

ESG ASSURANCE IN THE UNITED KINGDOM

AN EMPIRICAL ANALYSIS OF FTSE 350 COMPANIES

RENQIAO GUO

RUI GE

Master Thesis

Stockholm School of Economics

2025

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Abstract

We provide the first large-sample evidence on third-party verification of firms' environmental, social, and governance metrics in ESG reports (ESG assurance) in the United Kingdom. Focusing on the FTSE350 from 2023-2024, we manually collect first-hand data on ESG assurance and document its prevalence and characteristics. Unlike financial audits, ESG assurance in the UK varies widely in form and substance, including the level of assurance, the choice of assurance providers, and the scope across E/S/G dimensions. We show that firms' decision to obtain ESG assurance is primarily driven by firm size, peer effects, and adoption in reporting frameworks such as GRI and CDP. In contrast, financial performance and leverage play a minimal role. Assurance is associated with broader and deeper engagement with ESG disclosures, especially in social and governance areas, suggesting ESG assurance in the UK is a strategic and institutionally embedded practice.

Keywords:

ESG reporting · ESG assurance · Sustainability · Assurance scope

Authors:

Renqiao Guo (42530)

Rui Ge (42531)

Tutor:

Ting Dong, Assistant Professor, Department of Accounting

Master Thesis

Master Program in Accounting, Valuation and Financial Management

Stockholm School of Economics

Renqiao Guo and Rui Ge, 2025

Acknowledgement

We are deeply grateful to our supervisor, Ting Dong, Assistant Professor at the Department of Accounting at Stockholm School of Economics, for her exceptional support throughout the process of writing this thesis. Her guidance went far beyond what we expected—always precise, constructive, and refreshingly honest.

From the earliest stage of topic development to the final structure and clarity of argument, Ting challenged us to think more critically, encouraged us to refine our ideas, and held us to a high academic standard. She consistently pointed out blind spots we had missed, helping us avoid gaps in our logic and stay focused on what mattered. Her patience, availability, and commitment to our progress made a meaningful difference, especially during moments when we felt stuck or uncertain.

This has been a long and at times difficult journey, and we can honestly say that it was her steady guidance and support that kept us going. Working with her has been not only academically enriching, but also truly enjoyable—a collaboration we will remember with gratitude. We sincerely thank her for her encouragement and belief in our work, and we wish her all the very best in her continued academic career.

We'd also like to thank our friend Zongxu Yu, who was always happy to share his experience and lend a hand with technical issues. His advice, shortcuts, and calm presence made things easier.

Finally, we want to thank everyone—friends and classmates—who offered their time, ideas, or support along the way. Whether it was a quick comment, a helpful idea, or simply a kind word, we truly appreciated it.

Renqiao Guo and Rui Ge

Stockholm, 05 May 2025

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1 Introduction

One of the hot topics that has received the most attention in the UK capital markets over the past few years has been the publication of reports discussing environmental, social, and governance (ESG) topics. Given the existence of preferences for ESG-conscious companies among stakeholders, it is not unusual for public companies to obtain ESG assurance. However, the issue remains with the quality (depth and breadth) and credibility of these ESG disclosures. There is a growing need for stakeholders to differentiate between listed companies that provide high quality and trustworthy ESG assurance reports and those that merely talk about these activities. To meet these growing stakeholder demands, companies issuing ESG reports are increasingly likely to engage independent third-party organizations to validate the various metrics in the report to ensure that they are being measured and reported correctly, a practice known as ESG assurance. However, little is known about the practical application of ESG assurances in the UK.

This study presents timely evidence on the nature and extent of ESG assurances in FTSE 350 companies over the two-year period 2023-2024. Our analysis proceeds in three steps, which are described in more detail below. These findings could form the basis for follow-up studies, so we suggest future research paths throughout our analyses.

In the first step, we document the status of ESG assurances in the UK from 2023 to 2024. Documenting ESG assurance is not straightforward. Although some databases contain information relating to ESG assurance, the data is only measured at a general level. However, unlike audits that apply to the financial statements as a whole, ESG assurance rarely verifies all the metrics in ESG report. This leads to considerable differences in the metrics reported and assured in each of these reports. The specific characteristics of ESG assurance that we have focused on in this study are not available in the database. We overcome this challenge by hand-collecting data from more than 1000 reports issued by FTSE 350 companies. From these reports, we obtain data on firms' overall assurance practices and collect firm-level assurance metric data. Our hand-collected data indicates that commercial databases can fail to capture as much as 30% of assurance cases.

We leverage manually collected data to describe the status of ESG assurance for FTSE 350 companies for 2023 and 2024. First, we document the number of firms in the overall sample that received assurances. In our 534 observations, 48.3% of them obtained external assurance. Second, the ESG assurance market consists of both non-financial assurers (i.e., firms that do not provide financial statement audits) and financial audit firms (e.g., Big 4). Their market shares are approximately 49.2% and 50.8%, respectively. Third, ESG assurance in the UK comes with significant heterogeneity, including the percentage of indicators in ESG reports that are assured, the level of assurance, and the assurance standard used. In summary, we conclude that

ESG assurance is a growing aspect of ESG reporting, and it shows more heterogeneity than financial statement audits.

In the second step, we extend our description of the status of ESG assurance in the UK. We use regression analyses to explore the variables associated with ESG assurances in order to document the drivers for UK-listed companies obtaining such assurances. First, we show that ESG assurances issued by independent third parties are related to the economic characteristics (e.g., firm size or profitability) of UK-listed firms, as has been shown in previous research. Second, we find that firms are more likely to obtain ESG assurance when a greater proportion of their industry peers do so. This likely reflects stakeholder demands for comparability across firms in the same sector, prompting companies to align with peer practices to maintain legitimacy (Bochkay, Choi & Hales, 2022). Then, Firms that adopt formal ESG reporting frameworks, such as the Global Reporting Initiative (GRI), are more likely to obtain external assurance. This may be because these frameworks offer standardized metrics and detailed measurement guidance, enabling assurance providers to more easily verify the quality of disclosures. Moreover, the use of established frameworks may signal a firms' commitment to credible ESG reporting, thereby increasing the value of assurance as a trust-enhancing mechanism.

We also explore how firms choose assurers. We find that firms engaging accounting assurers (including both Big Four and other financial auditors) tend to assure a broader set of ESG metrics compared to those engaging non-accounting assurers. This finding is consistent with prior research suggesting that financial auditors—with their auditing expertise and established assurance infrastructure—are more capable of delivering broader and more integrated ESG assurance (Simnett, Vanstraelen & Chua, 2009; Perego, 2009).

In the third step, we focus on assurance quality, as captured by its depth and breadth. We define depth as the level of assurance provided (reasonable vs. limited) and breadth as the coverage of assurance across the E, S, and G components. Using a subsample of 258 firms that obtained ESG assurance, we conducted a series of regression analyses to identify the firm-level and institutional determinants of assurance quality. Firstly, we find that larger firms are more likely to seek reasonable assurance, consistent with the view that such firms face greater stakeholder scrutiny and possess the resources to support more rigorous verification processes. Then, to evaluate breadth, we perform separate regressions for the assurance of environmental (E), social (S), and governance (G) metrics. Our results show that firm size and the use of ESG reporting frameworks significantly increase the likelihood of obtaining assurance across each ESG pillar. Together, these findings suggest that firms with stronger institutional and resource profiles tend to pursue more comprehensive and credible assurance practices.

This paper makes three key contributions. First, we provide timely evidence on ESG assurance practices in the UK using a manually constructed data set covering FTSE

350 firms during the 2023-2024 reporting cycle. While prior research has largely focused on cross-country samples or earlier periods, our study offers the most up-to-date empirical portrait of ESG assurance behavior in a market preparing for mandatory sustainability assurance. This enhances our understanding of how firms respond to evolving regulatory pressures and market expectations in a single, economically significant setting. Importantly, our hand-collected data fill a gap left by commercial ESG databases, which often lack comprehensive or up-to-date coverage of assurance practices. By capturing detailed assurance characteristics at the firm level, we contribute a novel empirical foundation for future research on ESG assurance in the UK and beyond.

Second, we go beyond the binary question of whether firms obtain ESG assurance by examining the quality of that assurance—measured both by its depth (assurance level: reasonable vs. limited) and breadth (coverage across environmental, social, and governance pillars). We analyze the firm-level and institutional-level factors that shape these dimensions, thereby extending prior work that often treated ESG assurance as a homogeneous or undifferentiated activity. Also, we investigate the choice of assurance provider, distinguishing between reputable providers (e.g., Big Four or equivalent) and others. By analyzing what drives firms to select reputable assurers, our study contributes to understanding how signaling motives, stakeholder expectations, and ESG reporting frameworks influence assurance provider selection—an area where empirical evidence remains scarce, especially in single-country settings.

Third, our findings offer important implications for both practitioners and regulators. Current ESG reporting and assurance practices remain highly heterogeneous—varying widely in nature and content—making it difficult for stakeholders to compare disclosures across firms. However, with the UK government advancing the adoption of the UK Sustainability Reporting Standards (UK SRS), based on the ISSB’s IFRS S1 and S2, ESG assurance is on a clear trajectory toward becoming more standardized and potentially mandatory. Our study offers an empirical baseline of how firms currently approach assurance in a voluntary environment, shedding light on the institutional and strategic drivers of the assurance option. These insights can help inform regulatory efforts to harmonize assurance practices and enhance the comparability and credibility of ESG disclosures and assurances in the years ahead.

2 Literature Review and Hypothesis Development

Over the past two decades, the voluntary disclosure of non-financial information has gained prominence, driven by rising demands from stakeholders, regulators, and capital markets. Firms increasingly publish Environmental, Social, and Governance (ESG) reports to communicate their sustainability performance. However, the credibility of these disclosures is frequently questioned, particularly given the rise of green-washing concerns (Cho, Michelon & Patten, 2012). To enhance transparency and legitimacy, many companies seek third-party assurance of their ESG reports—a

practice that, while voluntary in most jurisdictions, is becoming mainstream globally (Simnett et al., 2009).

Third-party assurance is expected to provide credibility, mitigate information asymmetry, and bolster stakeholder confidence (Simnett et al., 2009; Perego & Kolk, 2012). According to stakeholder theory (Freeman, 2010), firms respond to stakeholders' expectations by improving disclosure quality, and obtaining assurance is one way to demonstrate accountability to those stakeholders. From a signaling theory perspective (Spence, 1973), voluntarily engaging an independent assurer sends a signal of the firm's commitment to truthful and high-quality ESG reporting, helping it stand out in the marketplace. At the same time, the resource-based view (RBV) suggests that only firms with sufficient resources and capabilities can strategically invest in such credibility-enhancing practices (Barney, 1991).

In the following sections, we critically review the literature on four key aspects of ESG assurance—adoption, provider choice, assurance level, and scope.

2.1 Adoption of external assurance

Early research on sustainability assurance adoption laid the groundwork by examining institutional pressures and legitimacy motives. Institutional theory posits that coercive (regulatory), normative (professional), and mimetic (peer) forces shape organizational practices (DiMaggio et al., 2010). Foundational studies such as Simnett et al. (2009) and Kolk and Perego (2010) adopted this lens to show that external institutional factors—such as legal origin, regulatory context, and general stakeholder pressure—influence a firm's decision to pursue ESG assurance. Subsequent work extended this view by incorporating legitimacy theory and stakeholder perspectives. For example, O'Dwyer and Owen (2005) conducted a critical evaluation of early assurance statements and found that companies often use assurance as a proactive legitimacy tool when under public scrutiny. In such cases, assurance is framed not only as a compliance response to external pressure but also as a strategic exercise in reputation management and stakeholder engagement. Consistent with this, Manetti and Becatti (2009) observed that firms threatened by social or environmental controversies tend to seek assurance to restore legitimacy. These studies collectively suggest that organizations with greater exposure to stakeholder scrutiny will be more likely to adopt ESG assurance to (re)gain approval from their salient stakeholders.

Internal firm characteristics have also been linked to assurance adoption. Prior studies have produced mixed findings on certain factors, however. A meta-analysis by Hay et al. (2023) confirms that industry and size are robust predictors of whether firms obtain sustainability assurance, but finds little or mixed evidence for several other expected determinants (including some corporate governance measures). Larger firms with more diverse stakeholders and higher visibility are more exposed to legitimacy pressures and have more to lose from credibility gaps; accordingly, they exhibit a higher propensity to obtain assurance (Simnett et al., 2009). Some evidence indicates

that strong financial performance can provide the slack resources needed to afford external assurance engagements, whereas firms with higher leverage might use assurance to signal reliability and transparency to creditors concerned with risk (Perego, 2009). Clarkson et al. (2008) suggest that even firms with poorer environmental performance may adopt assurance or other disclosure strategies as a form of appeasement (a “visibility” effect), highlighting that not only high performers seek assurance. Meanwhile, some governance-related attributes (e.g., board composition) hypothesized to drive credibility efforts have shown inconsistent effects across studies. These inconsistencies underscore the need for updated, context-specific investigations.

In particular, much of the early literature predates the current ESG reporting era with its proliferation of frameworks and heightened investor attention, potentially limiting the applicability of older conclusions. More recent work points to emerging drivers: mimetic pressure and normative guidance now play a critical role. For example, firms often imitate their industry peers’ ESG practices; when a high proportion of peer companies have their sustainability reports assured, a focal firm may feel pressure to do the same to avoid standing out negatively (Martínez-Ferrero & García-Sánchez, 2017). Such mimetic behavior has been documented especially in environmentally sensitive industries and in regions where stakeholder scrutiny is intense. Likewise, adherence to comprehensive ESG frameworks (e.g., GRI Standards or recommendations of the Task Force on Climate-related Financial Disclosures) often encourages external assurance as part of best practice. Companies participating in voluntary initiatives like the Carbon Disclosure Project (CDP) face soft pressure to validate their reported data (Luo, Lan & Tang, 2012), and the Global Reporting Initiative explicitly advocates external assurance for its reporters (GRI, 2021). These evolving forces suggest that firms today pursue ESG assurance not only due to traditional institutional pressures but also to signal leadership in sustainability reporting and to meet the normative expectations set by global frameworks.

