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## RESEARCH ARTICLE

# Which institutional investors drive corporate sustainability? A systematic literature review

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**Abstract**

In this article, we review recent archival research (66 studies) on the influence of institutional ownership (IO) heterogeneity on corporate sustainability. Relying on an agency-theoretical framework, we differentiate between various types of IO and their nature. We found that most prior research concentrates on the impact of IO heterogeneity on corporate sustainability performance. Long-term, sustainable, and foreign IO leads to better ESG/CSR outputs. Based on the business case argument for corporate sustainability, long-term institutional investors moderate the positive link between corporate sustainability and future financial performance. We provide useful recommendations for future research by focusing on endogeneity concerns as methodological challenges and content-related proposals for future research designs.

**KEYWORDS**

agency theory, corporate governance, corporate social responsibility, institutional investors, institutional ownership, monitoring

## 1 | INTRODUCTION

Since the financial crisis of 2008–2009, equity ownership and its impact on corporate sustainability have been crucial from a research, regulatory, and business practice view. Equity ownership can be separated into several categories: family ownership, state ownership, managerial ownership, or *institutional ownership* (IO) (Faller & zu Knyphausen-Aufseß, 2018). In this current analysis, we focus on IO for the following reasons. First, in contrast to non-institutional ownership (e.g., private investors), we assume that IO has more experience and resources and thus influences corporate strategies. Many institutions are active owners who monitor the boards of directors of investment firms and pressure management to increase corporate sustainability efforts (see, e.g., Basse Mama & Mandaroux, 2022; Wahba, 2010). Most of these institutions have a very complex portfolio of firms from an international perspective. As sustainability topics (e.g., climate change or gender diversity) represent global challenges, we expect that institutions are aware of stakeholder concerns.

Second, most sustainable investors who sign the United Nations Principles for Responsible Investment (PRI) or related voluntary networks belong to institutional investors (Kordsachia et al., 2021). Consequently, institutions tend to demand more corporate sustainability information and successful management tools compared to other forms of equity ownership and are likely to pressure management to strengthen their sustainability performance. Third, as institutional investors invest money on behalf of others, the literature stresses their special stewardship functions (e.g., based on compliance with national stewardship codes), which should also increase the probability of them being sustainable investors and long-term oriented (Klettner, 2021). In line with these remarks, institutional investors and their activism related to sustainability issues have increased greatly (see, e.g., Chang et al., 2021; Flammer et al., 2021; Garel & Petit-Romec, 2021). From an international perspective, the largest listed firms are currently owned by institutions (Li et al., 2021). According to Aguilar (2013), the ratio of US public equities managed by institutions has risen steadily over the past six decades, from about 7% or 8% of

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market capitalization in 1950 to about 67% in 2010. In this study, we define an *IO* as a company or organization that invests money on behalf of other people or organizations. We separate the main *IO* types into mutual funds, pension funds, hedge funds, banks and insurance companies, and other investment funds. Institutional investors buy and sell significant amounts of stocks, bonds, or other securities. Depending on the specific nature of an *IO*, these institutions can be classified as major monitoring tools in external corporate governance (Xiang et al., 2021). Regarding *IO* nature, we differentiated between independent/active, long-term, sustainable, and foreign institutional investors and cross-ownership. In line with *agency theory*, we assume that especially those categories of institutions will fulfill a significant monitoring function within the corporate governance system due to their major impact on strategic goals and their increased experience and expertise (Bebchuk et al., 2017).

As sustainability topics become vital for capital markets (e.g., a firm's inclusion in the Dow Jones Sustainability Index, the FTSE4Good Index, or signatures of the UN PRI), we link *IO* heterogeneity with *corporate sustainability*. In more detail, we separate *environmental, social, and governance* (ESG) and *corporate social responsibility* (CSR) as *corporate sustainability*. ESG refers to a business organization's configuration of principles of ESG responsibility, processes of ESG responsiveness, politics, programs, and observable outcomes as they relate to a firm's societal relationships. CSR is linked with the famous triple-bottom line approach (i.e., people, planet, and profit), and a firm's strategy should equally include economic, environmental, and social sustainability.

As political and public pressure on corporate sustainability efforts has increased in recent years, firms have become more aware of strengthening their ESG/CSR reporting and performance. As sustainability information lacks objectivity and reliability (e.g., based on external databases), *greenwashing* and *information overload* may be the consequence. To lower the risk of the symbolic use of corporate sustainability for self-impression management, an appropriate quality of corporate governance is necessary (Kim et al., 2020). Also to board governance, institutional investors should lead to better corporate governance quality as active monitors (Basse Mama & Mandaroux, 2022; Wahba, 2010).

We recognized a great increase in sustainability reporting, finance, governance regulations, and reform initiatives from an international perspective (Li et al., 2020). The famous Green Deal project of the European Commission represents one of the major regulatory strategies during the last few years to reach a climate-neutral economy by 2050. To reach this ambitious goal, institutional investors should include sustainability aspects, such as ESG issues and corporate innovation, in their decision-making processes, in line with classical financial topics (Wahba, 2010). We expect that most institutions are extrinsically motivated to integrate sustainability goals because they impact financial performance and firm valuation due to business case logic. However, we assume that other investors may also be intrinsically motivated to include sustainability interests in their investments (e.g., based on UN PRI signatories: Dyck et al., 2019). From a business practice and regulatory perspective, it remains

unclear whether *IO* and what kinds of *IO* type and nature will pressure top management to strengthen corporate sustainability efforts. Moreover, the inverse relationship between sustainability and *IO* attraction is important for attracting new shareholders because of a firm's successful sustainability strategy.

Because both empirical corporate governance and *IO* research mainly focus on quantitative (archival designs) and agency theory, we recognize the classical dominance of total ownership variables (e.g., the ratio of *IO*) and their impact on financial performance (Dyck et al., 2019). Environmental and social sustainability have been neglected in classical agency models (Bebchuk et al., 2017). While research on the impact of *IO* on sustainability has increased during the last decade, we recognize heterogeneous results (Faller & zu Knyphausen-Aufseß, 2018) and thus a lack of comparability within related studies. We do not agree with the assumption of *homogenous* preferences of institutional owners but assume that the preference of *IO* regarding corporate sustainability depends on an institution's type and nature. Over the last few years, especially since 2019, archival researchers have concentrated on these aspects of *IO* heterogeneity and their influence on corporate sustainability, mostly based on ESG/CSR variables. We identified a major research gap, as no literature review has yet been published on this topic. With our research framework, we contribute to prior literature that summarizes research on ownership and CSR (Faller & zu Knyphausen-Aufseß, 2018). Our *research questions* are as follows:

- Does the type and nature of an *IO* influence corporate sustainability?
- Which variables moderate or mediate the relationship between institutional investor heterogeneity and corporate sustainability?
- Does the type and nature of an *IO* moderate the link between sustainability and financial performance, in line with the business case argument?

Compared to prior research, the contributions of this analysis and the value added can be stressed as follows. First, prior research did not concentrate on *IO* and its impact on ESG/CSR but referred to an overall description of equity ownership and CSR (Faller & zu Knyphausen-Aufseß, 2018). As institutional investors are very heterogeneous due to their types and natures, it is important to separate between different categories of *IO* (e.g., long-term, sustainable, foreign, or independent institutions) and evaluate which category will influence corporate sustainability. Second, there are various proxies of corporate sustainability within related *IO* studies, which should be better structured to stress the main differences. Prior research solely differentiates between corporate sustainability performance and reporting (Faller & zu Knyphausen-Aufseß, 2018). This review provides a more detailed overview and a detailed list of included variables. Third, in contrast to prior research, we stress the major endogeneity concerns within this research strand and the need for advanced regression models (e.g., based on instrumental variables and difference-in-difference [DiD] approaches). As we evaluate the chosen instruments and identification strategies for these techniques, we

increase our knowledge about this attractive field of research and guide future research.

## 2 | THEORETICAL BACKGROUND

The relationship between IO and corporate sustainability and vice versa can be explained by a variety of different theories (e.g., agency theory, resource-based view, institutional theory, resource dependence theory, legitimacy theory, and stakeholder theory). A screening of the research articles and the studies included in the literature review clearly stressed the dominant use of agency theory and the monitoring function of IO (Bebchuk et al., 2017). Therefore, we rely on agency theory in the following sections. Shleifer and Vishny (1997) characterized corporate governance as the solution to a basic agency problem: “How investors get the managers to give them back their money.” Traditional corporate finance and governance researchers assume that ownership is the lynchpin of agency conflicts. Shleifer and Vishny (1986) focused on large investors (blockholders), as these shareholders have a greater incentive and the ability to monitor managers and threats to sell their shares.

According to Hirschman (1970), there are two main strategies for institutional investors: exit and voice options. On the one hand, institutional investors may leave a company and choose the exit option as a divestment when dissatisfied with management. On the other hand, they may hold their investment in the firm and pressure management as active monitoring (voice option). There are multiple tactics for shareholders to exercise pressure on management and a board to change financial and sustainable corporate strategies. The main channels of shareholder pressure are letter writing, proxy battles, litigation, publicity campaigns, dialog with corporate management or a board, asking questions at general annual meetings, formal shareholder proposals, and say-on-pay votes (Obermann & Velte, 2018; Velte & Obermann, 2021).

Institutional investors are also represented as nonexecutive board members or members of supervisory boards. Institutional investors, in particular, conduct behind-the-scene talks with top management, leading to agency problems with other stakeholder groups. In line with financial, environmental, and social topics, institutional investors may be dissatisfied with the perceived mismanagement of resources or low internal and external corporate governance quality. The main shareholder initiatives were related to using of poison pills, changes in corporate charters, bylaws, corporate voting rules, and proxy advisers.

While classical agency theory stresses that conflicts of interest and information asymmetries reduce shareholder's power, a group of shareholders is assumed to be homogeneous in their preferences. However, this theoretical assumption is not in line with current business practices. As the types and natures of investors are mainly different, principal-principal conflicts can arise (e.g., between long-term and short-term investors, independent and gray investors, and financial and sustainable investors). Modern agency-theory approaches, e.g., stakeholder agency theory (Hill & Jones, 1992), neglect the assumption of homogeneity within institutional investors. Thus, it

depends on the nature and special types of institutional investors and whether IO is significantly related to corporate sustainability.

In our literature review, we rely on IO (e.g., pension funds, mutual funds, hedge funds, and banks and insurance firms) because of their great influence and power compared to other shareholders and other aspects of ownership (e.g., state ownership or family ownership). The shares of the largest corporations are owned by institutions rather than individuals.

We wish to stress two major agency conflicts in this context. First, agency conflicts between management and institutional investors arise. Managers are better informed about real corporate sustainability performance compared to investors. Conflicts of interest and information asymmetries can be reduced only by strong monitoring duties (Jensen & Meckling, 1976; Ross, 1973). Helped by the voice option, the IO should demand reliable corporate sustainability information about a business model, business strategy, and related management tools and investments. Second, another agency conflict between institutional investors and their end users (e.g., private investors) can be found. Institutions are better informed about the success of a corporate sustainability strategy compared to private investors.

An opportunistic behavior can also be related to institutions, neglecting their stewardship function. A possible risk may be labeling as sustainable investor with no real reference to ESG/CSR performance. Compared to other types of IO, we assume that pension funds will have a clear motivation to conduct an active monitoring role toward corporate sustainability due to their long-term investment horizon. As corporate sustainability and long-term success are interrelated, pension funds neglect short-term financial policies and related remuneration packages of top managers. In contrast, the traditional goal of hedge funds is to gain short-term financial profits. Thus, there may be agency conflicts between sustainable end users and institutions that do not care about corporate sustainability efforts and long-term strategies. Mutual funds are assumed to be independent and active monitors of a firm (Brickley et al., 1988), leading to reduced agency conflicts. However, it is unclear whether mutual funds push for sustainability goals. There may be an inclusion of these issues if sustainability aspects are clearly related to financial risks. Banks and insurance companies tend to be gray and passive monitors, leading to agency conflicts between management and stakeholders. From an international perspective, many regulators strengthen the sustainability duties of those types of IO, leading to an increased active monitoring role toward corporate sustainability. However, the monitoring quality regarding ESG/CSR is rather heterogeneous. Concerning the nature of institutions, agency conflicts may be reduced if a certain degree of active/independent, long-term, sustainable (foreign) investors with related networks exists. These institutions are more aware of the voice option and are more likely to conduct proper monitoring of corporate sustainability. In contrast, we expect that passive/dependent, short-term, non-sustainable (domestic) investors without any networks will not be significantly motivated to use their voice options to strengthen the sustainability efforts of a board of directors.

