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Institutional Ownership and Corporate Sustainability Performance—A Meta-Analysis

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ABSTRACT

This study investigates the relationship between institutional ownership (IO) and corporate sustainability performance (SP), addressing inconsistent findings in prior research and clarifying the boundary conditions of this relationship by testing a defined set of potential moderators. Drawing on a comprehensive meta-analysis of 116 empirical studies, we find evidence of a bidirectional positive association: higher IO is linked to superior subsequent SP, and prior superior SP attracts greater IO. Furthermore, country-level institutional factors significantly moderate the IO–SP relationship, and temporal factors exert additional moderating effects. These results support arguments from agency theory and stakeholder salience theory.

Investors increasingly consider the corporate sustainability performance (SP) of their investment targets, either due to pecuniary (*value* investors) or nonpecuniary motivations (*values* investors) (Lopez-de-Silanes et al. 2024; Starks 2023). *Value* investors consider SP as a driver of firm value, as exemplified by statements from BlackRock CEO Larry Fink: "We focus on sustainability not because we're environmentalists, but because we are capitalists and fiduciaries to our clients." (Fink 2022). In contrast, *values* investors are interested in the societal and environmental impact of firms, as reflected in the statement of an impact investor: "We go one step beyond simply investing according to ESG[1] [environmental, social, and governance] criteria and really want to actively and positively influence the world with the capital we provide" (Interview quote from a related research project). Both motivations imply that there should be a positive relationship between institutional ownership (IO) and SP.

An increasing number of studies has investigated the relationship between IO and SP from two different angles yielding inconclusive findings (e.g., Faller and Knyphausen-Aufseß 2018; Velte 2020; Velte 2022b). Many studies have focused on the influence exerted by institutional investors on the SP of companies in which they are invested (IO➔SP) (e.g., Gloßner 2019; Neubaum and Zahra 2006) drawing on the consideration that investor preferences for SP directly (e.g., by means of shareholder proposals) or indirectly (e.g., by selling off shares or threatening to do so) drive firms' sustainability activities. Some studies show a positive relationship (e.g., Chen et al. 2020; Dyck et al. 2019), others have reported a negative one (Arora and Dharwadkar 2011; Yan et al. 2021), while some have found nonsignificant results (Barnea and Rubin 2010; Dam and Scholtens 2012). Other studies have examined the reverse causal relationship (i.e., the effect of SP on institutional investors' share; SP➔IO) (e.g., Cox et al. 2007; Cullinan et al. 2016), drawing on the idea that

This study investigates the relationship between institutional ownership and corporate sustainability performance, offering new empirical evidence to address inconsistent findings in prior research and clarifying the boundary conditions of this relationship by testing a defined set of potential moderators, including country-level institutional factors.

investors select firms for their SP records. Again, some have revealed a positive relationship (Ahmed et al. 2014; Wahba 2008), while others have reported nonsignificant results (Graves and Waddock 1994; Oikonomou et al. 2020).

Along with the increase of empirical studies focusing on the IO–SP relationship, several scholars cumulatively assessed the body of evidence by means of systematic literature reviews (e.g., Faller and Knyphausen-Aufseß 2018; Gillan et al. 2021; Jain and Jamali 2016; Kavadis and Thomsen 2023; Martiny et al. 2024; Velte 2022b). While those works undoubtedly provide important insights, they rely on narrative or vote counting approaches and, thus, entail different shortcomings from a statistical point of view such as Type II error problems, neglect of sample size differences, or lacking point estimates (Combs et al. 2011). Therefore, our study complements the available reviews by using a meta-analytic approach that enables more precise and actionable insights into the IO–SP nexus. In essence, our study integrates quantitative data from 116 primary empirical studies in two separate meta-analyses to move beyond this inconclusive empirical evidence. We embed our analyses in agency theory and stakeholder salience theory. Our results indicate a positive relationship between a high share of IO and a company's subsequent superior SP, as well as a positive relationship between prior superior SP and higher IO. Furthermore, our results reveal a high degree of heterogeneity, indicating possible moderating effects. Therefore, we test the meta-analytic results for potential moderating effects by means of random-effects meta-regression analyses for both directions to better understand the relationship between IO and SP (Faller and Knyphausen-Aufseß 2018). Our results show that country-level institutional factors (the strength of shareholder rights and regulatory burden) moderate the relationship between IO and SP. Moreover, we find moderating effects of temporal factors (institutional investors' investment horizon and the increasing salience of SP in recent years). We organize and classify arguments for both directions of the relationship within a framework building on agency theory and stakeholder salience theory.

Against the background of previously inconclusive findings regarding the focal relationship, our meta-analysis contributes to the scholarly discussion by conveying stylized facts or empirical regularities that provide a foundation for future research to develop theory and conduct more refined tests and extensions (Helfat 2007; Walls et al. 2012). Our synthesis of prior empirical studies allows us to derive general conclusions about both directions of the relationship between IO and SP and thereby responds to the call for meta-analyses on institutional investors and SP (Velte 2022a).

1 | Theory and Hypotheses

In the following, we develop hypotheses for both directions of the focal relationship and, subsequently, for the moderating effects building on agency theory and stakeholder salience theory. Agency theory is one of the most prominent theoretical approaches to examine the relationship between IO and SP (Velte 2022b). In the relationship between principals (here: institutional investors) and agents (managers), agents are expected to act in the best interests of the principal (Eisenhardt 1989; Jensen and Meckling 1976). However, information asymmetry can result in agency conflicts when the interests of both actors do not align. Regarding SP, managers possess an informational advantage over investors and they might be reluctant to commit to certain sustainability activities that incur potential costs or utilize limited managerial resources (Buertey et al. 2020; Kock et al. 2012). Stakeholder salience theory explains why companies prioritize different stakeholders (Erhemjamts and Huang 2019). Accordingly, we use stakeholder salience theory to explain why certain stakeholders such as institutional investors may be more influential than others in driving SP based on their salience, determined by their power (ownership stake), legitimacy (commitment to SP), and urgency (investment timelines) (David et al. 2007; R. K. Mitchell et al. 1997; Neubaum and Zahra 2006).

We argue that the two theories provide complementary perspectives on the IO–SP relationship as summarized in Figure 1 and outlined in detail below: Agency theory addresses the internal dynamics and governance structures affecting SP, focusing on conflicts and alignment between principals (institutional investors) and agents (managers). Stakeholder salience theory extends this by considering external pressures and the varying influence of different stakeholder groups, including institutional investors, on a firm's SP strategies.

1.1 | Main Effects on the Relationship Between IO and SP

Institutional investors can influence a company's SP either directly (e.g., through actions like shareholder proposals) or indirectly (e.g., by selling shares or signaling the intention to do so) to encourage firms to change their sustainability efforts (Chen et al. 2020; DesJardine, Grewal, and Viswanathan 2023). Compared with retail investors, institutional investors possess more specific resources and capabilities, which lead to superior information-processing abilities (Mahoney and Roberts 2007; Schnatterly et al. 2008). They typically own a larger portion of shares and thus also of voting rights, which better enables them to make their voice heard (Dressler and Mugerman 2023). In addition, it can be more difficult for them to readily reduce their investment volume because withdrawing a significant share of capital from a company could negatively impact the value of their investment (Cox et al. 2004; Davis and Thompson 1994). Therefore, institutional investors can be expected to have a significant influence on a company's SP, whether leading to its improvement or reduction.

