

Article

The Role of Long-Term Institutional Ownership in Sustainability Report Assurance: Global Evidence

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Abstract: Focusing on the role of the institutional investment horizon as a monitoring mechanism that enhances companies' sustainability reporting reliability, this study investigates the association between long-term ownership and companies' decisions to assure their sustainability report. Further, the study examines the moderating effect of the quality of governance on this association. Consistent with the critical mass theory, the study argues that long-term ownership should reach a certain threshold to have an influence on companies' assurance decisions. The study's results support the argument and find that long-term ownership is positively and significantly associated with companies' assurance decisions, and the association is positive and significant only for a high level of long-term ownership in comparison to low- and medium-level long-term ownership. Moreover, the study finds that the association between long-term ownership and assurance is negatively moderated by the quality of governance at both the company and country levels.

Keywords: sustainability reporting; assurance; institutional ownership; investment horizon



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1. Introduction

The many high-profile company scandals that have been committed through financial reporting have led users to question the reliability of companies' reporting systems. The concern has spread to companies' sustainability reporting, which raises questions about the reliability of sustainability reports. The reliability of companies' sustainability reporting is a particularly high concern for its users considering the textual nature of these reports [1]. The main issue with sustainability reporting is that companies may use such reports to promote a more sustainable image of their performance, which is known as "greenwashing" [2,3]. The practice of greenwashing raises shareholder concerns regarding the reliability of such reports. Therefore, it is expected that shareholders would push for external assurance over sustainability reports to ensure their reliability. The reliability concerns could arise for two different reasons: First, the history of scandal in financial reporting, which results in the issuing of highly regulated standards for financial reporting and auditing, and second, the nature of sustainability reporting, in which companies can report all their sustainability practices and avoid disclosing their unsustainable practices. Further, sustainability reporting is highly unregulated with many standards available for companies to follow, such as those provided by the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB). Although these standards are available, there is not a unified standard to be followed as in the case of financial reporting. For these reasons, investors are expected to have concerns regarding the reliability of companies' sustainability reports.

To ensure the reliability of such reports, companies started to provide external assurance as a reliability-enhancing mechanism [4]. In this study, we examine the role of an important company monitoring mechanism (i.e., long-term institutional ownership) on companies' decisions to engage in sustainability assurance.

One of the main players in monitoring companies' performance are institutional owners [5,6], and many studies find that institutional ownership enhances companies'

sustainability performance [7–9]. Prior studies argue that different ownership types have different preferences based on their investment horizon [10]. The argument is that long-term ownership focuses more on companies' long-term performance rather than short-term returns [11]. Therefore, we argue that long-term institutional ownership will be more interested in sustainability report reliability through external assurance.

The study further considers the critical mass of long-term ownership. Critical mass theory suggests that the presence of personnel does not ensure the level of influence unless it reaches the critical mass threshold [12]. Therefore, the study argues that long-term institutional ownership will have an impact on companies' decisions to assure their sustainability reports if the critical mass threshold is reached, giving the heterogeneous interests/preferences of firms' different shareholders.

Research examining companies' assurance practices is still in its early stages [13] and the provision of external assurance over sustainability reports is still lagging [14]. Therefore, examining the role of long-term institutional ownership on companies' decisions to engage in sustainability assurance will provide new insight to complement previous studies that find institutional forces (e.g., country and industry), company-level factors (e.g., size and leverage), and corporate board characteristics (e.g., board size and women on the board) to be associated with companies' assurance decisions.

Our findings suggest that long-term institutional investors do affect the reliability of companies' sustainability reports through external assurance. Consistent with the agency theory, we find that their role is moderated by the strength of corporate and country governance. We find that in the case of weak governance, long-term institutional investors will play a more significant role in affecting companies' decisions to engage in sustainability reporting assurance. We also find that their impact is more pronounced once they reach a higher concentration, which is consistent with the critical mass theory, which suggests that for certain personnel to have an influence, they need to reach a critical mass threshold [12].

This paper makes a number of incremental contributions to the existing literature. First, while this study confirms the previously documented role that institutional investors play in firms' decisions to assure their sustainability reports, this study makes an argument that this role is not homogenous. We find that the effect of institutional ownership on sustainability assurance depends on the investment horizon of investors in the investee firms and the effect is inclined by two important influencing factors: (i) The quality of corporate and country governance and (ii) the critical mass of institutional investors. [15], in a recent related study, examined the effect of long-term versus short-term institutional investors on sustainability assurance. Their study, however, focused only on large (with at least 5% holding) institutional investors rather than all institutional investors. Another important difference is that we believe that we adopt a more precise measure to distinguish between long-term and short-term investors. We use the actual investment duration for each investor in the focal firm rather than classifying investors based on the expected investment horizon of the type that the investor belongs to. For example, all pension funds are classified as long-term investors and all banks and other institutional investors are short-term investors regardless of their actual investment horizons at either their overall portfolio level or at the focal firm level.

Second, we show the influence of long-term institutional ownership is moderated by corporate- and country-level governance. [16] found no direct relationship between institutional ownership and sustainability assurance, but they argue that the effect of institutional ownership as external governance mechanics is complemented by other governance mechanisms such as board independence and the existence of a CSR committee. We, on the other hand, find that there is a direct positive relationship between long-term institutional ownership and sustainability assurance, and this relationship is negatively moderated by the quality of governance. Our findings suggest that long-term institutional investors will put pressure on their investee firms to assure their sustainability reports, but they would lessen this pressure if the investee firms were well-governed or operated in a strong governance context. These findings are more in line with the agency view of

explaining the need for assurance to enhance the credibility of the sustainability reports as institutional investors are expected to put more faith in sustainability reports issued by well-governed firms.