In the next section, we present our research framework and explain in detail our included proxies of IO type and nature.

### 3 | RESEARCH FRAMEWORK AND METHOD

Figure 1 summarizes our research framework. This literature review presents a detailed analysis of the relationship between IO heterogeneity and sustainability. More specifically, we separate IO type and nature. Regarding the IO type, we analyze the link between banks and insurance companies, pension funds, mutual funds, hedge funds, and other investment firms on the one hand and sustainability on the other hand. IO nature is differentiated into five main categories: (1) pressure-sensitive (gray; passive) versus pressure-resistant (independent; active), (2) short-term (transient) versus long-term (dedicated), (3) sustainable, (4) foreign IO, and (5) cross-ownership/networks.

With our research framework, we make a major contribution to prior literature that summarizes research on ownership and CSR (Faller & zu Knyphausen-Aufseß, 2018). As Faller and zu Knyphausen-Aufseß (2018) integrated several kinds of ownership, our research framework differs because we are only interested in IO. We focus on IO heterogeneity instead of total IO, as studies on the IO ratio are too narrow in their validity and do not recognize institutions' different types and characteristics.

A classical identification strategy for IO was presented by Brickley et al. (1988). The researchers separated pressure-sensitive institutions (e.g., insurance companies and banks, and non-bank trusts), pressure-resistant institutions (e.g., public pension funds, mutual funds, endowments, and foundations), and pressure-indeterminant institutions (e.g., private pensions funds, brokerage houses, investment counsel firms, miscellaneous financial service firms, and unidentified institutions). Pressure-sensitive institutions tend to be passive and gray, as they have potential business relations with firms that create potential conflicts of interest with their fiduciary obligations. In contrast, pressure-resistant institutional investors tend to be active in their monitoring strategies and more independent.

A second classical separation was conducted by Bushee (1998). The author differentiated between transient, dedicated, and quasi-indexers; transient institutions mostly rely on short-term goals, in contrast to dedicated ones. Dedicated institutional investors as long-term institutions (e.g., pension funds and life insurance companies) usually hold large percentages of shares in portfolio companies. It is rather difficult for these investors to find new beneficial investments, as holdings are already typically diversified across a broad number of firms. Active monitoring can be classified as a voice threat, given its long-term relationship with a firm and its strategic goals. Dedicated

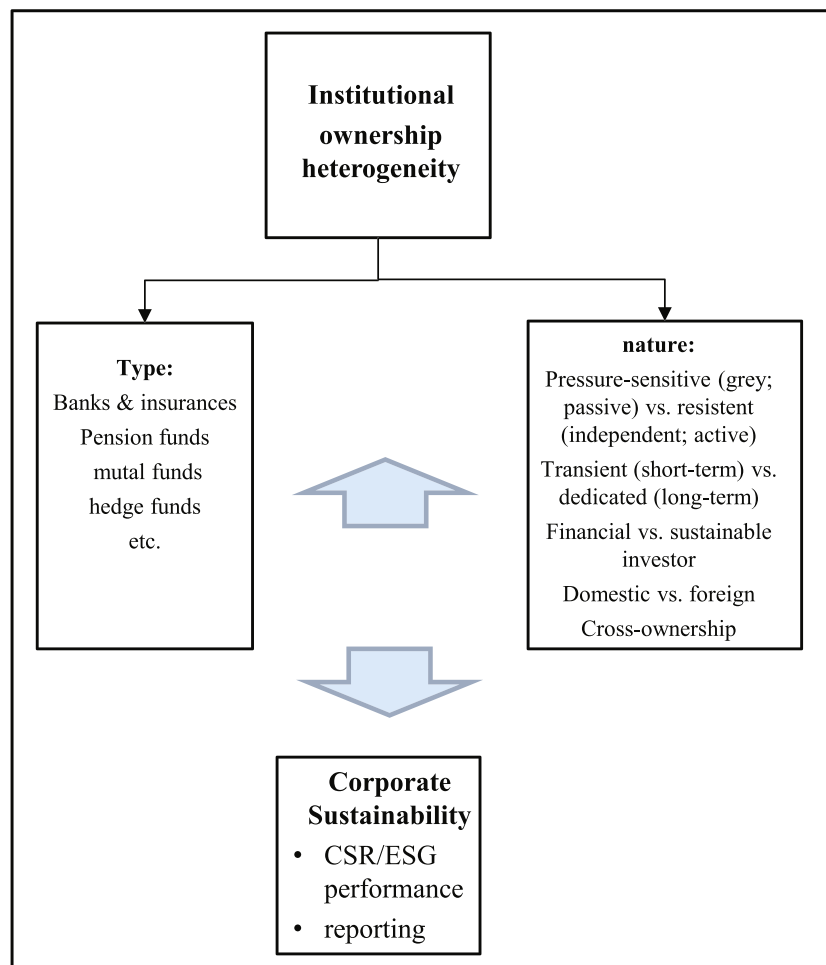


FIGURE 1 Research framework

owners are always concerned with a firm's CSR/ESG strategy, as it affects financial returns or potential risks over the long term. In contrast, short-term institutions (e.g., mutual funds, unit trusts, investment trusts, and investment banks) are mainly concerned with quarterly earnings and act as traders. These investors typically have average holding periods of fewer than 2 years and tend to focus on the short-term results of their portfolio companies. Their monitoring activities can be classified as exit threats. In line with the increased awareness of ESG in investment decisions, sustainable institutional investors and especially religious funds include intrinsic (moral) motives in their portfolios.

Dyck et al. (2019) differentiated institutions by whether they signed the UN PRI as socially responsible investors (SRIs). Signing the PRI commits an investor to actively monitor and consider ESG issues in an investment decision; these include ethical values in line with the interests of other stakeholders. In line with PRI signatures, specific investor networks on sustainability topics, such as the Ceres Investor Network on Climate Risk and Sustainability, have been implemented (Flammer, 2021). The separation between domestic and foreign IO is also mainly relevant as most capital markets are screened by foreign institutions. The literature assumes that foreign IO is more independent than domestic institutions due to fewer business ties to a specific firm and increased experience and international expertise (Dyck et al., 2019).

ESG/CSR represent our two main categories of corporate sustainability. ESG/CSR proxies can mainly be differentiated in ESG/CSR performance and disclosure and related subpillars (e.g., carbon). Most studies on sustainability performance rely on databases, while disclosure studies also conduct individual content analyses and scoring methods for business reports. We stressed the major role of IO as an external corporate governance mechanism. Thus, it is useful to exclude a governance performance score and solely use environmental and social scores. In this context, we also note that using CSR/ESG performance proxies based on external databases is criticized due to a "black box" character, the lack of comparability between different providers, and the limited quality of sustainability information itself, which is the key basis of the scores.

Empirical research on IO is linked to the complexity of the collected data, research designs, theoretical foundations, and analytical methods. Thus, prior studies are largely disjointed. Literature reviews are an important and useful research method for a broad range of scholars, practitioners, and regulators seeking to decrease research complexity (Torraco, 2005; Webster & Watson, 2002). We refer to established methods (Denyer & Tranfield, 2009) to prepare our literature review. Our initial sample consisted of 159 studies. We included only quantitative (archival-based) empirical studies because these represent the most important research method for analyzing the business case argument and our research questions.

Archival research on IO heterogeneity has increased since 2019, and it has been established as the most dominant method compared to experimental and qualitative research designs. With this strategy, we ensured the increased comparability of the included studies. Therefore, we dropped 21 studies. To guarantee an appropriate level

of quality, we included only articles published in English in peer-reviewed journals. This led to another reduction of 15 studies. In this context, it is important to separate between IO ratios and IO heterogeneity studies. Because we assume that IO preferences regarding corporate sustainability are not homogeneous in business practice, we deleted studies that relied solely on total IO proxies, e.g., IO ratio. Thus, we reduced our sample to 57 studies, leading to a final sample of 66 studies.

## 4 | FINDINGS OF THE LITERATURE REVIEW

### 4.1 | Bibliometric and descriptive content analysis

Table 1 summarizes the papers per publication year (Panel 1), region (Panel 2), journal (Panel 3), corporate sustainability proxies (Panel 4), and IO variables (Panel 5). Panel 1 stresses a massive increase in studies since 2019 and a rather young research discipline (with the first study published in 1999). The year 2021 was the most important year of publication (17 studies). Most of the included studies were conducted for the US capital market (Panel 2: 35 studies); also, the Chinese capital market (9 studies) and international samples are recognized (8 studies). Because of the great attraction of the US capital market and the availability of databases, this dominance is obvious. Panel 3 illustrates that most of the studies were published in (disciplinary) finance and accounting journals (29 studies), e.g., *Journal of Financial Economics* (6 studies), but sustainability journals (21 studies), e.g., *Journal of Business Ethics*, and management journals are also included (16 studies). As seen in Panel 4, the majority of the studies include ESG/CSR performance as corporate sustainability measures (56 studies), while ESG/CSR reporting was of lower relevance (25 studies). As indicated in Panel 5, long-term IO (34 studies) was most the important IO variable within our included studies. Other IO nature proxies, e.g., foreign (18 studies) or independent/active (12 studies) and IO type variables (22 studies), are lower in amount. Table 2 summarizes the included IO and ESG/CSR proxies.

### 4.2 | Types of institutional investors and corporate sustainability

#### 4.2.1 | Pension funds

We have already introduced the classification by Brickley et al. (1988), whereas, among others, public pension funds are labeled as pressure-resistant institutions, leading to increased independence and active monitoring. Other authors classify pension funds as norm-constrained owners (Cahan et al., 2017), which leads to the assumption that they will promote long-term and sustainable goals in line with stakeholders' interests. In the following section, we rely on archival research, which does not explicitly refer to Brickley et al. (1988) and their collection of

**TABLE 1** Count of cited included studies

## Panel 1: By publication year

2021: 17  
 2020: 15  
 2019: 13  
 2018: 3  
 2017: 3  
 2016: 1  
 2015: 1  
 2014: 2  
 2013: 2  
 2012: 2  
 2011: 2  
 2010: 2  
 2009: 1  
 2006: 1  
 1999: 1

Total: 66

## Panel 2: By country

- Canada: 1
- China: 9
- India: 3
- Japan: 1
- Korea: 3
- Pakistan: 1
- Spain: 2
- Taiwan: 2
- UK: 1
- USA: 35
- *International*: 8

Total: 66

## Panel 3: By journal

- Management Journals: 16
- Academy of management journal: 2
- Asian business management: 1
- Cogent Business & Management: 1
- Indian journal of corporate governance: 1
- Journal of Asia business studies: 1
- Journal of business research: 1
- Journal of management: 1
- Journal of Management & Organization: 1
- Management science: 2
- Review of managerial science: 2
- Strategic management journal: 2
- Thunderbird international business review: 1
- Finance & Accounting Journals: 29
- Accounting perspectives: 1
- Accounting research journal: 1
- European journal of finance: 1
- Global finance journal: 1
- Journal of banking and finance: 3
- Journal of Business Finance & Accounting: 1
- Journal of corporate finance: 3
- Journal of empirical finance: 1
- Journal of finance: 2
- Journal of financial and quantitative analysis: 1
- *Journal of financial economics: 6*
- Journal of international accounting, auditing and taxation: 1
- Journal of international financial management and accounting: 1
- Managerial finance: 1
- Pacific-Basin finance journal: 1
- Review of financial studies: 1

(Continues)

TABLE 1 (Continued)

	<ul style="list-style-type: none"> <li>• Review of quantitative finance and accounting: 2</li> <li>• The accounting review: 1</li> <li>• The journal of financial research: 1</li> <li>• Sustainability journals: 21</li> <li>• Business strategy and the environment: 2</li> <li>• Business &amp; Society: 1</li> <li>• Corporate social responsibility and environmental management: 3</li> <li>• International journal of climate change strategy and management: 1</li> <li>• <i>Journal of business ethics</i>: 9</li> <li>• Journal of Sustainable Finance &amp; Investment: 1</li> <li>• Social responsibility journal: 1</li> <li>• Sustainability: 3</li> </ul>
Total: 66	
Panel 4: By sustainability topic	
	<ul style="list-style-type: none"> <li>• CSR/ESG reporting: 10</li> <li>• CSR/ESG performance: 56</li> </ul>
Total: 66	
Panel 5: By institutional ownership variable	
	<ul style="list-style-type: none"> <li>• Type: (pension funds, mutual funds, hedge funds, banks &amp; insurance, investment funds): 22</li> <li>• Nature: <ul style="list-style-type: none"> <li>• Independent/active: 12</li> <li>• Long-term: 34</li> <li>• Sustainable: 13</li> <li>• Foreign: 18</li> <li>• Cross-ownership/networks: 4</li> </ul> </li> </ul>
Total 103 <sup>a</sup>	

<sup>a</sup>Some studies include more than one institutional ownership variable.

independent/active and dependent/gray institutions. Instead, these studies separately tested the influence of a specific type of IO.