Despite extensive research, there remain theoretical and empirical gaps regarding which firms elect to pursue ESG assurance, especially in specific markets. Prior studies have largely treated assurance adoption in general terms, without always disentangling the interplay of external pressures and internal strategic motives. There is a need to critically evaluate how classic predictors (size, performance, risk profiles) hold up in the current environment and how newer factors (like peer influence and framework adoption) enter the equation. By focusing on a recent period (2023-2024) and a specific setting (UK FTSE 350 firms), our study addresses the call for more contextualized evidence. We integrate institutional, stakeholder, and resource-based perspectives to examine a comprehensive set of factors that may drive the decision to obtain third-party ESG assurance. Accordingly, we propose:

H1: Firms are more likely to obtain external ESG assurance when they face greater external pressure and have a stronger capacity to do so.

2.2 Choice of assurance provider

Beyond the decision to assure lies a secondary strategic choice: which type of assurer to engage. The choice of assurance provider can significantly affect stakeholders' perceptions of assurance quality. Companies typically select either a large reputable accounting firm (often one of the Big Four audit firms) or a specialist consultancy/agency to conduct the ESG assurance. Each option carries different implications in terms of expertise, cost, and credibility. Accounting firms—especially the Big Four—are often perceived as providing higher-quality assurance due to their established methodologies, brand reputation, and experience in financial auditing (Perego, 2009). In contrast, boutique sustainability consultancies may offer deeper technical expertise in certain ESG topics and more customized feedback for improvement (O'Dwyer & Owen, 2005), but they generally lack the name recognition and broad trust that large audit firms command.

Empirical evidence supports the notion that firms with higher stakeholder visibility and accountability demands tend to hire reputable assurers. Kolk and Perego (2010) found in an international sample that companies in stakeholder-sensitive environments were more likely to choose a Big Four provider. More recently, a study by Bentley-Goode et al. (2024) documented that larger firms and those with better financial performance are more inclined toward Big Four assurance, and such choice is associated with higher assurance quality outcomes. This aligns with stakeholder and signaling theory: a prominent firm has more to gain from signaling its commitment to rigorous assurance by hiring a top-tier provider, as stakeholders interpret the involvement of a reputable auditor as a sign of diligence. The institutional context also matters; in stakeholder-oriented countries (with stronger expectations for corporate social responsibility), Big Four providers dominate, whereas in more shareholder-oriented or lax environments, companies might be content with lesser-known providers (Hay et al., 2023).

Nevertheless, open questions remain about the determinants of provider selection. While size and visibility are known drivers, the literature is less clear on the role of other firm-specific factors (for example, does a firm's risk profile or governance strength tilt the balance toward a particular provider type). Some studies have proposed that stronger internal governance might drive companies to demand higher-quality assurers, but evidence is inconclusive (the meta-analysis by Hay et al. (2023) found no consistent association between common governance indicators and provider choice outcomes). Also, relatively few studies focus specifically on single-country settings or the post-2020 period to see if prior international patterns hold true in the current era of ESG investing.

In light of the above, our study contributes by examining which factors affect firms to choose a reputable (Big Four or equivalent) assurance provider, within a uniform regulatory context. We draw on signaling arguments—expecting that firms under greater scrutiny or aiming to signal superior ESG credibility will opt for renowned

providers. We also consider resource-based factors like firm size and profitability, which may determine the ability to bear the higher fees of reputable assurers. Therefore, we expect:

H2: Among firms that obtain ESG assurance, those subject to greater legitimacy pressures and possessing greater resources are more likely to select a highly reputable assurance provider.

2.3 Assurance depth - reasonable vs. limited

A further dimension of ESG assurance decisions is the level of assurance provided—typically classified as either limited (moderate assurance) or reasonable (high assurance, akin to a financial audit level). The assurance level reflects the depth of the verifier's work and the degree of confidence conveyed in the assurance statement. In practice, since reasonable assurance is more costly and challenging—most companies have historically opted for limited assurance (Maroun, 2019). Limited assurance involves fewer detailed tests and results in a negative form conclusion (stating that nothing came to the assurer's attention to suggest the information is not fairly stated), whereas reasonable assurance requires more exhaustive evidence gathering and supports a positive opinion on the reliability of the information. Perego (2009) suggests that this choice entails a strategic trade-off between report credibility and cost: firms will only pursue the higher level if they perceive sufficient benefit in terms of stakeholder trust or risk reduction.

In theory, opting for reasonable assurance could serve as a stronger signal of transparency and quality, since it indicates the firm is confident in its ESG reporting to undergo rigorous scrutiny. Signaling theory would imply that firms with superior ESG performance or robust internal controls might use reasonable assurance to distinguish themselves from peers, sending a message of exceptional accountability. Indeed, some companies—often those facing intense reputational or regulatory scrutiny—do choose reasonable assurance on their ESG disclosures, despite the norm of limited assurance. Maroun (2019) introduced the notion of symbolic legitimacy in this context: certain firms may adopt reasonable assurance largely as a symbol to demonstrate openness and gain legitimacy, even if the practical improvement in information reliability over limited assurance is marginal. In other words, a high assurance level can be a performative act to impress stakeholders.

Empirical evidence on the determinants of assurance level is relatively sparse. Simnett et al. (2009) provided an early technical overview, noting that reasonable assurance engagements were rare and mostly associated with particular countries or providers rather than firm traits. Another study by Maroun (2019) found that firms with strong monitoring boards and in high-impact industries were more likely to seek reasonable assurance, linking this decision to corporate governance influences. Some researchers have posited that firms with better internal governance and risk management systems are more inclined toward reasonable assurance (Cohen, Krishnamoorthy, & Wright,

2017), since they can support the demands of a thorough assurance process and have confidence in their reported data. Additionally, involvement in more demanding ESG frameworks or standards might push companies toward higher assurance levels as a way to comply with best practices. On the other hand, many firms may deliberately stick to limited assurance to retain flexibility, avoid potential liability, or because their ESG reporting systems are not mature enough to withstand a full audit-level check.

Taken as a whole, the literature suggests a tension between the ideal of enhanced credibility and the practical constraints of cost and capability. Notably, very few studies have directly examined firm-level predictors of choosing reasonable vs. limited assurance. Our study addresses this gap by investigating which kinds of firms go beyond the minimum and opt for reasonable assurance. We draw on legitimacy and signaling arguments to propose that firms facing greater scrutiny (e.g., those in sensitive industries or with higher stakeholder expectations) and those with greater capacity (size, financial strength, and strong governance) will be more likely to demand a higher level of assurance. By empirically testing firm-level factors, we aim to contribute new evidence on the drivers of assurance depth. Thus, we hypothesize:

H3: Among firms that obtain ESG assurance, those with greater resources and under higher scrutiny are more likely to seek a reasonable (as opposed to limited) assurance level.

2.4 Assurance breadth - coverage of E, S, G metric

The final point this paper concerns is the assurance scope. Most prior studies discuss sustainability assurance as if it were a monolithic practice, without differentiating which aspects of ESG are assured. In reality, assurance scope can vary widely: some companies assure only a narrow subset of metrics (often environmental data like greenhouse gas emissions), while others assure information across all three ESG pillars. The breadth of assurance refers to how comprehensively a firm's ESG report is covered by the assurance engagement. This is an important but under-explored facet—ensuring one dimension (say, E) but not others (S or G) might reflect the firm's priorities or the areas of greatest risk, and it affects how stakeholders interpret the credibility of different parts of the ESG disclosure.

Emerging literature suggests significant variation in the motivations and drivers for assurance across the E, S, and G dimensions. For the environmental (E) component, external regulatory compliance and environmental risk management considerations are paramount. Firms in high-pollution or carbon-intensive industries face coercive pressure to validate their environmental impact data; studies show that such firms are more likely to pursue third-party assurance of environmental metrics to satisfy regulators and preempt criticism (Clarkson et al., 2019; Luo et al., 2012). In contrast, assurance of social (S) information (e.g., labor practices, human rights, community impact) is often driven by reputational risk and stakeholder activism. Research finds that public scrutiny, NGO campaigns, and media exposure around social issues can

motivate firms to seek assurance as a legitimacy tool, to show they are addressing stakeholders' ethical concerns (Islam & Deegan, 2010; Barkemeyer, Preuss, & Lee, 2015). The governance (G) dimension of ESG is somewhat different, as it deals with internal processes (like board structure, anti-corruption, ethics policies). Decisions to assure governance disclosures have been linked to internal oversight strength: companies with more independent boards or proactive audit committees may be more willing to have governance processes assured, integrating it with their overall risk management and control framework (Cohen et al., 2017; Boiral, Heras-Saizarbitoria, & Brotherton, 2022). These studies indicate that each ESG pillar has distinct stakeholders' concerns and pressures.

The literature has yet to fully incorporate a disaggregated analysis of ESG assurance. Most empirical works treat the presence of assurance as a single binary variable, without specifying scope, thereby overlooking how firms might selectively assure what "matters most" to them or to their stakeholders. An exception is the recent study by Gipper et al. (2024), which examined how the different ESG metric been assured. They found, for instance, that assurance on environmental information (e.g., greenhouse gas emissions) tends to be more extensive and leads to higher reported quality. This kind of evidence underlines the importance of analyzing assurance choices at a granular level. It also raises further questions: what characteristics lead a company to assure all three ESG dimensions versus just one or two?

One might expect that firms with a strong overall commitment to sustainability would seek broader assurance coverage to reinforce their credibility across the board. Such firms likely have the internal systems (a resource-based capability) to support assurance of diverse data and see comprehensive assurance as aligned with their transparent ethos. Additionally, stakeholder theory would suggest that firms facing pressures on multiple fronts—for example, a consumer-facing company with both environmental impact and social supply chain issues—will feel compelled to assure information in all those areas to satisfy the varied concerns of their stakeholder groups. Industry practice may play a role too: in some sectors (e.g., mining), it might be standard to assure environmental and safety (social) data, whereas governance metrics might be less commonly assured, and firms will follow what is seen as normative for their industry. Furthermore, mimetic effects could influence scope: if leading companies begin assuring a broader set of metrics, peers may imitate to signal they are keeping up with best practices.

In summary, broader assurance scope is thought to reflect a stronger commitment to transparency and ESG integration within the firm (Boiral et al., 2022). A company that assures across E, S, and G signals that its sustainability reporting as a whole is trustworthy, not just isolated parts of it. However, expanding assurance breadth also entails higher cost and effort, so we expect only certain types of firms will do so. We aim to contribute to the literature by explicitly examining the determinants of assurance scope breadth—essentially, what drives a firm to assure a wider range of ESG topics. Our analysis will consider factors like firm size, resource availability, and

external pressure breadth (e.g., does the firm operate in a controversial industry touching multiple ESG issues?) as potential drivers. By doing so, we fill the gap in understanding how assurance is deployed across different content areas of ESG reports. Accordingly, we propose:

H4: Firms with greater overall resources, stakeholder pressures, and sustainability orientation are more likely to assure a broader scope of ESG disclosures (covering environmental, social, and governance dimensions).

In the above literature review, we identified that ESG assurance decisions are shaped by a combination of external pressures (stakeholder, institutional, and mimetic) and internal characteristics (resources, performance, and governance)—yet prior research has left several gaps. Our study contributes by empirically testing these factors in a unified framework covering four aspects: the decision to adopt assurance, the choice of provider, the chosen assurance level, and the scope of coverage. By drawing on stakeholder theory, signaling theory, and the resource-based view, we address the theoretical call to integrate legitimacy and strategic perspectives. We focus on a recent period (2023-2024) and the UK FTSE350 context, thereby updating and extending earlier findings to a new setting. Each of our hypotheses targets a specific gap noted in the literature, and together, they offer a comprehensive investigation into why and how firms engage with external ESG assurance.

3 Data

3.1 Sample

Our sample includes 350 firms that are in the FTSE 350 index for 2023 and 2024 (for firms who have released their annual report or sustainability report as of 2025.3.31). We begin by identifying all constituents of the index during this period and collecting ESG assurance data. We limit our sample to FTSE 350 firms because they represent the largest and most visible publicly traded companies in the UK, with high levels of stakeholder scrutiny and advanced corporate reporting practices. These firms are more likely to engage in ESG assurance and disclose relevant assurance details, making them well-suited for studying variation in assurance use and quality.

Firms are included in the sample if they provide at least one ESG-related disclosure. Our full sample includes 534 firm-level observations with complete assurance and financial information, which we use for descriptive analysis. For regressions on assurance provider and assurance quality, we retain a subset of 258 firms with complete detail on those dimensions. We use additional firm characteristics from Refinitiv Eikon, a product of the London Stock Exchange Group (LSEG), to complement the manually collected data and ensure consistency across observations.

3.2 Data Collection

ESG reports are unstructured and vary widely across firms in terms of content, format, and terminology. Because of this heterogeneity, no commercial database systematically captures the details of ESG assurance across multiple assurance dimensions. To address this limitation, we manually collect data on ESG assurance from firm-level reports, focusing on disclosures related to whether assurance was obtained, what aspects of ESG were covered, and who provided the assurance. The reports used include standalone sustainability reports, integrated annual reports, and CSR disclosures available on company websites and archives.

From these reports, we extract firm-level assurance characteristics. Specifically, we record three main aspects for each firm: (1) whether any ESG assurance was obtained, (2) the level of assurance (reasonable vs. limited), and (3) the identity and type of assurance provide. In addition, we separately track whether each of the three ESG pillars—environmental, social, and governance—was explicitly covered by the assurance engagement.

Disclosure framework usage was captured using a combination of Refinitiv Eikon and our manual data collection. We coded three binary indicators for the Global Reporting Initiative (GRI), the Task Force on Climate-related Financial Disclosures (TCFD), and the Carbon Disclosure Project (CDP). Refinitiv’s classification was used where available and validated against disclosures in firms’ ESG reports. All data collection was performed by the authors of this paper. Our hand-collected dataset allows us to capture assurance detail at a level of granularity not offered by existing databases and forms the basis for our empirical analyses.

4 ESG Assurance in the UK

This section provides a detailed descriptive analysis of ESG assurance practices among FTSE 350 firms, structured around the four main hypothesis. Each subsection focuses on one dependent variable and highlights key patterns in firm characteristics, peer behavior, and reporting frameworks.

4.1 Adoption of ESG assurance

We begin by documenting the state of ESG assurance in the United Kingdom for 2023-2024. Firstly, ESG assurance is becoming mainstream among FTSE350, we find the proportion of FTSE 350 companies that obtained independent ESG assurance in 2023 and 2024 is 49.4% and 46.3% respectively. We interpret the 2024 data with caution, as they are based on annual and sustainability reports published as of March 31, 2025. Given that a significant number of companies release their reports later in the year, the current data may underestimate the true assurance rate for 2024. Moreover, several firms explicitly disclosed in their 2023 reports an intention to obtain assurance in the subsequent reporting cycle, indicating a growing commitment to external verification. These observations support the view that voluntary ESG

assurance is becoming increasingly institutionalized and may be transitioning toward a market norm.