Third, to the best of our knowledge, this study is the first to provide empirical evidence that the effect of institutional ownership on sustainability assurance is determined by a critical mass threshold. Most prior studies have used total ownership and argue that the increase in institutional ownership would have a positive influence on firms' behaviors and performance, ignoring the influence of the critical mass threshold, which is important to understand the extent to which long-term ownership would influence firms' decisions and policies. Indeed, a recent related study, [9], showed that the influence of institutional ownership on ESG performance depends on the level of ownership, and they documented a U-shaped relationship. While our findings confirm that the influence of long-term institutional ownership is determined by the level of ownership, we did not find empirical results that support the U-shaped relationship for either total institutional ownership or long-term institutional ownership. However, our empirical results support the critical mass theory as we show that the effect of institutional ownership on sustainability assurance exists when the ownership reaches a critical mass threshold. The differences in the empirical results might be due to the following factors: (i) They focus on ESG performance rather than assurance, (ii) they only focus on emerging markets rather than a mix of developed and emerging markets, or (iii) our models employ country fixed-effects to control for the unobserved heterogeneous factors between studied markets.

The rest of this paper is organized as follows. Section 2 presents a background survey on sustainability reporting assurance and long-term ownership. Section 3 provides an overview of the theoretical framework and explains the hypothesis development. Section 4 describes the data sources and sample and model specifications. Section 5 documents the descriptive empirical results and discussion. Section 6 provides a summary and conclusion.

2. Background

2.1. Sustainability Reports and Assurance

Recently, sustainability reporting practices have become of interest to different stakeholders, and many studies are investigating companies' sustainability reporting practices [17,18]. The demand for companies' sustainability reports is growing [14]. The increasing demand for sustainability reporting raises many questions regarding companies' reporting practices. One of the main concerns is the reliability of those reports. Some researchers suggest that sustainability reports can be used by management to promote a more sustainable image of the company [1,3].

One of the challenges in sustainability reporting is the lack of unified guidelines, which results in variation and inconsistency among companies' sustainability reporting practices. Management can be selective in providing information that enhances their sustainability reputation and avoids reporting any other information that may diminish their sustainable image. The practice of greenwashing is the main issue that raises concerns among shareholders. Studies also suggest that providing assurance over sustainability reporting is one mechanism to ensure reliability [19–22].

External assurance is an engagement "in which a practitioner expresses a conclusion designed to enhance the degree of confidence of the intended users other than the responsible party about the outcome of the evaluation or measurement of a subject matter against criteria" [23]. There are different standards for assurance engagement, including the International Standard for Assurance Engagements (ISAE 3000) [24], the International Auditing and Assurance Standards Board (IAASB), and the AA1000 AccountAbility Standard (AA1000 AS) [25]. Companies might engage in sustainability report assurance for different reasons. Prior studies' findings suggest that some firm-level characteristics are associated with companies' decisions to engage in external assurance (e.g., [26]). Furthermore, other studies found that board characteristics influence companies' external assurance decisions [16,27]. Furthermore, [26] found that country-level characteristics,

such as legal orientation and strength, affect such decisions. Based on these prior findings, we aim to analyze the influence of long-term institutional investors while considering the moderating effect of board governance strength and the critical mass for long-term institutional investors.

2.2. Long-Term Institutional Ownership

For a long time, studies have examined the monitoring role of institutional ownership [6,10] and how it affects companies' decisions [5,28]. Recent studies have found that heterogeneous institutional ownership has a different impact on companies' decisions (e.g., [29,30]). Studies found different behavior for different groups of institutional ownership (e.g., long-term institutional ownership versus short-term ones) (e.g., [28,31]).

Long-term institutional investors have different interests and preferences in the investee company. For instance, the heterogeneous influence of investors with different investment horizons is documented in regard to companies' fundamental policies such as financing policies and capital structure (e.g., [32–34]) and investment policies (e.g., [35,36]). Indeed, long-term institutional investors are more interested in companies' long-term performance, and, unlike short-term owners, they do not focus on short-term earnings. For instance, prior studies show that short-term institutional investors tend to change their holding position when the stock market is volatile [37] or in response to recent news [38]. Companies with higher long-term institutional ownership are associated with higher performance [39] and valuation [40].

Further, long-term investors have a comparative advantage over short-term investors to make changes in their investee companies. Long-term institutional investors can spread the costs of ownership over a long period [31], and their long-term investment horizon allows them to accumulate more information about companies [28]. As long-term institutional investors bear fewer costs in collecting specific-company information, they are more likely to engage in voting [41] and integrate the collected information into their voting decisions [42]. In their recent survey, [43] show that institutional investors with long-term investment horizons are more likely than short-term investors to actively engage with their investee companies about corporate governance issues. Overall, prior literature finds that institutional investors with long-term investment horizons efficiently monitor and actively engage with their investee companies.

3. Theoretical Framework and Hypothesis Development

In this study, we are looking through the lens of agency theory to examine the role of long-term institutional investors on companies' sustainability report reliability. Agency theory suggests that management has incentives to manipulate companies' performance for their personal gain [44]. Therefore, in the case of sustainability reporting, management might not engage in external assurance if they are involved in greenwashing. External assurance of sustainability reports should enhance their reliability. Therefore, we expect long-term institutional investors to use their power and ensure companies are assuring their sustainability reports to avoid greenwashing scandals that could blow back on the companies' financial values.

Studies have explored companies' sustainability assurance practices using different approaches. Some studies provide an exploratory analysis of the assurance practices [14] and suggest that the growth of assurance is still lagging in comparison to the growth of sustainability reports, which raises the need for an examination of what drives companies to engage in sustainability assurance. Other studies focus on drivers for companies' assurance decisions (e.g., [26,27]). Ref. [26] find that large companies, companies with high leverage, and companies in environmentally sensitive industries are more likely to assure their sustainability reports. Further, [27] find that corporate board attributes are associated with companies' decisions to assure their sustainability reports. We build on those studies by investigating the role of long-term institutional ownership in companies' voluntary decisions to engage in sustainability assurance. Further, in our study, we explore a different

corporate governance mechanism (i.e., institutional ownership) to understand its role in enhancing the reliability of companies' sustainability reports through external assurance.