An argument brought forward for a negative relationship between IO and SP is that institutional owners may prioritize short-term gains at the expense of SP (e.g., Arora et al. 2024). Often, however, institutional investors were said to be interested in a high SP, either due to pecuniary motivations (*value* investors) or driven by nonpecuniary motivations (*values* investors) (Lopez-de-Silanes et al. 2024; Starks 2023). In terms of pecuniary motivations, corporate financial performance effects of SP may explain why *value* investors might prefer companies with strong SP (Faller and Knyphausen-Aufseß 2018). A strong SP is often associated with lower risks and potentially better long-term returns because of lower adverse externalities such as litigation

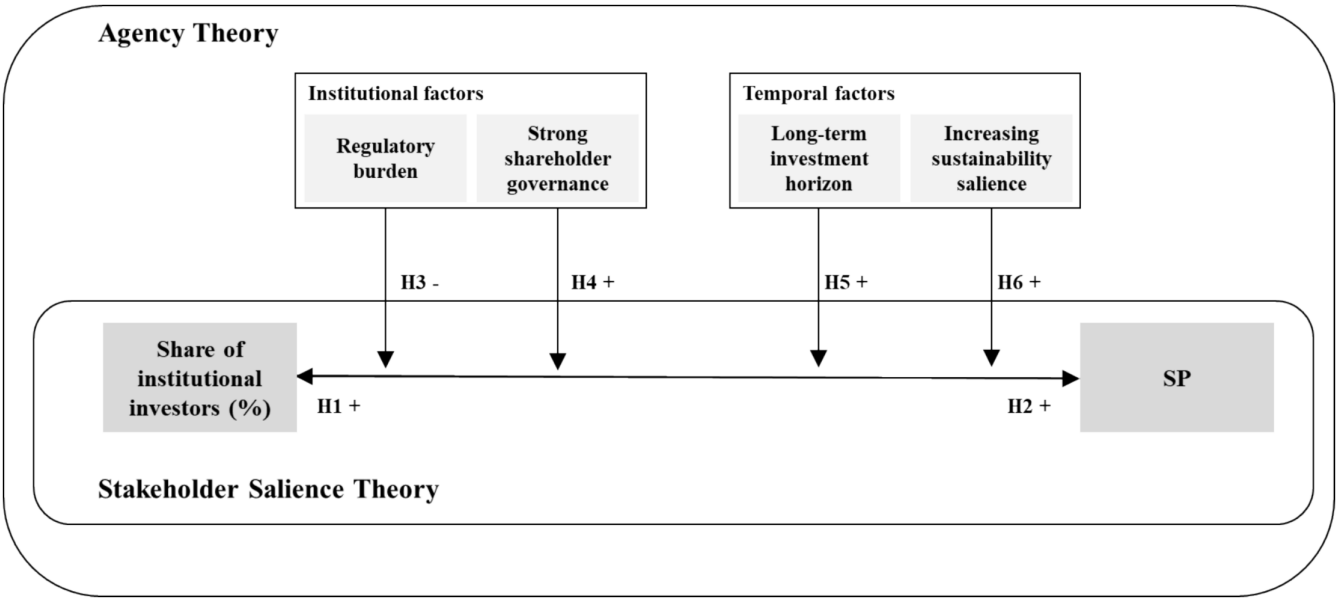

FIGURE 1 | Main hypotheses and moderators.

or regulatory burden (Ceccarelli et al. 2023; Chen et al. 2020). As most institutional investors are universal owners that are usually invested in multiple companies in different countries, they bear a systematic market risk and are consequently affected by global trends such as climate change (Hawley and Williams 2007). Thus, another potential pecuniary advantage of SP for IO might be the diversification of systematic risk (Lopez-de-Silanes et al. 2024). Overall, although some short-term institutional investors may not "walk the talk" (Raghunandan and Rajgopal 2022, 825) and prioritize short-term financial gains over long-term sustainability goals (Gloßner 2019), various meta-analyses have found a positive relationship between SP and corporate financial performance in the past (Busch and Friede 2018; Wang et al. 2016).

Furthermore, regulatory and societal pressures shape institutional investors' investment behavior (Cox et al. 2004; Ryan and Schneider 2002) and up until recently, there was an increasing regulatory push in this regard. For instance, the much-debated European Union (EU) taxonomy for sustainable activities has increased institutional investors' awareness of environmental issues (Kordsachia et al. 2022), while in the United States, the Securities and Exchange Commission proposed that companies disclose risks associated with climate change and emissions (Securities and Exchange Commission 2022). However, how this regulatory development continues is an open question especially with regard to the recent heated political debate on ESG especially in the United States (Eccles 2024).

Moreover, beyond the pure financial motivation of *value* investors, *value* investors are additionally driven by nonpecuniary motivations, such as ethical values, when seeking high SP (Lopez-de-Silanes et al. 2024; Starks 2023). Such institutional investors may be endowed with a particular underlying set of social norms that guides their investment behavior (Cahan et al. 2017; Dyck et al. 2019). H. Hong and Kacperczyk (2009) found that norm-constrained investors hold stocks differently from non-norm–constrained investors to the extent that the former, for example, refuse to invest in "sin" stocks, which relate to publicly listed companies in industries such as tobacco, alcohol, or gaming. Therefore, social norms could provide an additional explanation for investors' demand for a company's higher SP. Considering these arguments, we hypothesize the following:

Hypothesis 1. **(H1):** *A high share of IO is positively related to companies' subsequent superior SP.*

When examining the reverse causal relationship (SP➔IO), according to which institutional investors select firms based on their SP, we again base our reasoning on the arguments that institutional investors could favor high SP, driven by pecuniary (*value* investors) or nonpecuniary motivations (*values* investors).

Value investors could be interested in investing in companies that already exhibited high SP as this could be associated with the companies' improved financial performance and reduced risks, as illustrated above. Kölbel and Busch (2021), for example, point out that good SP ratings convey a risk-minimizing effect. Moreover, companies with high SP may attract institutional investors, as these firms have already made substantial investments in SP. This allows institutional investors to potentially reap the financial rewards of high SP without incurring the initial costs. Additionally, institutional investors may be inclined to invest in companies with high SP due to nonpecuniary motivations, such as previously mentioned factors like norms (Cahan et al. 2017; Dyck et al. 2019). We therefore hypothesize:

Hypothesis 2. **(H2):** *Companies' prior superior SP is positively related to higher IO.*

1.2 | Moderating Effects on the Relationship Between IO and SP

The existing literature emphasizes the importance of investigating moderating effects to gain further insights into the

relationship between IO and SP (Faller and Knyphausen-Aufseß 2018; Velte 2022b). We acknowledge potential moderators whose relevance has been highlighted by prior meta-analyses on SP (Velte 2022a) and other works on corporate governance (Aguilera et al. 2012), grouping potential moderators into institutional factors and temporal factors as displayed in Figure 1. In the following, we suggest moderating effects for both causal directions of the relationship between IO and SP following again arguments from agency theory, stakeholder salience theory and previous literature.

1.2.1 | Institutional Factors

Companies' sustainability activities presumably depend on the country context, which rests on different institutional factors (Freeman and Hasnaoui 2011). According to Matten and Moon (2008), these institutional factors are related to national, institutional frameworks that have developed over time. These factors may also impact the dynamics of the relationship between principal and agent (Jain and Jamali 2016). For instance, regulations or cultural standards may influence managerial decisions regarding investments into SP (Tashman et al. 2022). The strength of shareholder rights and the level of government regulation are two potential country-level institutional factors (Jain and Jamali 2016; Law and Azman-Saini 2012).

While institutional investors can shape SP through their influence on managerial decision-making, the extent of this influence depends on the strength of shareholder rights (Arora and Dharwadkar 2011). Shareholder rights determine how much power investors can legally exert (Armour 2020), serving as a key institutional governance mechanism that amplifies the influence of institutional investors, including their authority over managerial decisions (Arora and Dharwadkar 2011). For example, when shareholder rights are strong, institutional investors can utilize formal governance mechanisms to ensure managerial accountability for their commitments to SP (Jain and Jamali 2016). In countries with weak shareholder rights, however, managers have greater autonomy and thus may more easily act against the interest of investors (Kock et al. 2012). In sum, strong shareholder rights potentially reduce agency costs and enhance stakeholder salience of institutional owners by increasing their power and influence over corporate decision-making (David et al. 2007). Accordingly, they serve as an enabling governance mechanism that could amplify the impact of IO on SP so that we hypothesize:

Hypothesis 3. **(H3)***: Strong shareholder rights positively moderate the relationship between IO and* SP.

IO can influence management through governance mechanisms such as voting rights, shareholder resolutions, or direct engagement (DesJardine, Zhang, and Shi 2023). However, a high regulatory burden can diminish this influence, irrespective of whether this burden is related to SP. Regulatory burden encompasses the total costs and expenditures that companies incur to comply with laws and regulations. This includes both financial and administrative expenses, as well as indirect impacts, such as constraints on entrepreneurial decision-making (Liang and Renneboog 2017).

