

# Corporate social responsibility: A review of empirical research using Thomson Reuters Asset4 data

Charl de Villiers<sup>1,2</sup>  | Jing Jia<sup>3</sup>  | Zhongtian Li<sup>4</sup> 

<sup>1</sup>The University of Auckland, Auckland, New Zealand

<sup>2</sup>University of Pretoria, Pretoria, South Africa

<sup>3</sup>University of Tasmania, Hobart, Tasmania, Australia

<sup>4</sup>University of Newcastle, Callaghan, New South Wales, Australia

## Correspondence

Charl de Villiers, The University of Auckland, Auckland, New Zealand.  
Email: [charl.devilliers@auckland.ac.nz](mailto:charl.devilliers@auckland.ac.nz)

## Abstract

Thomson Reuters Asset4 (Asset4) is a leading corporate social responsibility (CSR) database often used by practitioners and researchers. This review offers a precise understanding of prior studies using Asset4 and their justification for selecting Asset4, and identifies research opportunities. We review 285 studies using Asset4 data published in quality academic journals, analysing: (1) the usage of Asset4 pillars, categories, data points, and indicators; (2) the justification for using Asset4; and (3) research themes. Our findings provide valuable information for practitioners and researchers who (plan to) use CSR databases, including our guidance on promising avenues for future studies.

## KEYWORDS

corporate social responsibility, corporate social responsibility databases, corporate sustainability, literature review, Thomson Reuters Asset4

## JEL CLASSIFICATION

M40, M14

## 1 | INTRODUCTION

Corporate social responsibility (CSR) is an important and developing research topic. Its importance is discussed and reiterated in several prior literature reviews, including Alrazi et al. (2015), Gray (2001), Marston and Shrivs (1991), and Wood (1991a). Practitioners find CSR increasingly relevant and meaningful, given the ever-increasing popularity of CSR-related

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2022 The Authors. *Accounting & Finance* published by John Wiley & Sons Australia, Ltd on behalf of Accounting and Finance Association of Australia and New Zealand.

investment (or socially responsible investment). For example, in the United States (US), the total US-domiciled assets under CSR-related management rose from \$US12 trillion in 2018 to \$US17.1 trillion in 2020.<sup>1</sup> As a consequence of the burgeoning interest, an increasing number of databases of CSR practices have been developed and marketed (Chatterji et al., 2009; Doyle, 2018; Halbritter & Dorfleitner, 2015; Hayat & Orsagh, 2015; Rekker et al., 2021; Schäfer et al., 2006). CSR databases provide evidence to investors, financial analysts and fund managers that their ratings are based on careful analysis of high-quality data collected from multiple sources, and their measurements of constructs are valid (Chatterji et al., 2009). Consequently, CSR databases are frequently used by researchers.

In the CSR literature, large-sample CSR quantitative studies play a key role in advancing knowledge and suggesting important implications for practitioners (Patten, 2015; Richardson, 2015). For example, using CSR ratings of 23,000 firms from 114 countries, Liang and Renneboog (2017) examine which country characteristics affect CSR performance. However, some concerns have been expressed that researchers could misuse CSR databases (Deegan, 2017; Roberts & Wallace, 2015). For example, scholars argue that researchers ‘justify the use of existing data sources with little critical probing and reflection’ (Gray & Milne, 2015, p. 62); ‘researchers employ metrics ... without carefully determining if they actually capture the construct being proxied’ (Patten, 2015, p. 47); and CSR databases ‘suffer from the fact the items are not based on theoretical arguments’ (Maignan & Ferrell, 2000, p. 285).

If CSR databases are misused, then the conclusions drawn from large-sample CSR quantitative studies may be misleading (Chatterji et al., 2016; Halbritter & Dorfleitner, 2015). The concerns of misuse are recognized by Richardson (2015, p. 74) who suggests that ‘the use of commercial and/or public databases must also be done carefully’. To mitigate these concerns, researchers need to carefully assess what CSR ratings are capturing, how the ratings should be used, ‘and/or justify why their chosen rating system is the right one to test their particular theoretical propositions’ (Chatterji et al., 2016, p. 1608). Roberts and Wallace (2015, p. 84) also highlight that ‘researchers must foremost have a clear understanding of their data. Various CSR rating agencies exist (e.g., Sustainalytics, KLD, Asset4, etc.), for instance, and is important for the researcher to ensure he or she understands how those ratings were composed and whether the ratings appropriately measure the underlying construct’.

Despite the increasing attention and interest in CSR and the critique regarding the use of CSR databases in the literature, few prior studies systematically review the use of CSR databases. It is also important to investigate how scholars justify their selection of a particular CSR database, given the current proliferation (Novethic, 2014; Pagano et al., 2018). Therefore, our study aims to systemically examine how scholars use one of the most popular CSR databases, namely, Thomson Reuters Asset4 (Asset4)<sup>2</sup> (Chatterji et al., 2016; De Villiers et al., 2017; Malik, 2015), and how they justify their use of Asset4. Our study focuses on the Asset4 database because it is well regarded by scholars and non-governmental organisations (NGOs) (SustainAbility, 2019). In addition, Asset4 is arguably the largest<sup>3</sup> CSR database with comprehensive coverage of firms in many different countries (Boffo & Patalano, 2020; Ribando & Bonne, 2010), which allows scholars to investigate CSR-related issues in different country settings. Most importantly, unlike other databases, Asset4 also provides raw data to users, allowing users to create their own measurements (Huber &

<sup>1</sup>[https://www.ussif.org/blog\\_home.asp?Display=155](https://www.ussif.org/blog_home.asp?Display=155) (accessed 31 December 2021).

<sup>2</sup>We are aware that Thomson Reuters rebranded Asset4 as Refinitiv. However, to be consistent with studies in this regard, we keep using the name Asset4 rather than Refinitiv.

<sup>3</sup>Asset4 commenced evaluation of 1000 firms in 2002 and covers over 4300 companies worldwide at the beginning of 2014. KLD covers the 500 largest US companies and Bloomberg provides historical data from 2006 and covers about 4100 firms globally (Dorfleitner et al., 2015).

Comstock, 2017; SustainAbility, 2020). Thus, the Asset4 database is selected in this study due to its comprehensiveness. Concurring with Chatterji et al. (2016) and Roberts and Wallace (2015), our study would help researchers to have a clear understanding of Asset4 ratings and how to justify using Asset4 in their work. The insights we develop from this systematic review could be used by researchers to consider and motivate the variables they use and to develop new research ideas.

Therefore, to better understand how researchers use Asset4 and justify their selection of Asset4, we are guided by three research questions [RQs], namely: (RQ1) How did researchers use Asset4 ratings, including Asset4 pillars, categories, data points and indicators?; (RQ2) How did they justify their use of Asset4?; and (RQ3) What are their research themes? Based on our findings in answering these RQs, we identify several opportunities for future research, which we discuss in Section 5.3.2.

After systemically searching through major academic databases,<sup>4</sup> we identify 285 studies that use Asset4. In relation to RQ1, we summarise different measurements and constructs of these studies using Asset4 pillars, categories and indicators and data points and find that the four pillars of Asset4 are more frequently used than the categories, indicators and data points to capture CSR constructs, even though indicators and data points show greater potential to measure constructs with novel and nuanced theoretical meanings. In addition, we reveal that the prior literature uses different terms to refer to similar (even the same) CSR constructs, and different measurements are used to measure the same CSR constructs. This suggests that the specific Asset4 metrics used sometimes do not align with the constructs the authors claim to measure. Regarding authors' justification for using Asset4 (RQ2), information sources used by Asset4 and the comprehensiveness of Asset4 are frequently used as justifications for using this database, as is citing prior studies that used Asset4. Through analysing citations among the 285 studies, we identify the top 10 most influential studies. In relation to our last review question (RQ3), we identify three main research themes, namely consequences of CSR performance, antecedents of CSR performance and CSR disclosure, which are most frequently examined by the 285 studies.