There seems to be empirical evidence for the classification that *pension funds* are more independent and active and may thus also promote corporate sustainability. We identified three US studies (Cahan et al., 2017; Kim, Wan, et al., 2019; Rayfield & Unsal, 2021), two cross-country studies (Dyck et al., 2019; Garcia-Sanchez et al., 2020), and one Korean study (Oh et al., 2011), which reported a positive impact of pension funds on ESG/CSR. Specially, pension funds and ESG/CSR performance (Dyck et al., 2019; Kim, Wan, et al., 2019; Oh et al., 2011) or reporting (Garcia-Sanchez et al., 2020) are positively related. Rayfield and Unsal (2021) found that pension funds moderate the negative link between ownership ratio and employment lawsuits as an inverse measure of social performance. According to Cahan et al. (2017), pension funds moderate the positive link between CSR performance and IO, and vice versa.

As we will go into detail later, endogeneity concerns arise in this research topic due to reversed causality and omitted variable bias. Thus, some researchers not only analyze a bidirectional relationship between IO heterogeneity and corporate sustainability but refer to the opposite link, i.e., the impact of corporate sustainability on IO. Relying on an international sample of firms, Bolton and Kacperczyk (2021) stressed the positive impact of carbon performance on investment by pension funds. Similarly, in a US setting, toxic

firms, as an inverse measure of environmental performance, are linked to decreased pension funds (Fernando et al., 2017). Finally, according to Chava (2014), environmental concerns within a firm decrease the attraction of pension funds in later years.

#### 4.2.2 | Mutual funds

In line with pension funds, Brickley et al. (1988) also assumed that *mutual funds* are pressure-resistant institutions and should be more independent and active supervisors. Because of this, mutual funds may also pressure management to increase corporate sustainability efforts. Prior studies have found supportive results for this argument. Regarding ESG/CSR, two Indian studies (Manogna & Mishra, 2020; Yadav, 2020) and one US study (Rayfield & Unsal, 2021) stressed a positive impact on mutual funds. According to Rayfield and Unsal (2021), mutual funds moderate the negative link between IO ratio and employment lawsuits as an inverse measure of social performance. Relying on India as a unique setting with mandatory sustainable corporate governance regulations, mutual funds increase both CSR spending (Manogna & Mishra, 2020) and ESG performance (Yadav, 2020). In contrast, Li et al. (2021) stressed a negative link between mutual funds and CSR performance, which was moderated by mutual fund size, board independence, and board diversity. One



**TABLE 2** Overview of included IO and corporate sustainability variables in our literature review

IO variables	Corporate sustainability variables
<ol style="list-style-type: none"> <li>1. <u>Type</u> <ol style="list-style-type: none"> <li>a. Pension funds</li> <li>b. Mutual funds</li> <li>c. Hedge funds</li> <li>d. Banks &amp; insurances</li> <li>e. Investment funds</li> </ol> </li> <li>2. <u>Nature</u> <ol style="list-style-type: none"> <li>a. Independent/active versus grey/passive                             <ul style="list-style-type: none"> <li>• Classification in line with Brickley et al. (1988) (pressure-resistant versus sensitive)</li> <li>• Classification of types as independent/active (mutual funds; hedge funds; pension funds; investment advisors) and grey/passive (banks and insurances)</li> <li>• Attention</li> <li>• Unique annual episodes in reports and press releases; unique acts of coordinated activism</li> <li>• Announced opposition to management based on shareholder proposal initiation, direct negotiations with management, proxy contest initiation</li> </ul> </li> <li>b. Long-term versus short-term                             <ul style="list-style-type: none"> <li>• Classification in line with Bushee (1998) (dedicated, transient, quasi-index)</li> <li>• Churn ratio</li> <li>• Portfolio turnover (below 35%)</li> <li>• Shares for more than 1 year</li> </ul> </li> <li>c. Sustainable                             <ul style="list-style-type: none"> <li>• UN PRI signatories</li> <li>• Ceres investor network on climate risk and sustainability</li> <li>• SRI funds</li> <li>• Initiated CSR-related shareholder proposals in a given year</li> <li>• CSR-friendly (fund CSR score)</li> <li>• Social responsible pension funds</li> <li>• Religious beliefs</li> <li>• Political values (republican versus democratic)</li> <li>• Environmental and social preference</li> <li>• Financial misconduct</li> </ul> </li> <li>d. Foreign                             <ul style="list-style-type: none"> <li>• Qualified</li> </ul> </li> </ol> </li></ol>	<ol style="list-style-type: none"> <li>1. <u>Performance</u> <ul style="list-style-type: none"> <li>• ESG/CSR performance (databases)</li> <li>• CSR donations</li> <li>• CSR-related engagements of institutions (targeted; successful)</li> <li>• E, S, G performance (databases)</li> <li>• Environmental performance; environmental capital expenditures; toxics releases; carbon performance/emissions; CDP participation (dummy); green bond issuance</li> <li>• Employee-related performance; workplace misconduct; employment lawsuits</li> </ul> </li> <li>2. <u>Reporting</u> <ul style="list-style-type: none"> <li>• Dummy; first time report</li> <li>• CSR reporting in line with UN SDGs; CSR reporting (GRI compliance, receive of a CSR rating)</li> <li>• Environmental reporting; carbon/climate risk disclosure (CDP scores)</li> </ul> </li> <li>3. <u>Irresponsible “sin” firms (alcohol, tobacco and gambling)</u></li> </ol>

(Continues)

**TABLE 2** (Continued)

IO variables	Corporate sustainability variables
	<ul style="list-style-type: none"> <li>• Blockholder</li> <li>• From code/case-law regimes</li> <li>• Location within a 100–/150-mile radius around firms headquarters</li> <li>• Subject to steward codes in their home country</li> <li>• From high-norm countries</li> <li>e. Cross-ownership/networks                             <ul style="list-style-type: none"> <li>• (Blockholder) with at least 3% (5%) outstanding shares of a firm and also in another firm in the same industry</li> <li>• Dual holdings (debt and equity claims in the same firm)</li> <li>• Mutual fund networks (centrality)</li> </ul> </li> </ul>

[Correction added on 14 May 2022, after first online publication: Table 2 has been updated in this version.]

study also reported an insignificant impact of mutual funds on CSR spending (Panicker, 2017: Indian setting).

Regarding reserve causality, Bolton and Kacperczyk (2021) found that carbon performance increases mutual funds in an international setting. Similarly, based on a US sample, according to Hartzmark and Sussman (2019), CSR performance leads to increased mutual fund flow.

### 4.2.3 | Hedge funds

Interestingly, we know little about the link between *hedge funds* and corporate sustainability. As hedge funds do not have a long tradition as major institutional investors compared to pension funds or mutual funds, the literature assumes that these institutions are active and independent but mainly short-term and not interested in sustainability issues. Based on an international sample, Dyck et al. (2019) did not state any significant influence of hedge funds on ESG performance. In contrast, DesJardine et al. (2021) stressed the positive impact of CSR on activist hedge fund campaigns, weakened by high levels of CSR and strengthened by vague financial communication.

### 4.2.4 | Banks and insurance companies

We already mentioned that *banks and insurance companies* have been classified as pressure-sensitive institutional investors (Brickley et al., 1988), assuming a gray and passive monitoring role. Because of massive regulations on sustainable finance during the last few years (e.g., in the European Commission), we expect that banks and

insurance companies play a major role in promoting corporate sustainability and pressure top management to increase ESG/CSR. Not surprisingly, prior research results are inconclusive. Relying on an Indian setting, banks and insurance firms promote CSR spending (Manogna & Mishra, 2020; Panicker, 2017). Other researchers have not found any impact of banks and insurance companies on CSR performance (Oh et al., 2011: Korean setting) or CSR reporting (Garcia-Sanchez et al., 2020: international basis). In contrast, Bolton and Kacperczyk (2021), based on an international sample, reported a positive impact of carbon performance on insurance firms as an inverse relationship. However, according to Fernando et al. (2017), US green firms negatively influence banks' and insurance firms' investments.

#### 4.2.5 | Other investment funds

Prior research on other *investment funds* and their influence on corporate sustainability is scant and has led to heterogeneous results. Based on an international sample, other investment firms decrease environmental performance (Acar et al., 2020). We also stress insignificant effects on CSR performance (Mallin et al., 2013: US setting; Oh et al., 2011: Korea) and CSR reporting (Garcia-Sanchez et al., 2020: international setting).

### 4.3 | The nature of institutional investors and corporate sustainability

#### 4.3.1 | Independent/active institutional investors

Regarding the nature of institutional investors, we begin our literature review with studies that explicitly refer to the classification by Brickley et al. (1988) and clearly distinguish between pressure-resistant institutions on the one hand (mutual funds, hedge funds, and public pension funds) and pressure-sensitive owners on the other (banks and insurance firms). In the line with this classification of institutions by type (Brickley et al., 1988), other proxies in prior research refer to active and independent monitoring (e.g., attention). The literature assumes that independent/active institutional investors will likely to promote corporate sustainability compared to gray/passive institutions. We found supportive results for this assumption and identified one US study (Chen et al., 2020), one international setting (Dyck et al., 2019), one Spanish study (Pucheta-Martinez & Lopez-Zamora, 2018), one Chinese study (Xiang et al., 2021), and one Indian study (Yadav, 2020) with a positive impact of independent institutional investors on ESG/CSR. In more detail, according to Chen et al. (2020), investor attention and CSR performance are positively related and moderated by material CSR categories. Dyck et al. (2019) reported a positive impact of independent foreign institutions with high social norms in their home countries on ESG performance. Pucheta-Martinez and Lopez-Zamora (2018) referred to pressure-resistant institutions as directors and stated that they have a positive impact on environmental reporting. According to Xiang et al. (2021),

the negative link between investor inattention and CSR performance is moderated by an expense ratio, less managerial ownership, weaker internal controls, less analyst coverage, influential ownership, and long-term investors. Yadav (2020) stressed the negative impact of pressure-sensitive institutions and ESG performance. In contrast to this, Garcia-Meca and Pucheta-Martinez (2017), based on a Spanish setting, stressed a negative impact of independent institutions as directors and CSR disclosures. Wegener et al. (2013) found no significant link between active institutions and CDP participation in Canada. We also identified one study with an inverse relationship, indicating that green bond issuance leads to increased independent domestic institutions (Tang & Zhang, 2020: international sample).