Companies' sustainability activities are more appealing to long-term owners as they have more interest in a company's long-term performance than short-term owners. Ref. [11] suggest that long-term ownership improves the sustainability score of a company. Ref. [45] finds that sustainability is in the interest of long-term owners and provides evidence that long-term institutional investors actively push for more sustainability by supporting sustainability proposals. In addition, long-term institutional investors are more likely to benefit from sustainability activities that will act as reputation insurance in future negative events because of their long-term investment horizon [11]. Their long-term investment horizon makes them more likely to experience crises than in the case of short-term ownership, where it is less likely that sustainability benefits will be claimed. Therefore, we argue that a high level of long-term institutional ownership drives companies to engage in sustainability assurance.

Hypothesis 1: *Long-term institutional ownership is positively associated with companies' decisions to engage in sustainability assurance.*

We further examine the moderating role of the quality of governance on the relationship between long-term institutional ownership and sustainability assurance. Prior studies suggest that the strength of the board of directors should reduce the agency problem by monitoring management [46]. Thus, we expect the effect of long-term institutional investors to be less significant if the companies have strong board characteristics. The agency problem increases when the board of directors is less independent, does not have a sustainability committee, or has a low representation of women on the board. It is well developed in the literature that the board of directors does impact companies' sustainability practices [47,48]; therefore, we expect there to be a moderating impact of the influence of long-term ownership on companies' decisions to engage in external assurance.

Hypothesis 2: *The relationship between long-term institutional ownership and companies' decisions to engage in sustainability assurance is moderated by the quality of governance.*

As we are examining the role of long-term institutional investors, we further investigate their role through the lens of critical mass theory. The theory suggests that the influence of certain personnel will have an impact once the critical mass threshold is reached [12]. Long-term institutional investors have the ability to make an impact on companies' decisions through either the threat of selling their shares, communicating with management directly, or voting [43,49], and in order to have an impact on management decisions, they need to represent a high percentage of ownership. Otherwise, the impact will be minimal. Therefore, long-term institutional ownership needs to represent a certain percentage of the company's total ownership in order to affect companies' decisions to enhance the reliability of their sustainability reports. Relying on critical mass theory, we argue that long-term institutional ownership will have an impact on companies' decisions to assure their sustainability reports if the critical mass threshold is reached.

Hypothesis 3: *The presence of a high level of long-term institutional ownership is positively and significantly associated with companies' decisions to engage in sustainability assurance.*

4. Sample and Research Design

Our sample consists of all worldwide publicly listed companies available in the Thomson Reuters-ESG (formerly known as Asset4) database. The sample period of our study was from 2010 to 2020. Our data were collected from several sources. First, we retrieved all listed companies with sustainability reports available in ESG during our sample period. Second, we collected companies' decisions for suitable assurance and corporate governance variables from ESG. Third, we collected companies' financial variables from

DataStream. Fourth, country-level data were obtained from The World Bank website. Our final sample size was 16,395 company-year observations, which represents 3446 companies from 31 countries.

To test our hypotheses, we adopted logistic regression following the literature (e.g., [26]). We also included the fixed effects of the year, industry, and country across all our estimations. We used the following model to test a company's decision to assure its sustainability report:

$$\text{Assurance} = \alpha + \beta_1 \text{ Long Institutional Ownership} + \beta_2 \text{ Total Institutional Ownership} + \beta_3 \text{ Blockholding} + \beta_{4-11} \text{ Corporate Governance Controls} + \beta_{12-14} \text{ Companies Controls} + \beta_{15-16} \text{ Country Controls} + \text{Year FE} + \text{Industry FE} + \text{Country FE} + \varepsilon$$

where Assurance is the dependent variable, which represents a dummy and equals 1 if a company assured its sustainability report at year t , and zero otherwise; Long Institutional Ownership is the main explanatory variable, which represents the sum ownership of long-term institutional investors in company i at year t ; Total Institutional Ownership represents the sum ownership of all institutional investors in company i at year t ; Blockholding represents the sum ownership of large ownership (with at least 5% ownership) in company i at year t ; Corporate Governance Controls represents a vector of control variables related to the corporate governance of company i at year t ; Companies Controls represents a vector of financial-level variables including return on assets, sales, and leverage of company i at year t ; Country Controls represents a vector of country-specific variables of country c at year t ; ε is an error term.

Following prior studies on the institutional ownership investment horizon (e.g., [50–52]), we proxy for investment horizon using the investment duration of ownership from their first entry/investment in a company. Prior studies used 8 quarters (2 years) as a threshold to classify particular ownership as long-term ownership [43,50–52], but as our sample includes a wide range of countries with different institutional characteristics, we implemented an adjustment. We calculated the mean of investment durations of all investors in a particular country for every year, then we classified ownership as long when the investment duration term was above the mean. In addition to constructing Long Institutional Ownership as the total ownership of long-term investors, we used the ratio of total long-term investors' ownership to non-long-term investors' ownership. Such a construction is useful to measure the relative size of long-term ownership compared to non-long-term ownership.

Ref. [15] studied the effect of different types of institutional investors on sustainability assurance. They classify pension funds, endowment funds, family firms, and government institutions as long-term investors, and all other types as short-term investors. The main concern with their measure is that it might underestimate or overestimate long-term institutional ownership. While the long-term investors in their definition are more likely, but not necessarily guaranteed, to invest in a company for a long period of time, other types in their short-term category (such as mutual funds, index funds, and banks and insurance companies) might stay in their investee companies for a long horizon. Our measure, on the other hand, classifies investors based on their actual investment horizon at specific investee companies. Using the investment duration of the investor at the firm level ensures that we only capture ownership by investors who intentionally choose to stay in the investee companies for a long period of time [39]. We argue that such investors are more likely to put more time and effort into monitoring and engaging with investee companies to improve their decisions.