Regulatory burden often entails significant reporting, compliance, and legal expenses leading to high compliance costs which may constrain a company's ability to allocate resources to sustainability projects (Duvanova 2012). Furthermore, if firms are burdened by regulatory compliance (e.g., Fifka and Loza Adaui 2015), it may constrain their engagement with institutional investor activities, such as shareholder resolutions.

Turning specifically to sustainability-related regulatory burden, firms may adopt a "box-ticking" approach of meeting legal requirements but not exceeding them (Herd and Moynihan 2019; Liang and Renneboog 2017). As argued above, IO may aim for high SP if they see it as a value-creation tool (*value* investors) (Starks 2023). However, regulation may mandate companies to assume responsibility in certain areas and thus diminish the scope of corporate discretion. As a result, institutional investors who would have otherwise pushed for proactive and voluntary SP initiatives may find firms reluctant to engage beyond regulatory mandates. Furthermore, if SP-related regulation is strict and enforcement is strong, institutional investors may defer responsibility to regulators, weakening their direct influence on SP and thus essentially crowding out investor influence.

Overall, we argue that regulatory burden weakens the ability of IO to influence SP because of shifting stakeholder salience, managerial distraction, resource reallocation, and compliance-driven rigidity. As a result, we hypothesize:

Hypothesis 4. **(H4)***: Regulatory burden negatively moderates the relationship between IO and* SP.

1.2.2 | Temporal Factors

Institutional investors are not a homogenous group. Some investors have a more short-term investment horizon whereas others adopt a more long-term one (Neubaum and Zahra 2006; Shleifer and Vishny 1990). The investment horizon is important, as SP-related activities are presumably of a long-term nature and thus do not always pay off in the short term (Cox et al. 2004; Fu et al. 2019). From an agency theory perspective, a potential conflict could arise between a long-term institutional investor dedicated to sustainable development and managers whose primary focus could be on meeting short-term objectives, often at the expense of SP goals (Kock et al. 2012). Thus, institutional investors, especially those with a long-term investment horizon, such as pension funds (Cox et al. 2008), may promote investments in companies' SP as their goals are less restricted to short-term financial gains (Gloßner 2019). Accordingly, we hypothesize:

Hypothesis 5. **(H5)***: Institutional investors' long-term investment horizon positively moderates the relationship between IO and* SP.

Finally, SP has gained increasing salience especially in the last few decades (Garel and Petit-Romec 2021b; Govindan et al. 2021). In addition, investors have become increasingly aware of sustainable issues and SP over time (Chen et al. 2020; Drempetic et al. 2020). The increasing salience of SP has implications for the principal–agent relationship, potentially intensifying agency conflicts as institutional investors increasingly

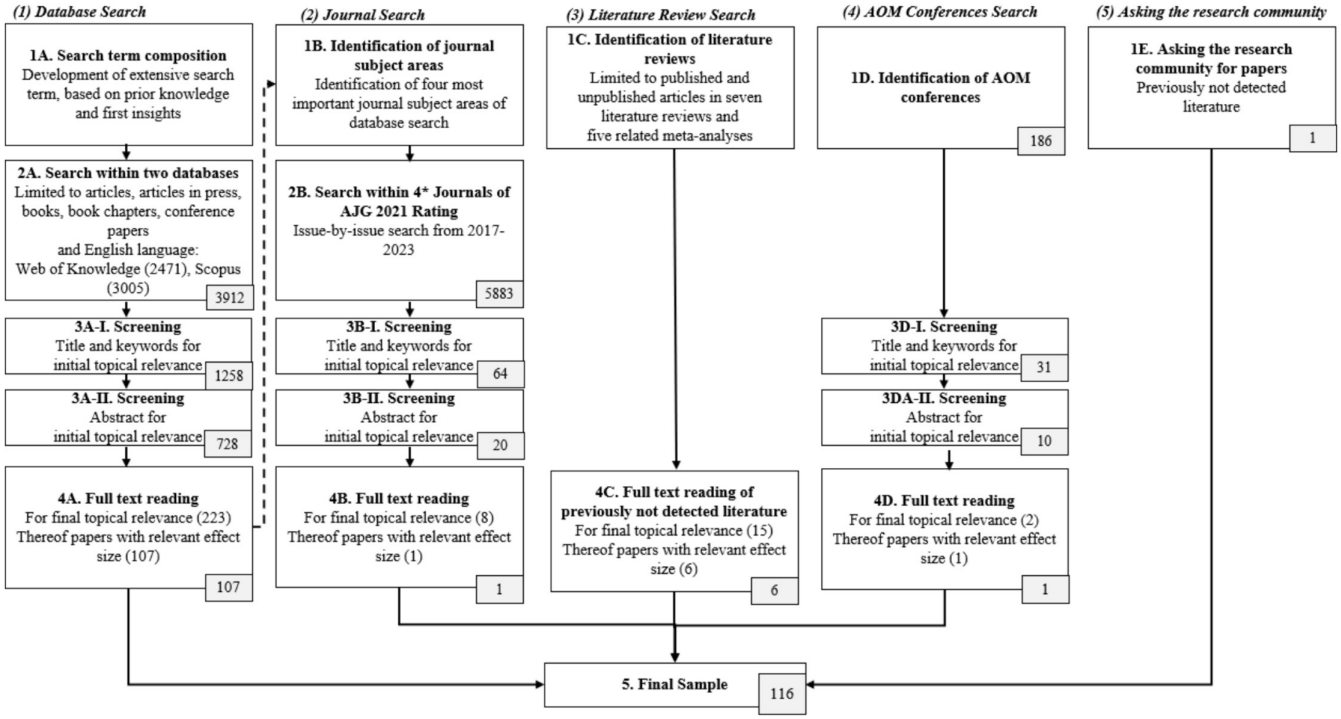

FIGURE 2 | Literature-search process.

advocate for enhanced SP standards. We argue that empirical studies based on more recent data on the relationship between IO and SP show a stronger relationship between the two variables. It is important to note, however, that the discourse around sustainability and SP has become increasingly polarized recently (Eccles 2024). Nevertheless, this debate has not yet been reflected in empirical studies because of the time lag in data availability so that we hypothesize:

Hypothesis 6. (H6)*: The positive relationship between IO and SP has become stronger over time.*

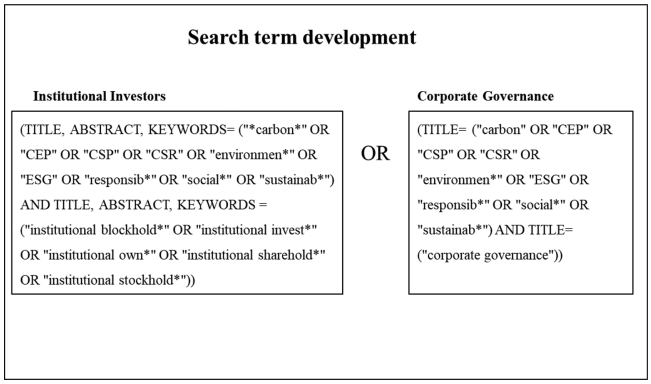

FIGURE 3 | Search-term development.

2 | Method

2.1 | Identification of Studies

To derive a comprehensive sample of studies, we employed five complementary literature-search procedures (see Figure 2 for an overview; Appendix A provides extensive details about this process). First, we searched in the Scopus and Web of Knowledge databases based on the combination of keywords illustrated in Figure 3. Second, we identified the four most important subject areas of the journals[2] in which we identified suitable studies in the first step. For these subject areas, we identified journals with 4* ratings by the Academic Journal Guide (AJG) and manually reviewed these journals' issues over the last years.[3] Third, we searched through the reference lists of seven review articles known to us that covered the focal topic (Faller and Knyphausen-Aufseß 2018; Jain and Jamali 2016; Karn et al. 2023; Kavadis and Thomsen 2023; Ludwig and Sassen 2022; Velte 2020; Velte 2022b). Fourth, we searched for studies included in the Academy of Management (AOM) annual meeting programs. Finally, we solicited unpublished manuscripts from scholars via repeated calls on the listserv communities of the Social Issues in Management (SIM), Organizations and the Natural Environment (ONE), Organizations and Management Theory (OMT), and Strategic Management (STR) division of the AOM, as well as on LinkedIn.