We summarize the overall picture of FTSE 350 firms in terms of ESG assurance, which we have compiled for our full sample. Approximately 48.3% of firms obtained third-party assurance, indicating that while assurance is no longer a marginal practice, it remains far from universal. The persistence of a non-assuring majority highlights ongoing heterogeneity in assurance adoption, suggesting that the practice has not yet reached institutional saturation. This variation may reflect differences in firm-level incentives, resource constraints, or risk perceptions. It also underscores the voluntary nature of ESG assurance in the UK context and supports the notion that, absent regulatory mandates, firms selectively adopt assurance based on perceived reputational benefits and stakeholder pressures. From a diffusion-of-practices perspective, this pattern aligns with a transitional stage in which assurance is becoming normative but is not yet universally expected.

Although the aggregate assurance rate reflects growing normalization of ESG assurance, this aggregate masks substantial cross-sectoral heterogeneity. Industry-level dynamics are particularly relevant, given the varying materiality of ESG risks and regulatory scrutiny across sectors.

Figure A-1 (in Appendix A) reveals marked disparities in ESG assurance uptake across industries. Sectors with high environmental exposure and operational intensity—such as Utilities, Basic Materials, and Energy—report near-universal adoption, with over 80% of firms engaging third-party assurers. This pattern aligns with stakeholder theory: firms operating in environmentally sensitive sectors face stronger legitimacy pressures and are thus more likely to adopt assurance as a risk-mitigating and credibility-enhancing tool (Deegan, 2002). In contrast, industries such as Technology and Financials exhibit significantly lower assurance rates (below 25%), suggesting either a perceived lower materiality of ESG issues or reliance on alternative reputational mechanisms. These observations support a contingency-based interpretation, where sector-specific risk exposure and disclosure norms drive the perceived value and necessity of assurance (Simnett et al., 2009).

Firm-Level Drivers of ESG Assurance

Beyond industry-level determinants, firm-specific characteristics—particularly size—also appear to influence assurance behavior in systematic ways. Larger firms are typically more visible to stakeholders, operate under more stringent scrutiny, and possess greater reporting infrastructure, which may increase both the perceived need and the capacity to pursue external assurance.

As illustrated in Figure 1, there is a clear positive association between firm size and the likelihood of obtaining ESG assurance. Firms in the top asset deciles (D9–D10) report assurance rates above 70%, whereas those in the lowest deciles fall below 30%. This monotonic trend aligns with both legitimacy theory and resource-based theory.

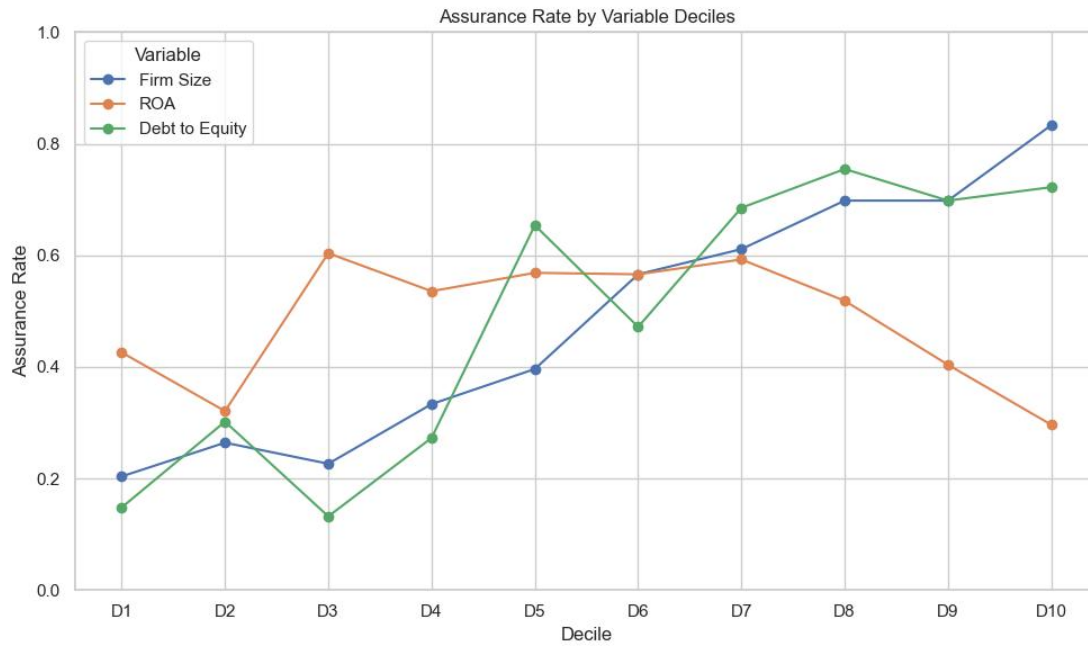
From a legitimacy perspective, larger firms face greater reputational risk and thus have stronger incentives to externally validate their ESG claims. Simultaneously, from a resource-based view, they are better equipped to bear the costs of assurance and implement the necessary internal systems. These findings suggest that scale not only facilitates assurance adoption but may make it an expected component of large firms' ESG communication strategies.

While firm size demonstrates a clear and intuitive relationship with assurance adoption, the role of financial performance—proxied by return on assets (ROA)—is more ambiguous. In theory, profitability could influence assurance behavior through multiple channels: more profitable firms may have greater resources to invest in assurance, or they may perceive less reputational need to signal credibility if their financial performance already speaks for itself.

Figure 1 reveals a non-linear association between ROA and assurance uptake. Firms in the middle range of profitability (deciles D3-D7) show moderate assurance rates, peaking around 55-60%. However, this trend declines in the upper deciles (D9-D10), where the most profitable firms report lower adoption. This inverted-U pattern suggests that ESG assurance may be strategically deployed by firms with moderate performance to bolster external credibility—potentially offsetting informational ambiguity or mitigating stakeholder doubt. In contrast, highly profitable firms may view third-party assurance as redundant, relying instead on financial success as a primary signal of legitimacy. These results are consistent with prior literature highlighting the limited and context-dependent role of financial performance in driving voluntary assurance decisions (Kolk & Perego, 2012).

Another financial determinant that may shape assurance decisions is capital structure. Highly leveraged firms often face heightened scrutiny from creditors and financial markets, which may increase the salience of assurance as a mechanism to reduce perceived risk and enhance transparency.

Figure 1 presents assurance adoption rates across leverage deciles, measured by the debt-to-equity ratio. The trend is notably upward: firms in the highest deciles report assurance rates exceeding 70%, while those in the lowest deciles are below 20%. This pattern lends support to signaling theory, which posits that firms with greater external financing needs may voluntarily disclose—or, in this case, externally verify—non-financial information to reduce information asymmetry (Spence, 1973). Assurance thus functions not merely as a reputational safeguard but as a strategic signal of risk management and reliability, particularly relevant for firms reliant on debt capital.



Note: Figure 1 illustrates the relationship between firm size, ROA and debt-to-equity and the likelihood of obtaining independent ESG assurance. Firms are grouped into deciles based on total assets, and the vertical axis plots the proportion of firms in each decile that received third-party assurance.

Figure 1. ESG Assurance Rate by Firm Size, ROA, Debt-to-Equity Decile

ESG Framework Drivers of ESG Assurance

In addition to firm-specific financial characteristics, institutional factors such as the adoption of ESG reporting frameworks can significantly influence assurance behavior. Framework adherence not only standardizes reporting practices but also reflects a firm's internal commitment to transparency and accountability, thereby lowering the marginal cost and increasing the expected benefit of third-party verification.

There is a strong positive association between framework adoption—specifically GRI, CDP, and TCFD—and the likelihood of obtaining ESG assurance. Among GRI adopters, over 80% obtained external assurance, compared to just 35% among non-adopters. A similar pattern holds for CDP (80% vs. 23%) and TCFD (65% vs. <20%). These differences suggest that firms using formal ESG frameworks are not only more structurally prepared to undergo external verification but may also do so to reinforce the credibility of their standardized disclosures. The results align with institutional theory: firms conforming to widely accepted reporting norms are more likely to face stakeholder expectations—and possibly peer pressure—for third-party validation (Perego, Kennedy & Whiteman, 2016). Moreover, framework adoption may act as a signal of ESG maturity, whereby firms both report and assure to distinguish themselves as leaders in sustainability governance.

Section Summary

The descriptive evidence suggests that ESG assurance adoption among FTSE 350 firms is driven by a combination of industry context, firm characteristics, and institutional alignment. Industry-level variation reflects the materiality of ESG risks and corresponding stakeholder pressures, with high-impact sectors showing markedly higher uptake. At the firm level, larger firms and those with higher leverage are significantly more likely to assure, consistent with both legitimacy and signaling theories. Profitability exhibits a non-linear pattern, indicating that moderately performing firms may use assurance strategically to bolster perceived credibility. Furthermore, the adoption of formal ESG reporting frameworks such as GRI, CDP, and TCFD is strongly associated with assurance uptake, likely due to improved reporting infrastructure and stakeholder expectations of verification. Collectively, these patterns suggest that ESG assurance adoption is not random but shaped by structural, strategic, and institutional factors. These insights inform the empirical specification of our first regression model, which formally tests the relative influence of these drivers on firms' assurance decisions.

4.2 Assuror type

While the preceding section focused on firms' decisions to obtain ESG assurance, an additional strategic consideration arises once that decision is made: the choice of assurance provider. The type and reputation of the selected provider can influence how stakeholders perceive the credibility, rigor, and independence of the assurance process.

To analyze this choice, we adopt a dual classification scheme. First, we distinguish between accounting and non-accounting firms. This typology allows us to assess the role of traditional audit firms—such as the Big Four—in the ESG assurance ecosystem, and to evaluate whether ESG verification is becoming an extension of financial audit services or remains the domain of specialized engineering, sustainability, or verification consultancies.

Second, we categorize assurance providers based on their global presence. Providers operating more than 100 offices worldwide are labeled “reputable”, reflecting their international scale, organizational capacity, and institutional brand equity. This classification is intended to capture how provider scope correlates with market dominance and whether global presence influences selection likelihood.

Together, these two dimensions—provider type and provider reputation—allow us to disentangle structural variation in the ESG assurance market and explore whether different firms systematically gravitate toward distinct types of assurers.

4.2.1 Accounting provider vs. Non-accounting provider

To begin disentangling the structure of the ESG assurance market, we first examine the division between accounting and non-accounting assurance providers. Among the 258 FTSE 350 firms that obtained ESG assurance, 50.8% engaged an accounting firm, while 49.2% relied on non-accounting providers, including engineering consultancies, environmental verification bodies, and sustainability specialists. The nearly equal split indicates that ESG assurance remains a structurally open and contested space, with traditional audit firms and domain-specific experts coexisting. Compared to the statutory audit market—where legal mandates restrict service provision to licensed accounting firms—the ESG assurance landscape exhibits a more balanced provider distribution, suggesting lower regulatory entry barriers and greater heterogeneity in client preferences.

The continued relevance of accounting firms in the assurance market, however, reflects their ability to leverage institutional trust and established client relationships. Firms that seek symbolic legitimacy or alignment with financial reporting standards may view accounting-based assurance as more credible in the eyes of investors or regulators. By contrast, firms with industry-specific reporting needs may prefer non-accounting providers for their technical expertise and operational relevance (Power, 1997).

Concentration and Competition in the Assurance Market (Top 10)

To further illustrate provider concentration and competitive dynamics within the ESG assurance landscape, Table A-1 (in Appendix A) presents the top 10 assurance providers ranked by market share within the FTSE 350. This analysis provides insight into whether the ESG assurance market mirrors the audit market's oligopolistic structure or remains fragmented and competitive.

The results reveal a highly concentrated market structure, with the Big Four accounting firms—EY, PwC, Deloitte, and KPMG—collectively accounting for over 47% of all ESG assurance engagements. EY holds the largest individual share at 14.3%, followed by PwC (12.0%), Deloitte (10.5%), and KPMG (10.5%). This dominance underscores the transference of audit-based reputational capital into the ESG domain and suggests that many firms perceive Big Four involvement as a marker of assurance credibility.

That said, non-accounting firms also feature prominently in the top 10, including ERM CVS (8.5%), Bureau Veritas (4.6%), and DNV (4.2%). Their presence suggests that firms in certain sectors may prioritize technical ESG expertise over audit lineage, especially for complex environmental or social disclosures. The coexistence of audit firms and sectoral specialists at the top of the market reflects a dual logic: one rooted in institutional credibility, the other in operational specificity. This finding complements the earlier split observed in market share of accounting vs. non-accounting providers and reinforces the idea that assurance provider choice is shaped by both symbolic and substantive considerations.

Sectoral Variation in Assurance Provider Choice

While the overall market for ESG assurance appears structurally balanced between accounting and non-accounting providers, this aggregate view conceals substantial heterogeneity across industries. Different sectors face different types of ESG risks, regulatory environments, and stakeholder expectations—all of which may influence preferences for the type of assurance provider engaged.

Furthermore, we depict the industry-level breakdown of provider type among firms that obtained ESG assurance in Figure A-1 (in Appendix A). The data reveal distinct industry patterns: Financials, Consumer Staples, and Energy sectors exhibit a strong preference for accounting firms, with over 60% of assured firms in each sector engaging a traditional audit provider. This tendency may reflect these sectors' higher exposure to financial markets, investor scrutiny, or regulatory compliance regimes, all of which amplify the signaling value of audit-based assurance.

In contrast, sectors such as Technology and Telecommunications show a marked preference for non-accounting providers, with the majority of firms relying on sustainability consultants or engineering specialists. These industries may place higher value on technical expertise tailored to their specific disclosure challenges, or they may perceive limited incremental value in audit-affiliated assurance. The observed divergence reinforces the notion that assurance provider selection is not only shaped by firm-level preferences but also deeply embedded in sectoral norms and materiality profiles.

Concentration Within the Accounting Assurer Segment

To better understand the internal structure of the accounting-based assurance segment, we summarize the market share data for firms that engaged accounting providers. This allows us to assess whether the accounting assurance landscape is competitive or dominated by a few major players—most notably, the Big Four.