As the CSR literature is rapidly developing and attracting increasing research interest (Parker, 2005, 2011a, 2011b; Parker & Guthrie, 2014), our study should be of substantial interest to researchers. First, our findings provide clear and comprehensive guidance to researchers who are interested in using Asset4 to conduct quantitative CSR studies (Roberts & Wallace, 2015). Distinct from Berg et al. (2020) and Sahin et al. (2022) who examine the impact of changes in Asset4 ratings, our study focuses on how researchers use Asset4 and justify its usage. Furthermore, we also identify avenues for future research using Asset4. Mattingly (2017) is another study that is related to ours in the sense that he reviews studies using KLD, focusing only on antecedents and outcomes of CSR performance. In other words, Mattingly (2017) does not discuss using KLD in all research. Unlike Mattingly (2017), our study is, first, not limited to reviewing only CSR performance; instead, we analyse and interpret how prior studies use any of the Asset4 ratings/measures. Second, given that our study provides detailed and thorough evidence on how a leading CSR database is used in different disciplines, it contributes to the evolving conversation about using CSR databases in research and shows the options available to researchers with regard to constructs/measures, justifications of using a database, and future research directions. Third, our study builds on an emerging group of studies focusing on CSR databases (e.g., Chatterji et al., 2016; Christensen et al., 2022; Delmas & Blass, 2010). However, whereas the extant studies are interested in the presence and reasons for different CSR ratings provided by the different databases, our study contributes by examining how researchers use Asset4 ratings

<sup>4</sup>They include EBSCOhost, Web of Science, ProQuest and Google Scholar.

and rationalise their use of Asset4. Therefore, our study contributes to the CSR literature by providing systematically synthesised information on the use of an important CSR database. While we focus on a particular CSR database, we contribute to a better understanding of the metrics involved and the issues being examined, and therefore our study provides insights that could be helpful for CSR researchers in general, e.g. through an enhanced understanding of the use of CSR databases in research (Karpoff et al., 2017).

Our study makes a number of practical contributions. First, our study should be of interest to Thomson Reuters and other CSR databases, as we systemically examine how a CSR database is diffused and used by an important group of users. Our findings suggest that some characteristics (e.g., information sources used, rating process and comprehensiveness of data) are valued by users. These insights could assist providers to develop, refine and market their databases. Second, our findings have implications for other users of CSR databases (including investors and assurance services providers). For example, while investors are keen on using CSR ratings (e.g., Asset4 ratings), they are struggling with how to use the ratings in their decisions (Amel-Zadeh & Serafeim, 2018).<sup>5</sup> Our study should also be of interest to investors, as it summarises the different ways of using pillars, data points and indicators of a CSR database to assess different aspects of a firm's CSR performance. In addition, our findings highlight the importance of not only focusing on pillars (i.e., composite indices) but exploiting data points and indicators at different levels (i.e., the inputs of composite indices) to measure more specific constructs.

The remainder of the paper is structured as follows. The next section provides background information on Asset4. Section 3 discusses prior literature reviews and how our paper contributes to them. Section 4 details our literature review method. The findings are reported in Section 5. This section also offers our observations and recommendations, including avenues for future research. Section 6 concludes the paper.

## 2 | BACKGROUND OF ASSET4

Founded in Switzerland, Asset4 has provided cross-country coverage since 2003. Its founders are Peter Ohnemus and Henrik Steffensen.<sup>6</sup> In 2009, it was acquired by Thomson Reuters.<sup>7</sup> After the acquisition, Asset4 was gradually integrated into Thomson Reuters' products and indices (e.g., corporate responsibility ratings and indices).<sup>8</sup> In 2017, Thomson Reuters made significant changes in Asset4's rating process and rebranded Asset4 as 'Thomson Reuters Environmental, Social and Governance (ESG) scores' (Thomson Reuters, 2017). In 2018, Asset4 was spun off and merged into 'Refinitiv'.<sup>9</sup> In 2021, 'Refinitiv' was sold to the London Stock Exchange Group.<sup>10</sup> As Berg et al. (2020) suggest, although Asset4 has experienced name changes, scholars still consistently refer to it as Asset4 in their work.

<sup>5</sup>CFA Institute also suggests that investors need to learn how to use CSR ratings in decision making. Readers may refer to <https://www.cfainstitute.org/en/research/industry-research/esg-operating-model> (accessed 29 April 2021).

<sup>6</sup><http://www.integrity-research.com/thomson-reuters-acquires-asset4/> (accessed 23 May 2022).

<sup>7</sup>[https://www.csrwire.com/press\\_releases/28250-Thomson-Reuters-Invests-in-Environmental-Social-Responsibility-and-Governance-Content-Through-the-Acquisition-of-ASSET4](https://www.csrwire.com/press_releases/28250-Thomson-Reuters-Invests-in-Environmental-Social-Responsibility-and-Governance-Content-Through-the-Acquisition-of-ASSET4) (accessed 23 May 2022).

<sup>8</sup>[https://web.archive.org/web/20140501155932/http://www.trcricom.com:80/images/TRCRI\\_Press\\_Release\\_April\\_23\\_2013.pdf](https://web.archive.org/web/20140501155932/http://www.trcricom.com:80/images/TRCRI_Press_Release_April_23_2013.pdf) (accessed 23 May 2022); <https://www.thomsonreuters.com/content/dam/openweb/documents/pdf/tr-com-financial/methodology/corporate-responsibility-ratings.pdf> (accessed 23 May 2022).

<sup>9</sup><https://www.refinitiv.com/perspectives/financial-crime/meet-refinitiv/> (accessed 23 May 2022).

<sup>10</sup><https://www.thomsonreuters.com/en/press-releases/2021/january/thomson-reuters-announces-closing-of-sale-of-refinitiv-to-london-stock-exchange-group.html> (accessed 23 May 2022).

Although Asset4's methodology partially changed in 2017, its overall structure remains intact. This CSR database constructs its ratings at four levels: at the first level, there are a large number of data points<sup>11</sup>; at the second level, the data points are combined into indicators<sup>12</sup>; at the third level, these indicators are synthesised into different categories (e.g., 18 categories in 2014) (Novethic, 2014)<sup>13</sup>; and at the fourth level, the various categories are composed of few pillars. Before 2017, Asset4 comprised four pillars: (1) environmental pillar, (2) social pillar, (3) corporate governance pillar and (4) economic pillar (Novethic, 2014; Thomson Reuters, 2011). In 2017, the economic pillar was removed, leaving three pillars (the environmental pillar, social pillar and corporate governance pillar) (Thomson Reuters, 2017). A new pillar was introduced, namely, ESG Controversy, which comprises 23 controversy indicators (e.g., public health controversies) based on media (Thomson Reuters, 2017). Moreover, a percentile rank was introduced in 2017. For a firm, its environmental and social categories are benchmarked against the industry-group, and corporate governance categories are benchmarked against other firms in the same country (Thomson Reuters, 2017). Lastly, before 2017, for the overall rating (i.e., Integrated Rating), Asset4 was used to normalise the four pillars and combine these on an equal weighted basis (Quantitative Services Group, 2009). However, after 2017, the overall rating (i.e., ESG Score) is the equal weighted average of indicators of the environmental pillar, social pillar and corporate governance pillar (Thomson Reuters, 2017).

Users can view ratings at the different levels for firms included in Asset4's assessment universe, which covers 76 countries. In other words, 'Asset4 was the first agency to supply raw ESG data that could be used by investors to devise their own ESG analysis of issuers' (Novethic, 2014, p. 27). Thus, researchers can use Asset4 to conduct a cross-country study and a study devoted to developing countries, unlike Kinder Lydenberg Domini (KLD) (another frequently used CSR database in the literature), which only covers US firms. Asset4 also provides raw data at different levels, while KLD users have limited access to raw data.<sup>14</sup> Thus, this feature of Asset4 better supports CSR research from various aspects. However, the comparability of research findings based on Asset4 could be problematic. As Berg et al. (2020) and Sahin et al. (2022) suggest, Thomson Reuters retrospectively updates the Asset4 database, especially data from the five most recent years. Thus, results using Asset4 data at different points in time may not be comparable.

### 3 | LITERATURE REVIEW

The extent of CSR research is impressive, and numerous CSR reviews have been performed. For example, De Villiers, Hsiao, et al. (2022), Hsiao et al. (2022), Andrew and Baker (2020), De villiers & Hsiao, 2018, De Villiers et al. (2014, 2017), Dumay et al. (2016), and Gray et al. (1995) conduct literature reviews on CSR disclosure; there are literature reviews on the economic

<sup>11</sup>The number of data points changed over time. For example, the number is about 900 in 2009 (Quantitative Services Group, 2009) and reduced to about 450 in 2020 (Refinitiv, 2020).

<sup>12</sup>The number of indicators changed over time. For example, the number is 250 in 2014 (Novethic, 2014) and reduced to 186 in 2020 (Refinitiv, 2020).