To be included in our analyses, studies had to be written in English and topically relevant. Studies had to report a bivariate correlation between an IO variable and a SP variable to allow for computing the effect size (Lipsey and Wilson 2001). We contacted authors of several papers regarding missing information for the calculation of effect sizes and included a study when the authors provided the necessary information on request.

We conducted two separate meta-analyses. The first covered the relationship between IO and companies' subsequent SP (IO➔SP). This analysis comprised 106 studies representing a total of 868,904 observations from 108 independent samples. The second meta-analysis related to the reverse causal direction

between companies' high SP and the subsequent share of institutional investors (SP➔IO). We included 89 studies in this calculation, comprising 753,378 observations.[4]

The overall set of studies included in the two meta-analyses comprised 116 studies representing a total of 933,684 observations from 118 independent samples. These studies were published between 1994 and 2023, with a clear trend toward more studies being published in more recent years. The absolute majority (~85%) of studies use time-series data, covering multiple years, spanning from 1988 to 2021. While we do not claim to have included all previous studies on the focal relationship, we are confident that we have systematically compiled a comprehensive sample covering our area of interest. Figure 4 illustrates the geographical distribution of the studies, illustrating a strong concentration of studies building on data from the United States and China, while Figure 5 illustrates a significant increase in research over the years. Appendix B summarizes the studies included in our meta-analyses.

2.2 | Coding of Studies

The authors jointly developed a coding scheme to extract information on IO, SP, cross-country variation, and temporal effects from each study (see Table 1), including the effect sizes. For example, IO was measured and coded as the ratio of the number of shares held by institutional investors to the total number of shares. We excluded studies from our sample if they reported only vague specifications of the extent of IO or merely used dummy variables for IO. Furthermore, some studies in our sample reported on detailed subdimensions

Geographical distribution of study data

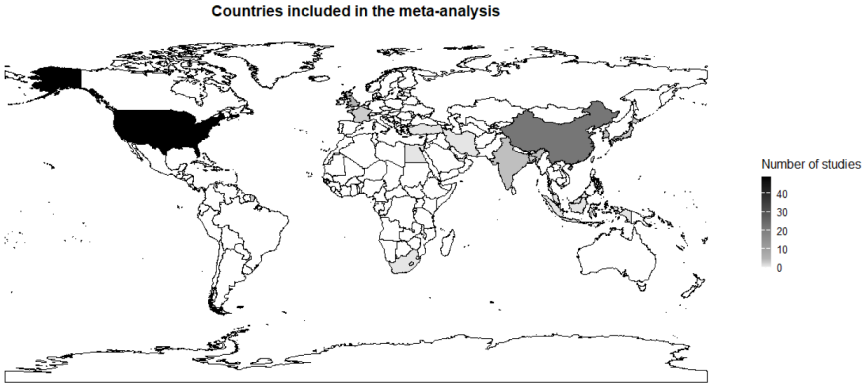

FIGURE 4 | Geographical distribution of study data.

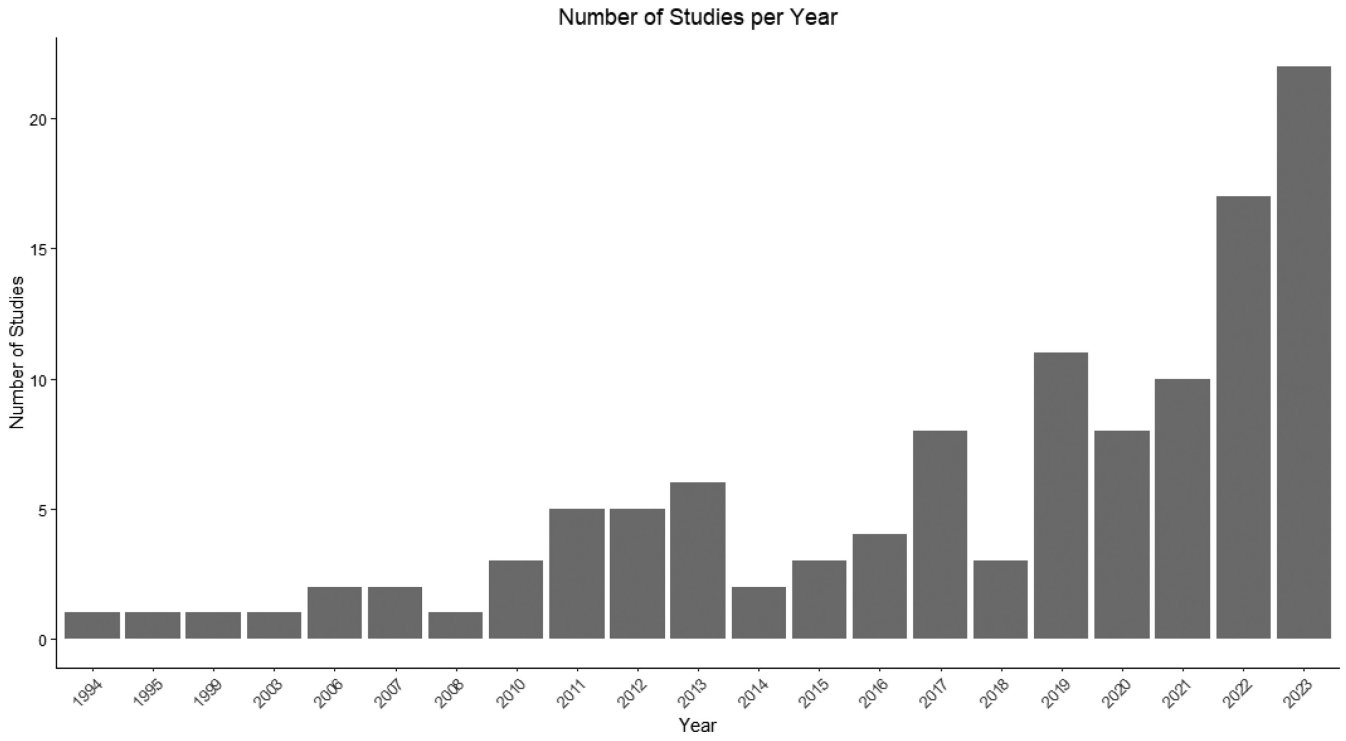

FIGURE 5 | Timeline of sample studies between 1994–2023*. *Three articles accounted for the year 2023 in this figure were published as "in press"-articles at the time of conducting the literature search. These were eventually published later in 2024 and are displayed as such in Appendix B.

TABLE 1 | Overview of coding details.

Measurement in sample studies	Operationalization in our analysis
IO	

• Ratio of number of shares held by institutional investors to total number of shares	• IO subdimensions included as a measure:
	  • long- and short-term
	  • foreign and domestic
	  • specific institutional-investor type such as mutual-funds ownership
	• Studies with only vague specifications of the extent of IO or with dummy variables for IO were excluded.
	• For studies with several measures for IO subdimensions (e.g., short- and long-term IO) but no composite IO score, we manually calculated a holistic IO score.