The data reveal a highly concentrated market. Among FTSE 350 firms that selected an accounting assurer (N=131), over 90% engaged one of the Big Four. EY leads with a 28.2% share, followed by PwC (23.7%), Deloitte (20.6%), and KPMG (20.6%). In fact, except for 9 companies, all firms choosing financial firms as assurance provider use one of the Big Four. Other accounting firms, such as BDO and Grant Thornton, collectively account for less than 7% of the segment. This concentration reflects the continued dominance of the Big Four in high-trust professional services and suggests that firms seeking accounting assurance generally default to the big-name financial auditors.

Decoupling Between Financial Audit and ESG Assurance

Interestingly, only 66% of firms that chose an accounting firm for ESG assurance selected the same provider as their financial auditor. This partial overlap suggests that while reputational familiarity may guide provider selection, firms do not always

bundle financial audits and non-financial assurance. This observation opens potential avenues for further research on provider independence, specialization, and the strategic decoupling of audit functions.

To better understand whether dominance in the ESG assurance market simply reflects incumbency in the audit market, Figure 2 compares each provider's market share in ESG assurance versus statutory audit services. This comparison sheds light on the degree to which traditional audit firms have successfully translated their audit client base into ESG assurance mandates—or whether ESG assurance represents a structurally distinct area.

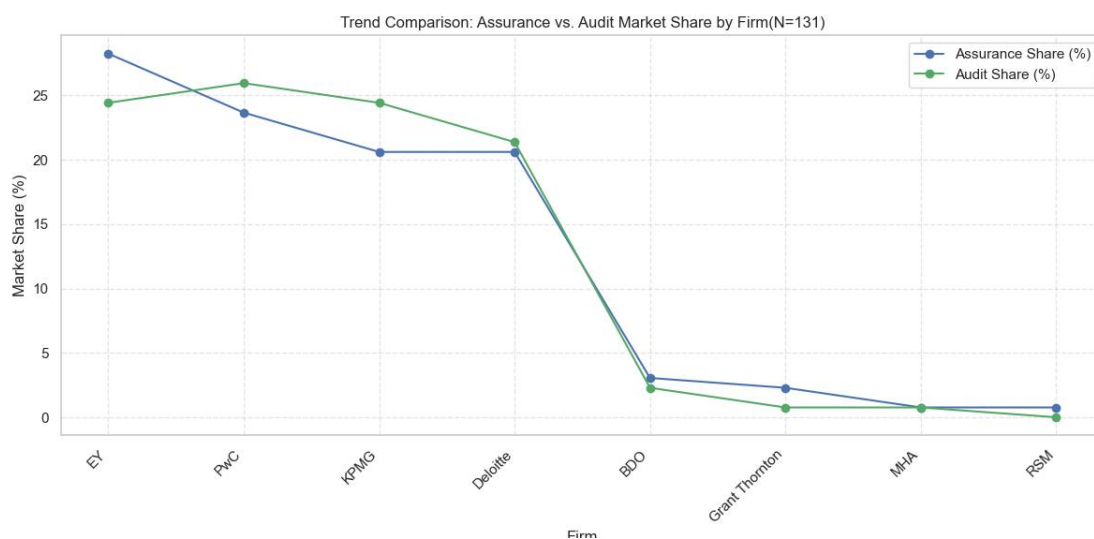


Figure 2: Trend Comparison – Assurance vs. Audit Market Share by Firm

The figure reveals divergences. EY demonstrates a relatively higher share in assurance than in audit, suggesting a proactive expansion strategy and strong positioning in the ESG space. Conversely, PwC and KPMG maintain stronger positions in audit than in assurance, indicating more conservative penetration into the non-financial assurance domain. This suggests that not all Big Four firms are leveraging their audit market share equally when entering the ESG assurance market.

Mid-tier and smaller firms such as MHA and RSM illustrate the inverse trend: their assurance shares exceed their audit footprint, indicating that ESG assurance may offer a more level playing field. These firms appear to be carving out niche positions in ESG services despite limited presence in the financial audit domain. Such decoupling supports the idea that ESG assurance is a less mature and more open market, where perceived credibility and technical expertise—rather than audit legacy—are key to provider selection.

Overall, the comparison suggests that while traditional audit relationships may facilitate entry into ESG assurance, they are neither necessary nor sufficient for success. The lower concentration in assurance shares relative to audit share supports the broader narrative that ESG assurance is evolving along a distinct trajectory, with space for both incumbents and challengers to coexist.

Fragmentation in the Non-Accounting Assurer Segment

Having examined the structure of the accounting-based ESG assurance market, we now turn to the non-accounting segment. This part of the market includes engineering consultancies, environmental verification firms, and sustainability specialists. Figure 3 presents a Pareto distribution of market shares among non-accounting providers, highlighting the degree of fragmentation and concentration within this space.

The distribution is strikingly dispersed. ERM CVS leads with a 17.3% market share, followed by Bureau Veritas (9.4%) and DNV (8.7%). Beyond the top five providers, market shares decline rapidly, and the long tail is composed of firms each serving only one or two clients. This highly fragmented structure stands in sharp contrast to the accounting segment, where the Big Four dominate more than 90% of the market.

The dispersion in this segment may be attributable to lower barriers to entry, the absence of a licensing monopoly (unlike audit), and a broader diversity of assurance needs. Sectoral specialization, technical differentiation, and cost sensitivity may all lead firms to engage smaller, boutique providers. This decentralized market suggests that ESG assurance—at least on the non-accounting side—remains competitive, accessible, and highly customizable.

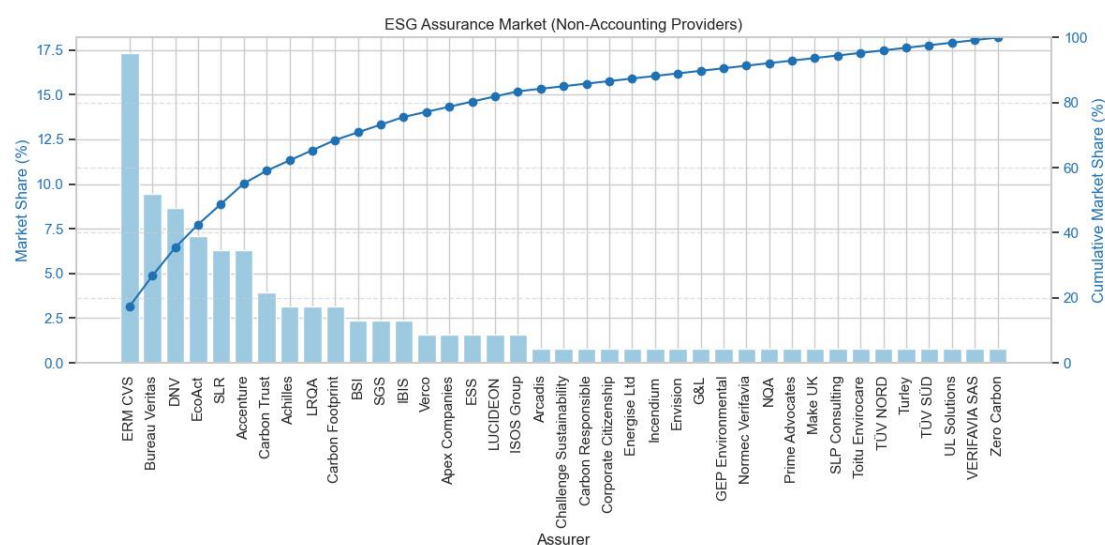


Figure 3: Market Concentration among Non-Accounting ESG Assurance Providers

These results reinforce the idea that the ESG assurance market operates under dual logics: a concentrated audit-influenced core and a fragmented, expertise-driven periphery. The presence of such structural divergence highlights the need for more nuanced assessments of assurance quality, credibility, and institutional legitimacy in ESG verification.

4.2.2 Reputable Provider vs. Non-reputable Provider

Having analyzed assurance providers by institutional type (accounting vs. non-accounting), we now turn to the second dimension of provider classification:

reputability. While provider type captures functional or professional identity, reputability speaks to the perceived status and global standing of the assurance firm. In voluntary ESG markets, where external verification remains largely unregulated, provider reputation may serve as a key heuristic for stakeholders assessing the credibility of reported information.

The distribution of ESG assurance providers according to their reputability, defined by whether the provider operates more than 100 offices globally. Among the 258 firms that obtained independent assurance, 76.4% engaged a reputable provider. This dominant share suggests that, even in the absence of regulatory mandates, firms often gravitate toward globally recognized providers—possibly to enhance external perceptions of credibility, signal commitment to ESG maturity, or align with stakeholder expectations.

The substantial presence of reputable providers aligns with institutional and legitimacy theories: as ESG assurance gains traction, firms may seek symbolic endorsement by selecting established market players. However, the remaining 23.6% of assured firms opted for non-reputable providers, indicating that smaller and regionally focused firms retain a foothold in this market. This may reflect cost considerations, flexibility, or sectoral specialization, especially for firms operating in less publicly scrutinized industries (Perego, 2009).

The existence of this dual structure—where both reputable and non-reputable providers coexist—supports the interpretation that ESG assurance credibility remains partially subjective, shaped by firm strategy and contextual risk rather than uniform quality standards.

Variation in Reputable Provider Use Across Industries

While reputable providers dominate the ESG assurance landscape overall, their prevalence varies substantially across industries. Figure A-1 (in Appendix A) shows distribution of reputable versus non-reputable provider usage by sector, offering insight into how industry norms, regulatory sensitivity, and ESG risk profiles shape reputational preferences.

The data reveal a clear gradient. Highly regulated sectors such as Consumer Staples, Utilities, and Health Care exhibit the strongest reliance on reputable providers, with over 85-90% of assured firms in these sectors engaging globally recognized assurers. These industries face more intense stakeholder scrutiny, and as such, firms may view reputable assurance as a necessary condition for maintaining legitimacy and investor confidence.

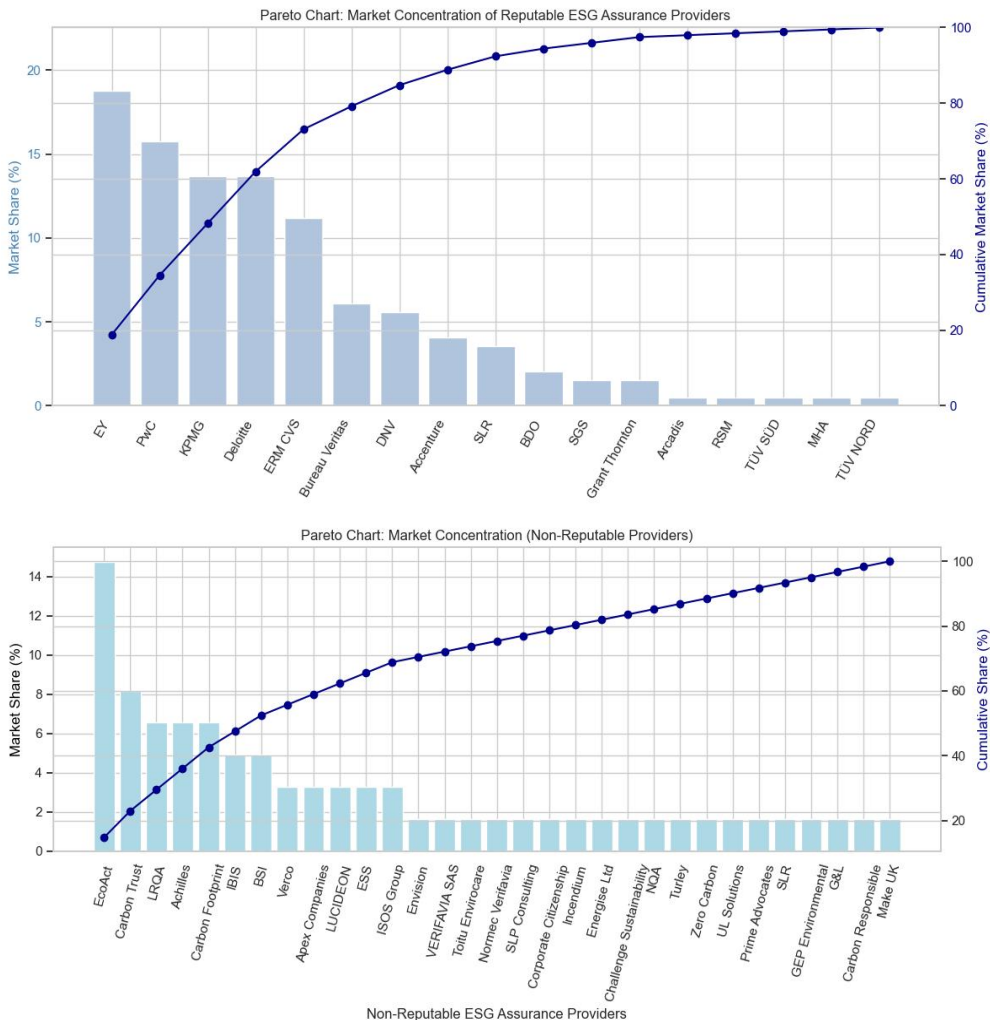
Conversely, sectors like Technology and Telecommunications show significantly lower reliance on reputable providers, with close to half of the assured firms opting for non-reputable alternatives. This may reflect weaker external pressure, cost considerations, or a perception that assurance provider reputation is less material to stakeholder evaluations. The heterogeneity also suggests that industry-level

expectations play a critical role in shaping what kind of provider is considered “sufficiently credible” for ESG reporting purposes.

Taken together, the sectoral divergence in provider reputability supports a context-dependent view of assurance quality, where firms respond not just to internal resources or values, but also to industry-specific legitimacy thresholds.

Dual Market Structure in Reputable vs. Non-Reputable Providers

Figure 4 contrasts the market structures of reputable and non-reputable assurance providers using two Pareto distributions.



Note: This figure shows Pareto charts of ESG assurance provider market share, separately for reputable and non-reputable providers. Each bar represents the proportion of total ESG assurance engagements conducted by a specific provider in the sample. The left Y-axis indicates the individual market share of each provider (as a percentage), while the right Y-axis and line plot display the cumulative market share.

Figure 4. Market Share Distribution of Reputable and Non-Reputable Assurers

The first chart, representing reputable providers, reveals a highly concentrated market. Just four firms—EY, PwC, KPMG, and Deloitte—collectively account for over 60%

of the total assurance engagements in this group. This concentration is consistent with the dominant institutional role of the Big Four in professional services and reflects the strong brand power these firms carry into the ESG assurance domain. Their scale, audit incumbency, and global credibility allow them to dominate the upper tier of the reputable segment.