#### 4.3.2 | Long-term institutional investors

As many sustainability investments and strategies are linked to a long-term perspective, it is assumed that long-term institutions will have a positive impact on ESG/CSR. Bushee's (1998) study represents the pioneer in this research topic, as he differentiated between dedicated, transient, and quasi-indexer IOs. A transient IO is linked to high portfolio turnover, and it is thus assumed that these investors have a short-term perspective (e.g., mutual funds, unit trusts, investment trusts, and investment banks). Most of the studies included in our literature review referred to the impact of long-term institutional investors on ESG/CSR and the majority of these studies also stressed a positive impact on ESG/CSR. The US capital market was mainly focused (Chang et al., 2021; Fu et al., 2019; Garel & Petit-Romec, 2021; Gloßner, 2019; Kim, Kim, et al., 2019; Kim, Wan, et al., 2019; Lamb & Butler, 2018; Meng & Wang, 2020; Neubaum & Zahra, 2006; Rayfield & Unsal, 2021). International samples (Kordsachia et al., 2021) are few in number.

In more detail, long-term institutions lead to increased ESG/CSR performance (Boubaker et al., 2017; Fu et al., 2019; Gloßner, 2019; Kim, Kim, et al., 2019; Lamb & Butler, 2018; Meng & Wang, 2020), CSR performance strengths (Chang et al., 2021), environmental performance (Kim, Wan, et al., 2019; Kordsachia et al., 2021), employee-related CSR performance (Garel & Petit-Romec, 2021), and employment lawsuits as an inverse measure of social performance (Rayfield & Unsal, 2021). Key moderator variables strengthen this relationship, e.g., a firm's involvement with R&D and intangible assets (Chang et al., 2021), market myopia, managerial agency risks, and motivated investors (Fu et al., 2019); a blockholder, low earnings management, and shareholder proposals (Gloßner, 2019); frequency and coordination of ownership activism (Neubaum & Zahra, 2006); and low industry-level labor skill index and low labor mobility (Garel & Petit-Romec, 2021). Some researchers have also indicated an insignificant influence of long-term IO on environmental performance (Walls et al., 2012: USA) and CSR reporting (Hu et al., 2018: China). We also identified some studies that reported an inverse relationship; thus, CSR performance (Harjoto et al., 2019: USA; Oikonomou et al., 2019: USA), green bond issuance announcement (Flammer, 2021: international setting), and environmental

expenditures (Li & Lu, 2016: China) increase long-term IO. Finally, Nofsinger et al. (2019) found no impact of ESG performance on long-term institutions in the USA.

#### 4.3.3 | Sustainable institutional investors

In line with long-term IO, which should be connected with corporate sustainability pressure, researchers have included the content-related sustainability preferences of institutional investors as a modern IO nature since 2019. There seems to be strong logic and empirical evidence that a sustainable IO leads to increased ESG/CSR outputs. In this context, we identify six studies referring to the US capital market (Dimson et al., 2015; Hong & Kostovetsky, 2012; Kim et al., 2020; Kim, Wan, et al., 2019; Li et al., 2021), three international settings (Dyck et al., 2019; Kordsachia et al., 2021), and one UK study (Alda, 2019).

First, socially responsible investment (SRI) funds lead to increased environmental performance (Kim, Wan, et al., 2019) and targeted CSR engagements (Dimson et al., 2015). Li et al. (2021) found a positive impact of CSR-friendly mutual funds on CSR performance. Alda (2019) stressed a bidirectional link between socially responsible pension funds and environmental (carbon) performance. Two studies explicitly relied on the UN PRI signatures of institutions and found a positive impact on ESG performance (Dyck et al., 2019) and environmental performance (Kordsachia et al., 2021). Kim et al. (2020) and Hong and Kostovetsky (2012) analyzed the political connections of institutional investors in the USA (Republican versus Democrats) and assumed that support for Democrats reflects an increased sustainable mindset of institutions. Kim et al. (2020) found a negative relationship between Republican values of IO and environmental reporting/performance, moderated by long-term ownership, corporate Republican ideology scores, and the nonexistence of an environmental committee. Similarly, Hong and Kostovetsky (2012) stressed that mutual and hedge funds that make campaign donations to Democrats invest less in irresponsible firms.

Finally, only two recent studies, both relying on an international sample of firms, have analyzed the impact of ESG/CSR efforts on sustainable IO. According to Barko et al. (2021), low CSR performance leads to the engagement of a socially responsible activist fund. Flammer (2021) found that green bond issuance announcements and green IO, based on participation in the Ceres Investor Network on climate risk, are positively linked.

#### 4.3.4 | Foreign institutional investors

The second key proxy of the IO nature, which was mainly included in prior research on corporate sustainability, is foreign institutional investors. As most capital markets are influenced mainly by foreign institutions, the literature assumes the increased independence of those investors due to the reduced ties of a specific firm. As increased independence will be also linked with active monitoring and greater

international experience, the literature assumes a positive impact of foreign institutions on corporate sustainability. In line with our remarks on independent/active, long-term, and sustainable IO, there is empirical support for this assumption both for international samples (Bena et al., 2017; Dyck et al., 2019; Garcia-Sanchez et al., 2020; Luong et al., 2017) and national settings such as France, Taiwan (Huang, 2010; Shu & Chiang, 2020), India (Manogna & Mishra, 2020; Panicker, 2017), and China (Li et al., 2020; Zhao et al., 2021).

In more detail, Dyck et al. (2019) included foreign institutional investors domiciled in countries with social norms supportive of strong environmental and social commitments and found a positive impact on ESG performance. There are indications of a positive impact of foreign investors on CSR reporting (Garcia-Sanchez et al., 2020), CSR performance (Shu & Chiang, 2020, focused on blockholdings; Li et al., 2020), CSR spending (Manogna & Mishra, 2020; Panicker, 2017), and supplier performance (Huang, 2010). Key moderator variables of these relationships are low family ownership and loss (Shu & Chiang, 2020), CSR performance by the entry of an investor, a foreign country with high regulatory quality, and a geographically remote distance (Li et al., 2020). Zhao et al. (2021) stressed that foreign IO with religious beliefs increases CSR performance, positively moderated by committed investors and their ratio, and negatively moderated by long term IO.

However, we also noted a few studies with a positive impact of domestic IO on corporate sustainability. In more detail, according to Chang et al. (2021), local US long-term IO and CSR strengths are positively related to and moderated by a firm's involvement with R&D and intangible assets. Similarly, Kim, Wan, et al. (2019) found that local US (SRI) funds lead to better environmental performance. Wegener et al. (2013) reported a positive impact of domestic Canadian institutions on CDP participation. According to Chung et al. (2019), domestic Korean IO leads to better CSR performance, moderated by R&D expenses and low liquidity. A few studies have also found an insignificant relationship between foreign institutions and ESG/CSR performance (Yadav, 2020, India; Gulzar et al., 2019: China).

We identified four studies on the impact of corporate sustainability on foreign IO, assuming a reversed causality logic. According to Yu and Zheng (2020), based on a Chinese setting, firms with mandatory CSR reporting are linked with increased qualified foreign IO, moderated by case law regimes as home countries. In contrast, green bond issuance leads to stronger domestic IO (Tang & Zhang, 2020).

#### 4.3.5 | Cross-ownership/networks

The strength of monitoring by IO can be mainly influenced by cross-ownership and participation in investor networks. Interestingly, prior researchers have rarely included this proxy for the nature of IO. It remains unclear whether the sole existence of cross-ownership leads to better corporate sustainability, as unsustainable institutions in networks may also pressure management to decrease its sustainability activities. Some researchers have found a positive relationship between debt and equity claims as dual holdings and ESG

performance (Lopatta et al., 2020: USA), mutual fund networks and CSR performance (Qi et al., 2020: China), common ownership (in the same industry), and patents (He & Huang, 2017: USA; Gao et al., 2019). According to Gao et al. (2019), IO concentration, the ratio of the largest shareholder and the second to the ninth shareholder, and low product market competition moderate this relationship. In contrast to these positive results, Cheng et al. (2021) found a negative link between common ownership in the USA and CSR performance, moderated by long-term IO and low social inclination. Garcia-Sanchez et al. (2020) found no significant impact on CSR reporting in an international setting.

#### 4.4 | Moderator and mediator analysis

##### 4.4.1 | Institutional ownership as a moderator variable of the link between corporate sustainability and financial performance

While the majority of the included studies recognized IO heterogeneity as an independent variable to measure its impact on corporate sustainability, we identified some studies on the moderating role of IO in the relationship between corporate sustainability and financial performance. Seven studies in our sample included long-term IO, relying on US settings (Dhaliwal et al., 2011; Erhemjams & Huang, 2019; Flammer et al., 2021; Kim et al., 2014; Nguyen et al., 2020), and Japan (Shirasu & Kawakita, 2020). Flammer (2021) reported that the positive link between environment-related shareholder proposals and CDP reporting was moderated by long-term IO. Shirasu and Kawakita (2020) and Erhemjams and Huang (2019) found a moderating influence of long-term IO on the positive link between CSR/ESG performance and buy-and-hold returns. A similar moderator effect was stressed by Nguyen et al. (2020) regarding the positive link between CSR performance and Tobin's Q. Kim et al. (2014) (USA) documented that the negative link between CSR performance and stock price crash risk was moderated by long-term IO. This moderates the negative link between first time CSR reports and the cost of equity (Dhaliwal et al., 2011).

Other variables of IO heterogeneity are of lower relevance yet. Regarding foreign IO, Lu and Abeysekera (2021) found no moderator influence on the link between CSR reporting and cumulative abnormal returns in a Chinese setting. One study also relied on the IO type (Waheed et al., 2021) in Pakistan and stressed the moderating impact of pension funds on the positive impact of social contribution value per share on Tobin's Q.

##### 4.4.2 | Other moderator variables and mediator variables

We recognized a variety of other moderator variables. In the following, we differentiate between (1) "classical" financial and firm-related

proxies, (2) corporate governance variables, and (3) country-related aspects. With regard to the link between IO and ESG/CSR, the following variables of the first category have been included: the R&D and intangible assets involvement of a firm (Chang et al., 2021), R&D expenses (Choi et al., 2020; Chung et al., 2019), liquidity (Choi et al., 2020; Chung et al., 2019; Kim, Kim, et al., 2019), loss (Shu & Chiang, 2020), expense ratio (Xiang et al., 2021), internationalization (Yadav, 2020), earnings management (Gloßner, 2019), future expected performance (Liu & Tian, 2021), bid-ask spread and free cash flows (Fu et al., 2019), financial communication of managers during earnings-related conference calls (DesJardine et al., 2021), and corporate Republican ideology scores (Kim et al., 2020).

Some researchers have included the following corporate governance variables as moderators on the link between IO and ESG/CSR: board independence and diversity (Li et al., 2020); environmental committees (Kim et al., 2020), board independence, shareholder rights index, executive incentive compensation, and analyst coverage (Chen et al., 2020); managerial ownership, internal controls, and analyst coverage (Xiang et al., 2021); and family ownership (Shu & Chiang, 2020). As country-related governance moderators, industry-level labor skill index and labor mobility (Garel & Petit-Romec, 2021), CSR performance by the entry of an investor, foreign countries by high regulatory quality, and geographically remote distant countries (Li et al., 2020) were included.

We identified only one study with a mediator variable. Lu and Abeysekera (2021) analyzed the impact of CSR disclosure on cumulative abnormal returns and integrated qualified foreign IO as a moderator and corporate innovation (patents) as a mediator variable. They did not stress a moderator but rather a mediator effect in their setting.