<sup>13</sup>The number of categories changed over time. Before 2017, Asset4 had 18 categories (i.e., client loyalty, (economic) performance, shareholders loyalty, resource reduction, emission reduction, product innovation, employment quality, health and safety, training and development, diversity, human rights, community, product responsibility, board structure, compensation policy, board functions, shareholders rights, and vision and strategy) (Novethic, 2014). In 2017, the number of categories reduced to 10 (i.e., resource use, emissions, (environmental) innovation, workforce, human rights, community, product responsibility, management, shareholders, and CSR strategy) (Thomson Reuters, 2017).

<sup>14</sup>How to synthesize ratings of the KLD is a debatable issue (Eccles et al., 2020; Mattingly, 2017).



consequences of CSR (e.g., firm value and firm risk) (Albuquerque et al., 2019; Khlif et al., 2015; Orlitzky, 2001, 2008; Orlitzky et al., 2003; Orlitzky & Benjamin, 2001; Rost & Ehrmann, 2017), the theories used in the CSR literature (De Villiers & Van Staden, 2010; Deegan, 2002; Spence et al., 2010), CSR performance (Wood, 1991a, 1991b, 2010; Wood & Jones, 1995), and CSR assurance services (Cohen & Simnett, 2014; Farooq & De Villiers, 2017). Differing from the previous literature reviews, we are interested in reviewing CSR research with an emphasis on CSR databases. Specifically, we systematically inspect the studies that use Asset4 – a frequently used CSR database.

Corporate social responsibility databases have attracted more attention. A rising group of studies examines the trade-offs in the CSR rating process (Bessire & Onnée, 2010; Delmas & Blass, 2010) and the disagreement between CSR ratings provided by different CSR databases (Chatterji et al., 2009, 2016; Christensen et al., 2022). For instance, comparing leading CSR databases, Chatterji et al. (2016) identify that different definitions of CSR and different rating processes cause the disagreement in CSR ratings. We extend the scope of these studies by investigating how researchers rationalise their selection of a particular CSR database and use this CSR database in their research. Concurring with Chatterji et al. (2016), Richardson (2015) and Roberts and Wallace (2015), our review helps researchers to have a good understanding of Asset4 ratings and how the ratings could be used. Moreover, understanding researchers' rationale for adopting a particular CSR database is very meaningful, as they play active roles in developing the CSR agenda and affect other users (e.g., investors and financial analysts) in choosing a CSR database.

## 4 | METHOD

In order to identify the studies using Asset4, we use search keywords, including Asset4, Asset4\*, Thomson Reuters Asset4, Refinitiv, and combinations of the keywords, in EBSCOhost, Web of Science, ProQuest, and Google Scholar to retrieve the studies consistent with all of the following criteria:

- They are published in quality academic journals.<sup>15</sup>
- They are published and assigned to a print issue before 1 January 2021.
- They use Asset4, rather than only mentioning it.
- They are not literature review studies or editorials.

We also search through the reference lists of the studies identified in the preceding step to minimise the likelihood that a study using Asset4 is missing in our collection process. After manually screening the initial outcomes, we identify 285 studies in 74 journals. Panel A of Table 1 shows the number of studies using Asset4 over time. We find that the number of publications using Asset4 increases over time. For example, there is only one publication using Asset4 in 2011, and this number increased to 74 in 2020. Panel B of Table 1 presents the list of journals that published studies using Asset4. We find that the top three journals publishing studies using Asset4 are *Corporate Social Responsibility and Environmental Management*, *Business Strategy and the Environment* and *Journal of Business Ethics*. Panel C of Table 1 shows that cross-country studies occupy the largest proportion of the 285 studies with a proportion >69% (197 of 285), followed by studies about the US and UK (with 35 and 21, respectively).

<sup>15</sup>The journals need to be included by the 2019 Australian Business Deans Council (ABDC) Journal Quality List, the 2018 Academic Journal Guide issued by Chartered Association of Business Schools or the SCImago Journal Rank to be considered as 'quality'. While we acknowledge that whether the journal ranking lists indicate 'quality' journals can be debatable, these journal ranking lists are widely used by universities globally and provide clear and straightforward benchmarks.

**TABLE 1** Descriptive information of studies using Asset4 ratings

<b>Panel A: The number of studies using Asset4 to 2020</b>	
<b>Year</b>	<b>Number of publications</b>
2011	1
2012	1
2013	4
2014	6
2015	19
2016	28
2017	47
2018	44
2019	61
2020	74
Total	285

  

<b>Panel B: The list of journals that published the studies</b>	
<b>Journal</b>	<b>Number of publications</b>
<i>Corporate Social Responsibility and Environmental Management</i>	30
<i>Business Strategy and the Environment</i>	27
<i>Journal of Business Ethics</i>	19
<i>Journal of Corporate Finance</i>	11
<i>Journal of Cleaner Production</i>	10
<i>Strategic Management Journal</i>	10
<i>Business &amp; Society</i>	5
<i>British Journal of Management</i>	5
<i>Journal of International Business Studies</i>	5
<i>Sustainability</i>	5
<i>Corporate Governance: An International Review</i>	4
<i>European Accounting Review</i>	4
<i>Journal of Asset Management</i>	4
<i>Journal of Global Responsibility</i>	4
<i>Journal of World Business</i>	4
<i>Applied Economics</i>	3
<i>Corporate Governance</i>	3
<i>Ecological Economics</i>	3
<i>Global Finance Journal</i>	3
<i>Journal of Banking &amp; Finance</i>	3
<i>Journal of Business Finance and Accounting</i>	3
<i>Journal of Management and Governance</i>	3
<i>The British Accounting Review</i>	3
<i>International Review of Finance</i>	3
<i>Journal of Sustainable Finance &amp; Investment</i>	3

(Continues)

TABLE 1 (Continued)

<b>Panel B: The list of journals that published the studies</b>	
<b>Journal</b>	<b>Number of publications</b>
<i>Measuring Business Excellence</i>	3
<i>Accounting, Auditing and Accountability</i>	2
<i>Accounting and Business Research</i>	2
<i>Accounting Forum</i>	2
<i>Accounting Research Journal</i>	2
<i>Cogent Business &amp; Management</i>	2
<i>Energy Economics</i>	2
<i>European Financial Management</i>	2
<i>European Journal of Operational Research</i>	2
<i>International Journal of Environmental Research</i>	2
<i>International Journal of Business and Society</i>	2
<i>Journal of Environmental Management</i>	2
<i>Journal of Financial Economics</i>	2
<i>Journal of Financial Reporting and Accounting</i>	2
<i>Journal of International Accounting Research</i>	2
<i>Journal of Knowledge Management</i>	2
<i>Management Decision</i>	2
<i>Managerial Finance</i>	2
<i>Pacific-Basin Finance Journal</i>	2
<i>Review of Financial Economics</i>	2
<i>Review of Managerial Science</i>	2
<i>Social Responsibility Journal</i>	2
<i>The Accounting Review</i>	2
<i>Abacus</i>	1
<i>Accounting, Organizations and Society</i>	1
<i>Accounting and Management Information Systems</i>	1
<i>Applied Economic Letters</i>	1
<i>Asia-Pacific Journal of Financial Studies</i>	1
<i>Asia-Pacific Financial Market</i>	1
<i>Asia-Pacific Journal of Management</i>	1
<i>Auditing: A Journal of Practice &amp; Theory</i>	1
<i>Australian Journal of Management</i>	1
<i>Business and Politics</i>	1
<i>Business Research</i>	1
<i>Critical Perspectives on Accounting</i>	1
<i>Cross Cultural &amp; Strategic Management</i>	1
<i>Contemporary Management Research</i>	1
<i>De Economist</i>	1
<i>Economic Modelling</i>	1



TABLE 1 (Continued)

## Panel B: The list of journals that published the studies

Journal	Number of publications
<i>Environmental Engineering and Management Journal</i>	1
<i>Environmental and Resource Economics</i>	1
<i>European Journal of Industrial Relations</i>	1
<i>European Management Journal</i>	1
<i>European Management Review</i>	1
<i>Finance Research Letters</i>	1
<i>Gadjah Mada International Journal of Business</i>	1
<i>Global Economic Review</i>	1
<i>International Journal of Operations</i>	1
<i>International Journal of Operations and Production Management</i>	1
<i>international Journal of Production Economics</i>	1
<i>Journal of Accounting and Public Policy</i>	1
<i>Journal of African Business</i>	1
<i>Journal of Applied Accounting</i>	1
<i>Journal of Applied Accounting Research</i>	1
<i>Journal of Applied Corporate Finance</i>	1
<i>Journal of Asia-pacific Business</i>	1
<i>Journal of Asia Business Studies</i>	1
<i>Journal of Business Economics</i>	3
<i>Journal of Contemporary Accounting &amp; Economics</i>	1
<i>Journal of Environmental Planning and Management</i>	1
<i>Journal of Family Business Management</i>	1
<i>Journal of Financial Crime</i>	1
<i>Journal of Financial Services Research</i>	1
<i>Journal of Global Marketing</i>	1
<i>Journal of Intellectual Capital</i>	1
<i>Journal of International Financial</i>	1
<i>Journal of International Financial Management and Accounting</i>	1
<i>Journal of Risk Finance</i>	1
<i>Journal of Sustainable Tourism</i>	1
<i>Long Range Planning</i>	1
<i>Marketing Letters</i>	1
<i>Management of Environmental Quality: An International Journal</i>	1
<i>Meditari Accountancy Research</i>	1
<i>Organization Science</i>	1
<i>Pacific Accounting Review</i>	1
<i>Portuguese Economic Journal</i>	1
<i>Review of Quantitative Finance and Accounting</i>	1
<i>Supply Chain Management: An International Journal</i>	1