Hypothesis H2 seeks to investigate the moderating role of governance. We employed a statistical interaction to study the moderating effect. We use four corporate-level and two country-level variables to proxy for the quality of governance. Board independence, audit committee independence, the existence of a stand-alone committee for sustainability, and an overall score of corporate governance are used as corporate-level governance characteristics, and governance effectiveness and rule of law are used as country-level governance traits. For each of these variables, we construct a binary variable that equals one for observations above the sample median and zero otherwise. Thus, these binary variables equal one for

firms with strong corporate governance or where firms are operating in countries with strong governance in place.

To test our third hypothesis on the critical mass, we replaced Long Institutional Ownership with three dummy variables that divide a company's long-term institutional ownership into three groups: 'high' where a company's long-term institutional ownership is in the top 25th percentile of the sample, 'low' where a company's long-term institutional ownership is in the bottom 25th percentile of the sample, and 'medium' otherwise.

We use a wide range of control variables following prior studies on the assurance of sustainability reports. First, to distinguish the effect of long-term investors from other investors, we control for the total ownership of institutional investors and the ownership by large investors. Second, we control for the effect of the company's corporate governance, as well-governed companies are expected to assure their report [27]. Particularly, we control for CEO separation, board size, the number of meetings, female representation, independent directors' representation, the existence of a sustainability committee, the compensation of the audit committee, and the representation of independent directors in the audit committee. Third, we control for the company's performance, ROA and sales, and leverage [26]. Fourth, we follow [26] and include legal system quality and country orientation toward shareholders to control for countries' institutional characteristics. Lastly, we control for differences and omitted variables bias for years, industries, and countries by including fixed effects across all models.

5. Empirical Results and Discussion

5.1. Descriptive Statistics

Table 1 presents the descriptive statistics for our sample. It shows that approximately 53.6% of our sample companies assured their sustainability reports. The ownership by long-term institutional ownership is 33.1%, which represents approximately two-thirds of the total institutional ownership. Our sample companies have, on average, boards with 11 members, 9 annual meetings, 62% independent directors, and 19% female directors. Furthermore, 82% (65%) of companies have a stand-alone sustainability committee (separate from the roles of CEO and chairman). Companies, on average, have 22% debt and 4.5% return on assets.

Table 2 represents the mean statistics of the main dependent and independent variables by year, industry, and country. Panel A shows that there is an increasing trend toward sustainability assurance; while 37% of companies assured their reports in 2010, 79% of companies did so in 2019, although there is a significant decrease in 2020 that might be attributed to the COVID-19 pandemic. Panel A also shows that long-term institutional ownership increased during our sample period, with a 6% increase between 2010 and 2017, though the increase in the total institutional ownership was only 3%. Panel B shows that utilities and financial companies assure their sustainability reports more than other companies. Moreover, it shows that manufacturing and financial companies have higher long-term institutional ownership compared to companies in the mining and utility industries.

Panel C shows large differences between companies from different countries in terms of their assurance over sustainability reports and ownership by long-term institutional investors. On the one hand, for instance, while more than 80% of companies in France, Greece, and Taiwan and approximately 70% of companies in countries such as Colombia, Finland, Italy, Portugal, and Spain assured their reports, less than 35% of companies assured their reports in the US, Canada, China, Malaysia, and Turkey. Interestingly, Korean companies assured their sustainability reports in 93% of cases. On the other hand, while more than half of the ownership of US, Canadian, Irish, and British companies are held by institutional investors, such ownership represents less than 15% in countries such as Russia, Greece, Hong Kong, Thailand, and Turkey. Long-term institutional ownership represents approximately 65% of total institutional ownership across almost all countries.

Table 1. Descriptive Statistics.

	N	Mean	Median	SD	P5	P75
Assurance	16,395	0.536	0.499	0.000	1.000	1.000
Long Institutional Ownership	16,395	0.331	0.252	0.114	0.272	0.545
Long-on-Nonlong	16,338	3.795	2.968	1.290	3.088	5.793
Long-on-Nonlong (low)	16,395	0.248	0.432	0.000	0.000	0.000
Long-on-Nonlong (medium)	16,395	0.498	0.500	0.000	0.000	1.000
Long-on-Nonlong (high)	16,395	0.254	0.435	0.000	0.000	1.000
Long (low)	16,395	0.250	0.433	0.000	0.000	0.000
Long (medium)	16,395	0.501	0.500	0.000	1.000	1.000
Long (high)	16,395	0.249	0.432	0.000	0.000	0.000
Institutional Ownership	16,395	0.485	0.287	0.238	0.447	0.731
Blockholding	16,395	0.304	0.226	0.120	0.260	0.468
CEO Separation	16,395	0.649	0.477	0.000	1.000	1.000
Board Size	16,395	10.998	3.355	9.000	11.000	13.000
Board Meetings	16,395	9.327	4.415	6.000	8.000	11.000
Women on Board	16,395	0.192	0.127	0.100	0.182	0.278
Independents on Board	16,395	0.621	0.246	0.444	0.667	0.833
Sustainability Committee	16,395	0.818	0.386	1.000	1.000	1.000
Audit Compensation	16,395	0.822	0.382	1.000	1.000	1.000
Audit independents	16,395	0.869	0.226	0.750	1.000	1.000
ROA	16,395	0.045	0.083	0.012	0.041	0.076
Sales	16,395	15.316	1.607	14.263	15.365	16.445
Leverage	16,395	0.217	0.160	0.089	0.199	0.315
Legal	16,395	1.352	0.578	1.157	1.578	1.761
Stakeholder Orientation	16,395	0.634	0.482	0.000	1.000	1.000

Table 1 provides summary statistics for companies' assurance decisions and assurance provider types. In addition, the table provides summary statistics for variables used in the model. Detailed definitions of the variables are in the Appendix. The sample contains 3446 firms that issued a sustainability report during the period from 2010 to 2020. All variables are winsorized at the 1% and the 99% levels.