#### 4.5 | Results

In summary, our literature review clearly indicates that most studies have analyzed the impact of IO heterogeneity on corporate sustainability. An inverse or even bidirectional relationship is neglected. By tendency, there are indications that long-term, sustainable, and foreign IO significantly increase both ESG/CSR with a special focus on ESG/CSR performance. There are also some hints that long-term IO strengthens the positive relationship between corporate sustainability and financial performance as a moderator effect in line with the business case argument. Other IO variables are too low in amount or are linked to heterogeneous results. These results remain for specific IO types (e.g., pension-, mutual-, and hedge funds, banks and insurance companies, and other investment funds), independent/active IO, and cross-ownership. While prior archival research on IO heterogeneity has become attractive during the last few years, there are many research gaps, both from a methodological and content-based perspective, which are explained in detail in the following chapter. Table 3 includes all of the included studies of the literature review.

TABLE 3 Studies on the link between institutional ownership heterogeneity and ESG/CSR and vice versa

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
<b>1. Impact of institutional ownership on ESG/CSR</b>						
2021	Acar et al.	International journal of climate change strategy and management	<ul style="list-style-type: none"> <li>International</li> <li>27,847 firm-year</li> <li>2002–2017</li> <li>OLS/panel (random)</li> </ul>	Investment firms (ratio)	Environmental performance (Asset4; biodiversity impact reduction, climate change risks and opportunities, environmental investments initiatives, and spill impact reduction)	–
2021	Chang et al.	Review of quantitative finance and accounting	<ul style="list-style-type: none"> <li>USA</li> <li>1995–2009</li> <li>5,108–5,144 firm-year observations</li> <li>Panel; 2SLS/IV (average local long-term institutional ownership index for each state-year pair, excluding the contribution of the focal firm and those in the same industry) and industry year pair (excluding the contribution of the focal firm); granger causality,</li> </ul>	Local long-term institutional ownership (location within a 100-mile radius around firm headquarters; dedicated and quasi-index institutions in line with Bushee) Moderator: Firms involvement in dealing with R&D and intangible assets (dummy: Positive R&D expenses; dummy: Above-median intangible assets)	CSR performance (KLD database)	+ (CSR strengths) Moderator: +
2021	Cheng et al.	Journal of banking and finance	<ul style="list-style-type: none"> <li>USA</li> <li>1991–2015</li> <li>34,500 firm-year observations</li> <li>Panel; PSM/diff-in-diff; quasi-natural experiment of financial institution mergers based on regulations</li> </ul>	Common institutional ownership blockholder with at least 5% that simultaneously hold at least two firms in the same industry (four-digit SIC code) (dummy: log number) Moderator: long-term horizon (churn rate); low social inclination (based on El-Ghoul and Karoui 2017)	CSR performance (KLD database)	– Moderator: More pronounced
2021	Flammer et al.	Strategic management journal	<ul style="list-style-type: none"> <li>USA</li> <li>1,110 firm-year observations</li> <li>2010–2016</li> <li>OLS/2SLS/IV firm is targeted by shareholder who submits the same environmental-related</li> </ul>	Environmental-related shareholder proposals (ISS database) Moderator: (long-term) institutional investors (churn rate)	Climate change risk disclosure (CDP)	+ Moderator: +

(Continues)

TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
			proposal to at least five companies in the same proxy season (environmental activism wave)			
2021	Garel and Petit-Romec	Journal of business ethics	<ul style="list-style-type: none"> <li>USA</li> <li>2003–2015</li> <li>18,169 firm-year observations</li> <li>OLS; 2SLS/IV (average trading performance sensitivity)</li> </ul>	<p>Long-term institutional ownership (average portfolio turnover is below 35%)</p> <p>Moderator: Low industry-level labor skill index; low labor mobility</p>	Employee-related CSR performance (KLD database; great place to work survey; Glassdoor website)	+
2021	Kordsachia et al.	Review of managerial science	<ul style="list-style-type: none"> <li>International (Europe)</li> <li>2008–2017</li> <li>7,384 firm-year observations</li> <li>Panel; logistic; 2 SLS/IV (industry-year average of investor proxies)</li> </ul>	<p>Sustainable institutional investors (UN PRI signatories)</p> <p>Investor horizon (churn rate)</p>	Environmental performance (total and product innovation, resource use, emission reduction [Asset4]; CDP participation; dummy)	+
2021	Li et al.	Journal of Business Finance & Accounting	<ul style="list-style-type: none"> <li>China</li> <li>2009–17</li> <li>4,145 firm-year observations</li> <li>OLS; granger causality; panel (fixed); PSM; Heckman 2 stage;</li> </ul>	<p>Qualified foreign institutional ownership (dummy; wind financial terminal)</p> <p>Moderators: CSR performance by entry of the investor (RKS rating); foreign country with high regulatory quality (World Bank; dummy); geographically remote distant countries (dummy)</p>	<p>CSR performance (RKS rating); CSR disclosure (GRI compliance; receive of a CSR rating; quantity)</p>	+
2021	Lu and Abeysekera	Journal of international financial management and accounting	<ul style="list-style-type: none"> <li>China</li> <li>2013–2018</li> <li>557 firm-year observations</li> <li>Event study/Heckman 2 stage</li> </ul>	<p>Strategic CSR disclosure (score)</p> <p>Moderator: Qualified foreign institutional ownership</p> <p>Mediator: Corporate innovation (breakdown of authorized patents into inventions, utility models, and designs)</p>	Cumulative abnormal return (CAR)	+
2021	Rayfield and Unsal	The journal of financial research	<ul style="list-style-type: none"> <li>USA</li> <li>2000–2015</li> <li>2,923 firms</li> </ul>	<p>Institutional ownership (ratio)</p> <p>Moderator: Type (mutual funds, banks, individuals,</p>	Employment lawsuits (national labor relations board database)	–

TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2021	Waheed et al.	Cogent Business & Management	<ul style="list-style-type: none"> <li>• Pakistan</li> <li>• 327 firms</li> <li>• 2007–2018</li> <li>• GMM</li> </ul>	<p>corporate pension funds, insurance firms); long-term</p> <p>Social contribution value per share Moderator: Pension funds</p>	Financial performance (Tobins Q)	<p>Moderator: More pronounced by pension and mutual funds; long-term</p> <p>+ Moderator: +</p>
2021	Xiang et al.	Review of managerial science	<ul style="list-style-type: none"> <li>• China</li> <li>• 2009–17</li> <li>• 12,556 firm-year observations</li> <li>• OLS</li> </ul>	<p>Institutional ownership inattention Moderator: Expense ratio, less managerial ownership, weaker internal controls, less analyst coverage; influential ownership, long-term/dedicated institutional investors</p>	CSR performance (RKS database)	<p>– Moderator: More pronounced</p>
2021	Zhao et al.	Journal of business ethics	<ul style="list-style-type: none"> <li>• China</li> <li>• 2010–2018</li> <li>• 23,046 firm-year observations</li> <li>• Hierarchical linear model</li> </ul>	<p>Foreign institutional investors religious beliefs (China securities regulatory committee; religious characteristics of states database) (regions; Christianity or other religions versus atheistic) Moderator: Long-term investor; ratio; committed investor (entry to Chinese stock market)</p>	CSR performance (Hexun database)	<p>+ Moderator: – (long-term); + (ratio); committed investor)</p>
2020	Chen et al.	Journal of financial economics	<ul style="list-style-type: none"> <li>• USA</li> <li>• 1,631 firm-year observations</li> <li>• 2003–2006</li> <li>• Probit regression; 2SLS/IV/Diff-in-Diff (membership in the Russell 2000 index)</li> </ul>	<p>Institutional ownership (ratio) Institutional ownership attention Moderator: Board independence, shareholder rights (E-index), executive incentive compensation, analyst coverage</p>	CSR performance (rating; KLD database)	<p>+ (stronger in CSR categories what are financially material) – (when investors are distracted by exogenous shocks) Moderator: +</p>
2020	Choi et al.	Sustainability	<ul style="list-style-type: none"> <li>• Korea</li> <li>• 2009–2017</li> <li>• 554 firm-year observations</li> <li>• Panel (fixed effects)</li> </ul>	<p>Institutional blockholding by Korean National Pension Service (at least 5%)</p>	CSR performance (KEJI database)	<p>±</p>

(Continues)

TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2020	Garcia-Sanchez et al.	Business strategy and the environment	<ul style="list-style-type: none"> <li>International</li> <li>989 firms</li> <li>2015–2017</li> <li>OLS</li> </ul>	<p>Moderator: Liquidity; R&amp;D expenses</p> <p>Foreign institutional ownership</p> <p>Cross ownership</p> <p>Government, financial institutions, pension funds and endowments, others</p>	CSR disclosure in line with UN SDG (score)	+ (foreign, pension funds, "others") ± (cross holdings, government, financial institutions)
2020	Kim et al.	Journal of corporate finance	<ul style="list-style-type: none"> <li>USA</li> <li>1999–2016</li> <li>42,828 firm-year observations</li> <li>OLS/PSM/diff-in-diff (institutional blockholders' M&amp;A)</li> </ul>	<p>Institutional ownership</p> <p>political values (republican versus democratic; political donations made to electoral candidates)</p> <p>Moderator: Long-term (dedicated) institutional ownership, corporate republican ideology score; no environmental committee</p>	<p>Environmental reporting (frequency, pages)</p> <p>Environmental performance (KLD database)</p>	– (republican) Moderator: More pronounced –
2020	Li et al.	Journal of business ethics	<ul style="list-style-type: none"> <li>USA</li> <li>1996–2013</li> <li>3,803 firms</li> <li>Panel</li> </ul>	<p>Mutual ownership (ratio)</p> <p>CSR-friendly mutual funds (top tercile based on the fund CSR score)</p> <p>Moderator: Mutual fund size; board independence; board diversity</p>	CSR performance (KLD database)	– + (more pronounced by CSR strengths) Moderator: +
2020	Lopatta et al.	Journal of Sustainable Finance & Investment	<ul style="list-style-type: none"> <li>USA</li> <li>2001–2017</li> <li>11,391 firm-year observations</li> <li>OLS; diff-in-diff (mergers between separate lenders and equity holders)</li> </ul>	<p>Institutional dual holdings (debt and equity claims in the same firm; dummy; number; equity stake size)</p>	E, S, G and total ESG performance (Asset4)	+
2020	Manogna and Mishra	Journal of Asia business studies	<ul style="list-style-type: none"> <li>India</li> <li>2014–19</li> <li>1,594 firms</li> <li>Tobit</li> </ul>	<p>Institutional ownership by banks and lending institutions (ratio)</p> <p>Domestic mutual funds (ratio)</p> <p>Foreign institutional ownership (ratio)</p> <p>Moderator: Business group affiliation</p>	CSR spendings	+ Moderator: ±



TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2020	Meng and Wang	Managerial finance	<ul style="list-style-type: none"> <li>USA</li> <li>29,391 firm-year observations</li> <li>1991–2013</li> <li>Panel</li> </ul>	Long-term institutional ownership (portfolio turnover)	CSR performance (KLD database)	+
2020	Nguyen et al.	Journal of banking and finance	<ul style="list-style-type: none"> <li>USA</li> <li>21,257 firm-year observations</li> <li>1991–2009</li> <li>Cross-sectional analysis (Fama-MacBeth), time series</li> </ul>	CSR performance (KLD database) Moderator: Institutional ownership (long-term)	Tobin's Q	+ Moderator: Strengthened by long-term institutions
2020	Qi et al.	Corporate social responsibility and environmental management	<ul style="list-style-type: none"> <li>China</li> <li>2009–2016</li> <li>15,566 firm-year observations</li> <li>PSM</li> </ul>	Mutual fund networks (degree centrality as number of firms that have direct ties with the focal firm); peer pressure (mean number of CSR score of firms that have a direct link with the focal firm)	CSR performance (RKS database)	+
2020	Shirasu and Kawakita	Global finance journal	<ul style="list-style-type: none"> <li>Japan</li> <li>2004–14</li> <li>3,315 firm-year observations</li> <li>Panel; 2SLS/IV (average of industrial CSR score)</li> </ul>	E, S, G performance (GoodBanker database) Moderator: Long-term institutional investors (institutional financial ratio)	Financial performance (buy and hold return)	+ Moderator: +
2020	Shu and Chiang	Pacific-Basin finance journal	<ul style="list-style-type: none"> <li>Taiwan</li> <li>2008–2015</li> <li>11,439 firm-year observations</li> <li>Panel; 3SLS; 2SLS/IV (industry average of domestic institutional ownership); PSM</li> </ul>	Foreign institutional ownership blockholder Moderator: Family ownership; loss (dummy)	CSR performance (CSRI database)	+ Moderator: Weakened
2020	Yadav	Indian journal of corporate governance	<ul style="list-style-type: none"> <li>India</li> <li>2013–2018</li> <li>61 firms</li> <li>Panel (fixed)</li> </ul>	Pressure-sensitive institutional ownership (banks, insurances) (ratio) Mutual ownership (ratio) Foreign institutional ownership (ratio) Moderator: Firm internationalization	E, S, G performance (Asset4)	– + ± Moderator: ±