In contrast, the non-reputable segment is markedly fragmented. Even the leading firm, EcoAct, holds a market share of only ~15%, and market share drops steeply beyond the top few providers. The long tail of this distribution includes dozens of small players, most serving only one or two clients. This decentralized structure reflects a more competitive and accessible submarket, likely shaped by sectoral niches, technical specialization, and lower barriers to entry.

Together, the two charts reinforce a dual-market structure within ESG assurance: one hierarchical and brand-driven, the other pluralistic and expertise-based. This fragmentation among non-reputable providers may be viewed as a strength—enabling customization and diversity—or as a limitation, potentially raising questions about consistency and standardization in assurance practices.

Assurance Level and the Reputability Paradox

A natural question that follows from provider reputability is whether it correlates with the depth of assurance. One might expect reputable providers—given their global scale, technical capacity, and liability exposure—to be more likely to issue reasonable assurance. However, the data reveals a counterintuitive pattern.

Among engagements conducted by reputable providers, only 7.6% were issued at the reasonable level. By contrast, non-reputable providers issued reasonable assurance in 13.1% of cases. This suggests that smaller or less globally recognized providers may be more inclined to offer higher-assurance opinions—possibly as a form of market differentiation or to signal credibility in the absence of strong brand recognition.

There are several plausible interpretations. Reputable firms may adopt a conservative posture due to liability concerns or internal standardization policies that prioritize consistency over flexibility. Limited assurance may also reflect prevailing market expectations or be seen as a sufficient baseline signal when coming from a globally established firm. Conversely, non-reputable firms may use reasonable assurance to compensate for weaker institutional branding, positioning themselves as more rigorous or responsive to client demands. However, it is important to recognize that the final decision regarding assurance level typically rests with the reporting firm. Providers may advise based on their internal policies and risk tolerance, but the chosen level of assurance ultimately reflects the firm's strategic preferences, balancing stakeholder expectations, reputational goals, and cost considerations.

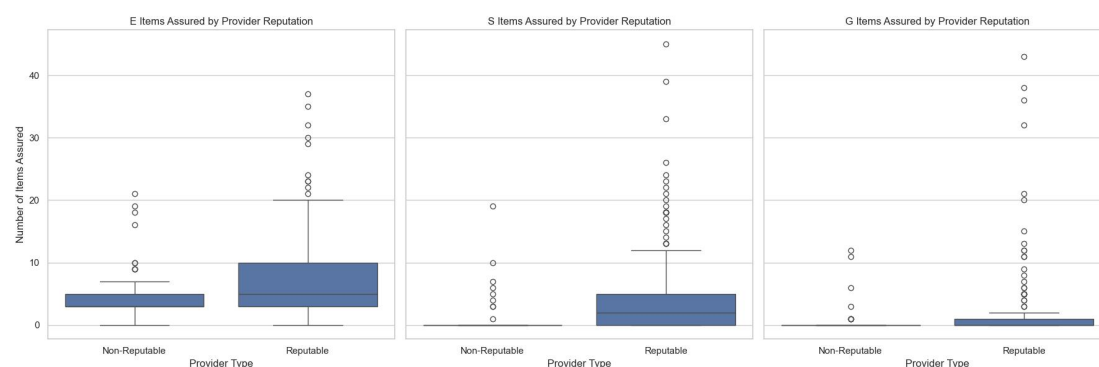
This finding complicates assumptions that provider scale necessarily implies greater assurance depth. It highlights the strategic nature of assurance level decisions and

underscores the need to disentangle reputability from rigor in future evaluations of assurance quality.

Breadth of ESG Assurance by Provider Reputability

Beyond the level of assurance, another important dimension of quality is its breadth—namely, the extent to which assurance covers the full spectrum of ESG disclosures. Figure 5 examines whether provider reputability is associated with broader assurance scope, disaggregated into the E, S, and G pillars.

The results reveal a clear pattern: reputable providers offer broader assurance coverage across all three dimensions. In the environmental category, reputable providers assure more items on average, including several outliers with extensive verification of GHG emissions, energy use, and water metrics. The difference is especially pronounced in the social dimension, where non-reputable providers frequently assure zero or very few items, while reputable providers show a much wider spread of engagement. A similar, though less stark, pattern is observed for governance disclosures.



Note: This figure presents the number of items assured in the Environmental (E), Social (S), and Governance (G) categories, disaggregated by assurance provider reputability. Each boxplot displays the distribution of assured items across firms, with the center line indicating the median, and the box representing the interquartile range (IQR), i.e., the range between the first (Q1) and third (Q3) quartiles. Whiskers extend to values within $1.5 \times IQR$ from the quartiles, while dots beyond this range denote outliers.

Figure 5. Breadth of ESG Assurance by Provider Reputability

These differences likely reflect variations in capacity, methodology, and institutional accountability. Reputable firms may have more standardized procedures and multidisciplinary teams that facilitate broader engagement. Their global client base may also demand assurance across a wider set of disclosures, particularly where reporting frameworks like GRI or CDP are followed. In contrast, non-reputable providers may focus on narrower scopes—either by client request or due to resource constraints.

Overall, these findings suggest that while non-reputable providers may at times offer deeper assurance (i.e., reasonable level), reputable providers tend to provide broader

coverage. This distinction reinforces the need to conceptualize assurance quality along multiple dimensions—depth, breadth, and credibility—rather than relying on any single proxy.

Section Summary

This section provided a two-dimensional descriptive analysis of ESG assurance provider selection among FTSE 350 firms, distinguishing providers by institutional type (accounting vs. non-accounting) and reputability (reputable vs. non-reputable). The results indicate that both dimensions are salient in shaping market structure and firm choice. Accounting firms account for just over half of the market, with the Big Four dominating the segment. However, non-accounting firms—often specialized in sustainability or engineering—retain substantial market share and dominate in certain industries such as Technology and Telecommunications. This suggests that technical relevance and sectoral alignment are significant drivers of provider selection.

In terms of reputability, firms overwhelmingly prefer globally recognized providers, especially in highly regulated or investor-facing sectors. Yet the persistence of non-reputable providers—often smaller, specialized, or regionally focused—demonstrates that reputational capital is not the sole determinant of provider choice. Furthermore, assurance quality characteristics differ across the two classifications: reputable providers tend to offer broader coverage, while non-reputable providers are more likely to deliver reasonable-level assurance. These patterns suggest that provider selection reflects a balance between legitimacy signaling, technical suitability, and cost or flexibility considerations.

Collectively, the findings in Section 4.2 reveal a dual logic of provider selection: one anchored in institutional trust and symbolic capital, and the other in practical expertise and market accessibility. These insights will be further contextualized in the following section, which explores assurance quality outcomes—namely, the level and breadth of ESG assurance—as dependent variables in their own right.

4.3 Assurance level

In the ESG assurance context, the level of assurance—limited versus reasonable—serves as a key indicator of verification depth. Reasonable assurance is typically more rigorous, involving detailed testing and higher assurance thresholds. However, the overwhelming majority of ESG assurance statements among FTSE 350 firms are issued at the limited level.

Specifically, only 8.9% of assurance engagements apply the reasonable standard, while 91.1% are limited in scope. This stark imbalance suggests that most firms adopt ESG assurance as a symbolic legitimacy practice rather than a substantive audit mechanism. From a provider perspective, issuing reasonable assurance carries greater

liability exposure, and may therefore be selectively applied under pressure from investors, regulators, or in highly sensitive sectors.

The descriptive evidence supports the broader interpretation that ESG assurance—especially in jurisdictions like the UK where it remains voluntary—is still evolving as a signaling tool. The dominance of limited assurance raises important questions about what drives the marginal firm to pursue the more rigorous (and costly) reasonable standard, which the subsequent analysis seeks to explore.

While reasonable assurance is rare overall, its distribution is not uniform across industries. Certain sectors may face more intense scrutiny or have more auditable ESG disclosures, potentially making reasonable assurance more feasible or expected. We explore how the prevalence of reasonable versus limited assurance varies by industry.

The data reveal that industries such as Financials and Basic Materials exhibit relatively higher proportions of reasonable assurance—reaching or exceeding 20% in some cases—compared to near-zero rates in sectors like Technology, Industrials, and Telecommunications. This variation may reflect differing stakeholder demands, risk exposure, and ESG disclosure maturity. For example, financial firms are often under stronger regulatory oversight, particularly regarding governance and risk disclosures, while basic materials firms face heavy pressure on environmental accountability.

On the other end of the spectrum, firms in low-regulation, innovation-focused sectors may opt for limited assurance to balance reputational signaling with flexibility. The data support the interpretation that industry context plays a meaningful role in shaping not just the decision to assure, but the intensity with which assurance is pursued.

In addition to industry effects, firm-level financial characteristics may shape the likelihood of obtaining reasonable assurance. Larger, more profitable, or more highly leveraged firms may be better positioned to afford the cost of higher-quality assurance, or may face greater stakeholder pressure to substantiate ESG disclosures with greater rigor. Also, institutional alignment—particularly through ESG reporting frameworks—may influence the depth of assurance that firms seek. Frameworks such as GRI, CDP, and TCFD provide structured templates for disclosure, enhancing the comparability and auditability of ESG data. This institutional scaffolding may make reasonable assurance more attainable or expected, thus we explore the relationship between framework adoption and assurance level.

The results suggest a clear positive association. Firms that obtain reasonable assurance are more likely to adopt each of the three frameworks, especially GRI. Among firms with reasonable assurance, 65.2% are GRI adopters, compared to only 43.3% among those with limited assurance. CDP and TCFD follow a similar pattern, though with smaller gaps. This trend implies that framework adoption may act as a precursor or enabler of higher-assurance engagements.

From a theoretical standpoint, these results align with institutional theory: firms embedded in formalized reporting environments are more likely to internalize norms of verification and invest in higher levels of external scrutiny. At a practical level, frameworks reduce ambiguity and allow assurance providers to more confidently apply reasonable-level procedures. Thus, ESG framework adoption appears not only as a signal of maturity but as a facilitator of deeper assurance.

Section Summary

This section examined the firm-level, industry-level, institutional, and provider-related factors that shape the likelihood of obtaining reasonable versus limited ESG assurance. The findings reveal that reasonable assurance remains relatively rare across the FTSE 350 (8.9%) and is heavily concentrated in specific industries such as Financials and Basic Materials, where stakeholder expectations and regulatory oversight are more pronounced.

Institutional factors play a role: firms adopting formal ESG reporting frameworks—especially GRI—demonstrate higher rates of reasonable assurance, indicating that structural alignment with disclosure standards facilitates deeper verification.

Taken together, these results underscore that the depth of ESG assurance is not a simple function of firm size or provider reputation. Instead, it reflects a multi-layered interaction of institutional embeddedness, sectoral legitimacy thresholds, financial signaling needs, and assurance market structures. These insights set the stage for the next section, which examines the breadth—or scope—of ESG assurance across environmental, social, and governance dimensions.

4.4 Assurance breadth - coverage of environment, social, and governance

While the previous section focused on assurance level as a proxy for depth, another important dimension of assurance quality is breadth—the extent to which third-party assurance covers the full range of ESG disclosures. Rather than treating ESG assurance as a binary or uniform concept, we recognize that companies may selectively assure certain dimensions of ESG disclosure while leaving others unaudited. Assurance breadth can be conceptualized both in terms of dimensional coverage (i.e., whether the Environmental, Social, and Governance pillars are all included) and in terms of the number of assured data points within each dimension.

Breadth matters because selective or partial assurance may limit the credibility of a firm's ESG claims. For instance, verifying environmental data while omitting social or governance aspects may be seen as greenwashing or box-ticking. At the same time, assuring across all three dimensions often requires significant resources, technical expertise, and organizational readiness. As such, assurance breadth likely reflects both external pressures and internal capabilities.

This section examines the structural patterns of assurance scope across ESG dimensions. We first describe the overall distribution of breadth among FTSE 350 firms, then assess how industry, provider type, and assurance market dynamics influence the comprehensiveness of ESG assurance.

We start by overviews of ESG assurance breadth across the FTSE 350 sample. The data reveal that nearly all firms that obtain assurance (98.8%) include environmental indicators in their scope, confirming the centrality of environmental metrics—such as greenhouse gas emissions and energy use—in corporate ESG verification. However, breadth drops significantly beyond this point: only 47.3% of firms include social indicators alongside environmental ones, and a mere 19% provide assurance coverage across all three ESG pillars.

This pattern suggests that most ESG assurance practices remain environmentally focused, with only a minority of firms pursuing full-spectrum verification. The social and governance domains may be less frequently assured due to factors such as measurement complexity, weaker regulatory mandates, and perceived lower materiality to investors. The steep drop in E+S+G coverage underscores that breadth in ESG assurance is still nascent and unevenly developed.

From a credibility perspective, these results raise concerns about selective assurance. Firms that verify only environmental data may inadvertently signal a fragmented approach to ESG management, or even invite stakeholder skepticism about unassured dimensions. As such, assurance breadth represents not just a reporting choice, but a strategic decision with reputational implications.

ESG Assurance Coverage by Industry

While previous finding highlights the limited overall breadth of ESG assurance, this aggregate picture conceals significant variation across industries. Different sectors face distinct regulatory landscapes, stakeholder expectations, and material ESG risks, which may influence the comprehensiveness of assurance practices. Therefore, we disaggregate assurance scope by industry to examine these structural differences.

The results reveal a sharp contrast between ESG-intensive industries and those with lighter ESG exposure. Basic Materials and Health Care show the highest rates of full-spectrum assurance, with 47.6% and 38.5% of firms in these sectors covering all three pillars. These industries often confront high reputational and operational risks in areas such as environmental emissions, labor standards, and governance compliance. Utilities and Consumer Staples also exhibit relatively balanced breadth, with over half of the firms assuring at least environmental and social indicators.

In contrast, Real Estate, Telecommunications, and Industrials remain narrowly focused, with almost all assurance limited to environmental metrics. In Real Estate, for example, just 11.8% of assured firms cover all three dimensions. This unevenness suggests that industry norms and ESG salience strongly influence the perceived need

for comprehensive assurance. Firms in lower-risk or less regulated sectors may view social and governance assurance as non-essential or discretionary.

Overall, this industry-specific analysis underscores that breadth is not randomly distributed but shaped by sectoral expectations and legitimacy demands. For firms operating in high-impact sectors, partial assurance may be seen as insufficient to meet stakeholder standards.

After examining assurance breadth in categorical terms (i.e., whether each ESG pillar is included), Figure 6 adds a quantitative dimension by measuring the average number of indicators assured within each ESG category across industries. This provides a more granular perspective on the intensity and depth of engagement within the E, S, and G domains.