(Continues)

TABLE 1 (Continued)

Panel B: The list of journals that published the studies	
Journal	Number of publications
<i>Sustainable Development</i>	1
<i>The Journal of Finance</i>	1
<i>Tourism Economics</i>	1
<i>Utilities Policy</i>	<u>1</u>
Total	285

  

Panel C: The sample coverage of the 158 studies	
Sample coverage	Number of publications
Cross countries	197
US	35
UK	21
South Africa	6
France	6
Germany	6
Australia	2
Japan	2
Malaysia	2
Netherlands	2
Brazil	1
China	1
Dutch	1
Korea	1
Indonesia	1
Italy	<u>1</u>
Total	285

Note: This table shows descriptive information of the studies using Asset4 ratings. Panel A reports the studies to 2020. Panel B reports the journals that published the studies. Panel C reports the sample coverage of the studies.

Our findings provide some comparisons with the findings of Mattingly (2017),<sup>16</sup> who reviews 100 CSR performance studies using the KLD database. First, studies using Asset4 are published in a more diverse range of journals than studies using KLD (74 journals vs. 34 journals). Second, studies using Asset4 seem to be favoured by journals interested in cross-country evidence, compared with studies using KLD.<sup>17</sup> Third, *Journal of Business Ethics* is an important outlet for both studies using Asset4 (19 of 285) and studies using KLD (25 of 100, as shown by Mattingly, 2017). Overall, we suggest that studies using Asset4 and studies using KLD address the same general audience; however, the former tends to have more research issues in relation to cross-country evidence and comparisons.

<sup>16</sup>Readers are referred to table 1 in Mattingly (2017, p. 800) in relation to where the studies using KLD are published.

<sup>17</sup>The studies using Asset4 are published in 14 journals with keywords 'international', 'global' or 'world' in their titles, yet the studies using KLD are published in seven journals with keywords 'international', 'global' or 'world' in their titles.

Table 2 summarises the theories used by the 285 studies. As Table 2 shows, stakeholder theory (83 studies), agency theory (52 studies), institutional theory (36 studies) and legitimacy theory (27 studies) are the top four frequently used theories of the studies using Asset4. This is consistent with Gray et al. (1996) and Pisani et al. (2017) who find that these theories have been frequently used in the overall CSR literature (regardless of CSR databases). Resource-based view (13 studies), resource dependence theory (nine studies), and voluntary disclosure theory (seven studies) also attract a certain amount of attention from researchers. Thus, the extant literature mainly embraces theories that focus on firms. Concurring with Aguinis and Glavas (2012), Baker and Wurgler (2013), Doh and Quigley (2014) and Frynas and Yamahaki (2016), we suggest that researchers could adopt theories that focus on individuals (e.g., psychology-based theories)<sup>18</sup> to improve our understanding of the heterogeneity of individuals (e.g. top executives) and the interactions between individuals and CSR practices. The Asset4 database not only provides scores, but also provides raw data at different levels (e.g., indicators and data points). This allows scholars to adopt psychology theories and empowers a more fine-grained analysis of the impact of individuals on CSR practices.

## 5 | FINDINGS

### 5.1 | The usage of Asset4 pillars, categories, data points and indicators

As discussed in Section 2, Asset4 constructs its ratings at four levels: at the first level, there are data points; at the second level, the data points are grouped into various indicators; at the third level, the indicators are synthesised into some categories; and at the fourth level, the categories are composed of pillars. Regarding the overall ESG score, before 2017, the score was based on an equal weighted average of four pillars (i.e., environmental pillar, social pillar, corporate governance pillar and economic pillar); after 2017, the score is an equal weighted average of indicators of three pillars (i.e., environmental pillar, social pillar and corporate governance pillar).

We systematically review the 285 studies that use the Asset4 database and identify the usage of Asset4 pillars, categories, indicators and data points. Table 3 summarises different measurements and constructs of studies using Asset4 pillars (Panel A), categories (Panel B) and indicators and data points (Panel C). First, the overall ESG score is little considered (only 11 studies mentioned it). This is not surprising, as Asset4 provides different raw data to users, thereby allowing researchers to construct their own measures. For example, many Asset4 studies use the pillars in their research (148 of the 285 studies). Among the 148 studies that use Asset4 pillars, 111 combine the pillars (e.g., taking an average) as their measurements. Two ways are frequently used in measuring CSR constructs. The first measure is taking the average of the following two pillars: the social pillar and the environmental pillar (36 studies adopt this measurement). The second measure is taking the average of the following three pillars: social pillar, environmental pillar and corporate governance pillar (37 studies use this measurement). It is noteworthy that the two measures are not equivalent to either the overall ESG score before 2017 or the score after 2017.

Among ratings at different levels, the pillars are the most frequently used to operationalise general and broad CSR constructs. Panel A of Table 3 presents how the pillars of Asset4 are used, including their measurement, pillar code (Asset4 mnemonic) and constructs. As shown in Panel A, the same or similar measurement is used to capture different CSR constructs (e.g., CSR performance – Sidhoum & Serra, 2017; corporate sustainability performance – Diebecker

<sup>18</sup>Such theories are discussed as 'micro-level theories' in Aguinis and Glavas (2012).

**Theories that explicitly use and discuss the theories**

Agency Theory	Abdelmotaal and Abdel-Kader (2016), Al-Shaer (2018, 2020), Al-Shaer and Zaman (2019), Alsaadi (2020), Benlemlih et al. (2018), Beretta et al. (2020), Caglio et al. (2020), Chang et al. (2018), Cao and Rees (2020), Cheng et al. (2014), Chollet and Sandwidi (2018), Cui et al. (2020), Dal Maso et al. (2017, 2020), Dalla Via and Perego (2018), del Mar Miras-Rodriguez and Di Pietra (2018), Desender et al. (2020), Diebecker and Sommer (2017), Fauver et al. (2018), Ferrellet al. (2016), Garcia-Sánchez et al. (2020), Habib and Hasan (2019), Haque (2017), Jarboui et al. (2020), Jo et al. (2016), Kyaw et al. (2017), Lee et al. (2019), LópezPuertas-Lamy et al. (2017), Mackenzie et al. (2013), Manning et al. (2019), Martín and Herrero (2020), Michelon et al. (2015), Mili and Abid (2016), Moussa et al. (2020), Nguyen et al. (2019), Nuber et al. (2020), Obermann (2020), Ortas and Gallego-Alvarez (2020), Pérez-Cornejo et al. (2019), Rees and Rodionova (2015), Salhi et al. (2020), Seaborn et al. (2020), Shaikat et al. (2016), Shakil et al. (2019), Utz (2018), Velte (2016, 2017), Wamba et al. (2018), Wang et al. (2020), Xue et al. (2020), Younas and Zafar (2019)
Attribution Theory	Köbel et al. (2017)
Contingent Resource-based View	Hartmann and Vachon (2018)
Contract Theory	Li et al. (2018)
Entrenchment Theory	Wamba et al. (2018)
Ethical, Political and Integrative Theories	Krishnamurti et al. (2018)
Fuzzy Set Theory	Escrig-Olmedo, Rivera-Lirio, et al. (2017)
Good Management Theory	Ortas et al. (2014)
Gender socialisation theory	Burkhardt et al. (2020), Nadeem et al. (2020)
Human Capital Theory	Baalouch et al. (2019), Brahmana et al. (2018), Loukil et al. (2019)
Institutional Theory	Alsaadi (2020), Alsaadi et al. (2017), Banerjee et al. (2019), Baraibar-Dize et al. (2019), Boura et al. (2020), Budsaratagoon and Jitmaneeroj (2019), Choi et al. (2018), del Mar Miras-Rodriguez and Di Pietra (2018), Diebecker and Sommer (2017), Duong et al. (2016), Duque-Grisales et al. (2020a, 2020b), Durand and Jacqueminet (2015), Fuhrmann (2019), Garcia and Orsato (2020), Graafland and Smid (2015), Gupta et al. (2020), Haque and Ntim (2018), Hartmann and Uhlenbruck (2015), Hawn and Ioannou (2016), Hull et al. (2019), Ioannou and Serafeim (2012), Kyaw et al. (2017), Lin and Ho (2016), López-Arceiz et al. (2020), Mackenzie et al. (2013), McGuinness et al. (2020), Miska et al. (2018), Ortas et al. (2015, 2019), Rathert (2016), Simoni et al. (2020), Barkemeyer et al. (2019), Yen et al. (2019), Zulkafli et al. (2017)
Instrumental Theories	Krishnamurti et al. (2018)
Insurance Theory	Choi et al. (2018)
Investor Choice Behaviour Theory	Feng et al. (2015)