Table 2. Panel A: Descriptive Statistics by Year; Panel B: Descriptive Statistics by Industry; Panel C: Descriptive Statistics by Country.

(A)				
	N	Assurance	Institutional Ownership	Long Institutional Ownership
2010	1474	0.375	0.47	0.301
2011	1464	0.449	0.455	0.299
2012	1548	0.502	0.449	0.295
2013	1586	0.537	0.462	0.311
2014	1532	0.539	0.475	0.338
2015	1540	0.545	0.492	0.352
2016	1477	0.543	0.511	0.368
2017	1565	0.589	0.508	0.365
2018	1268	0.792	0.464	0.34
2019	1355	0.79	0.463	0.338
2020	1586	0.303	0.571	0.339
Total	16,395	0.536	0.485	0.331

Table 2. Cont.

(B)				
	N	Assurance	Institutional Ownership	Long Institutional Ownership
Agriculture, Forestry, & Fishing	64	0.203	0.231	0.13
Construction	619	0.528	0.384	0.26
Finance, Insurance, & Real Estate	3088	0.544	0.472	0.336
Manufacturing	6036	0.563	0.508	0.354
Mining	1336	0.494	0.432	0.265
Retail Trade	966	0.465	0.525	0.359
Services	1513	0.414	0.591	0.361
Transportation & Public Utilities	2449	0.594	0.414	0.294
Wholesale Trade	324	0.525	0.551	0.361
(C)				
	N	Assurance	Institutional Ownership	Long Institutional Ownership
AUSTRALIA	967	0.464	0.312	0.171
AUSTRIA	108	0.685	0.264	0.166
BELGIUM	160	0.569	0.239	0.142
BRAZIL	88	0.591	0.248	0.153
CANADA	836	0.373	0.5	0.332
DENMARK	148	0.52	0.329	0.188
FINLAND	250	0.752	0.365	0.238
FRANCE	905	0.878	0.333	0.19
GERMANY	653	0.646	0.349	0.197
GREECE	77	0.831	0.198	0.124
HONG KONG	462	0.532	0.175	0.113
INDIA	455	0.71	0.268	0.199
INDONESIA	180	0.378	0.148	0.105
IRELAND	143	0.594	0.6	0.445
ITALY	291	0.818	0.241	0.157
JAPAN	1004	0.727	0.304	0.215
MALAYSIA	303	0.3	0.218	0.141
MEXICO	4	0.5	0.116	0.0824
NETHERLANDS	291	0.756	0.428	0.271
NEW ZEALAND	49	0.306	0.216	0.112
PHILIPPINES	111	0.45	0.113	0.0773
PORTUGAL	74	0.77	0.252	0.145
SINGAPORE	237	0.346	0.37	0.312
SOUTH AFRICA	840	0.568	0.427	0.313
SPAIN	334	0.805	0.231	0.118
SWEDEN	447	0.644	0.495	0.385
SWITZERLAND	472	0.511	0.385	0.247
TAIWAN	391	0.875	0.235	0.154
THAILAND	240	0.475	0.11	0.0726
UNITED KINGDOM	1923	0.563	0.664	0.463
UNITED STATES	3952	0.313	0.811	0.574

Table 2 provides summary statistics by year, industry and country for companies' assurance decisions and institutional ownership. The sample contains 3446 firms that issued a sustainability report during the period from 2010 to 2020. Panel A provides summary statistics by year for companies' assurance decisions and institutional ownership. Panel B provides summary statistics by industries for companies' assurance decisions and institutional ownership. Panel C provides summary statistics by countries for companies' assurance decisions and institutional ownership.

5.2. Regression Estimations

Table 3 provides our logistics regression estimation results for testing our hypotheses. Column (1) shows that the increase in institutional ownership decreases the likelihood of assurance over sustainability reports. However, when we distinguish between the effect of long-term institutional investors from other investors in Column (2) by including long-term

institutional ownership, the estimated coefficient of long-term institutional ownership is positive and statistically significant at the 1% level. Such results support hypothesis H1 that companies with higher long-term institutional ownership are more likely to assure their sustainability reports. In Column (3), we use the ratio of long-term institutional ownership to non-long-term institutional ownership as an alternative measure to test hypothesis H1. The results in Column (3) confirm our initial results and show that companies are more likely to assure their reports as institutional ownership by long-term investors increases relative to non-long-term investors.

Columns (4)–(7) of Table 3 provide the estimation results to test hypothesis H3 on the critical mass. Column (4) shows that the two dummy variables of low and medium long-term institutional ownership are negative and significant in comparison to the reference group, which is the dummy variable of high long-term institutional ownership. In Column (5), we replace the reference group to use the dummy of medium ownership, and the results show that only the dummy of high long-term ownership is positive and significant. Thus, the estimation results support our prediction in hypothesis H2 of the critical mass role in the effect of institutional ownership on companies' assurance decisions. In Columns (6) and (7), we replicate Columns (4) and (5) using the ratio of long-term to non-long-term institutional ownership to construct the dummy variables of the critical mass. Both Columns (6) and (7) show consistent results with Columns (4) and (5). Overall, the estimation results in Table 3 support our hypotheses H1 and H3.

Consistent with prior studies examining the association between board characteristics and companies' assurance decisions [16,27], we find that strong characteristics of the board (e.g., an independent board and women on the board) are positively and significantly associated with companies' assurance decisions. Furthermore, using a more precise measure for long-term ownership, our results are consistent with [15]. We also extend [15] findings by showing that the association between long-term ownership and assurance decisions appears only when the critical mass theory is applied. Therefore, our results suggest that for long-term ownership to have an impact on companies' sustainability decisions they need to represent a certain ownership level.

Table 4 examines the moderating role of the quality of governance on the positive relations between long-term institutional ownership and the likelihood of assurance on sustainability reports. Columns (1)–(4) estimate the moderating effect using corporate-level governance variables, and Columns (5) and (6) use country-level governance characteristics. The coefficients of Interactions 1–6 suggest that the positive influence of long-term institutional ownership on companies' decisions to engage in sustainability assurance is negatively moderated by both corporate- and country-level governance. Overall, the estimation results in Table 4 support our expectation in hypothesis H2.

