < 0.1$.

the cost of internal control systems and the ESG rating; a negative association between the magnitudes while a positive relationship between the differentials (change in variables).

6 | CONCLUSIONS

This article offers four theoretical and practical contributions to internal control systems and reporting quality. First, we present Italy's institutional and regulatory setup regarding corporate governance bodies and internal control functions. Second, we determine an appropriate mode of calculating the internal control cost under the current regulatory regime. Third, we test the relevant factors determining the cost of internal control. Finally, we empirically test the potential impacts of introducing the CoSO-ERM 2017 and the E.U. directive on NFD on the ESG rating that can be used as a strategic tool to enhance the long-term stakeholders' value.

Regarding the first aspect, we referred to the Italian documented studies and current and previous legislation to offer a panoramic view of the institutional characteristics and legislation governing the corporate level's internal control functions. We show increased attention to international laws and frameworks of internal control, such as the incorporation of the SOX and the CoSO framework by the Italian system, which is consistent with prior studies (Chambers & Odar, 2015) who show greater attention by Italian listed companies to internal

controls and the tendency to invest in strengthening the internal control system.

As for the second aspect, literature helped figure out how to calculate the cost of internal control in the Italian corporate system, which is also challenging regarding remuneration disclosures. Therefore, according to the CoSO framework, we refer to the internal control cost as the sum of the BoD, CEO, Board of Statutory Auditors, and strategic managers, manually collected from corporate annual reports.

For the third aspect, we determine the appropriate corporate variables that influence the cost of internal control based on various organizational and institutional theories, such as agency theory and the compliance cost approach. Specific hypotheses are formulated and empirically tested using regression analysis for a sample of 34 Italian listed companies from 2016 to 2019. Our findings show that market capitalization and personnel cost moderately explain the internal control cost supporting (Arena & Azzone, 2009) and are coherent with the predictions of the agency theory and the SOX compliance framework. Revenues and assets are not significant determinants of the cost of internal control, which does not support (Anderson et al., 2012; Wallace & Kreutzfeldt, 1991).

Regarding the last aspect, previous studies investigate whether internal control systems provide reasonable assurance by avoiding scandals in financial reporting (Lenz & Sarens, 2012; Selim et al., 2009). However, the linkage with sustainability reporting is still not explored;

therefore, in this part, we fill this gap by linking the internal control cost to the ESG rating providing direct implications of adopting CoSO-ERM 2017 and the NFD directive. We empirically tested the relationship between the internal control cost and ESG integration with different model specifications. ESG rating is not related to the size of the internal control cost; instead, it is more associated with the growth (change in the cost). Our findings partially support the impacts of the CoSO-2017 and the E.U. directive on NFD as reasonable assurance tools to enhance firms' competence in integrating ESG issues and obtain better ESG ratings. In this context, our findings moderately support the conclusions of (Hao et al., 2018; Koo & Ki, 2020).

6.1 | Implications

The analysis of total ICSC enhances the understanding of the internal audit market structure and how the companies perceive internal auditing compared to external auditing. These findings also help shareholders assess companies' willingness to invest in this activity. This can illustrate the extent of the companies' seriousness in protecting the rights of shareholders and the need for more transparency regarding the cost of internal control in publicly traded companies.

The internal control system could be the first-line assurance for integrating ESG issues, which helps comply with external related regulations and frameworks that ultimately enhance all stakeholders' strategic value by guaranteeing the degree of corporate responsibility toward ESG issues. Moreover, internal control establishes ESG-related KPIs against which managers can be evaluated to ensure value maximization.

The results are generalizable: several countries—including developing and emerging nations—are establishing sustainability reporting directives, and internal control systems are common global tools. They will play a significant role in guaranteeing the quality of nonfinancial information for transparency as required by the market and the stakeholders and for compliance with the evolving provisions envisaged by the NFD directives.

Finally, the informational environment is evolving rapidly, generating too much valuable, invaluable, and confusing information. Therefore, internal and external assurance by information agents (intermediaries) is essential for the healthy functioning of the financial and business environment and market efficiency.

6.2 | Limitations and future research

The lack of disclosure on the remuneration of board committees makes it challenging to calculate and study the internal control cost and its determinates under the Italian system: we relied on representative components of the internal control cost since the total cost is not explicitly indicated in corporate reports. Therefore, this study explores the Italian context and provides novel construction that encourages future studies with different contexts and governance structures. The limitations of this study pave the way for further

research directions; incorporating the new amendment of the EU directive on NFD, allowing for a better valuation creation assessment; and whether there is a substitution between sustainability performance and other corporate issues such as taxes and marketing expenditure.