(Continues)

TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2019	Alda	Business strategy and the environment	<ul style="list-style-type: none"> <li>UK</li> <li>1,253 firms</li> <li>2002–2018</li> <li>OLS/logit regression/granger causality</li> </ul>	Social responsible pension funds	Environmental performance, Carbon performance (Eikon database)	+ Also the other way round
2019	Chung et al.	Asian business management	<ul style="list-style-type: none"> <li>Korea</li> <li>1,618 firm-year observations</li> <li>2005–2014</li> <li>Panel/2SLS/IV (number of business segments; CEO tenure)</li> </ul>	Institutional ownership (ratio; foreign) Moderators: Liquidity (Amihud's illiquidity ratio), R&D expenses	CSR performance (KEJI database)	+ (domestic stronger than foreign) Moderators: Strengthened by R&D and by low liquidity
2019	Dyck et al.	Journal of financial economics	<ul style="list-style-type: none"> <li>International</li> <li>3,277 firms</li> <li>2004–2013</li> <li>Panel/diff-in-diff (BP Deepwater horizon oil spill)/IV (MSCI index inclusion)</li> </ul>	Institutional ownership nature (PRI signatory, foreign institutional investors' home countries' environmental performance index and World Value E&S Index) Type (pension plans, hedge funds), Independent institutional ownership	Environmental and social performance (rating by Asset4)	+ + + (pension plans) ± (hedge funds)
2019	Erhemjamt and Huang	Journal of business research	<ul style="list-style-type: none"> <li>USA</li> <li>15,217 firm-year observations</li> <li>2003–2013</li> <li>OLS/logit regression/2SLS/IV (S&amp;P 500 index membership/pseudo-Russell 1000 and 2000 memberships/lagged short-term and long-term ownership)</li> </ul>	Long-term institutional ownership (churn rate) CSR performance Moderator: Long-term institutional ownership	CSR performance, environmental, and social performance (KLD database) Buy- and hold return	+ + Moderator: More pronounced
2019	Fu et al.	Journal of empirical finance	<ul style="list-style-type: none"> <li>USA</li> <li>90,426 firm-quarter observations 1995–2012</li> <li>Panel/2SLS/IV (Russell 1000/2000 index switches)/Diff-in-Diff</li> </ul>	Institutional ownership nature (long-term; churn rate) Moderators: Market myopia (bid-ask-spread), managerial agency risks (free cash flow) and motivated investor	Environmental and social performance (KLD database)	+ Moderators: More pronounced by market myopia, managerial agency risks, and motivated investors
2019	Gloßner	Journal of Banking & Finance	<ul style="list-style-type: none"> <li>USA</li> <li>1991–2003</li> </ul>	Institutional ownership nature (long-term; churn rate)		+ +

TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2019	Gulzar et al.	Sustainability	<ul style="list-style-type: none"> <li>• 38,845 firm-year observations</li> <li>• Pooled OLS/first difference regression/diff-in-diff (firm's inclusion into the S&amp;P 500 index/IV) (flows of institutional investors' clients)</li> <li>• China</li> <li>• 4,256 firm-year observations</li> <li>• 2008–2015</li> <li>• OLS/2SLS/IV (lagged foreign institutional investors)</li> </ul>	<p>Moderator: Institutional blockholder</p> <p>Subsample: Firms with high and low earnings management (accruals)</p> <p>CSR-related shareholder proposals; insider ownership</p> <p>Institutional ownership (foreign; dummy)</p>	<p>Environmental and social performance (KLD) (total, strengths and concerns)</p> <p>CSR performance (CSMAR database)</p>	<ul style="list-style-type: none"> <li>+ (short term investors and earnings management)</li> <li>+ (more targeted by longer investor duration)</li> </ul> <p>–</p>
2019	Kim, Kim, et al.	Journal of Banking & Finance	<ul style="list-style-type: none"> <li>• USA</li> <li>• 22,073 firm-year observations</li> <li>• 1992–2012</li> <li>• PSM/Diff-in-Diff (significant change in institutional investment horizon as turnover)/2SLS/IV (stock illiquidity by Amihud, 2002)</li> </ul>	<p>Institutional ownership nature (long-term; churn rate and turnover/dedicated)</p>	<p>Environmental and social performance (KLD database)</p>	<ul style="list-style-type: none"> <li>+ (active long term investors)</li> </ul>
2019	Kim, Wan, et al.	Management science	<ul style="list-style-type: none"> <li>• USA</li> <li>• 770 firms</li> <li>• 1994–2010</li> <li>• OLS/diff-in-diff (institutional investor mergers; facility relocation)</li> </ul>	<p>Institutional ownership nature (local); local SRI funds, public pension funds, dedicated (long-term)</p>	<p>Environmental performance (total quantity of toxic chemicals)</p>	–
2018	Hu et al.	Accounting research journal	<ul style="list-style-type: none"> <li>• China</li> <li>• 1,839 firms</li> <li>• 2010</li> <li>• Probit regression</li> </ul>	<p>Institutional ownership short-term (mutual, insurance), long-term (public pension fund NSSF); ratio</p>	<p>CSR disclosure (dummy; yes/no)</p>	±
2018	Lamb and Butler	Business & Society	<ul style="list-style-type: none"> <li>• USA</li> <li>• 153 firms</li> <li>• 1994–2006</li> <li>• Panel (fixed effects)</li> </ul>	<p>Institutional ownership nature transient (short-term), dedicated (long-term)</p>	<p>CSR performance (strengths and concerns; KLD database)</p>	<ul style="list-style-type: none"> <li>– (transient; CSR strengths)</li> <li>+ (dedicated; CSR concerns)</li> </ul>
2018			<ul style="list-style-type: none"> <li>• Spain</li> </ul>	<p>Institutional ownership nature as directors pressure-</p>	<p>Environmental disclosure (dummy; score)</p>	<ul style="list-style-type: none"> <li>+ (pressure-resistant institutions)</li> </ul>

(Continues)

TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2017	Pucheta-Martinez and Lopez-Zamora	Corporate social responsibility and environmental management	<ul style="list-style-type: none"> <li>1,092 firm-year observations 2014–2013</li> <li>OLS</li> </ul>	sensitive (passive) versus pressure-resistant (active)		
2017	Boubaker et al.	Thunderbird international business review	<ul style="list-style-type: none"> <li>USA</li> <li>3,440 firms</li> <li>2003–2009</li> <li>OLS/fixed panel regression/granger causality test</li> </ul>	Institutional ownership (ratio; nature [dedicated; long-term])	CSR performance (KLD database)	± (ratio) +(long-term); – (short-term) (not the other way round)
2017	Cahan et al.	Journal of business ethics	<ul style="list-style-type: none"> <li>USA</li> <li>1991–2011</li> <li>4,071 firms</li> <li>Panel regression</li> </ul>	CSR performance (KLD database) Moderator: Institutional ownership (norm-constrained: Pensions, universities, and religious, charitable, and non-for-profit institutions; dummy) Institutional ownership with voting rights	Institutional ownership (ratio)	+ (norm-constrained) (and also the other way round)
2017	Garcia-Meca and Pucheta-Martinez	Corporate social responsibility and environmental management	<ul style="list-style-type: none"> <li>Spain</li> <li>1,332 observations</li> <li>2004–2012</li> <li>Panel</li> </ul>	Institutional investors as directors pressure-sensitive (passive) versus pressure-resistant (active)	CSR disclosure (score)	+ (pressure-sensitive institutions)
2017	Panicker	Social responsibility journal	<ul style="list-style-type: none"> <li>India</li> <li>1,722 firms</li> <li>2014–2016</li> <li>Random effects tobit regression</li> </ul>	Institutional ownership (mutual fund, banks, insurance and other financial institutions, foreign; ratio)	CSR spendings	+ (banks, insurance and other institutions, foreign) ± (mutual)
2015	Dimson and Karakas	Review of financial studies	<ul style="list-style-type: none"> <li>USA</li> <li>613 firms</li> <li>1999–2009</li> <li>Probit regression</li> </ul>	Sustainable institutional investors (SRI funds) Successful CSR engagement	CSR engagements (targeted; successful; dummy) Institutional ownership (asset manager, pension activists; SRI funds)	+ (only targeted) +
2014	Kim et al.	Journal of banking and finance	<ul style="list-style-type: none"> <li>USA</li> <li>12,978 firm-year observations</li> <li>1995–2009</li> </ul>	CSR performance (KLD database) Moderator: Institutional ownership (long-term; dedicated)	Stock price crash risk (conditional skewness of return distribution)	– More pronounced by less long-term institutional ownership (I)

TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2013	Mallin et al.	Journal of business ethics	<ul style="list-style-type: none"> <li>• OLS/2SLS/IV (average CSR performance of other firms in the same Fama–French 48 industry) /GMIM (no information which model)</li> <li>• USA</li> <li>• 100 firms</li> <li>• 2005–2007</li> <li>• 3SLS (SEM)</li> </ul>	Institutional ownership nature (ratio of investment funds); pension fund (dummy)	CSR performance (KLD)	±
2013	Wegener et al.	Accounting perspectives	<ul style="list-style-type: none"> <li>• Canada</li> <li>• 2006–2009</li> <li>• 319 firms</li> <li>• Logistic regression/2SLS</li> </ul>	Institutional ownership (domestic; active)	Participation in the CDP (dummy)	+ (domestic)
2012	Hong and Kostovetsky	Journal of financial economics	<ul style="list-style-type: none"> <li>• USA</li> <li>• 1992–2006</li> <li>• OLS</li> </ul>	Mutual funds who make campaign donations to democrats Hedge funds who make campaign donations to democrats	Irresponsible firms (tobacco, guns, or defense firms or with bad relations or diversity records)	– –
2012	Walls et al.	Strategic management journal	<ul style="list-style-type: none"> <li>• USA</li> <li>• 313 firms</li> <li>• 1997–2005</li> <li>• Panel</li> </ul>	Institutional ownership (ratio; long-term/turnover)	Environmental performance (KLD database)	± Interaction effects: Long-term investors and outsiders in the board on environmental performance; investor ratio, high CEO salary/low CEO stock option on environmental performance
2011	Dhaliwal et al.	The accounting review	<ul style="list-style-type: none"> <li>• USA</li> <li>• 1,109 observations</li> <li>• 1993–2007</li> <li>• OLS/2SLS</li> </ul>	First time CSR report (dummy; yes/no) Moderator: Institutional ownership (dedicated; long-term)	Cost of equity (models by Gebhardt et al., Claus and Thomas, and Easton)	– (more pronounced by dedicated institutional investors by superior CSR performance) Bidirectional negative relationship
2011	Oh et al.	Journal of business ethics	<ul style="list-style-type: none"> <li>• Korea</li> <li>• 118 firms</li> <li>• 2005</li> <li>• OLS</li> </ul>	Institutional ownership type (pension funds; insurance firms; securities firms; investment and commercial banks)	CSR performance (KEJI index)	+ (pension funds)

(Continues)

TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2010	Barnea and Rubin	Journal of business ethics	<ul style="list-style-type: none"> <li>USA</li> <li>2,649 firms</li> <li>2003</li> <li>OLS/probit regression/2SLS/IV (turnover as three-month average of the monthly volume divided by the number of shares outstanding)</li> </ul>	Institutional ownership (ratio, pension funds)	CSR performance (KLD database)	±
2010	Huang	Journal of Management & Organization	<ul style="list-style-type: none"> <li>Taiwan</li> <li>297 firms</li> <li>2006–2007</li> <li>OLS</li> </ul>	Institutional ownership (foreign)	CSR disclosure (score)	+ (foreign; worker and supplier performance)
2006	Neubaum and Zahra	Journal of management	<ul style="list-style-type: none"> <li>USA</li> <li>357 and 383 firms</li> <li>1995 and 2000</li> <li>OLS</li> </ul>	Institutional ownership long-term/pension funds with at least 1% shares Short-term/banking and mutual funds with at least 1% shares Moderator: Institutional ownership activism (number of unique annual episodes in reports and press releases) and coordination (average of unique acts of coordinated activism)	CSR performance (KLD database)	+ – More pronounced by higher frequency and coordination of activism
1999	Johnson and Greening	Academy of management journal	<ul style="list-style-type: none"> <li>USA</li> <li>1993</li> <li>252 firms</li> <li>SEM</li> </ul>	Institutional ownership type (pension funds; mutual funds; investment banks)	CSR performance (KLD)	+ (pension funds and people, employee and product quality) ± (mutual and investment bank funds)
<b>2. Impact of ESG/CSR on institutional ownership</b>						
2021	Barko et al.	Journal of business ethics	<ul style="list-style-type: none"> <li>International</li> <li>847 engagements</li> <li>2005–2014</li> <li>Probit regression</li> </ul>	Low CSR performance (Asset4) Engagement	Engagement of a SRI fund (dummy) CSR performance after compliance with activist's demands	+ +
2021	Bolton and Kacperczyk	Journal of financial economics	<ul style="list-style-type: none"> <li>International</li> <li>2005–2017</li> <li>3,421 firms</li> </ul>	Carbon emissions (scope 1, 2, 3, intensity) (CDP, Trucost, MSCI, Sustainalytics,	Institutional ownership portfolio	– (scope 1 intensity) Insurances, pension and mutual funds are

TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2021	DesJardine et al.	Academy of management journal	<ul style="list-style-type: none"> <li>• Pooled OLS</li> </ul>	Thomson Reuters, Bloomberg, ISS	Mutual funds, insurance, banks, pension funds, hedge funds	underweight scope 1 emission intensity (divestment) No effect by excluding industries with high Co2 emissions (salient industries) (oil and gas, utilities, motor industries)
2021	Flammer	Journal of financial economics	<ul style="list-style-type: none"> <li>• USA</li> <li>• 2000–16</li> <li>• 506 hedge funds compaigns</li> <li>• Logit; 2SLS/IV (number of fatalities caused by natural disasters per capita)/PSM</li> </ul>	CSR performance (KLD database) Moderator: High-level of industry-CSR; vague firms' financial communication of managers (during quarterly earnings conference calls)	Activist hedge fund campaign (dummy)	+ Moderator: Weakened by high level CSR and stronger by vague financial communication
2021	Flammer	Journal of financial economics	<ul style="list-style-type: none"> <li>• International</li> <li>• 2013–2018</li> <li>• 1,189 green bonds</li> <li>• Event study/diff-in-diff</li> </ul>	Green bond issuance announcement (Bloomberg)	Environmental performance (Asset4; CO2 emissions) Long-term (duration; churn ratio) and green institutional investors (members of the Ceres investor network on climate risk and sustainability)	+ +
2020	Tang and Zhang	Journal of corporate finance	<ul style="list-style-type: none"> <li>• International</li> <li>• 2007–2017</li> <li>• 1,510 bonds</li> <li>• Panel; diff-in-diff</li> </ul>	Green bond issuance (Bloomberg)	Institutional ownership (ratio) Domestic institutional ownership (ratio) Domestic independent institutional ownership (mutual funds, independent investment advisors)	+ + +
2020	Yu and Zheng	Journal of international accounting, auditing and taxation	<ul style="list-style-type: none"> <li>• China</li> <li>• 2004–2013</li> <li>• 11,656 firm-year observations</li> <li>• PSM/Diff-in-Diff (2008 CSR mandatory disclosure act)</li> </ul>	Firms with mandatory CSR reporting (dummy) Moderator: Investors from common/case law regimes	Qualified foreign institutional ownership (ratio)	+ Moderator: +

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TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2019	Harjoto et al.	Review of quantitative finance and accounting	<ul style="list-style-type: none"> <li>USA</li> <li>4,617 firms</li> <li>1991–2004</li> <li>OLS/event study/2SLS/IV</li> <li>(industry average of CSR performance and percentage of religious adherents in the county where the firms' headquarters are located)</li> </ul>	CSR performance (KLD database) after a stock split (dummy)	Institutional ownership nature (dedicated; long-term)	+
2019	Hartzmark and Sussman	Journal of finance	<ul style="list-style-type: none"> <li>USA</li> <li>34,046 firm-year observations</li> <li>N.A.</li> <li>Diff-in-diff (shock to the US mutual fund market)</li> </ul>	CSR performance (Morningstar sustainability rating)	Mutual funds flow	+
2019	Nofsinger et al.	Journal of corporate finance	<ul style="list-style-type: none"> <li>USA</li> <li>49,133 firm-year observations</li> <li>2001–2013</li> <li>Panel regression/PSM</li> </ul>	Environmental and social performance (KLD database; strength and weaknesses)	Institutional ownership (ratio); long-term (churn ratio)	– (weaknesses) ± (strengths)
2019	Oikonomou et al.	European journal of finance	<ul style="list-style-type: none"> <li>USA</li> <li>22,801 firm-year observations</li> <li>1991–2012</li> <li>Panel/2SLS/IV (initial level of the firm's CSR performance and industry-year average of CSR performance)</li> </ul>	CSR performance (KLD database)	Institutional ownership nature (long-term; churn rate)	+
2017	Fernando et al.	Journal of financial and quantitative analysis	<ul style="list-style-type: none"> <li>USA</li> <li>1997–2007</li> <li>7,324 firm-year observations</li> <li>OLS</li> </ul>	Environmental performance (KLD database) (green, toxic and neutral firms)	Institutional ownership (ratio) Norm-unconstrained institutions (e.g., banks and insurances) Norm-constrained institutions (e.g., pension funds)	– (in green and toxic firms) – (green firms) – (toxic firms)



TABLE 3 (Continued)

Year of publication	Author (s)	Journal	State Sample Years	Independent variable(s)	Dependent variable (s)	Significant results
2016	Li and Lu	Journal of business ethics	<ul style="list-style-type: none"> <li>China</li> <li>3,843 firm-year observations</li> <li>2004–10</li> <li>OLS</li> </ul>	Environmental capital expenditures	Investment decisions of institutional investors (ratio; long-term investors by churn rate)	<ul style="list-style-type: none"> <li>+ (ratio; long-term invest in state-owned firms)</li> <li>+ (state-owned firms)</li> </ul>
2014	Chava	Management science	<ul style="list-style-type: none"> <li>USA</li> <li>1992–2007</li> <li>13,114 firm-year observations</li> <li>OLS</li> </ul>	Environmental concerns (KLD database)	Abnormal stock returns Institutional ownership (ratio) Norm-constrained institutions	<ul style="list-style-type: none"> <li>–</li> <li>– (only 2000–07)</li> </ul>
2009	Hong and Kacperczyk	Journal of financial economics	<ul style="list-style-type: none"> <li>USA</li> <li>193 firms</li> <li>1962–2006</li> <li>Panel</li> </ul>	Irresponsible “sin” firms (alcohol, tobacco and gambling; dummy)	Institutional ownership (pension funds as norm-constrained institutions)	–

## 5 | IMPLICATIONS FOR FUTURE RESEARCH

### 5.1 | Methodological implications with regard to endogeneity concerns

Archival research on the relationship between IO heterogeneity and corporate sustainability is linked with massive endogeneity concerns, e.g., omitted variable bias and reversed causality (e.g., Dyck et al., 2019; Gloßner, 2019). The majority of studies in our literature review solely measured correlation but not causality. While most prior research assumes and analyzes the impact of IO on corporate sustainability, there may be an inverse or even bidirectional relationship. Related to finance journals, since 2019, an increased number of researchers have included causality tests by quasi-natural experiments based on the diff-in-diff approach (DiD) as a complement to two-stage least squares (SLS) models and instrumental variables (IVs). In the following, we stress the prior choices of IVs and external shocks in DiD approaches and refer to the major requirements of these strategies to increase the validity of these endogeneity checks. Therefore, we would like to guide future researchers in this strategy.

Many prior studies on the impact of IO on corporate sustainability relied solely on modified (lagged or mean-related) dependent or independent variables as IV (see, e.g., Chang et al., 2021; Flammer et al., 2021; Kordsachia et al., 2021). The literature assumes that these instruments are not quite valid. Other researchers have included memberships of firms in specific indices as IV, e.g., in the S&P 500 index or the Russell 1000 and 2000 index (Fu et al., 2019; Rayfield & Unsal, 2021), the Morgan Stanley Capital International (MSCI) All Country World Index (Luong et al., 2017), and the Shanghai Shenzhen 300 index (Gao et al., 2019).

Few researchers have tried to identify more innovative instruments, e.g., business segments and CEO tenure (Chung et al., 2019), turnover (Barnea & Rubin, 2010), fatalities caused by natural disasters per capita (DesJardine et al., 2021), average trading performance sensitivity (Garel & Petit-Romec, 2021), stock alpha, beta, turnover (Rayfield & Unsal, 2021), and excess return of an individual stock, market beta, annual trading, the volume of an individual stock (Chi et al., 2019), flows of institutional investors' clients (Gloßner, 2019), and even religious adherents in the counties where firms' headquarters are located (Harjoto et al., 2019).

Future researchers should clearly justify whether the choice of 2SLS and IV approaches is justified in their research designs and which endogeneity concerns they would like to address. Furthermore, researchers should clearly explain the specific choice of their instruments.

In line with IV approaches, the DiD method has become widespread in empirical economics (e.g., Cheng et al., 2021). The DiD, as a quasi-experimental research design, is a useful strategy for studying causal relationships. We have already noted that DiD approaches in prior research on the impact of IO heterogeneity on corporate sustainability are few and have mainly been related to finance journals since 2019 (e.g., Chen et al., 2020). In line with the choice of specific

instruments, including a firm's stock in a specific index has been the most important in prior research designs.

In a current working paper, Döring et al. (2021) relied on prior researchers (Aggarwal et al., 2011) and included MSCI inclusion of a firm as an exogenous shock for their DiD approach. Bena et al. (2017) also chose MSCI inclusion of a firm because it presents a commonly used benchmark by foreign investors. Similarly, Gloßner (2019) chose S&P 500 index inclusion as exogenous shock because a firm is only considered for index addition if its market capitalization exceeds a certain threshold and not regarding CSR performance. Chen et al. (2020) include reconstitutions in the Russell 2000 index as industry shock if it has the highest or lowest return across all Fama-French 12 industries in a given quarter.

In line with index-specific shocks, mergers between institutional investors as exogenous shocks are also relevant in prior DiD designs. He and Huang (2017) recognized financial institution mergers because financial institutions often merge for reasons unrelated to the fundamentals of their portfolio holdings. Following He and Huang (2017), Cheng et al. (2021) also relied on financial institution mergers, because an increase in holdings results from the merger of institutional investors and not from individual firm characteristics in investor portfolios (e.g., CSR performance). Similarly, Kim, Wan, et al. (2019) included institutional investor mergers and facility relocation as shocks in their DiD designs. The second event serves as a quasi-natural experiment because a facility's relocation decision is likely independent of institutional investors' decisions and will cause local IO to change for that facility. Other authors have recognized mergers between separate lenders and equity holders (Lopatta et al., 2020), institutional blockholders' mergers (Kim et al., 2020), shocks in the US mutual fund market (Hartzmark & Sussman, 2019), and changes in institutional investment horizons based on turnover (Kim, Kim, et al., 2019). Giannetti and Yu (2021) included trade shocks as large reductions of import tariff rates because these shocks are not under the direct control of domestic firms and have been widely used in the literature to capture large exogenous changes in competition.