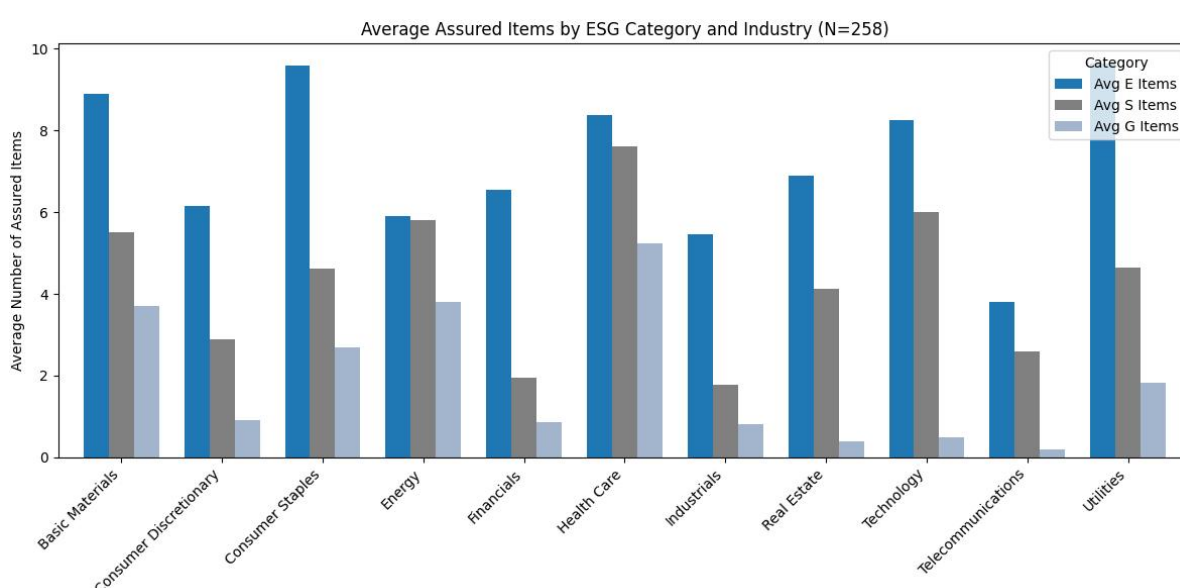


Figure 6. Average Assured items by ESG Category and Industry

The environmental pillar remains the most robust across all industries, with most sectors averaging 5-6 assured items. Basic Materials, Utilities, and Consumer Staples lead in environmental assurance intensity, likely due to well-established metrics such as GHG emissions, energy consumption, and waste management. These results reaffirm the dominant role of environmental disclosure as the anchor of ESG assurance.

For social and governance assurance, the averages drop sharply. Many sectors report fewer than one assured social indicator on average, and governance coverage is even lower. Only Health Care and Financials show moderate assurance intensity across all three pillars, suggesting these sectors face multidimensional ESG risk and regulatory complexity that incentivizes broader assurance engagement.

This item-level view reveals not just whether firms include S or G in their assurance scope, but how substantively they do so. It also highlights that even when firms

nominally include a pillar, they may assure only a minimal subset of disclosures. Thus, true assurance breadth requires both dimensional presence and indicator-level depth.

Assurance Level & ESG Dimension

Up to this point, we have examined assurance breadth in terms of dimensional inclusion and intensity. Yet breadth and depth are not mutually exclusive—firms may choose to assure more dimensions, but still apply only a limited level of rigor. Table 1 explores how assurance level (limited vs. reasonable) varies across the environmental, social, and governance pillars, offering insight into how breadth and depth interact.

The findings are striking: while environmental assurance is nearly universal, it is almost entirely conducted at the limited level, with only 9.1% of E indicators assured reasonably. Social assurance is also less likely to reach reasonable standards (only 9.7%). In contrast, governance—though the least commonly assured dimension overall—exhibits the highest proportion of reasonable-level assurance at 20.3%.

This asymmetry suggests that firms may treat different ESG dimensions not only with different breadth, but also with varying expectations of verification depth. One possible interpretation is that governance indicators (e.g., board structure, risk oversight) are easier to verify and less subject to measurement ambiguity, making them more amenable to reasonable assurance. Environmental and social disclosures, by contrast, may involve complex estimation and reporting variability, leading providers and firms to prefer the lower-risk limited level.

Taken together, these results reinforce the idea that ESG assurance cannot be meaningfully discussed in terms of a single quality metric. Both how many dimensions are covered and how deeply they are assured vary significantly across contexts and dimensions.

Assurance Providers & ESG Dimension

Having analyzed assurance breadth across industries and ESG dimensions, we now shift focus to the role of assurance providers in shaping scope. In particular, we examine whether accounting firms—traditionally dominant in financial audit—approach ESG assurance differently from non-accounting providers such as sustainability or engineering specialists. We compare the average number of indicators assured per ESG pillar by provider type.

The results reveal notable differences. Accounting firms assure a greater number of environmental and social indicators on average than non-accounting providers. The gap is particularly wide in the environmental pillar, where accounting firms cover more than 4 items on average, compared to just over 2 for non-accounting firms.

In contrast, the governance pillar shows less variation between provider types, with both groups covering a limited number of items. This suggests that provider influence on breadth is strongest in areas where disclosure is more technical or externally

regulated (like E), and less relevant for dimensions that are either underreported (S) or already embedded in corporate governance frameworks (G).

These patterns imply that provider selection influences not only how ESG assurance is delivered, but what is included in the scope to begin with. Accounting firms, due to their institutional credibility and structured processes, may be better positioned to deliver broader assurance—especially in firms that are already accustomed to comprehensive financial audits.

Market Share of Assurance Provider across ESG Dimensions (Top 10)

To further contextualize the provider landscape, Table A-1 (in Appendix A) ranks the ten most active ESG assurance firms by their presence in each individual pillar. This breakdown allows us to assess whether certain providers dominate across all ESG dimensions, or whether specialization is emerging within the market.

The results indicate a mix of concentration and divergence. Big Four accounting firms are consistently among the top providers in all three dimensions but with slightly different rankings across pillars, reflecting their broad market presence and capacity to deliver integrated ESG assurance.

Several non-accounting providers show targeted specialization. For example, ERM CVS and Bureau Veritas feature prominently in the environmental and social pillars but are largely absent from the governance space. This may reflect their technical orientation toward operational disclosures rather than corporate governance structures. Similarly, some mid-sized providers appear only in one dimension, suggesting a niche strategy focused on specific client needs or sectors.

The data point to a bifurcated assurance market: large generalist firms with cross-pillar capabilities, and smaller specialists focused on particular ESG domains. This structure reflects the diverse nature of ESG disclosure and reinforces the idea that assurance breadth is shaped not only by firm or industry characteristics, but by the capabilities and strategic positioning of assurance providers themselves.

Session summary

This section examined the scope—or breadth—of ESG assurance across firms in the FTSE 350, focusing on whether third-party verification extends beyond environmental disclosures to include social and governance indicators. The findings confirm that ESG assurance remains narrowly focused in practice: while nearly all assured firms include environmental indicators, less than half include social disclosures, and only 19% assure across all three ESG dimensions.

Industry patterns show that full-spectrum assurance is most prevalent in sectors with high ESG exposure, such as Basic Materials, Utilities, and Health Care. These industries also exhibit higher intensity in the number of assured indicators. By contrast, sectors such as Real Estate and Telecommunications remain largely limited

to environmental coverage. This heterogeneity reflects the differing salience of ESG risks and stakeholder expectations across sectors.

The relationship between assurance breadth and depth is non-linear. While governance indicators are least frequently assured, they are the most likely to be issued at the reasonable level, suggesting a selective approach to verification depth. Accounting firms tend to deliver broader coverage—particularly in the environmental and social pillars—while non-accounting firms appear more focused or specialized. Finally, market structure analysis reveals that large generalist providers dominate across ESG categories, but niche players maintain footholds through pillar-specific expertise.

Together, these findings underscore that assurance breadth is shaped by a combination of institutional capacity, industry legitimacy pressures, and provider specialization. Unlike assurance level, which signals rigor, assurance scope reflects the comprehensiveness of a firm's ESG accountability. Understanding both dimensions is essential for evaluating assurance quality and its signaling power in capital markets.

4.5 Research Design

To examine the determinants of ESG assurance practices among FTSE 350 companies, we estimate the following cross-sectional logistic regressions for various assurance outcomes, including the likelihood of obtaining assurance and the quality thereof.

The dependent variables correspond to binary indicators from ESG characteristics of the firm. The independent variables fall into three conceptual categories: (1) firm fundamentals, (2) peer effects, and (3) ESG reporting frameworks. To account for potential omitted variable bias, all regressions include year fixed effects and industry fixed effects based on ICB industry codes. We adopt this fixed-effect structure to mitigate the influence of unobserved heterogeneity across sectors and time. All variables are defined in Appendix 1.

(i) Obtains independent ESG assurance:

$$\begin{aligned} \text{Independent Assurance}_{i,t} = & \\ & \alpha + \beta_1 \text{Economics of Firms} + \beta_2 \text{Peer Effects} \\ & + \beta_3 \text{ESG Reporting Frameworks} + \text{Fixed Effects} + \mu_{i,t} \end{aligned}$$

(ii) Engages a reputable assurator:

$$\begin{aligned} \text{Reputable Provider}_{i,t} = & \\ & \alpha + \beta_1 \text{Economics of Firms} \\ & + \beta_2 \text{ESG Reporting Frameworks} + \text{Fixed Effects} + \mu_{i,t} \end{aligned}$$

(iii) Obtains reasonable-level assurance:

$$\begin{aligned} \text{Assurance Level}_{i,t} = & \\ & \alpha + \beta_1 \text{Economics of Firms} \\ & + \beta_2 \text{ESG Reporting Frameworks} + \text{Fixed Effects} + \mu_{i,t} \end{aligned}$$

(iv) Provides broader assurance coverage across ESG dimensions:

$$\begin{aligned} \text{Broad E,S,G Metric}_{i,t} = & \\ & \alpha + \beta_1 \text{Economics of Firms} \\ & + \beta_2 \text{ESG Reporting Frameworks} + \text{Fixed Effects} + \mu_{i,t} \end{aligned}$$

4.6 Results

This section presents the empirical findings from multiple logistic regression models that examine corporate decisions surrounding ESG assurance. The analysis explores four interconnected aspects: whether a firm obtains third-party ESG assurance, the level of assurance (limited vs. reasonable), the choice of reputable assurance providers, and the scope of assurance across environmental, social, and governance dimensions. The results shed light on the interplay between firm characteristics, institutional contexts, and disclosure strategies in shaping assurance behavior.

Panel A							
Variable	Sample	N	Mean	SD	P25	P50	P75
Firm Size	Full	534	21.99	1.79	20.76	21.70	22.83
	Assured	258	22.72	1.87	21.47	22.32	23.65
ROA	Full	534	0.05	0.14	0.007	0.04	0.08
	Assured	258	0.05	0.13	0.009	0.039	0.074
Debt-to Equity	Full	534	0.96	4.93	0.09	0.38	0.88
	Assured	258	1.24	6.33	0.31	0.65	1.24
Peer Assurance Rate	Full	534	0.48	0.27	0.30	0.59	0.67
	Assured	258	0.62	0.24	0.61	0.66	0.79
CDP	Full	534	0.47	0.50	0	0	1
	Assured	258	0.76	0.43	1	1	1
TCFD	Full	534	0.58	0.49	0	1	1
	Assured	258	0.85	0.36	1	1	1
GRI	Full	534	0.27	0.45	0	0	1
	Assured	258	0.46	0.50	0	0	1

Panel B							
Variables	Firm Size	ROA	Debt/Equity	% Peer Assurance	CDP	TCFD	GRI
Firm Size	1.00	-0.23	0.07	0.11	0.40	0.34	0.37
ROA	-0.23	1.00	-0.02	0.01	-0.06	-0.02	-0.07
Debt/Equity	0.07	-0.02	1.00	0.05	0.04	0.07	0.05
% Peer Assurance	0.11	0.01	0.05	1.00	0.41	0.44	0.35
CDP	0.40	-0.06	0.04	0.41	1.00	0.52	0.33
TCFD	0.34	-0.02	0.07	0.44	0.52	1.00	0.38
GRI	0.37	-0.07	0.05	0.35	0.33	0.38	1.00

Table 1. Descriptive Statistics and Correlation Matrix

Table 1 summarizes descriptive statistics for the key independent variables across the full and assured sub-samples, while the second table presents the Pearson correlation matrix among these variables, indicating generally low to moderate correlations and limited multicollinearity concerns.

The likelihood that a company chooses to obtain third-party independent ESG assurance is significantly influenced by firm size. Across all model specifications, the coefficient on firm size is both positive and highly significant at the 1% level, indicating that larger firms are systematically more inclined to pursue assurance. This finding supports the expectations of stakeholder and legitimacy theory, which argue that firms with greater public exposure and reputational risk adopt assurance to enhance transparency and legitimacy. Larger firms also tend to possess the necessary internal capabilities and economies of scale to institutionalize assurance practices through dedicated ESG teams and governance frameworks.

In contrast to institutional and reputational drivers, financial performance (proxied by ROA) and capital structure (measured by the debt-to-equity ratio) do not exhibit statistically significant effects on firms' ESG assurance decisions. This lack of association suggests that assurance uptake is not primarily contingent on a firm's profitability or financial capacity. One plausible explanation is that the costs of third-party ESG assurance are relatively modest compared to other sustainability-related expenditures, making it accessible even to less profitable firms. More importantly, firms increasingly perceive ESG assurance as a strategic or normative obligation, rather than a financially discretionary activity. These findings are consistent with emerging literature on the decoupling of financial and non-financial disclosure behaviors, wherein assurance adoption is shaped more by institutional legitimacy

pressures and stakeholder expectations than by traditional financial metrics (Boiral, 2013; Christensen et al., 2021). Overall, the evidence points to a shift in assurance logic—from one grounded in financial feasibility to one rooted in reputational accountability and alignment with evolving sustainability norms.