Extending prior studies' findings [16,27], we find that companies' decisions to engage in external assurance over their sustainability reports are not driven by single factors. Where different factors are driving companies' assurance decisions, as we find in the case of weak governance, long-term institutional investors would exert more pressure to ensure that companies assure their sustainability reports.

5.3. Robustness Tests

In addition to our main estimations, we provide additional analyses to check the robustness of our findings. First, we re-estimate our models using lagged regression models. We employ lagged models for two reasons. The main reason is that one could argue that companies might make their assurance decisions based on a past period and not in the same financial year. Additionally, lagged regression models could overcome the potential concern of autocorrelation [53,54]. Table 5 shows the results of the lagged regression models. Table 5 replicates Table 3 using a lagged value for all independent variables. The estimation results in Table 5 are consistent with those in Table 3 and support both hypotheses.

Table 3. Institutional ownership and companies' assurance decision.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable = Assurance							
Institutional Ownership	−0.257 ** [0.123]	−0.620 *** [0.163]	−0.385 *** [0.124]	−0.498 *** [0.144]	−0.498 *** [0.144]	−0.291 ** [0.123]	−0.291 ** [0.123]
Long Institutional Ownership		0.532 *** [0.161]					
Long-on-Nonlong			0.045 *** [0.008]				
Long (low)				−0.274 *** [0.090]	−0.074 [0.058]		
Long (medium)				−0.199 *** [0.069]			
Long (high)					0.199 *** [0.069]		
Long-on-Nonlong (low)						−0.296 *** [0.063]	−0.137 *** [0.052]
Long-on-Nonlong (medium)						−0.159 *** [0.050]	
Long-on-Nonlong (high)							0.159 *** [0.050]
Blockholding	−0.629 *** [0.119]	−0.610 *** [0.119]	−0.649 *** [0.120]	−0.629 *** [0.122]	−0.629 *** [0.122]	−0.606 *** [0.120]	−0.606 *** [0.120]
CEO Separation	0.165 *** [0.050]	0.170 *** [0.050]	0.164 *** [0.050]	0.172 *** [0.050]	0.172 *** [0.050]	0.166 *** [0.050]	0.166 *** [0.050]
Board Size	0.084 *** [0.009]	0.082 *** [0.009]	0.080 *** [0.009]	0.084 *** [0.009]	0.084 *** [0.009]	0.082 *** [0.009]	0.082 *** [0.009]
Board Meetings	0.024 *** [0.006]	0.025 *** [0.006]	0.026 *** [0.006]	0.025 *** [0.006]	0.025 *** [0.006]	0.025 *** [0.006]	0.025 *** [0.006]
Women on Board	1.616 *** [0.222]	1.579 *** [0.222]	1.592 *** [0.223]	1.599 *** [0.222]	1.599 *** [0.222]	1.564 *** [0.222]	1.564 *** [0.222]
Independents on Board	0.315 ** [0.155]	0.300 * [0.155]	0.290 * [0.155]	0.307 ** [0.155]	0.307 ** [0.155]	0.294 * [0.155]	0.294 * [0.155]
Sustainability Committee	1.176 *** [0.059]	1.167 *** [0.059]	1.159 *** [0.059]	1.169 *** [0.059]	1.169 *** [0.059]	1.166 *** [0.059]	1.166 *** [0.059]
Audit Compensation	0.204 *** [0.066]	0.209 *** [0.066]	0.216 *** [0.066]	0.207 *** [0.066]	0.207 *** [0.066]	0.211 *** [0.066]	0.211 *** [0.066]
Audit independents	0.230 * [0.139]	0.247 * [0.139]	0.235 * [0.139]	0.241 * [0.139]	0.241 * [0.139]	0.247 * [0.139]	0.247 * [0.139]
ROA	0.973 *** [0.284]	0.948 *** [0.284]	0.919 *** [0.283]	0.943 *** [0.284]	0.943 *** [0.284]	0.956 *** [0.285]	0.956 *** [0.285]
Sales	0.489 *** [0.020]	0.478 *** [0.021]	0.464 *** [0.021]	0.481 *** [0.021]	0.481 *** [0.021]	0.469 *** [0.021]	0.469 *** [0.021]
Leverage	0.127 [0.155]	0.152 [0.155]	0.177 [0.155]	0.144 [0.155]	0.144 [0.155]	0.144 [0.154]	0.144 [0.154]
Legal	−0.594 *** [0.218]	−0.611 *** [0.218]	−0.687 *** [0.219]	−0.593 *** [0.218]	−0.593 *** [0.218]	−0.640 *** [0.218]	−0.640 *** [0.218]
Stakeholder Orientation	1.571 *** [0.588]	1.513 *** [0.582]	1.516 *** [0.586]	1.502 ** [0.594]	1.502 ** [0.594]	1.483 ** [0.583]	1.483 ** [0.583]
Constant	−15.507 *** [1.100]	−15.255 *** [1.096]	−14.977 *** [1.091]	−15.051 *** [1.112]	−15.251 *** [1.106]	−14.836 *** [1.100]	−14.995 *** [1.095]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R-squared	0.30	0.30	0.30	0.30	0.30	0.30	0.30
log likelihood	−8098.93	−8092.85	−8050.17	−8093.75	−8093.75	−8087.90	−8087.90
Chi ²	4143.34	4136.74	4127.06	4147.35	4147.35	4138.42	4138.42
N	16,395	16,395	16,395	16,395	16,395	16,395	16,395

Table 3 presents the results of logistic regressions examining the association between institutional ownership and companies' assurance decision. The analysis is performed on a sample of 3446 firms that issued an assured sustainability report during the period from 2010 to 2020. Robust standard errors are reported in brackets. Industry, year, and country fixed effects are included in all models. Detailed definitions of all variables are in the Appendix. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 4. Institutional ownership and companies' assurance decision (the moderating role of governance).