TABLE 2 (Continued)

Theories	Studies that explicitly use and discuss the theories
Knowledge Transfer Theory	Brahmana et al. (2018)
Legitimacy Theory	Alsaadi (2020), Aouadi and Marsat (2018), Beretta et al. (2020), Bodhanwala and Bodhanwala (2020), Braam and Peeters (2018), Chouaibi and Chouaibi (2020), Clarkson et al. (2019), Dal Maso et al. (2018), Dalla Via and Perego (2018), Datt et al. (2019), Miras-Rodriguez et al. (2020), Helfaya and Moussa (2017), Jo and Park (2020), Lee and Xiao (2020), Ling and Abdul Wahab (2018), Ling and Abdul Wahab (2019), Luo and Tang (2016), Manning et al. (2019), Melloni et al. (2017), Michelon et al. (2015), del Mar Miras-Rodriguez and Di Pietra (2018), Moussa et al. (2020), Palea and Drogo (2020), Simoni et al. (2020), Usman (2020), Xue et al. (2020)
Markowitz's Portfolio Selection Theory	Gasser et al. (2017)
Natural Resource-based View	Chopra and Wu (2016), Duque-Grisales et al. (2020b), Fu and Su (2020), Trumpp and Guenther (2017)
Proprietary Costs Theory	Benlemlih et al. (2018)
Real Options Theory	Jia and Li (2020)
Resource-based View	Banerjee and Gupta (2017, 2019), Benlemlih et al. (2018), Chopra and Wu (2016), Dal Maso et al. (2017), Desender et al. (2020), Duque-Grisales et al. (2020a), Orazalin (2020), Qiu et al. (2016), Shaikat et al. (2016), Trumpp and Guenther (2017), Xue et al. (2020), Ziegler et al. (2011)
Resource Dependence Theory	Baalouch et al. (2019), Choi et al. (2018), Haque (2017), Helfaya and Moussa (2017), Kyaw et al. (2017), LópezPuertas-Lamy et al. (2017), Loukil et al. (2019), Moussa et al. (2020), Orazalin and Baydauletov (2020)
Risk Management Theory	Alsaadi (2021), Sassen et al. (2016)
Schumpeterian Theory	Nemlioglu and Mallick (2017)
Signalling Theory	Beretta et al. (2020), Braam and Peeters (2018), Clarkson et al. (2019), Dell'Atti et al. (2017), Fuhrmann (2019), Lam (2018), Manning et al. (2019), Melloni et al. (2017), Testa et al. (2018), Simoni et al. (2020)
Slack Resources Theory	Adegite et al. (2019), Chollet and Sandwidi (2018), Graafland and Smid (2015), Lewandowski (2017), Moneva et al. (2020), Ortas et al. (2014), Tan et al. (2017)
Social Identity Theory	Biscotti et al. (2018), LópezPuertas-Lamy et al. (2017)
Social Exchange Theory	Mitra and Gaur (2020)

(Continues)

TABLE 2 (Continued)

Theories	Studies that explicitly use and discuss the theories
Stakeholder Theory	Abdelmotaal and Abdel-Kader (2016), Alsaadi et al. (2017), Al-Shaar and Zaman (2019), Aouadi and Marsat (2018), Arouri et al. (2019), Baalouch et al. (2019), Badia et al. (2020), Baraibar-Diez et al. (2019), Benlemlih et al. (2018), Bettinazzi and Zollo (2017), Biswas et al. (2018), Bodhanwala and Bodhanwala (2020), Boubakri et al. (2019), Boura et al. (2020), Braune et al. (2019), Budisartragoon and Jitmaneeroj (2019), Cheng et al. (2014), Chouaibi and Chouaibi (2020), Dal Maso et al. (2018), Miras-Rodriguez et al. (2019), Diebecker and Sommer (2017), Drago et al. (2019), Drempetic et al. (2020), Escrig-Olmedo, Muñoz-Torres, et al. (2017), Esteban-Sanchez et al. (2017), Ferrell et al. (2016), Ferrero-Ferrero et al. (2015, 2016), Fuhrmann (2019), Gangi et al. (2019, 2020), Garcia et al. (2017), Gonenc and Scholtens (2017), Gong et al. (2019), Graafland and Smid (2015), Guenther et al. (2016), Gupta et al. (2020), Habib and Hasan (2019), Hellaya and Moussa (2017), Jarboui et al. (2020), Jitmaneeroj (2018), Jo et al. (2016), Kölbel et al. (2017), Kyaw et al. (2017), Lee and Kim (2016), Ling and Abdul Wahab (2018), Luo et al. (2015), Manning et al. (2019), Martin and Herrero (2019), Mayberry (2020), Mervelskemper and Streit (2017), Misani and Pogutz (2015), Moneva et al. (2020), Nadeem et al. (2020), Naseem et al. (2020), Nguyen et al. (2019), Nuber et al. (2020), Orazalin (2020), Ortas et al. (2014), Pérez-Cornejo et al. (2019), Rajesh and Rajendran (2020), Qian et al. (2019), Radhouane et al. (2018), Sassen et al. (2016), Seaborn et al. (2020), Shakil et al. (2019), Simoni et al. (2020), Sun et al. (2019), Tampakoudis and Anagnostopoulou (2020), Tommaso and Thornton (2020), Tan et al. (2017), Testa et al. (2018), Trumpp and Guenther (2017), Velte (2016, 2017, 2019), Wamba et al. (2018, 2020), Wu et al. (2020), Xue et al. (2020), Yen et al. (2019), Younas and Zafar (2019), Ziegler et al. (2011)
Stewardship Theory	Al-Shaar (2018)
Upper-Echelons Theory	Arena et al. (2018), Ferrero-Ferrero et al. (2015), Loukil et al. (2019), Nadeem et al. (2020), Orazalin and Baydauletov (2020)
Voluntary Disclosure Theory/Accounting Disclosure Theory/Disclosure Theory	Benlemlih et al. (2018), Dalla Via and Perego (2018), Demartini and Trucco (2016), Fuhrmann et al. (2017), Qiu et al. (2016), Zhou et al. (2016, 2017)

Note: This table summarises the theories adopted by the studies that explicitly use and discuss theories are provided here.



**TABLE 3** Asset4 ratings used to operationalise interested constructs

Measurement	Asset4 Mnemonic	Construct(s)	Example(s)
Panel A: Pillars			
The average of (1) environmental pillar, (2) social pillar, (3) corporate governance pillar and (4) economic pillars	CGVSCORE, ECNSCORE, ENVSCORE, SOCScore	Corporate sustainability performance, ethical performance, integrated performance	Diebecker and Sommer (2017)
The average of (1) environmental pillar, (2) social pillar and (3) corporate governance pillar	CGVSCORE, ENVSCORE, SOCScore	Commitment to environmental, social, and governance (ESG) factors, Corporate sustainability performance (CSP), Corporate social responsibility (CSR) performance, ESG performance	Fatemi et al. (2017), Ferrero-Ferrero et al. (2016), Kiesewetter and Manthey (2017)
The average of (1) environmental pillar and (2) social pillar	ENVSCORE, SOCScore	Corporate sustainability performance, CSP, CSR performance, Environmental and social (E&S) performance	Alsaadi et al. (2017), Miras-Rodriguez et al. (2015), Kyaw et al. (2017)
Using the following four individual pillars: (1) environmental pillar, (2) social pillar, (3) corporate governance pillar and (4) economic pillars	CGVSCORE, ECNSCORE, ENVSCORE, SOCScore	CSR	Sidhoum and Serra (2018)
Using the following three individual pillars: (1) environmental pillar, (2) social pillar and (3) corporate governance pillar	CGVSCORE, ENVSCORE, SOCScore	CSR, ESG performance	Del Bosco and Misani (2016), Dell'Atti et al. (2017)
Using the following three individual pillars: (1) environmental pillar, (2) social pillar and (3) economic pillars	ECNSCORE, ENVSCORE, SOCScore	Corporate sustainability practices	Miska et al. (2018)
The sum of (1) environmental pillar and (2) social pillar	ENVSCORE, SOCScore	CSR	Ortas et al. (2015), Stolowy and Paugam (2018)
Environmental pillar	ENVSCORE	Environmental management, environmental performance, environmental protection attitude, corporate environmental engagement	Datt et al. (2019), Gangi et al. (2020), Hartmann and Uhlenbruck (2015)