SP	
• SP measured in various ways, reflecting its multidimensional nature • Most studies reported holistic SP scores from KLD, ASSET4 or other databases[a] • Few studies used a subdimension of SP (e.g., social or environmental performance)	• In case of separate scores for environmental and social performance, we calculated holistic SP scores for the overall analyses.
Cross-country variation	
• Consistent with recent corporate-governance-related meta-analyses (e.g., Jeong and Harrison 2017; Post and Byron 2015), we exploited the cross-country variation in the primary studies or independent samples, which allowed us to incorporate country-level moderators.	• We coded regulation with the World Economic Forum's burden of government regulation survey and the strength of shareholder rights with the shareholder-governance index (World Economic Forum 2019).[b] • For studies covering a single country, we used the respective scores for that country. We averaged the respective scores for multiple country studies covering up to seven countries.
Temporal effects	
• The sample studies operationalized the time horizon differently.[c] • The studies were conducted in different years, with varying timelines across studies—some using cross-sectional data (e.g., Dam and Scholtens 2012) and others employing time-series data (e.g., David et al. 2007).	• We coded whether the primary studies used a measure of long-term investment horizon for IO. • We also coded the timing of the studies to address the increased prominence of SP-related issues in the business world. • We distinguished between studies based on samples before 2010 and after 2010 by assigning a dummy coding for each period (0 and 1, respectively).[d]
Time lag of sample studies	

• The focal variables in the primary studies were often measured with a time lag, allowing for a temporal separation between the dependent and independent variables.	• We coded:
	  • whether the measurement of IO preceded that of SP, which would indicate a causal link from the former to the latter (IO➔SP),
	  • whether the measurement of SP preceded that of IO, which would indicate a reverse causal direction (SP➔IO)
	  • whether the two variables were concurrently measured, which would preclude any causal inference.[e]

TABLE 1 | (Continued)

[a]One-third of the studies used the KLD/MSCI ESG database, 11% used the Refinitiv/Asset 4 database, and 7% used the Hexun database.
[b]The burden of government regulation score ranges from 1 (= extremely burdensome) to 7 (= not burdensome at all). The shareholder-governance index (from 0 to 10) "assesses three dimensions of good governance: (1) shareholders' rights and role in major corporate decisions, (2) governance safeguards protecting shareholders from undue board control and entrenchment, and (3) corporate transparency on ownership stakes, compensation, audits and financial prospects" (World Economic Forum 2019, 632).
[c]For example, one group of studies categorized a long-term investor horizon by investor type. Others used investor churn rates, which relates to the quarterly portfolio turnover of the institutional investor. The latter approach allows to take into account how frequently an investor trades. Finally, another group of studies used portfolio turnover to account for the investment horizon with the rational that the more often institutional investors change the proportion of their shares, the more likely it is that they have a short-term investment horizon (Garel and Petit-Romec 2021a).
[d]From the 116 studies, 70 cover data before 2010, 40 after 2010, and six could neither be allocated. We allocated studies with time-series data either before or after 2010, depending on whether the majority of years lies before or after 2010. We used 2010 as a cutoff year because this year was marked by a decisive event for sustainability when the Deepwater Horizon oil spill led to an increasing awareness of sustainability and SP worldwide (Dyck et al. 2019). For studies based on samples spanning multiple years, we designated them as either before or after 2010, depending on their focus.
[e]The studies in our sample measured SP and IO concurrently for different reasons. First, both variables do not necessarily represent dependent variables or independent variables in the original models of the papers. Rather, IO was a control variable and SP an independent variable. Therefore, the authors may have decided against a time lag and thus the relationship between these two variables is concurrent. Moreover, in several studies, the statistically analyzed relationships in the main models are concurrent, but in the robustness check a time lag is used to verify the data. It is important to note that time lag effects or temporal precedence in measurement are not identical to causality but are accepted as a strong indicator (Bono and McNamara 2011; Endrikat, Guenther, et al. 2014; Mitchell and James 2001).

of IO such as long-term and short-term institutional investors or specific types of institutional investors. Erhemjamts and Huang (2019), for example, specifically provide data on short-term and long-term, but not on total IO. In such cases, we manually calculated a composite effect size as this produces more valid results than using separate scores (Higgins et al. 2003; Ones and Viswevaran 1996). Following Schmidt and Hunter (2014), we computed composite correlations based on the average correlations between different measures of construct X (e.g., short-term IO and long-term IO) and the measure of construct Y (e.g., SP), corrected for the correlation among the measures of construct X (e.g., short-term IO and long-term IO).

For SP, few studies examined a specific subdimension of SP (e.g., social or environmental performance). We therefore initially considered using disaggregated measures of SP to capture distinct dimensions such as environmental and social dimensions. However, because of inconsistencies in data availability across studies and the increased complexity this would introduce, we decided to use aggregated SP measures to maintain methodological consistency and comparability in our meta-analysis. Table 1 provides details on all elements of IO, SP, cross-country variation, and temporal effects in the coding scheme.

After pilot testing and refining this scheme, the first author coded all the studies. To obtain accurate and reliable coding results (Carpenter and Berry 2017; Endrikat, de Villiers, et al. 2021), a second author independently coded 20 studies. The overall agreement was at 95%, with a Cohen's Kappa of 0.93. In addition, a third coder independently coded 40 studies, with a nearly identical overall agreement of 94% with a Cohen's Kappa of 0.92, suggesting almost perfect reliability (Landis and Koch 1977). The few minor discrepancies were resolved through communicative validation (Kvale 1995).

2.3 | Meta-Analytic Calculations

We opted for the Hedges and Olkin-type meta-analysis (Hedges and Olkin 1985) because an absolute majority of the primary studies was based on observed measures for both variables. This approach is in line with recent meta-analyses in management science (e.g., Jeong and Harrison 2017; Lander and Heugens 2017). We did not apply the method by Hunter and Schmidt (2004), which would correct measurement error, because an absolute majority of studies in our sample did not publish reliability statistics and were based on observed variables. We utilized meta-essentials (Suurmond et al. 2017) to estimate random-effects models. These models inherently imply that, besides the variability in the population, any variability between effect sizes is due to sampling error (Lee et al. 2017; Lipsey and Wilson 2001).

In the first step, following Hedges and Vevea (1998), we used Fisher's z transformation to convert the original correlations because the sample correlation, r, does not unbiasedly represent the population r (Dalton and Dalton 2005; Hunter and Schmidt 2004). Fisher's z-transformed correlations are approximately normally distributed. In addition, Fisher's z transformation ensures that effect sizes are optimally weighted because the