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent Variable = Assurance					
Long Institutional Ownership	1.093 *** [0.214]	1.324 *** [0.247]	1.028 *** [0.259]	1.086 *** [0.199]	0.811 *** [0.228]	1.361 *** [0.303]
High Independents on Board	0.233 ** [0.107]					
Interaction 1	−0.836 *** [0.209]					
High Audit independents		0.106 [0.108]				
Interaction 2		−0.935 *** [0.228]				
Sustainability Committee			1.344 *** [0.092]			
Interaction 3			−0.580 ** [0.228]			
High Governance Score				0.856 *** [0.080]		
Interaction 4				−1.011 *** [0.182]		
High Legal					0.312 * [0.162]	
Interaction 5					−0.420 * [0.227]	
High Government Effectiveness						0.294 * [0.152]
Interaction 6						−0.954 *** [0.295]
Constant	−15.285 *** [1.100]	−15.374 *** [1.097]	−15.425 *** [1.101]	−15.097 *** [1.118]	−14.836 *** [1.100]	−14.995 *** [1.095]
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R-squared	0.30	0.30	0.30	0.30	0.30	0.30
log likelihood	−8084.11	−8082.54	−8089.37	−8027.79	−8090.62	−8086.94
Chi ²	4149.17	4138.62	4156.69	4187.46	4154.50	4157.29
N	16,395	16,395	16,395	16,395	16,395	16,395

Table 4 presents the results of logistic regressions examining the association between institutional ownership and companies' assurance decision. The analysis is performed on a sample of 3446 firms that issued an assured sustainability report during the period from 2010 to 2020. Robust standard errors are reported in brackets. Industry, year, and country fixed effects are included in all models. Detailed definitions of all variables are in the Appendix. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Second, we also use propensity score matching (PSM) analysis to alleviate any concern about self-selection bias. Long-term institutional investors might choose to invest in companies that assure their sustainability reports. PSM is a useful technique to deal with such bias [55,56]. Table 6 shows the results of PSM using five different matching algorithms to match target companies (companies with high long-term institutional ownership) with control companies (companies with low long-term institutional ownership). Table 6 shows there are statistically significant differences in the likelihood of assurance decisions between target and control companies across all matching algorithms. Particularly, companies with high long-term institutional ownership are more likely to assure their sustainability reports than match companies with low long-term institutional ownership. Overall, Table 6 provides results that support our hypotheses on the positive relationship between long-term institutional ownership and the likelihood of assurance over sustainability reports.

Table 5. Institutional ownership and companies' assurance decision (lagged model).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent Variable = Assurance						
L.Institutional Ownership	−0.283 ** [0.142]	−0.535 *** [0.191]	−0.412 *** [0.144]	−0.517 *** [0.169]	−0.517 *** [0.169]	−0.313 ** [0.143]	−0.313 ** [0.143]
L.Long Institutional Ownership		0.368 ** [0.185]					
L.Long-on-Nonlong			0.036 *** [0.009]				
L.Long (low)				−0.253 ** [0.102]	−0.043 [0.066]		
L.Long (medium)				−0.210 *** [0.078]			
L.Long (high)					0.210 *** [0.078]		
L.Long-on-Nonlong (low)						−0.221 *** [0.073]	−0.098 * [0.059]
L.Long-on-Nonlong (medium)						−0.123 ** [0.058]	
L.Long-on-Nonlong (high)							0.123 ** [0.058]
L.Blockholding	−0.844 *** [0.133]	−0.829 *** [0.133]	−0.869 *** [0.134]	−0.859 *** [0.136]	−0.859 *** [0.136]	−0.829 *** [0.134]	−0.829 *** [0.134]
L.CEO Separation	0.300 *** [0.058]	0.304 *** [0.058]	0.299 *** [0.058]	0.307 *** [0.058]	0.307 *** [0.058]	0.301 *** [0.058]	0.301 *** [0.058]
L.Board Size	0.088 *** [0.010]	0.087 *** [0.010]	0.085 *** [0.010]	0.088 *** [0.010]	0.088 *** [0.010]	0.086 *** [0.010]	0.086 *** [0.010]
L.Board Meetings	0.021 *** [0.007]	0.022 *** [0.007]	0.022 *** [0.007]	0.022 *** [0.007]	0.022 *** [0.007]	0.022 *** [0.007]	0.022 *** [0.007]
L.Women on Board	1.300 *** [0.259]	1.274 *** [0.259]	1.279 *** [0.260]	1.290 *** [0.259]	1.290 *** [0.259]	1.258 *** [0.259]	1.258 *** [0.259]
L Independents on Board	0.089 [0.176]	0.077 [0.176]	0.073 [0.176]	0.082 [0.176]	0.082 [0.176]	0.075 [0.176]	0.075 [0.176]
L.Sustainability Committee	1.052 *** [0.068]	1.046 *** [0.068]	1.037 *** [0.068]	1.046 *** [0.068]	1.046 *** [0.068]	1.044 *** [0.068]	1.044 *** [0.068]
L.Audit Compensation	0.145 * [0.074]	0.149 ** [0.074]	0.156 ** [0.074]	0.147 ** [0.074]	0.147 ** [0.074]	0.151 ** [0.074]	0.151 ** [0.074]
L.Audit independents	0.309 * [0.159]	0.321 ** [0.159]	0.315 ** [0.159]	0.317 ** [0.159]	0.317 ** [0.159]	0.322 ** [0.159]	0.322 ** [0.159]
L.ROA	1.304 *** [0.303]	1.295 *** [0.303]	1.274 *** [0.304]	1.275 *** [0.303]	1.275 *** [0.303]	1.302 *** [0.304]	1.302 *** [0.304]
L.Sales	0.434 *** [0.024]	0.426 *** [0.024]	0.415 *** [0.024]	0.427 *** [0.024]	0.427 *** [0.024]	0.419 *** [0.024]	0.419 *** [0.024]
L.Leverage	0.029 [0.185]	0.042 [0.185]	0.070 [0.185]	0.037 [0.185]	0.037 [0.185]	0.044 [0.185]	0.044 [0.185]
L.Legal	−0.213 [0.252]	−0.223 [0.252]	−0.263 [0.253]	−0.212 [0.252]	−0.212 [0.252]	−0.236 [0.252]	−0.236 [0.252]
L.Stakeholder Orintation	1.374 * [0.714]	1.325 * [0.712]	1.328 * [0.715]	1.294 * [0.724]	1.294 * [0.724]	1.307 * [0.714]	1.307 * [0.714]
Constant	−14.926 *** [1.417]	−14.747 *** [1.418]	−14.503 *** [1.417]	−14.489 *** [1.433]	−14.699 *** [1.428]	−14.417 *** [1.426]	−14.539 *** [1.420]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R-squared	0.26	0.26	0.26	0.26	0.26	0.26	0.26
log likelihood	−6257.37	−6255.23	−6231.98	−6253.42	−6253.42	−6252.73	−6252.73
Chi ²	2770.68	2770.44	2770.87	2781.05	2781.05	2770.52	2770.52
N	12,360	12,360	12,360	12,360	12,360	12,360	12,360