	(1)	(2)	(3)	(4)
	Dependent Variable: Independent Assurance			
Economics of Firms				
Firm size	0.6979*** (8.314)	-	-	0.399*** (3.892)
ROA	1.3584* (1.751)	-	-	1.828* (1.261)
Debt to equity	0.005* (0.225)	-	-	0.019* (0.635)
Peer effects				
% Peer Assurance	-	-56.057*** (-6.831)	-	-50.221*** (-6.415)
ESG Reporting Frameworks				
CDP	-	-	1.719*** (6.671)	1.200*** (3.912)
GRI	-	-	0.948*** (3.221)	0.709** (2.077)
TCFD	-	-	0.221*** (4.403)	1.060*** (3.320)
Fixed effects	Ind, Year	Ind, Year	Ind, Year	Ind, Year
Observations	534	534	534	534
Pseudo R-squared	0.3667	0.3801	0.4128	0.5440

*Note: This table presents results from regression analyses of the determinants of independent ESG assurance. Regression specifications follow Eq. (i). Data are at the firm-year level and include all FTSE 350 firms with ESG reports and annual reports issuance from 2023-2024. All variables are defined in Appendix 1. *, **, *** indicate statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.*

Table 2. Determinants of Independent ESG assurance: multivariate analysis

The analysis reveals that firms are significantly more likely to obtain ESG assurance when a greater proportion of their industry peers have done so in the same year, as indicated by the positive and statistically significant coefficient on the peer assurance rate. Rather than acting in isolation, firms appear highly responsive to institutional cues embedded in peer behavior—an observation consistent with recent empirical evidence from the U.S. assurance market (Gipper, Ross, & Shi, 2024). In this context, assurance adoption functions not only as a credibility-enhancing measure but also as a strategic response to conformity pressures, particularly in industries where ESG

reporting is becoming institutionalized. The diffusionary nature of assurance suggests that peer uptake serves both as a benchmark and a reputational threshold that firms feel compelled to meet. This dynamic reinforces the idea that ESG assurance is increasingly regarded as a standard practice in sectors with advanced sustainability reporting norms. These core findings are summarized visually in Table 2.

Complementing these firm-level dynamics is the influence of the broader institutional context. The extent of environmental transparency, as proxied by participation in the global CDP disclosure system, emerges as a robust and significant predictor of assurance adoption. Firms operating in jurisdictions with higher rates of CDP engagement—indicative of more developed sustainability discourse and greater pressure for disclosure—are more likely to obtain third-party assurance. This pattern is consistent with coercive institutional theory, which posits that firms adapt their practices in response to external pressures not only to comply with formal requirements but also to meet evolving normative expectations. As CDP participation increasingly reflects stakeholder demand for credible, comparable ESG information, its prominence underscores how voluntary yet globally coordinated transparency initiatives can catalyze assurance behavior, even in the absence of binding regulation.

The next stage of the analysis focuses on the determinants influencing the choice of a reputable ESG assurance provider. Firms were classified based on whether their ESG assurance was conducted by a reputable provider, typically defined as one of the Big Four accounting firms or similarly recognized institutions. These core findings are summarized visually in Table 3.

The logistic regression results indicate that firm size is the most influential determinant. Larger firms are significantly more likely to engage reputable assurers. This pattern likely reflects their greater exposure to institutional investors, global capital markets, and external scrutiny, which creates stronger incentives to enhance the credibility of ESG disclosures. For these firms, selecting a high-reputation assurer serves as a strategic signal of commitment to transparency and accountability in non-financial reporting.

In contrast, leverage—as measured by the debt-to-equity ratio—shows a weakly significant negative relationship with the choice of a reputable provider. Highly leveraged firms may be more cost-sensitive or risk-averse, choosing to avoid the additional expense or scrutiny associated with top-tier assurance providers.

Notably, profitability (ROA) does not exhibit a significant effect. This suggests that the decision to engage a reputable assurance provider is driven less by a firm's financial performance and more by reputational concerns and institutional positioning. Overall, the findings highlight that non-financial strategic considerations, such as stakeholder perception and market signaling, play a more decisive role in assurance provider selection than conventional financial metrics.

	(1)	(2)	(3)
	Dependent Variable: Reputable Provider		
Economics of Firms			
Firm size	0.360** (3.123)	-	0.311** (2.509)
ROA	-2.041 (-0.944)	-	-1.751 (-0.819)
Debt to equity	-0.055* (-1.872)	-	-0.059* (-1.910)
ESG Reporting Frameworks			
CDP	-	0.544 (1.496)	0.252 (0.644)
GRI	-	0.801** (2.306)	0.586 (1.578)
TCFD	-	-0.418 (-0.908)	-0.440 (-0.938)
Fixed effects	Ind, Year	Ind, Year	Ind, Year
Observations	258	258	258
Pseudo R-squared	0.1152	0.0774	0.1268

*Note: This table presents results from regression analyses of the determinants of independent ESG assurance. Regression specifications follow Eq. (ii). Data are at the firm-year level and include all FTSE 350 firms with ESG reports and annual reports issuance from 2023-2024. All variables are defined in Appendix 1. *, **, *** indicate statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.*

Table 3. Determinants of reputable ESG assurance provider: multivariate analysis

Beyond the decision to obtain assurance, our analysis also investigates what determines the level of assurance—specifically, the choice between limited and reasonable assurance. Once again, firm size exerts a statistically and economically significant positive effect. This finding underscores the idea that reasonable assurance, which demands more rigorous verification and incurs higher costs, is pursued primarily by firms with greater resources and stakeholder exposure. The move toward reasonable assurance can be seen not merely as a technical decision but as a strategic gesture to reinforce credibility and accountability. These core findings are summarized visually in Table 4.

Notably, financial performance variables remain insignificant, reinforcing the view that assurance depth is not contingent on profitability or capital structure. Rather, the decision to pursue reasonable assurance reflects symbolic action aligned with legitimacy-seeking behavior. Among disclosure frameworks, GRI adoption shows a

marginally significant positive effect, suggesting that structured and comparable reporting formats—especially those involving quantitative metrics—facilitate more intensive assurance. By contrast, TCFD and CDP do not show significant associations, potentially due to their qualitative orientation or reliance on self-reported questionnaires, which are less amenable to rigorous third-party scrutiny.

	(1)	(2)	(3)
Dependent Variable: Assurance Level			
Economics of Firms			
Firm size	0.376** (2.556)	-	0.301* (1.898)
ROA	-2.788 (-0.589)	-	-2.941 (-0.611)
Debt to equity	-0.027 (-0.326)	-	-0.029 (-0.330)
ESG Reporting Frameworks			
CDP	-	0.447 (0.765)	0.208 (0.342)
GRI	-	0.967* (1.928)	0.692 (1.313)
TCFD	-	0.693 0.867	0.501 (0.613)
Fixed effects	Ind, Year	Ind, Year	Ind, Year
Observations	258	258	258
Pseudo R-squared	0.1756	0.1616	0.4128

*Note: This table presents results from regression analyses of the determinants of independent ESG assurance. Regression specifications follow Eq. (iii). Data are at the firm-year level and include all FTSE 350 firms with ESG reports and annual reports issuance from 2023-2024. All variables are defined in Appendix 1. *, **, *** indicate statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.*

Table 4. Determinants of ESG assurance level: multivariate analysis

To provide a more nuanced understanding of ESG assurance, we further disaggregate assurance adoption by its three core components—environmental, social, and governance. The results reveal distinct patterns that highlight how disclosure frameworks, firm characteristics, and the nature of underlying metrics interact across dimensions.

Environmental assurance emerges as the most prevalent and structurally supported dimension. Firm size remains the most robust and consistent predictor, suggesting that larger firms are more responsive to environmental scrutiny and stakeholder

expectations. Firms adopting standardized reporting frameworks, especially GRI and CDP, are significantly more likely to obtain environmental assurance. These frameworks provide quantitative, indicator-based disclosures (e.g., carbon emissions, energy use), which enhance the feasibility and credibility of third-party verification. In contrast, TCFD does not significantly predict assurance uptake, likely due to its emphasis on qualitative scenario analysis and governance processes rather than measurable environmental outcomes. These core findings are summarized visually in Table 5.

	(1)	(2)	(3)
Dependent Variable: Broad E Metric			
Economics of Firms			
Firm size	0.650*** (5.565)	-	0.581*** (4.674)
ROA	-1.981 (-0.842)	-	-1.910 (-0.792)
Debt to equity	-0.169 (-1.429)	-	-0.172 (-1.413)
ESG Reporting Frameworks			
CDP	-	0.816** (2.403)	0.356 (0.944)
GRI	-	0.910*** (3.031)	0.573* (1.719)
TCFD	-	0.012 (0.029)	-0.166 (-0.383)
Fixed effects	Ind, Year	Ind, Year	Ind, Year
Observations	258	258	258
Pseudo R-squared	0.1935	0.0964	0.2047

*Note: This table presents results from regression analyses of the determinants of independent ESG assurance. Regression specifications follow Eq. (iv). Data are at the firm-year level and include all FTSE 350 firms with ESG reports and annual reports issuance from 2023-2024. All variables are defined in Appendix 1. *, **, *** indicate statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.*

Table 5. Determinants of Broad E Metric: multivariate analysis

Social assurance is comparatively less common but displays a particularly strong dependence on disclosure frameworks. Again, firm size exerts a positive and significant influence. However, GRI adoption plays an even more pronounced role in this context. Social metrics—such as labor conditions, workforce diversity, and supply chain ethics—are often perceived as less quantifiable and more subjective. The structured, modular design of GRI facilitates the verifiability of social disclosures,

making assurance more accessible and credible. By contrast, CDP and TCFD exhibit no statistically significant effect on social assurance, consistent with their limited focus on social issues. These core findings are summarized visually in Table 6.

	(1)	(2)	(3)
	Dependent Variable: Broad S Metric		
Economics of Firms			
Firm size	0.574*** (4.484)	-	0.405*** (2.985)
ROA	-3.953 (-1.278)	-	-3.668 (-1.082)
Debt to equity	-0.019 (-0.576)	-	-0.040 (-0.900)
ESG Reporting Frameworks			
CDP	-	0.151 (0.344)	-0.079 (-0.167)
GRI	-	2.249*** (5.461)	1.981*** (4.616)
TCFD	-	0.541 (0.867)	0.326 (0.517)
Fixed effects	Ind, Year	Ind, Year	Ind, Year
Observations	258	258	258
Pseudo R-squared	0.1630	0.2149	0.2601

*Note: This table presents results from regression analyses of the determinants of independent ESG assurance. Regression specifications follow Eq. (iv). Data are at the firm-year level and include all FTSE 350 firms with ESG reports and annual reports issuance from 2023-2024. All variables are defined in Appendix 1. *, **, *** indicate statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.*

Table 6. Determinants of Broad S Metric: multivariate analysis

In the governance domain, the assurance dynamic parallels the previous two dimensions but with some notable distinctions. GRI once again stands out as the most significant predictor of assurance adoption. Governance metrics—such as board composition, executive compensation, and anti-corruption policies—tend to be structural or procedural rather than outcome-based. GRI’s standardized formats support consistent reporting, thereby enhancing the ability of assurers to verify such disclosures. Neither CDP nor TCFD is significantly associated with governance assurance, which aligns with their environmental orientation. These core findings are summarized visually in Table 7.

	(1)	(2)	(3)
Dependent Variable: Broad G Metric			
Economics of Firms			
Firm size	0.523*** (3.233)	-	0.363** (1.963)
ROA	0.937 (0.191)	-	-0.415 (-0.079)
Debt to equity	-0.007 (-0.149)	-	-0.015 (-0.244)
ESG Reporting Frameworks			
CDP	-	1.038 (1.405)	1.062 (1.330)
GRI	-	2.257*** (3.370)	1.897*** (2.736)
TCFD	-	26.498 (0.001)	12.799 (0.040)
Fixed effects	Ind, Year	Ind, Year	Ind, Year
Observations	258	258	258
Pseudo R-squared	0.0641	0.2967	0.3232

*Note: This table presents results from regression analyses of the determinants of independent ESG assurance. Regression specifications follow Eq. (iv). Data are at the firm-year level and include all FTSE 350 firms with ESG reports and annual reports issuance from 2023-2024. All variables are defined in Appendix 1. *, **, *** indicate statistical significance at the 0.1, 0.05, and 0.01 levels, respectively.*

Table 7. Determinants of Broad G Metric: multivariate analysis

Importantly, across all three dimensions, firm-level financial characteristics, including ROA and debt-to-equity ratio, consistently lack explanatory power. This reinforces the conclusion that ESG assurance decisions are driven more by strategic, reputational, and institutional factors than by financial performance or capital structure.

A cross-dimensional synthesis of the findings reveals that firm size is the only economic variable consistently associated with the adoption of ESG assurance, the choice of reputable providers, and the coverage of all E/S/G dimensions, underscoring its central role in ESG governance strategies. The adoption of the GRI framework emerges as particularly influential, especially in the social and governance domains, where the modular and standardized structure facilitates third-party verification of less quantifiable metrics. Environmental assurance is the most prevalent, supported by the inherent measurability of environmental indicators and alignment with multiple frameworks such as GRI and CDP. In contrast, social assurance depends more heavily on GRI to overcome verification challenges linked to qualitative disclosures, while

governance assurance remains comparatively underdeveloped, suggesting potential institutional or market barriers that warrant further exploration. Overall, these findings suggest that ESG assurance decisions are less driven by traditional financial indicators and more by institutional visibility, stakeholder pressures, and the architecture of disclosure systems. Assurance emerges as a strategic and context-sensitive practice, shaped by both external expectations and internal reporting capacity. As ESG reporting moves toward greater standardization and regulatory enforcement, understanding these determinants is critical to anticipating the trajectory of assurance practices and identifying effective avenues for policy intervention.

Session summary

A cross-dimensional synthesis reveals both convergence and divergence across the E, S, and G domains. Firm size consistently predicts assurance adoption, depth, and provider reputation, highlighting its foundational role in ESG governance. The GRI framework, though not universally influential, plays a particularly important role in enabling environmental, social and governance assurance. Financial metrics, by contrast, have limited explanatory power across all dimensions. Assurance on governance aspect, while conceptually important, remains an underdeveloped frontier in assurance practice, and future research could examine the possible institutional and market dynamics constraining its uptake.

Together, these findings demonstrate that ESG assurance is shaped more by visibility, institutional expectations, and reporting architecture than by firm profitability or leverage. Assurance decisions are strategic and context-sensitive—varying by firm size, disclosure frameworks, and industry norms. As global sustainability reporting moves toward standardization and regulatory mandates, understanding these determinants provides a foundation for anticipating how assurance practices will evolve and where policy intervention may be most effective.

In addition, we compute the variance inflation factors (VIFs) for all independent variables to evaluate the extent of multicollinearity in each regression model. All VIFs are below 2, suggesting that multicollinearity is unlikely to bias the estimated coefficient.