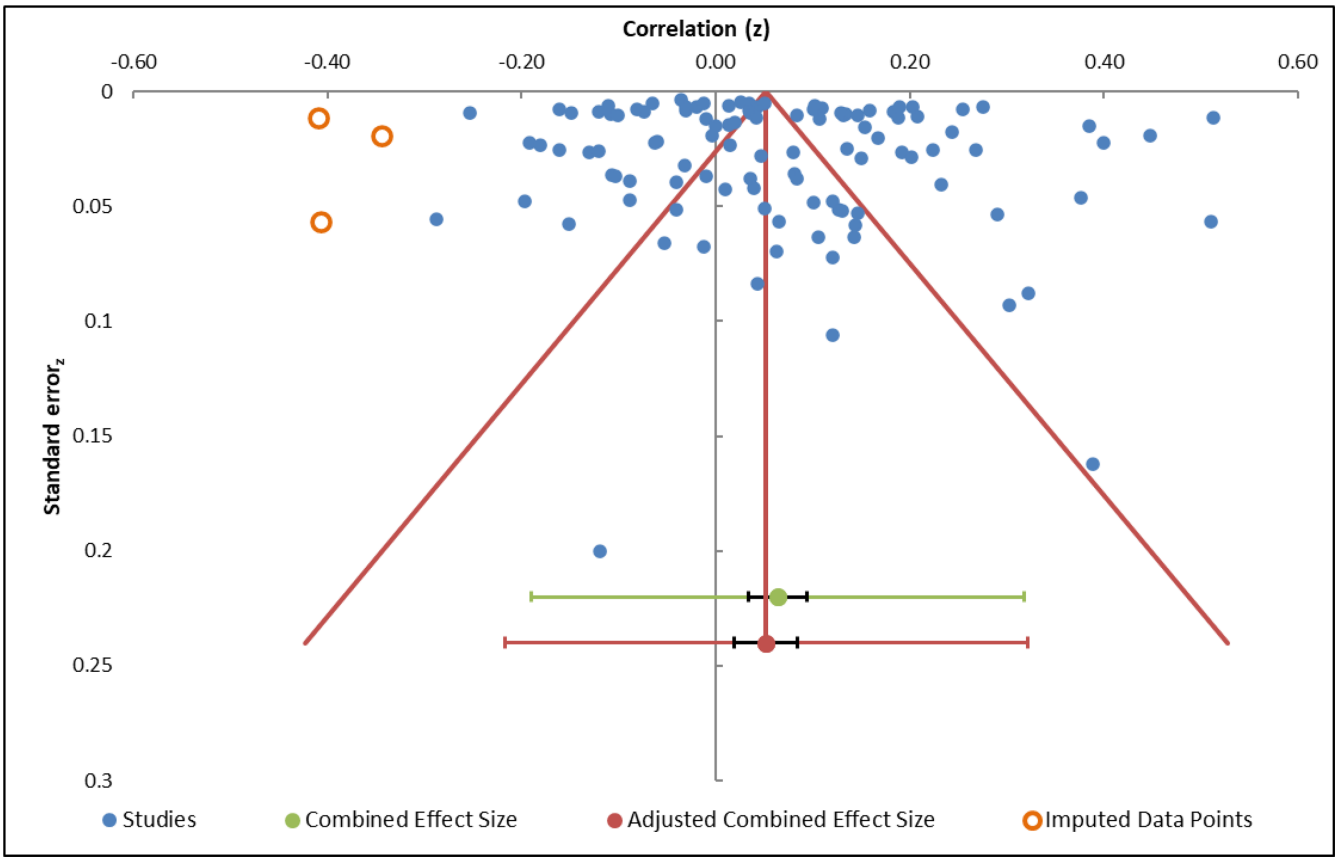

FIGURE 6 | Funnel plot meta-analysis (IO➔SP).

sample variance relies solely on the sample size and not on the population itself (Geyskens et al. 2009).

To evaluate whether the mean effect sizes were significant, we calculated 95% confidence intervals. The mean effect sizes are statistically significant when zero is not included in the confidence interval (Lipsey and Wilson 2001). We relied on I^2 and Q statistics to evaluate how homogeneously the effect sizes were distributed. The Q statistic indicates the dispersion of the effect sizes, and when it is significant, it is necessary to test for potential moderating effects (Allan et al. 2019; Lipsey and Wilson 2001). The I^2 statistic presents the scale of the observed variance that is caused by true disparities among the sample studies relative to error (Allan et al. 2019). Overall, significant Q statistics of meta-analytic findings indicate heterogeneity and consequently the existence of moderating effects (Allan et al. 2019). Publication bias is visually assessed in the funnel plots in Figures 6 and 7. The plots appear symmetrical, providing no indication of publication bias.

Additionally, Egger's test showed no statistically significant signs of publication bias in the full sample for both directions of the relationship.

To test our hypotheses concerning moderating effects, we utilized random-effects meta-regression analyses (Jeong and Harrison 2017; Lipsey and Wilson 2001). In these regressions, the mean correlation in the relationship between IO and SP derived from the meta-analysis is the dependent variable, whereas the potential moderators are the independent variables. Thus, a moderator is detected when the beta coefficient is statistically significant. Moreover, one potential challenge in a meta-analysis is the file-drawer problem, which reflects conditions in which "the research that appears in the published literature is systematically unrepresentative of the population of completed studies" (Rothstein et al. 2005, 1). These conditions might arise when studies are less likely to be published because of their specifics, such as an absence of significance of the findings or the direction of the results (Geyskens et al. 2009). To address this, we computed the fail-safe N statistic, which reports the number of null-effect studies that are necessary to obtain a nonsignificant mean effect size (Rosenthal 1979).

3 | Results

The results of both meta-analyses are presented in Table 2. We found a significant and positive mean correlation ($r = 0.06$; 95% CI = [0.03, 0.09]) for the first meta-analysis. This supports Hypothesis 1, which suggested a positive relationship between a high share of IO and subsequent superior SP (IO➔SP). The mean effect size for the second meta-analysis is also positive and significant ($r = 0.07$; 95% CI = [0.04, 0.11]), lending support to Hypothesis 2 that prior superior SP is related to higher IO (SP➔IO).

To account for the fact that SP is being assessed differently by various actors using different indicators, databases, and scoring systems, we conducted robustness tests in which we re-ran

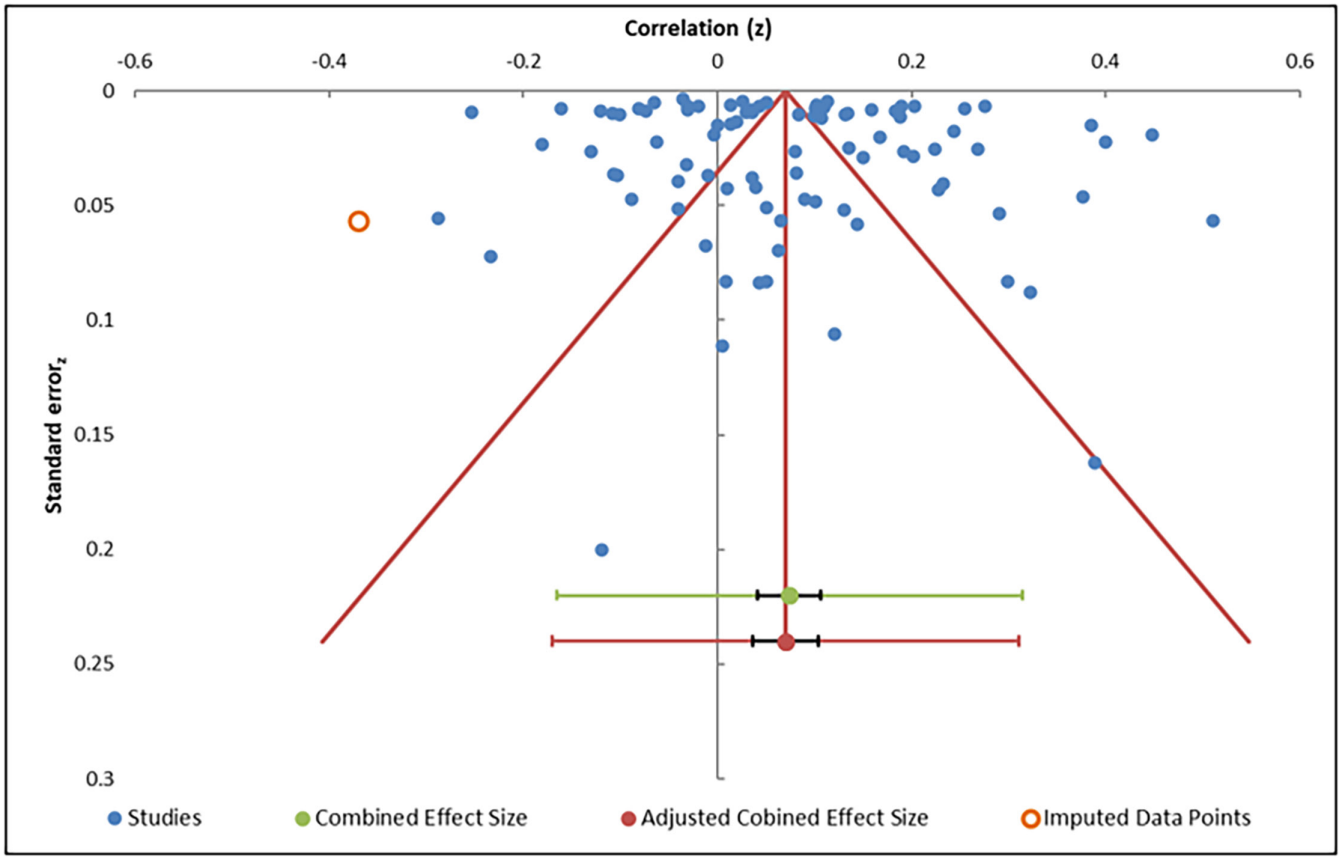

FIGURE 7 | Funnel plot meta-analysis (SP➔IO). [Correction added on 5 December 2025, after first online publication: Figure 7 has been corrected in this version.]

TABLE 2 | Meta-analytic results.