Referring to a different identification strategy, Dyck et al. (2019) chose the BP Deepwater Horizon Oil spill on May 24, 2010, as unexpected event. The authors stress that while the immediate negative economic effect of the oil spill was on BP, the event arguably focused investors' attention on all extractive industries and the potential risks of weak environmental policies, even in the most developed countries.

A recent strategy is to include regulatory shocks in the DiD design. Liu and Tian (2021) recognized the Shanghai Stock Exchange Regulation to disclose stand-alone CSR reporting after 2008 in China as an exogenous shock. Yu and Zheng (2020) also chose this regulatory event. Ilhan et al. (2021) recognized the French climate risk disclosure regulation of institutional investors (Energy Transition for Green Growth Act) and the UK carbon disclosure regulation on CO<sub>2</sub> emissions. As a third shock, the authors included the "Climate Action 100+ Disclosure Engagement" as an investor coalition that targets the world's largest CO<sub>2</sub> emitters for engagement. Roy et al. (2021) included the "S-135" CSR regulation in India 2013 which leads to

mandatory disclosure of CSR-related information and the duty of firms that meet a certain size threshold to spend a minimum amount (at least 2% of their annual net profit) on CSR projects. The US Jobs and Growth Tax Relief Reconciliation Act 2003 was chosen as an exogenous shock by Luong et al. (2017). The authors point out that the passage substantially lowered dividend tax rates not just for US firms but also for firms domiciled in countries that have tax treaties with the USA. Thus, they assumed a plausibly exogenous variation in foreign IO for non-US firms as it is unlikely to be designed to directly affect corporate sustainability (as the dependent variable) of non-US-firms.

As we recognize the increased importance of DiD methods in this research topic and the need for testing causality instead of correlation, we also stress the importance of a clear justification in future research designs, why the choice of this method is necessary, and which treatment and control groups in line with exogenous shocks are selected. A recommended strategy would be the selection of different regression models, from OLS, panel regressions, 2SLS, IV, and DiD methods in one study to increase the validity of research results.

In summary, future researchers should rely on sound advanced regressions (2SLS/IV and DiD methods) to analyze the impact of IO on corporate sustainability, and vice versa. Those advanced regression models should be included as main regressions and not as robustness tests or additional analyses. The researchers should be transparent in their identification strategy, the choice of related instrumental variables, and exogenous shocks, and in the comparison of different regression models. In this context, future researchers should also go into detail about which specific endogeneity problem is crucial in their design and which model can reduce those risks.

## 5.2 | Content-related implications

Summarizing the results of our literature review, future researchers should concentrate on specific IO types and their contributions to corporate sustainability. Among others, we know very little about the (un)sustainable motivations of hedge funds. As these institutions are classified as active and independent monitors, a rather traditional claim is that they only focus on short-term related financial goals and neglect ESG/CSR. Because of the massive current shift in international capital markets toward sustainable business and climate change regulations in many countries, we assume that hedge funds will also include ESG risks in their investment strategies, as these risks can be transferred to financial risks. Regarding the nature of IO, we also stress that prior research on active/independent IO and cross-ownership is rather low, leading to the main research gap. We question whether the classical identification strategy proposed by Brickley et al. (1988) is still valid for the present IO. In more detail, we assume that banks and insurance companies, which are assumed to be gray and passive monitors, may change their investment strategies due to increased sustainability regulations on debt capital. Because banks can be dual holders of equity and debt capital, there may be a

complementary strategy to include ESG risks in the strategy and the risk management systems.

In line with these recommendations, we also encourage future researchers to recognize a mixture of different types and nature characteristics to get a more nuanced picture of IO heterogeneity and its impact on corporate sustainability. We note that since 2020, more researchers have combined two or even three IO characteristics, with a great focus on either foreign or long-term IO. Regarding foreign institutional investors, prior studies have also included code law regimes (Yu & Zheng, 2020), long-term ownership (Chang et al., 2021), independence (Tang & Zhang, 2020), independent and long-term investors (Luong et al., 2017), home countries with social norms supportive of sustainability commitments and independence (Dyck et al., 2019), religious beliefs and long-term ownership (Zhao et al., 2021), and case law and long-term IO (Bena et al., 2017). Referring to long-term IO, few studies also combine active IO (Neubaum & Zahra, 2006), political values (Kim et al., 2020), diversity of institutions (Garcia-Sanchez et al., 2020), attention (Xiang et al., 2021), and social inclination and common ownership (Cheng et al., 2021). Interestingly, we know very little about the heterogeneity of sustainable institutional investors and common ownership. Because of the increased awareness of sustainable transformation of firms, future researchers are invited to analyze whether specific types or characteristics of sustainable investors pressure management to increase their sustainability activities (e.g., foreign, independent, and active institutions).

Another recommendation for future research is linked to moderator and mediator variables. With few exceptions in our literature review, mediator analyzes have been fully neglected in prior research on IO heterogeneity. Whether the positive impact of IO on corporate sustainability depends on specific requirements (e.g., an appropriate quality of the board of directors, proper financial performance or dividend payments in the past) should be analyzed. As most institutional investors follow business case logic, specific requirements may be needed for pressure on increased sustainability issues. Relying on the moderator variables in our literature review, we also noted major research gaps. First, except for board diversity, prior studies did not include sustainable corporate governance variables, e.g., ESG/CSR-related management compensation, sustainability expertise of board members, and institutionalized sustainability expertise via chief sustainability officers (CSOs) and sustainability committees. Audit and assurance variables have not yet been included as moderators of the IO sustainability relationship (e.g., [non]audit fees, big four audit, industry expertise, sustainability assurance, or dual audit of financial and sustainability reporting). Referring to the individual characteristics of the top management team, future researchers should not only include “classical” agency-oriented CEO attributes (e.g., CEO duality, CEO ownership, CEO pay, and CEO turnover). Instead, the behavioral characteristics of the CEO and other related members, such as the CFO or the CSO (e.g., overconfidence, narcissism, and power) increase our knowledge of the IO and its heterogeneous preferences. We assume that the aforementioned moderator variables may have a huge impact on the link between IO and corporate sustainability. In this context, a controversial discussion arises as to whether weak

board governance attracts or scares off institutional investors to monitor a specific firm as the voice option, or whether it will lead to the exit option.

In summary, future researchers should analyze the motivation of institutions to pressure management to increase their corporate sustainability efforts. Mixed-method designs (e.g., interviews or surveys, in connection with archival research) are highly recommended to question whether the solely business case argument and extrinsic motivations of IO are central or whether some types of investors also have an intrinsic motivation as “good” stewards of their end investors and other stakeholders. In this context, a combined analysis of the individual characteristics of included types (e.g., foreign, long-term, and sustainable attributes) may be useful. Moreover, future researchers should explicitly address the channels of the link between IO and corporate sustainability. As institutions may change the sustainability preferences of the board of directors, a great impact on sustainable board composition may be the relevant channel, for example, based on board gender diversity, sustainable executive compensation, or sustainability expertise.

## 6 | SUMMARY

This study addressed a systematic review of archival research on the influence of IO type and nature as IO heterogeneity on corporate sustainability. Classic agency theory assumes that the preferences of IO are homogeneous and are connected with a sole demand for financial instead of environmental and social sustainability issues (Basse Mama & Mandaroux, 2022; Wahba, 2010). Our research overcomes this assumption and assumes that specific characteristics of IO may lead to a positive influence on corporate sustainability based on ESG/CSR performance and reporting, and vice versa. In more detail, we differentiated between specific types of IO (pension funds, mutual funds, hedge funds, banks and insurance companies, and other investment funds) and the nature of IO (independent/active, long-term, sustainable, and foreign investors and cross-ownership). Our review of 66 archival studies indicates that many studies on the impact of IO on corporate sustainability are too few or have inconclusive results. The majority of the included studies analyzed that impact of IO on ESG/CSR performance but not an inverse or bidirectional relationship. However, there are clear indications that long-term, sustainable, and foreign IO increase ESG/CSR outputs. We also stress that long-term IO moderates the positive link between corporate sustainability and financial performance. This result is in line with the business case argument, as institutional investors may assume a positive relationship between ESG/CSR performance and financial performance. This extrinsic motivation to increase financial outputs and related dividends by including sustainability aspects can lead to a “win-win-situation” for firms, institutions, and other stakeholders. However, it is questionable whether institutions will accept lower financial performance during the next years due to a firm's massive sustainability investments (e.g., to reach climate neutrality production).

In our literature review, we do not only explain the included proxies and results in detail, but we also provide useful recommendations for future archival research on the link between IO heterogeneity and corporate sustainability. In this context, we rely on the recognition of endogeneity concerns as methodological challenges and content-based proposals. Future studies should address endogeneity concerns by IV and DiD approaches. The selection of proper IVs and an identification strategy of valid exogenous shocks remain crucial. Also, researchers should combine different IO types and nature characteristics (e.g., based on foreign, long-term, and sustainable investors) to get a more nuanced analysis of the specific preferences of institutional investors. Other corporate governance variables (e.g., audit, sustainable governance, and behavioral CEO proxies) should be included in future research designs as moderator and mediator variables, as there is a strong link between IO and board composition (Gerwanski et al., 2019; Nuber & Velte, 2021).

Our study has main implications for stakeholders, managers, the economy, theory, and research. For stakeholders, it is important to increase cooperation with institutional investors to fight for common goals (e.g., addressing climate change). For managers, it is crucial to conduct a careful and timely analysis of the development of their IO structures and their preferences for ESG/CSR information and related efforts. For the economy, this relates to stressing the main influence of investment shifts toward sustainable products and services over the next years. However, there is also a great risk of greenwashing or CSR washing by institutional owners who rely solely on the business case and do not really care about sustainability (extrinsic motivation). UN PRI signatures may represent a “low hanging fruit” without major changes in institutions' investment-related behaviors. Regarding theoretical implications, future research should include management theories in line with agency theory as a theory mix. This may increase our knowledge about the channels of the link between IO and corporate sustainability (e.g., based on monitoring activities to change a board of directors toward more sustainability). Regarding research, we stress the need for better inclusion of endogeneity concerns in future regression models. Using 2SLS/IV and DiD approaches should be a future “best practice” to measure causality instead of a simple correlation. Moreover, a more detailed analysis of certain characteristics of IO types (e.g., a combination of foreign, long-term, and sustainable ownership) is needed to obtain a more nuanced picture of the monitoring role of IO. The impact of IO on (sustainable) board composition, e.g., gender diversity, sustainable executive compensation systems, or sustainable board expertise, as a possible channel of future CSR/ESG performance should be addressed in future research.

Finally, regulators should be aware of the impact of the different preferences of IO on corporate sustainability. Recent discussions and reform initiatives on sustainability reporting (e.g., the European Commission or the US-American Securities and Exchange Commission [SEC]), sustainable finance, and corporate governance must consider which incentives may be necessary to attract both institutional investors and managers to improve their corporate sustainability strategies. We need increased transparency and objectivity in related ESG/CSR

databases and reports. Stricter regulations on sustainable finance cannot activate the intrinsic motivations of both investors and firms to rely substantially on corporate sustainability and change to a more ethical mindset. Firms and institutional investors should realize their stewardship function toward other stakeholders to reach ambitious sustainability goals as a climate neutral economy by 2050 within the European Union. The sole reliance on the business case will not lead to a radical and fast shift toward a sustainable business transformation.

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## CONFLICT OF INTEREST

The author declares no conflict of interest.

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