(Continues)

TABLE 3 (Continued)

Measurement	Asset4 Mnemonic	Construct(s)	Example(s)
Social pillar	SOCSCORE	CSP, stakeholder commitment	Lee and Kim (2016), Simoni et al. (2020), Shaukat et al. (2016)
Percentile rankings transformation of the social pillar	SOCSCORE	CSP	La Rosa et al. (2018)
Corporate governance pillar	CGVSCORE	Firm-level governance	Hayat and Hassan (2017)
Panel B: Categories			
Synthesising multiple categories by principal component analysis	CGBF, CGCP, CGSR, CGVS, ECCL, ECPE, ECSL, ENER, ENPI, ENRR, SOCO, SODO, SOEQ, SOHR, SOHS, SOPR, SOTD	CSR management quality	Ferrero-Ferrero et al. (2015)
The average of five categories of the social pillar	SODO, SOEQ, SOHR, SOHS, SOTD	Employee relation responsibility index, employee friendliness	Fauver et al. (2018), Lee and Kim (2016)
Dummy variable that takes the value of one if the standard deviation of three environmental-pillar categories is greater than the median standard deviation measured by country-year-industry	ENER, ENPI, ENRR	Stakeholder prioritisation	Dal Maso et al. (2018)
Unequally weighted index of categories and pillars	CGVSCORE, ENVSCORE, SOCO, SODO, SOEQ, SOHR, SOPR	CSR	Miras-Rodriguez et al. (2015)
Product innovation category of the environmental pillar	ENPI	Environmental innovation	Arena et al. (2018)
Emission category of the environmental pillar	ENER	Environmental performance	Gomez-Bolanos et al. (2019)
Employee quality category of the social pillar	SOEQ	Workforce/employee quality	Guenther et al. (2016)
Integration category of the corporate governance pillar	CGVS	Integrated thinking, CSR strategy, Overall integration level	Shaukat et al. (2016), Venter et al. (2017)
Training and development category of the social pillar	SOTD	Human capital training and development program	Biscotti et al. (2018)

**TABLE 3** (Continued)

Measurement	Asset4 Mnemonic	Construct(s)	Example(s)
Product responsibility category of the social pillar	SOPR	Product responsibility	Liang and Renneboog (2017)
Panel C: Data points & indicators			
Brand value	ECCL007V	Brand value	Chang and Young (2016)
Carbon emission scaled by sales	ENERDP023/Sales	Environmental performance	Guenther et al. (2016), Lewandowski (2017)
Cash donations include direct cash giving and cash giving via a corporate foundation	SOCODP028	Cash donation	Liang and Renneboog (2017)
Constructed index based on an undisclosed method	CGBFDP0014, CGBFO03S, CGBSDP0012, CGBSO03S	Board CSR orientation	Helfaya and Moussa (2017)
Constructed index based on an undisclosed method	Not disclosed	Board CSR strategy	Helfaya and Moussa (2017)
Dummy variable equal to one if a firm explains how it engages with its stakeholders, zero otherwise	CGVSDP023	Stakeholder engagement	Dal Maso et al. (2017, 2018)
Dummy variable takes the value one if the firm has a CSR committee or team and zero otherwise	CGVSDP005	CSR committee	Baraibar-Dize et al. (2019), Luo and Tang (2016)
Dummy variable takes the value one if the firm has an ESG-based compensation policy and zero otherwise	CGCPDP0013	ESG-related compensation policy	Baraibar-Diez et al. (2019)
Dummy variable takes the value one if the firm has a policy to improve its use of sustainable packaging and zero otherwise	ENRRDP0014	Sustainability resource efficiency policy	Abdelmotaal and Abdel-Kader (2016)
Dummy variable takes the value one if the firm has a climate impact statement and zero otherwise	ENERDP089	Corporate responses to climate change	Ziegler et al. (2011)

(Continues)

TABLE 3 (Continued)

Measurement	Asset4 Mnemonic	Construct(s)	Example(s)
Dummy variable takes the value one if the firm has an environmental management system certification and zero otherwise	ENERDP073 (ISO 14000 or EMS), ENERDP074 (EMAS Certified)	Environmental management system certification	Biscotti et al. (2018)
Dummy variable takes the value one if the firm has an environmental management system certification and zero otherwise	ENERDP074	Environmental management system certification	Miroshnychenko et al. (2017)
Dummy variable takes the value one if the firm has a policy on labour rights and zero otherwise.	SOHRDP0012	Policy on labour rights	Rathert (2016)
Dummy variable takes the value one if the firm has standalone CSR reports and zero otherwise.	CGVSDP026	Standalone CSR report	Helfaya and Moussa (2017)
Dummy variable takes the value one if the firm reports on belonging to a specific sustainability index and zero otherwise.	CGVSDP013	Sustainability index	Abdelmotaal and Abdelkader (2016), Fuhrmann et al. (2017)
Dummy variable takes the value one if the firm reports on corporate responses to climate change already implemented in terms of specific activities and zero otherwise.	ENERDP028	Release carbon reduction measures	Ziegler et al. (2011)
Dummy variable takes the value one if the firm uses CSR assurance and zero otherwise	CGVSDP030	CSR assurance	Birkey et al. (2016)
Dummy variable takes the value one if the firm's CSR report complies with the global reporting initiative (GRI) and zero otherwise	CGVSDP028	Compliance with GRI	del Mar Miras-Rodriguez and Di Pietra (2018)
Environmental operational performance scaled by sales	Details are provided in footnote <sup>a</sup>	Environmental operational performance	Trumpp et al. (2015)
Environmental product innovation	ENPID045	Environmental product innovation	Biscotti et al. (2018)

**TABLE 3** (Continued)

Measurement	Asset4 Mnemonic	Construct(s)	Example(s)
Greenhouse gas (GHG) emissions	ENERDP023	GHG emissions	Baboukardos (2017)
Normalising constructed indices of data points and indicators on a zero-to-one scale	Details of internal actions are provided in footnote <sup>b</sup> Details of external actions are provided in footnote <sup>c</sup>	Internal and external corporate social responsibility actions	Hawn and Ioannou (2016)
Positive attributes/total attributes	Details are provided in footnote <sup>d</sup>	Employee treatment index	Gupta and Krishnamurti et al. (2020)
Positive attributes/total attributes	Details are provided in footnote <sup>e</sup>	Environment sustainability index	Banerjee and Gupta (2017)
Positive attributes/total attributes	All 38 data points and indicators of ENER	Environmental sustainability index (ESI)	Gupta (2018)
Sales scaled by total energy consumption	ENRRDP033	Corporate energy efficiency	Bergmann et al. (2017)
Summing up data points and indicators then normalise on a zero-to-one scale and then take an average	Details are provided in footnote <sup>f</sup>	Employee orientation	Bettinazzi and Zollo (2017)
Summing up data points and indicators then normalise on a zero-to-one scale and then take an average	Not disclosed	Customer loyalty	Bettinazzi and Zollo (2017)
Summing up data points and indicators then normalise on a zero-to-one scale and then take an average	Not disclosed	Community	Bettinazzi and Zollo (2017)
Summing up data points and indicators then normalise on a zero-to-one scale and then take an average	Not disclosed	Supplier	Bettinazzi and Zollo (2017)
Synthesising multiple data points and indicators by factor analysis	Details are provided in footnote <sup>g</sup>	Sustainable supply chain performance	Ortas et al. (2014)
Synthesising multiple data points and indicators by factor analysis	Details are provided in footnote <sup>h</sup>	Proactive environmental strategy	Duque-Grisales et al. (2020a)

(Continues)

TABLE 3 (Continued)