Relationship	*k*	*N*	*r*	95% CI lower	95% CI upper	*Q*	p_Q	I^2 (%)	Fail-safe *N* (Rosenthal)
(Hypothesis 1) IO➔SP	108	868,904	0.06	0.03	0.09	13,760.00	0.000	99.22%	939
(Hypothesis 2) SP➔IO	89	753,378	0.07	0.04	0.11	10,463.43	0.000	99.16%	950

Abbreviations: 95% *CI*, confidence interval; fail-safe *N* statistic; I^2, share of variance related to true differences among the studies; *k*, number of samples; *N*, sample size; p_Q, significance of *Q* statistic; *Q*, *Q* statistic; *r*, mean effect size.

the meta-analysis in both directions, excluding either KLD/MSCI ESG data or the Refinitiv/Asset4 data as the two dominant SP measures in our sample. In both cases, the results remain qualitatively identical thus indicating that varying measures for SP did not affect the results of our meta-analyses. In addition, we performed a robustness check with regard to perceived journal quality, comparing studies published in higher- and lower-ranked journals, as classified by the AJG rating. Appendix C provides an overview of these robustness tests. Furthermore, we addressed the file-drawer problem by calculating the fail-safe *N* for the significant relationships. For the mean effect sizes to become nonsignificant, 939 further null-effect studies for the first and 950 for the second meta-analysis would be required. Moreover, we examined the robustness of the meta-analytic relationships by calculating the *Q* and I^2 statistics. A significant *Q* statistic reveals significant heterogeneity for both relationships and consequently the need to explore the existence of moderating effects. Additionally, the relevant shares of the I^2 statistic (above 75%) for both directions of the relationship indicate that a high proportion of the variance is not attributable to error but to the existence of true differences among the studies.

Tables 3 and 4 present four moderating effects for the two focal meta-analytic relationships. Regarding country-level institutional factors, we hypothesized in Hypothesis 3 that strong shareholder rights amplify the relationship between IO and SP. This hypothesis is supported for both directions of the relationship ($\beta = 0.46$; $p < 0.01$ for IO➔SP, and $\beta = 0.49$; $p < 0.01$ for SP➔IO). This moderator explains a relevant share of the variance of the effect sizes ($R^2 = 20.97\%$ for IO➔SP, and $R^2 = 23.64\%$ for SP➔IO). Hypothesis 4 posited that regulatory burden negatively moderates the focal relationship, which is supported by the significant findings for both directions of the relationship

TABLE 3 | Meta-regression results for the relationship IO➔SP.

Moderator	*k*	*N*	*β*	R^2
Institutional factors				
(Hypothesis 3) Shareholder governance (WEF)	96	685,669	0.46***	20.97%
(Hypothesis 4) Burden of government regulation (WEF)	96	685,669	−0.38***	14.67%
Temporal effects				
(Hypothesis 5) Long-term IO	108	868,717[a]	0.11	1.18%
(Hypothesis 6) Timing before 2010	108	868,904	−0.45***	20.01%
(Hypothesis 6) Timing after 2010	108	868,904	0.43***	18.36%
Robustness tests for Hypothesis 6				
(Hypothesis 6) Timing before 2009	108	868,904	−0.33***	10.94%
(Hypothesis 6) Timing after 2009	108	868,904	0.43***	18.18%
(Hypothesis 6) Timing before 2011	108	868,904	−0.43***	18.36%
(Hypothesis 6) Timing after 2011	108	868,904	0.42***	17.31%

Abbreviations: *k*, number of samples; *N*, sample size; R^2, share of variance of mean effect size explained by moderator; *β*, standardized regression coefficient.
[a]Several articles included a smaller sample size for long-term IO compared with total IO.
*$p < 0.1$.
**$p < 0.05$.
***$p < 0.01$.

TABLE 4 | Meta-regression results for the relationship SP➔ IO.

Moderator	*k*	*N*	*β*	R^2
Institutional factors				
(Hypothesis 3) Shareholder governance (WEF)	79	600,663	0.49***	23.64%
(Hypothesis 4) Burden of government regulation (WEF)	79	600,663	−0.36***	12.84%
Temporal effects				
(Hypothesis 5) Long-term IO	89	753,191[a]	0.002	0.05%
(Hypothesis 6) Timing before 2010	89	735,378	−0.37***	14.02%
(Hypothesis 6) Timing after 2010	89	735,378	0.36***	13.04%
Robustness tests for Hypothesis 6				
(Hypothesis 6) Timing before 2009	89	735,378	−0.26***	6.73%
(Hypothesis 6) Timing after 2009	89	735,378	0.35***	12.13%
(Hypothesis 6) Timing before 2011	89	735,378	−0.36***	13.04%
(Hypothesis 6) Timing after 2011	89	735,378	0.35***	12.04%

Abbreviations: *β*, standardized regression coefficient; *k*, number of samples; *N*, sample size; R^2, share of variance of mean effect size explained by moderato.
[a]Several articles included a smaller sample size for long-term IO compared to total IO.
*$p < 0.1$.
**$p < 0.05$.
***$p < 0.01$.

($\beta = -0.38$; $p < 0.01$; $R^2 = 14.67\%$ for IO➔SP, and $\beta = -0.36$; $p < 0.01$; $R^2 = 12.84\%$ for SP➔IO).

Hypothesis 5 posited that institutional investors' long-term investment horizon positively moderates the focal relationship. We found nonsignificant evidence for both directions of the relationship ($\beta = 0.11$; $R^2 = 1.18\%$ for IO➔SP; $\beta = 0.002$; $R^2 = 0.05\%$ for SP➔IO); thus, Hypothesis 5 is rejected. Finally, our results support Hypothesis 6, in that the positive relationship between IO and SP has become stronger over time. For studies building on data from after 2010, we found a positive and significant effect for both directions of the relationship ($\beta = 0.43$; $p < 0.01$; $R^2 = 18.36\%$ for IO➔SP; $\beta = 0.36$; $p < 0.01$; $R^2 = 13.04\%$, for SP➔IO). For studies building on data from before 2010, we found opposite and significant effects ($\beta = -0.45$; $p < 0.01$; $R^2 = 20.01\%$ for IO➔SP and $\beta = -0.37$; $p < 0.01$; $R^2 = 14.02\%$ for SP➔IO). Robustness checks with the years 2009 and 2011 as moderators confirm the results. Table 5 provides an overview of all hypotheses.

As corporate financial performance has been identified as a key correlating construct in previous meta-analyses on sustainability management and corporate social responsibility (e.g., Busch and Friede 2018; Wang et al. 2016), we conducted a post hoc analysis to examine whether it moderates the IO–SP relationship. The analysis did not yield any significant effects. Appendix D provides a detailed description of the applied method and results.

4 | Discussion and Directions for Future Research

4.1 | Theoretical Contributions

The results of our meta-analyses suggest that a high share of IO is associated with companies' subsequent superior SP, and vice versa. The clear positive effect sizes of our analyses are noteworthy as some of the original studies in our sample reported nonsignificant (Barnea and Rubin 2010; Dam and Scholtens 2012; Graves and Waddock 1994; Oikonomou et al. 2020) or even negative findings (Arora and Dharwadkar 2011; Yan et al. 2021). This lends support to our arguments from agency theory and stakeholder salience theory. Efforts to enhance SP may result in agency conflicts (Velte 2022b), as managers might ignore SP because of the

TABLE 5 | Overview of hypotheses and corresponding results.

Hypothesis	Results
Hypothesis 1 (H1): A high share of IO is positively related to companies' subsequent superior SP.	Approved
Hypothesis 2 (H2): Companies' prior superior SP is positively related to higher IO.	Approved
Hypothesis 3 (H3): Strong shareholder rights positively moderate the relationship between IO and SP.	Approved
Hypothesis 4 (H4): Regulatory burden negatively moderates the relationship between IO and SP.	Approved
Hypothesis 5 (H5): Institutional investors' long-term investment horizon positively moderates the relationship between IO and SP.	Rejected
Hypothesis 6 (H6): The positive relationship between IO and SP has become stronger over time.	Approved

extra managerial work required for its implementation (Kock et al. 2012). Agency conflicts may be resolved when managers follow the demands of institutional investors as salient stakeholders (Neubaum and Zahra 2006). Our meta-analytic findings suggest that institutional investors not only invest in firms with high SP but also actively seek to enhance SP, driven by both pecuniary motivations (*value* investors) and non-pecuniary motivations (*values* investors) (Lopez-de-Silanes et al. 2024; Starks 2023).