5 Discussion

This study contributes to the growing literature on ESG assurance by providing novel, UK-specific evidence on what drives the adoption of third-party ESG verification. Based on a manually collected dataset of FTSE 350 companies for the 2023-2024 reporting cycle, our findings offer several theoretical, regulatory, and managerial implications.

From a theoretical perspective, this study offers empirical support for both stakeholder and signaling theories in the context of ESG assurance. According to stakeholder theory, firms respond to external pressures from investors, regulators, and the public. Our findings confirm this: companies operating in high-exposure industries and those with larger size—both proxies for higher stakeholder visibility—are significantly more likely to obtain assurance and cover more ESG dimensions. This suggests that ESG assurance serves as a mechanism to maintain legitimacy under stakeholder scrutiny.

In addition, the results reinforce signaling theory. We find that firms adopting structured reporting frameworks such as GRI or CDP are not only more likely to obtain assurance, but also to engage reputable providers and seek broader coverage. This pattern indicates that firms may use assurance proactively to signal their ESG maturity and differentiate themselves in the market. Rather than being driven solely by external coercion, some firms appear to use assurance to voluntarily project transparency and credibility, consistent with signaling behavior.

Importantly, our study adds nuance to both theories by showing that not all firms respond in the same way: assurance is more likely when internal capacity (e.g., firm size, reporting infrastructure) and external expectations (e.g., industry norms, peer behavior) align. This interaction suggests that ESG assurance decisions are shaped by both institutional pressures and strategic positioning.

From a policy and regulatory standpoint, our findings underscore the fragmented and voluntary nature of ESG assurance in the UK. While nearly half of the firms obtained third-party assurance, the vast majority of engagements were at the limited level, and scope varied considerably across firms and ESG dimensions. This heterogeneity may undermine comparability and credibility in the eyes of stakeholders. As the UK moves toward adopting the Sustainability Disclosure Standards aligned with IFRS S1 and S2, policymakers may consider introducing more standardized expectations for assurance—both in terms of coverage and minimum assurance levels. Our findings suggest that assurance practices today are influenced heavily by industry norms and voluntary frameworks. Regulatory guidance could help close the gap between current assurance heterogeneity and the need for more consistent and reliable ESG disclosures in financial markets.

Finally, the results have important practical implications for firms and their governance bodies. First, assurance is increasingly expected by stakeholders, especially in high-impact sectors. Firms that choose not to obtain assurance—or rely on non-reputable providers or narrow scopes—may risk signaling lower ESG commitment or internal capability. Second, boards and audit committees should treat ESG assurance as a strategic issue, not simply a reporting add-on. Our findings indicate that firms engaging accounting firms or reputable providers tend to assure more ESG content, which may enhance stakeholder trust. Third, the strong association

between ESG framework adoption and assurance quality suggests that firms wishing to build credibility should consider aligning with international frameworks not only for disclosure purposes, but also to facilitate external verification. In this way, assurance becomes a governance tool for signaling accountability and building long-term stakeholder confidence.

6 Limitations

Despite offering novel insights into ESG assurance practices in the UK, this study is subject to several limitations that must be acknowledged. First, the analysis relies on hand-collected data from publicly available sustainability and annual reports. However, firms disclose information systematically different, it is possible that some assurance engagements were omitted if not disclosed or archived online.

Second, the voluntary nature of ESG reporting and assurance introduces potential self-selection bias. Firms that choose to report ESG information and obtain third-party assurance are likely to be systematically different from those that do not—potentially larger, more visible, or more responsive to stakeholder pressures. As such, the results may not generalize to firms outside the FTSE 350 or to jurisdictions with differing regulatory environments. Furthermore, the sample is restricted to FTSE 350 firms. The firms' large size and UK-specific institutional environment may not reflect assurance behaviors in smaller or non-UK firms.

Finally, this study is situated within a transitional regulatory environment. Anticipated developments—such as the upcoming UK Sustainability Disclosure Standards—may have prompted some firms to obtain ESG assurance preemptively, not solely due to stakeholder or market pressures. This regulatory anticipation complicates the interpretation of assurance motives, as firms may act strategically to prepare for future compliance rather than respond to current institutional demands. As a result, the findings may be less generalizable to jurisdictions with more stable or fully implemented ESG assurance regimes.

7 Future Research Direction

Several avenues remain open for future research, particularly as ESG assurance practices, regulatory frameworks, and data availability continue to evolve.

First, future studies could adopt a longitudinal research design to track how assurance practices evolve in response to regulatory shifts. The current study relies on a cross-sectional dataset covering two reporting years. However, as the UK implements the Sustainability Disclosure Standards based on IFRS S1 and S2, future work could leverage panel data to assess whether mandatory climate-related disclosures influence firms' assurance decisions over time.

Second, more detailed assurance quality indicators could be developed if disclosure practices improve. At present, assurance statements vary greatly in specificity and are not consistently machine-readable, limiting the ability to analyze in more granular level. In the future, researchers may benefit from standardized tagging of ESG assurance content or the introduction of assurance registries. This would allow for deeper content analysis, such as evaluating the rigor of assurance procedures, the frequency of site visits, or the technical expertise applied to different ESG dimensions.

Another promising avenue for future research lies in exploring the capital market consequences of ESG assurance, particularly its value relevance to investors. While this study focuses on the determinants and characteristics of assurance, future work could examine whether obtaining assurance — especially at a higher level (i.e., reasonable assurance)—translates into tangible capital market benefits.

8 Conclusion

This thesis provides the first large-sample, UK-specific empirical analysis of ESG assurance practices among FTSE 350 companies during the 2023-2024 reporting cycle. Using manually collected firm-level data, we examine not only whether companies obtain third-party ESG assurance, but also the characteristics of that assurance — namely, the provider type, assurance level, and breadth of coverage across environmental, social, and governance dimensions.

Our results show that the decision to obtain ESG assurance is strongly associated with firm size, industry exposure, peer practices, and the adoption of structured reporting frameworks such as GRI and CDP. These findings highlight the role of both external pressures and internal capacity in shaping assurance behavior. Among firms that engage assurance, we find that reputable providers—typically large audit firms—are more likely to deliver broader ESG coverage, although they do not necessarily offer higher levels of assurance. Reasonable assurance remains rare, suggesting that most firms prioritize symbolic legitimacy over rigorous verification. Finally, we observe significant variation in assurance breadth across firms and industries, with broader assurance linked to larger firms and framework adopters.

By examining assurance adoption, provider choice, assurance level, and scope separately, this study sheds light on the multifaceted nature of ESG assurance in a voluntary setting. The results reveal that assurance is not a uniform process, but a selective and strategic one—used differently across industries and firms depending on visibility, peer behavior, and reporting infrastructure. For regulators, this highlights the need to address assurance quality — not just quantity — as new sustainability disclosure standards take effect. For firms, the findings suggest that assurance choices send meaningful signals to stakeholders, and that both the depth and breadth of assurance may shape perceptions of ESG credibility. Understanding what drives these decisions is therefore essential to improving the consistency, transparency, and usefulness of ESG disclosures going forward.

Future research should continue to track how assurance evolves in response to regulatory developments, and explore its impact on capital market outcomes. As data availability improves, further investigation into the effectiveness and credibility of different assurance approaches will be essential for the continued development of reliable and decision-useful ESG reporting.

Appendix A

<i>Top 10 assurer in FTSE 350 (%)</i>		<i>Top 10 assurer in Environment metric (%)</i>	
EY	14.3	EY	14.5
PwC	12	PwC	12.2
Deloitte	10.5	Deloitte	10.2
KPMG	10.5	KPMG	9.8
ERM CVS	8.5	ERM CVS	8.6
Bureau Veritas	4.6	Bureau Veritas	4.7
DNV	4.2	DNV	4.3
EcoAct	3.4	EcoAct	3.5
Accenture	3.1	Accenture	3.1
SLR Consulting	3.1	SLR Consulting	3.1

<i>Top 10 assurer in Social metric (%)</i>		<i>Top 10 assurer in Governance metric (%)</i>	
EY	22.6	EY	18.6
KPMG	15.3	Deloitte	13.6
Deloitte	13.7	PwC	13.6
PwC	12.9	KPMG	11.9
Bureau Veritas	8.1	Bureau Veritas	6.8
ERM CVS	7.3	ERM CVS	5.1
DNV	5.6	SLR Consulting	5.1
SLR Consulting	3.2	DNV	5.1
IBIS	2.4	Accenture	3.4
Accenture	1.6	ESS	3.4

Table A-1. Top 10 assurers across different dimensions

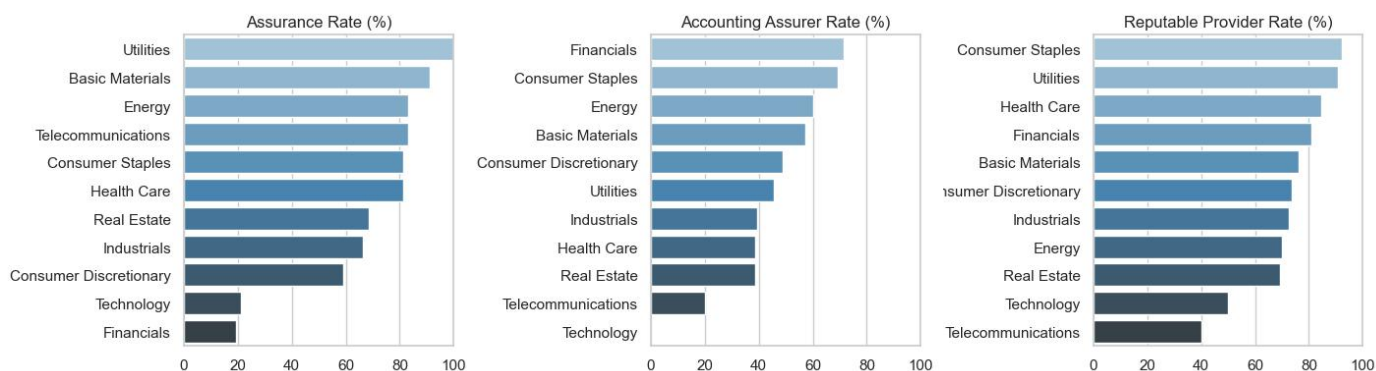


Figure A-1. ESG Assurance Characteristics Breakdown by Industry

Appendix 1. Variable Definition

This table presents variable definitions for our empirical tests.

Variables	Definition
Independent Assurance	An indicator variable equal to 1 if a firm obtains assurance in a year and 0 otherwise
Assurance Level	An indicator variable equal to 1 if a firm obtains reasonable assurance in a year and 0 otherwise
Reputable Provider	An indicator variable equal to 1 if a firm obtains assurance from reputable providers in a year and 0 otherwise. Reputable Provider is defined as an assurance provider with a global presence of 100 or more office locations.
Broad E Metric	An indicator variable equal to 1 if a firm obtains assurance on wide range of environmental metric in a year and 0 otherwise. Baseline is defined as having external assurance on environmental items where the number of assured items exceeds 10% of the maximum possible environmental metrics in the dataset.
Broad S Metric	An indicator variable equal to 1 if a firm obtains assurance on wide range of social metric in a year and 0 otherwise. Baseline is defined as having external assurance on social items where the number of assured items exceeds 10% of the maximum possible environmental metrics in the dataset.
Broad G Metric	An indicator variable equal to 1 if a firm obtains assurance on wide range of governance metric in a year and 0

	otherwise. Baseline is defined as having external assurance on social items where the number of assured items exceeds 10% of the maximum possible environmental metrics in the dataset.
Firm Size	Natural logarithm of total assets measured at fiscal year-end, from Refinitiv Eikon
ROA	Income After Taxes for the fiscal period divided by the average total assets, from Refinitiv Eikon
Debt to Equity Ratio	Total Debt divided by Total Equity as of the end of the fiscal period, from Refinitiv Eikon
Peer Assurance Rate	Proportion of firms within the same industry that obtain external ESG assurance in a given reporting period
GRI	An indicator variable equal to 1 if a firm report sustainability information in accordance with the GRI guidelines and 0 otherwise
TCFD	An indicator variable equal to 1 if a firm report sustainability information in accordance with the Task Force on Climate-related Financial Disclosures (TCFD) guidelines and 0 otherwise
CDP	An indicator variable equal to 1 if a firm explicitly commit to align its capital expenditure plans with its long-term GHG reduction target or Paris agreement's objective of limiting global warming and 0 otherwise

Appendix 2. AI disclosure

In accordance with the academic policy of the Stockholm School of Economics, we disclose the use of generative AI tools—specifically OpenAI’s ChatGPT—during the process of developing this thesis. AI tools were used in a limited but supportive role, primarily to assist with idea development, structure planning, and initial research orientation. At no point was AI used to produce final written content, conduct analysis, or generate original academic arguments.

The use of AI occurred in three main ways:

- Structuring and organization of the thesis: ChatGPT was used to explore how best to organize the literature review, hypothesis development, and contribution sections. Through prompts and iterative dialogue, we were able to assess various approaches to presenting the theoretical framework and empirical methods. The

AI-generated suggestions helped us consider different ways to enhance the logical flow between sections and align our paper with the structure of academic work published in leading journals.

- **Brainstorming and idealization:** In the early stages of the thesis, we used ChatGPT to help refine research questions, evaluate different theoretical lenses (such as institutional theory, stakeholder theory, and signaling theory), and think through how to frame our contribution. The AI acted as a brainstorming partner—helping us test the clarity and relevance of certain ideas before we committed to further exploration. The goal was not to accept AI outputs at face value but to use them to stimulate deeper thinking.
- **Initial literature exploration:** While we relied primarily on academic databases for sourcing literature, we used ChatGPT to summarize complex theoretical concepts and to help us identify common themes and citations in the ESG assurance literature. The AI provided helpful overviews of recurring ideas and pointed to seminal papers, which we subsequently reviewed and cited based on our own reading and analysis. At no point were AI-suggested references inserted into the thesis without full verification.

We were aware of the risks of AI, including the possibility of factual inaccuracy, over-reliance, or loss of academic integrity. To mitigate these, we verified all AI-assisted suggestions using original sources, peer-reviewed articles, and official regulatory publications. No sensitive data or proprietary firm-level information was shared with any AI platform.

In conclusion, while generative AI contributed to our efficiency and helped us engage more deeply with the structure and framing of our thesis, the intellectual content, empirical design, interpretation of findings, and written work reflect our own academic efforts. AI supported the process but did not shape the substance.

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