Measurement	Asset4 Mnemonic	Construct(s)	Example(s)
The percentage of the total sum of points ( $m$ ) assigned to the indicators over a total possible maximum point of 295, multiplied by 100 $\text{CSR score} = \frac{\sum_{\text{asset}} m}{295} \times 100$	Not disclosed	CSR	Ling and Abdul Wahab (2018)
The average of data points and indicators	Details are provided in footnote <sup>i</sup>	GHG implementation score	Graafland et al. (2016)
The average of data points and indicators	Details are provided in footnote <sup>j</sup>	Green practice index	Testa et al. (2018)
The average of data points and indicators	Details are provided in footnote <sup>k</sup>	Green communications	Testa et al. (2018)
The average of data points and indicators	Details are provided in footnote <sup>l</sup>	External peers' conformity	Durand and Jacqueminet (2015)
The average of data points and indicators	Details are provided in footnote <sup>m</sup>	Environmental management performance	Xue et al. (2020)
The average of data points and indicators	Not disclosed	CSR	Kölbl et al. (2017)
The extent to which the company develops products or technologies for use in clean, renewable energy (such as wind, solar, hydro, geothermal and biomass power)	ENPIO07S	Clean energy products	Liang and Renneboog (2017)
The extent to which the company invests in R&D on new environmentally friendly products or services that limit the amount of emissions and resources needed during product use	ENPIDP024	Environmental R&D	Liang and Renneboog (2017)
The extent to which the firm is directly or indirectly (through a supplier) under the spotlight of the media because of a controversy linked to the spill of chemicals, oils and fuels, gases (flaring), or the overall impact of the firm on the environment	ENERO20S	Spill and pollution control	Liang and Renneboog (2017)
The percent improvement in standardised carbon emissions over a year	ENERDP023/Total assets	Environmental performance	Hartmann and Vachon (2018)



TABLE 3 (Continued)

Measurement	Asset4 Mnemonic	Construct(s)	Example(s)
The sum of data points and indicators	Details are provided in footnote <sup>n</sup>	Carbon reduction initiatives	Haque and Ntim (2018)
The sum of data points and indicators	Details are provided in footnote <sup>o</sup>	Carbon reduction initiatives index	Haque (2017)
The sum of data points and indicators	CGVS, ENPI, SOTD, SOTDD04S, SOTDO03S, SOTDO05S	Managerial practice index	Nemlioglu and Mallick (2017)
The sum of data points and indicators	Details are provided in footnote <sup>p</sup>	Self-reported anticorruption efforts	Healy and Serafeim (2016)
The sum of data points and indicators	Details are provided in footnote <sup>q</sup>	Internal pollution prevention index—corporate green practice	Miroshnychenko et al. (2017)
The sum of data points and indicators	ENRRDP0125, ENRRDP029, ENRRDP058, ENRRDP059	Green supply chain management	Miroshnychenko et al. (2017)
The sum of data points and indicators	ENPIDP069, ENPIO01V, ENPIO16V	Green product index	Miroshnychenko et al. (2017)
The sum of data points and indicators	Details are provided in footnote <sup>r</sup>	Environmental policy	Trump et al. (2015)
The sum of data points and indicators	Details are provided in footnote <sup>s</sup>	Environmental objectives	Trump et al. (2015)
The sum of data points and indicators	Details are provided in footnote <sup>t</sup>	Environmental processes	Trump et al. (2015)
The sum of data points and indicators	Details are provided in footnote <sup>u</sup>	Organizational structure	Trump et al. (2015)
The sum of data points and indicators	Details are provided in footnote <sup>v</sup>	Environmental monitoring	Trump et al. (2015)
Total amount of waste scaled by sales	ENERO10V	Waste intensity	Trump and Guenther (2017)
Using more than one individual data point and indicator	Details are provided in footnote <sup>w</sup>	Environmental performance	Hörisch et al. (2015)
Using more than one individual data point and indicator	CGVSD01S, CGVSD04S, CGVSDP0041, CGVSO01S	Integrated thinking	Maniora (2017)
Using more than one individual data point and indicator	CGVSD02S, CGVSD03S, CGVSO04S, SOCODP0109	Integrated management	Maniora (2017)

Note: This table summarises the different Asset4 datasets (pillars, categories, indicators and data points) adopted by the studies to measure/operationalise interested constructs (as independent and dependent variables). Column (1) presents measurements/operational variables, column (2) shows corresponding Asset4 mnemonics, column (3) reports constructs/conceptual variables of interest, and column (4) gives corresponding studies. Panel A presents how four pillars of Asset4 data are used, Panel B shows how categories of Asset4 are operationalised, and Panel C reports how data points and indicators of Asset4 are applied.

<sup>n</sup>ENERDP023, ENERDP045, ENERDP056, ENRRDDP033, ENRRDP054.

(Continues)

**TABLE 3** (Continued)

<sup>b</sup>CGBFD019, CGBFD023, CGBF003, CGBSD01, CGBS007, CGBS017, CGCPCD01, CGCPO05, CGSRD01, CGVSDP005, ENERDP0011, ENPIDP067, ENRRDP0012, ENRRDP0121, ENRRDP046, ENRR011, SODOD01, SOEQD01, SOHRD01, SOHSD01, SOTDD01.

<sup>c</sup>CGVSDP016, CGVSDP029, CGVSO06, CGVSO08, ENERDP031, ENERDP036, ENERDP062, ENERDP081, ENERO05, ENERO08, ENRRDP052, ENRR003, SOCOD01, SOCODP053, SODODP027, SODOO03, SOEQO004, SOEQO04, SOHRDP026, SOHRDP029, SOHSDP039, SOPRDP029, SOTDDP023, SOTDDP024.

<sup>d</sup>CGBFD02, CGVSD04, ECPED01, ECPED02, ECPED03, ECPED04, ECPEDP0011, ECPED02, SODOD01, SODOD03, SODODP0011, SODOO02, SODOO03, SODOO04, SOEQD01, SOEQD02, SOEQD03, SOEQD04, SOEQD0011, SOEQO03, SOEQO04, SOEQO05, SOHSD01, SOHSD02, SOHSD03, SOHSD04, SOHSDP039, SOTDD01, SOTDD02, SOTDD03, SOTDD04, SOTDDP023, SOTDDP024.

<sup>e</sup>ENERD01, ENERD02, ENERD03, ENERD04, ENERO01, ENERO05, ENERO07, ENERO14, ENERO15, ENERO16, ENERO18, ENERO19, ENERO22, ENERO24, ENPID01, ENPID02, ENPID03, ENPID04, ENPIO01, ENPIO07, ENPIO13, ENPIO16, ENPIO20, ENRRD01, ENRRD02, ENRRD03, ENRRD04, ENRRD07, ENRRD08, ENRRD10, ENRRD11, SOHRDP029.

<sup>f</sup>SOEQD01, SOEQD02, SOEQD03, SOEQD04.

<sup>g</sup>ENRRDP0015, ENRRDP0125, ENRRDP0135, ENRRDP0195, ENRRDP0205, ENRRDP066, ENRR011, OHRDP029.

<sup>h</sup>ENRRD01; ENRRDP0121; ENRRDP0122; ENERDP0051; ENRRD04; ENRRDP008; ENERDP033; ENRR004; ENRRDP046; ENRR009; ENRR011; ENRR013; ENERO03; ENERDP123; ENERDP068; ENERDP033; ENERDP037; ENERDP052; ENERDP056; ENERO14; ENERDP075; ENERDP076; ENERO24; ENERDP091; ENERDP092; ENERDP070; ENPIDP019; ENPIDP069; ENPIDP026; ENPIDP048; ENPIO07.

<sup>i</sup>ENERD01, ENERD02, ENERD03, ENERD04, ENERDP028.

<sup>j</sup>ENERD02, ENERDP033, ENERDP036, ENERDP037, ENERDP063, ENERDP081, ENERO14, ENPIDP048, ENPIO01, ENPIO13, ENRRDP0012, ENRRDP0121, ENRRDP0125, ENRRDP029, ENRRDP031, ENRR011.

<sup>k</sup>CGVSDP005, CGVSDP018, CGVSDP020, CGVSDP023, CGVSDP028, CGVSDP029, CGVSDP030, CGVSO05.

<sup>l</sup>ENERD01, ENERDP020, ENERDP070, ENERO18, ENERO19, ENERO20, ENERO21, ENRRD01, ENRRD02, ENRRD07S, ENRR010, ENRR010, SODOD01, SODOD02, SODOD03, SODOD04, SODODP020, SODODP025, SODODP027, SOHSD01, SOHSD02, SOHSD03, SOHSD04, SOHSDP039, SOHSO04.