Because of the heterogeneity of our meta-analytic results, indicated by the respective significant *Q* statistics, we applied meta-regression to test for potential moderating effects for both directions of the relationship. For institutional factors, we find that strong shareholder rights amplify the relationship between IO and SP, while regulatory burden negatively moderates the relationship. The relative effect sizes of the various moderating variables offer additional insights. The standardized regression coefficients for the effects of shareholder rights and regulatory burden were especially pronounced, implying that sustainability activities are indeed strongly influenced by country-level institutional factors (Freeman and Hasnaoui 2011; Matten and Moon 2008). The standardized regression coefficients for both country-level institutional factors are rather high compared with other meta-analytical regression coefficients focusing on SP (e.g., Endrikat, de Villiers, et al. 2021; Zubeltzu-Jaka et al. 2020). These results lend weight to the arguments derived from agency theory (Eisenhardt 1989; Jensen and Meckling 1976), because principals' (investors') and agents' (managers') attitudes toward SP might diverge (Chen et al. 2020; Oh et al. 2017). Furthermore, the findings provide additional support for arguments based on stakeholder salience theory (Neubaum and Zahra 2006), suggesting that strong shareholder rights enhance the influence of institutional investors over management, while regulatory burdens shift stakeholder salience from institutional investors to regulatory authorities.

Moreover, we did not find empirical support for the hypothesis that a long-term investment horizon of IO moderates the relationship between IO and SP. This could be due to a potential agency conflict between, on the one hand, long-term institutional investors committed to sustainable development and SP and managers who prioritize short-term objectives potentially at the expense of SP goals, on the other hand (Kock et al. 2012). This misalignment could ultimately mitigate the hypothesized moderating effect.

Last, our results show positive moderating effects of the increasing salience of SP in recent years and confirm our assumptions that sustainable issues, such as corporate climate performance or human rights in supply chains (Garel and Petit-Romec 2021b; Govindan et al. 2021) have gained increasing attention by institutional investors in the years under study. Overall, these aspects constitute boundary conditions to the general relationship between IO and SP and should be taken into account by future empirical works as well as by approaches seeking to theorize on the mechanisms driving the relationship.

4.2 | Limitations and Future Research

This study has limitations that suggest potential avenues for future research. For our first hypothesis regarding the relationship between IO and SP, we based our argument on institutional investors' motivations for SP. However, such motivations could be as heterogeneous as institutional investors themselves. Impact investors, for example, aim to achieve measurable social or environmental impacts in addition to financial returns and they might thus even be willing to sacrifice returns (Schlütter et al. 2024) whereas hedge funds are known for their rather short-term and purely financial perspective. Such types of institutional investors might be interested in their investment targets' SP for entirely different reasons, for example to reduce financial risks (Duanmu et al. 2021) or to impose reaction costs on high SP (DesJardine, Marti, et al. 2021). Future research could thus draw on more detailed empirical data to derive concrete indications of various types of institutional investors' specific investment sentiment regarding SP.

The key variables SP and IO entail some heterogeneity. SP was measured in many different ways in our sample. Some studies provided a holistic SP score from the KLD/MSCI ESG database (e.g., Erhemjamts and Huang 2019; Gloßner 2019) whereas others reported on specific indicators such as carbon emissions (e.g., Luo and Tang 2021). Furthermore, SP scores were obtained from several different databases, such as the KLD/MSCI ESG, ASSET4, and Hexun databases, which use different forms of measurement (Berg et al. 2022). Similarly, IO was measured, for example, by a composite score or solely by the share of an institutional investor type such as a fund. Despite the fact that different robustness tests indicate no relevant influence on our meta-analytic results, future research, which would likely have access to an even higher number of studies over time, could address this heterogeneity of measurements by using a more fine-grained analysis and considering the differences between these measurements in more detail.

Approximately half of all the primary studies focused on the United States as a country setting, which limits the meaningfulness of our findings regarding the country-level institutional factors. Future research could thus aim to assign weight to countries other than the United States, especially emerging countries. Furthermore, future research should also investigate the existence of a nonlinear relationship between IO and SP (e.g., Harjoto et al. 2017; Oh et al. 2017). Moreover, our dataset only extends up to 2021, which means it does not account for trends that may have emerged afterwards, such as the recent heated political debate suggesting that ESG has lost its appeal in the business landscape (Eccles 2024). Therefore, future research should incorporate datasets that include more recent years.

Despite our efforts to encompass a broad range of variables, we faced inherent limitations regarding data availability and the scope of our initial research design. For example, the geographic proximity of institutional owners to the firms in which they invest could influence their ability to assess and value sustainability activities, especially those that are based on "soft information," as Chang et al. (2021) suggest. As we could not shed light on this (and potentially other) relevant moderating variables, we are hopeful that subsequent studies will be able to address this gap in the literature by leveraging more comprehensive datasets and exploring the nuanced ways in which, for example, geographic proximity can influence institutional investors' engagement with SP.

Finally, our meta-analytic calculations indicate causality only to a limited extent (Endrikat, de Villiers, et al. 2021; Jeong and Harrison 2017). Although time lags exist between the independent and dependent variables in the primary studies, this study does not reveal causality between the directions of the relationship between IO and SP. As investments in improving SP are often of a more long-term nature, this effect in relation to institutional investors' share could be addressed in future studies.

5 | Conclusion

This meta-analysis on 116 studies sheds light on previously mixed empirical evidence regarding the relationship between IO and SP. Our findings indicate a positive relationship between IO and SP for both directions of the relationship. In other words, institutional investors endorse SP of companies, while companies may actively solicit investments by institutional investors to increase their SP. Moreover, we tested country-level institutional factors and temporal factors as moderators in a subsequent meta-regression. Our results indicate that country-level institutional factors, namely regulatory burden and strong shareholder rights, significantly moderate both directions of the focal relationship. Finally, we found also moderating effects of temporal factors for both directions of the focal relationship.

Author Contributions

Hans Henrik Scherer contributed to the development of the research idea and the formulation of the overarching goals and aims. He conducted the systematic literature review and the subsequent coding and executed the meta-analytic and meta-regression calculations. He authored the majority of the manuscript draft and created visual representations of data.

Rüdiger Hahn contributed during the idea generation phase and the literature search process. He validated the research outputs and critically reviewed and revised the original and subsequent drafts of the paper.

Jan Endrikat supported the development of the methodology and the coding. He validated the research outputs and critically reviewed and revised the original and subsequent drafts of the paper.

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Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

[1] We deliberately refrained from using the term "ESG" when referring to issues of sustainability or corporate responsibility because institutional ownership (IO) as a central variable of our study is in itself an element of governance in ESG (Jain and Jamali 2016). Thus, we refer to the term corporate sustainability and the related SP as outcome, because there would otherwise be an overlap between the constructs of IO and ESG.

[2] "Accounting", "Finance", "Strategy" and "General Management, Ethics, Gender and Social Responsibility" were the most often assigned subject areas of the studies identified in the first step.

[3] The AJG is an internationally renowned rating for business-related journals published by the Chartered Association of Business Schools (2021). The rating ranges from "1" (journals that publish research of recognized but modest standard) to "4*" (journals that publish the most original and best-executed research). The following journals are 4*-rated in the four subject areas: *Academy of Management Annals*, *Academy of Management Journal*, *Academy of Management Review*, *Accounting, Organizations and Society*, *Accounting Review*, *Administrative Science Quarterly*, *Journal of Accounting and Economics*, *Journal of Accounting Research*, *Journal of Finance*, *Journal of Financial Economics*, *Journal of Management*, *Strategic Management Journal*, and *Review of Financial Studies*. We did not search in *Academy of Management Annals* and *Academy of Management Review* because these journals do not publish empirical studies. To arrive at a manageable number of issues for our review, we used 2017 as the starting year.

[4] For this second meta-analysis, we excluded one outlier study with an extreme sample size (e.g., Hoepner and Schopohl 2020) which did not substantially change the results. The results of the meta-analytic calculations with the outlier study included can be obtained from the first author of this study.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Data S1:** Supplementary Information. **Data S2:** Supplementary Information. **Data S3:** Supplementary Information. **Data S4:** Supplementary Information.