Table 5 presents the results of lagged logistic regressions examining the association between institutional ownership and companies' assurance decision. The analysis is performed on a sample of 3446 firms that issued an assured sustainability report during the period from 2010 to 2020. Robust standard errors are reported in brackets. Industry, year, and country fixed effects are included in all models. Detailed definitions of all variables are in the Appendix. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 6. Institutional ownership and companies' assurance decision (propensity score matching).

Matching Algorithm		Treated Firms (1)	Control Firms (2)	Diff. (3)	SE (4)	t-Statistics (5)
NN(1)	ATT	0.495	0.416	0.080	0.021	3.8 ***
NN(3)	ATT	0.495	0.409	0.087	0.018	4.74 ***
NN(5)	ATT	0.495	0.407	0.089	0.018	5.02 ***
Radius	ATT	0.495	0.404	0.091	0.017	5.34 ***
Kernel	ATT	0.495	0.400	0.096	0.017	5.68 ***

Table 6 presents the results of propensity score matching analysis examining the association between institutional ownership and companies' assurance decision. The analysis is performed on a sample of 3446 firms that issued an assured sustainability report during the period from 2010 to 2020. All matching algorithms impose common support and a caliper of 0.01. *** indicates statistical significance of t-test at 1% level.

Third, we re-estimate our models without US firms and UK firms to ensure that our results are not driven by these contexts as they represent approximately 24% and 12% of our overall sample, respectively. Additionally, we re-estimate our models excluding 2020 observations, as Table 2 shows a decrease of 62% in the number of firms assuring their sustainability reports and an increase of 24% in institutional ownership during 2020. Finally, we re-estimate our models controlling for industries using the classifications suggested by [26]. They argue and find that corporate reputation in some industries (mining, production, utilities, and finance) is more sensitive to sustainability, which will encourage firms in these industries to assure their sustainability reports. The estimated results of the above-mentioned tests are consistent with our initially reported results.

6. Summary and Conclusions

There is a huge ethical dilemma covering companies' sustainability reporting. Companies can manipulate sustainability reporting to provide a better picture of their sustainability practices. Companies are able to do so because of the nature of these reports. That is why the reliability of sustainability reporting is a concern for shareholders. If companies are manipulating their sustainability performance, this might cause a blowback on companies' financial values. Therefore, institutional investors play a significant role in ensuring the reliability of such reports through external assurance.

Analyzing an international sample of companies over the period of 2010 to 2020, we find evidence that long-term institutional ownership plays a significant role in companies' decisions to enhance their sustainability report reliability through external assurance. Further, we consider the importance of ownership level and find that companies with a high level of long-term institutional ownership are associated with companies' assurance decisions, a finding that aligns with critical mass theory. This study not only documents that there is a positive relationship between long-term institutional ownership and the likelihood of assurance over sustainability reports but it also shows this relationship is negatively moderated by the quality of governance at both corporate and country levels. These findings are in line with our argument that long-term institutional ownership as an effective monitoring function and corporate governance mechanism would encourage firms to enhance the reliability of their sustainability reports through assurance; furthermore, these long-term institutional investors would have less influence in the case of well-governed firms or firms that operate in countries with robust governance.

These findings have many practical and theoretical implications. The paper emphasizes how long-term institutional investors can function as a monitoring mechanism for a company's sustainability performance. Our results suggest that the role of long-term institutional investors is extended by their monitoring of companies' sustainability reporting reliability through external assurance. Further, the results suggest that their role is moderated by the strength of corporate and institutional governance, which is consistent with the agency theory. The results also suggest that their role changes based on their investment concentration, which is consistent with critical mass theory. As external assurance is found to be one mechanism that institutional investors are pushing for, standard-setting

organizations should work collaboratively to enhance assurance practices and enforce more guidelines.

Further research could investigate the role of other types of ownership, such as ownership by foreign investors, to determine if they are also using their monitoring role in enhancing the reliability of companies' sustainability reports. Many studies are trying to link companies' sustainability performance to their financial performance (e.g., [57]). What if sustainability performance and practices are not having a direct impact on companies' financial performance, but they are preventing a financial disaster? Indeed, some interview-based studies with institutional investors are likely to provide fruitful insights into why investors are interested in companies' sustainability practices. To extend this study's findings, further research could investigate why long-term institutional investors affect companies' decisions to engage in external assurance. Furthermore, long-term ownership might also affect companies' decisions regarding the quality of the assurance engagement and their choice of assurance provider. Access to different attributes regarding companies' assurance engagement is a limitation of this study, and further research could investigate these additional attributes.

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