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APPENDIX A

| | 2016 | 2017 | 2018 | 2019 | Panel | $\Delta(19-16)$ | Δ year | Normal | Lag |
|--|------|-------------|------|------|------------|-----------------|--------------------------------|--------|-------------------------------|
| VIF values in ICSC model specifications | | | | | | | | | |
| Revenue | 9.65 | 9.66 | 9.11 | 9.68 | 10.08 | 3.53 | 2.52 | 2.64 | 4.15 |
| Pers_cost | 9.82 | 9.32 | 9.02 | 9.63 | 9.86 | 2.80 | 1.66 | 2.39 | 3.35 |
| Assets | 8.35 | 8.77 | 7.89 | 8.11 | 9.18 | 2.23 | 1.75 | | 1.98 |
| Cap | 5.07 | 4.81 | 3.31 | 3.75 | 4.12 | 1.60 | 1.22 | 1.17 | 1.16 |
| Average | 8.22 | 8.14 | 7.33 | 7.79 | 8.31 | 2.54 | 1.79 | 2.07 | 2.66 |
| VIF values in ESG rating model specifications | | | | | | | | | |
| ICSC | 5.09 | 3.51 | 3.09 | 4.55 | 3.59 | 1.11 | 1.03 | 1.54 | 1.05 |
| Revenue | 9.05 | 10.02 | 9.03 | 9.53 | 9.73 | 3.58 | 2.53 | 2.64 | 4.16 |
| Pers_cost | 8.88 | 9.71 | 8.92 | 9.12 | 9.63 | 2.82 | 1.66 | 2.85 | 3.55 |
| Assets | 8.72 | 8.65 | 8.68 | 7.71 | 9.18 | 2.23 | 1.75 | | 2 |
| Cap | 5.91 | 5.05 | 3.34 | 3.84 | 4.28 | 1.65 | 1.26 | 1.2 | 1.21 |
| Average | 7.53 | 7.39 | 6.61 | 6.95 | 7.28 | 2.28 | 1.65 | 2.06 | 2.39 |
| VIF values in the quadratic specification | | | | | | | | | |
| | | abs. | | | log | | Δabs. | | Δlog |
| ICSC | | 20.16 | | | 22.13 | | 3.07 | | 1.10 |
| ICSC-sqr | | 14.95 | | | 17.28 | | 2.59 | | 1.12 |
| Revenue | | 3.67 | | | 9.85 | | 1.13 | | 3.65 |
| Pers_cost | | 3.86 | | | 9.22 | | 1.75 | | 2.83 |
| Assets | | 2.24 | | | 8.76 | | 1.46 | | 2.44 |
| Cap | | 3.24 | | | 4.50 | | 1.37 | | 1.67 |
| Average | | 8.02 | | | 11.96 | | 1.90 | | 2.14 |

TABLE A1 VIF values at different specifications

TABLE A2 Yearly correlations

| 2016 | ICSC | CAP. | Pers_cost | Revenue | Assets | ESG |
|-----------|---------|---------|-----------|---------|---------|-----|
| ICSC | 1 | | | | | |
| CAP. | 0.7008* | 1 | | | | |
| Pers_cost | 0.6875* | 0.4793* | 1 | | | |
| Revenue | 0.6813* | 0.6150 | 0.7214* | 1 | | |
| Assets | 0.6947* | 0.5114* | 0.6433 | 0.3664* | 1 | |
| ESG | -0.0003 | -0.0997 | -0.0237 | 0.1301 | -0.0072 | 1 |
| 2017 | ICSC | CAP. | Pers_cost | Revenue | Assets | ESG |
| ICSC | 1 | | | | | |
| CAP. | 0.5736* | 1 | | | | |
| Pers_cost | 0.5806* | 0.6435* | 1 | | | |
| Revenue | 0.5626* | 0.7036* | 0.7214* | 1 | | |
| Assets | 0.5473* | 0.6353* | 0.6133 | 0.3381 | 1 | |
| ESG | 0.0127 | -0.205 | 0.0057 | -0.0276 | -0.0659 | 1 |
| 2018 | ICSC | CAP. | Pers_cost | Revenue | Assets | ESG |
| ICSC | 1 | | | | | |
| CAP. | 0.5797* | 1 | | | | |
| Pers_cost | 0.5644* | 0.5728* | 1 | | | |
| Revenue | 0.5844* | 0.7382 | 0.7445* | 1 | | |
| Assets | 0.4694* | 0.5241* | 0.5720 | 0.337 | 1 | |
| ESG | 0.092 | -0.1228 | 0.0424 | 0.0701 | -0.1068 | 1 |
| 2019 | ICSC | CAP. | Pers_cost | Revenue | Assets | ESG |
| ICSC | 1 | | | | | |
| CAP. | 0.5324* | 1 | | | | |
| Pers_cost | 0.5136* | 0.4875* | 1 | | | |
| Revenue | 0.5005* | 0.6215 | 0.7125* | 1 | | |
| Assets | 0.5102* | 0.4912* | 0.5312* | 0.342 | 1 | |
| ESG | 0.105 | -0.1022 | 0.0404 | 0.0894 | -0.0952 | 1 |