<sup>m</sup>ENERD01; ENERD02; ENERD03; ENERD04; ENERO05; ENERO17; ENERO22; ENPID01; ENPID02; ENPID03; ENPID04; ENPIO04; ENPIO05; ENPIO06; ENPIO07; ENPIO08; ENPIO10; ENPIO12; ENPIO17; ENPIO18; ENPIO20; ENRRD01; ENRRD02; ENRRD03; ENRRD04; ENRR007; ENRR011; ENERO01; ENERO06; ENERO07; ENERO08; ENERO09; ENERO14; ENERO15; ENERO16; ENERO18; ENERO19; ENERO21; ENERO24; ENPIO01; ENPIO02; ENPIO09; ENPIO13; ENPIO15; ENPIO16; ENRR003; ENRR008; ENRR010; ENRR012.

<sup>n</sup>ENERDP028, ENERDP030, ENERDP031, ENERDP068, ENERDP089, ENRRDP0012, ENRRDP031, ENRRDP046.

<sup>o</sup>ENERDP028, ENERDP030, ENERDP068, ENERDP089, ENERO07S, ENRRDP0012, ENRRDP031, ENRRDP046.

<sup>p</sup>SOCODP0017, SOCODP0037, SOCODP0067, SOCODP008, SOCODP0127.

<sup>q</sup>ENERDP033, ENERDP036, ENERDP037, ENERDP063, ENERDP081, ENERO14, ENRRDP0011, ENRRDP0122, ENRRDP0123, ENRRDP031.

<sup>r</sup>ENPIDP0011, ENPIDP0012, ENPIDP0013, ENPIDP0014, ENRRDP0011, ENRRDP0012, ENRRDP0013, ENRRDP0014, ENRRDP0015.

<sup>s</sup>ENRRDP0191, ENRRDP0192, ENRRDP0193, ENRRDP0194, ENRRDP0195.

<sup>t</sup>ENRRDP0121, ENRRDP0122, ENRRDP0123, ENRRDP0124, ENRRDP0125, ENRRDP029, ENRRDP058.

<sup>u</sup>ENERDP0053, ENERDP073, ENERDP074, ENERDP004, ENRRDP008.

<sup>v</sup>ENRRDP0131, ENRRDP0132, ENRRDP0133, ENRRDP0134, ENRRDP0135, ENRRDP066.

<sup>w</sup>ENERDP058, ENPIDP061, ENRRDP021, ENRRDP033, ENRRDP033, ENRRDP033, ENRRDP054.

& Sommer, 2017; environmental, social and governance (ESG) performance – Maniora, 2017). We also find that different measurements are used to measure the same CSR construct. For example, corporate sustainability performance is measured as the average of the four pillars in Diebecker and Sommer (2017), the average of environmental, corporate governance and social pillars in Kiesewetter and Manthey (2017), and the average of social and environmental pillars in Naughton et al. (2019).

Asset4 has 18 categories. Panel B of Table 3 reports how researchers use these categories. The categories are mainly used to measure CSR constructs in sub-fields, including employee and product responsibility. Compared with the pillars, the categories are constructed in more diverse ways. For example, prior studies use unequally weighted index of the categories (e.g., Miras-Rodríguez et al., 2015), principal component analysis to synthesise multiple categories (e.g., Ferrero-Ferrero et al., 2015), and a dummy variable based on the categories' standard deviations (e.g., Dal Maso et al., 2018).

Asset4 has 569 indicators and up to 700 data points. Panel C of Table 3 shows how the indicators and data points are used. We find that some studies attempt to use indicators and data points to operationalise CSR constructs mentioned in Panel A with richer and more nuanced theoretical meanings. For instance, Hawn and Ioannou (2016) use indicators and data points to tease out two latent aspects of corporate sustainability performance, internal versus external; Testa et al. (2018) use indicators and data points to measure a construct 'green practice', which has different theoretical meanings from environmental performance (De Villiers, Jia, et al., 2022). Leveraging more detailed and richer information on the indicators and data points, researchers can shed light on some emerging sub-fields of CSR, including carbon emissions (Haque, 2017; Haque & Ntim, 2018; Hartmann & Vachon, 2018), anticorruption (Healy & Serafeim, 2016) and supply chain issues (Miroshnychenko et al., 2017; Ortas et al., 2014).

After reviewing the usage of Asset4 pillars, categories, indicators and data points, we make the following observations and suggestions. First, as Section 5.1 discusses, the extant literature uses different terms to refer to the similar (even the same) constructs, and different measurements are used to measure the same constructs. Future researchers are encouraged to carefully explain the constructs they aim to examine and how the constructs are distinct from similar ones, i.e., it is important to justify the measures used by explaining how the measures match with the underlying constructs. Moreover, concurring with Gray and Milne (2015),<sup>19</sup> Roberts and Wallace (2015),<sup>20</sup> and Chatterji et al. (2016), we suggest there is a need to thoroughly justify, in each study, how the specific Asset4 measures used align with the underlying constructs being investigated. We encourage future studies to define their CSR construct and then justify their measurement of that construct, ensuring there is an alignment between construct and measurement. If the definition of CSR construct includes corporate governance performance, then the corporate governance pillar should be used to measure CSR. Second, the full potential of Asset4 as measurements of CSR performance has not been utilised. For example, a number of studies using Asset4 examine the environmental impact<sup>21</sup> (e.g., carbon emissions and mitigation); however, cor-

<sup>19</sup>We would argue, many of the databases are generated by commercial and financial interest: only the factors that such interests are willing to pursue are manifest. Or, in other cases, databases were generated for purposes potentially quite at odds to which researchers put them, or in which researchers need to undertake quite unbelievable and utterly meaningless data gymnastics to force the data into a usable form' (Gray & Milne, 2015, p. 58).

<sup>20</sup>Quantitative SEA researchers must foremost have a clear understanding of their data. Various CSR ratings agencies exist (e.g., Sustainalytics, KLD, Asset4, etc.), for instance, and it is important for the researcher to ensure he or she understands how those ratings were composed and whether the ratings appropriately measure the underlying construct' (Roberts & Wallace, 2015, p. 83).

<sup>21</sup>For example, many studies examine the economic consequences of corporate environmental impact; however, few studies consider the economic consequences of employee-related performance.

porate social impact is not used often,<sup>22</sup> and Asset4 provides rich datasets in this regard (e.g., social/community [*SOCO*] and social/human rights [*SOHR*]). Because Asset4 has comprehensive multilevel ratings, it has great potential to measure various latent variables of performance. Third, although the four pillars (i.e., environmental pillar, social pillar, corporate governance pillar and economic pillar) have been used in many studies, the categories, indicators and data points have not been used much, suggesting many opportunities to examine finer-grained constructs. For example, the indicators and data points can be assembled to measure nuanced constructs (e.g., internal and external dimensions of CSR performance). Table 3 would be a good starting point for researchers in this regard. As Grewal and Serafeim (2020, p. 74) suggest, measuring CSR performance would be ‘the single biggest opportunity for researchers to advance the field’. Therefore, we propose future research could investigate: *How can the categories, indicators and data points be used to measure different (latent) variables or aspects of CSR performance (e.g., corporate social impact)?*

## 5.2 | The justification of using Asset4 database

As Panel A of Table 4 shows, among the 285 studies using Asset4, 71% (201/285) of studies provide justifications and 29% (84/285) of studies do not have justifications.<sup>23</sup> Compared with the studies published earlier (2011–2015), the studies published after 2016 justify their use of Asset4 less. This is in line with Green Jr’s (2004) argument that, along with the diffusion of practice (e.g., using Asset4 in our case), its later adopters would less justify their adoption, as the practice is taken for granted. Although the presence of studies without any justification for using Asset4 indicates that this database is treated as taken-for-granted by researchers and reviewers (i.e., using Asset4 to measure variables of CSR is diffused among researchers), the explanations or motivations regarding whether Asset4 is the most appropriate database for a specific study leave a lot to be desired. We suggest future studies carefully consider whether the Asset4 database is the right one to answer their research questions.

To better understand how researchers rationalise their selection of the Asset4 database, we adopt rhetoric theory. Following Green Jr (2004), Higgins and Walker (2012), and Brennan and Merkl-Davies (2014), we interpret the justifications from three aspects: pathos, logos and ethos. Specifically, pathos refers to the desired characteristics of a high-quality database; logos is associated with facts, figures and other logical arguments that support Asset4 as a high-quality database; and ethos focuses on the endorsements from social actors (Brennan & Merkl-Davies, 2014; Higgins & Walker, 2012).

### 5.2.1 | Pathos

As Panel B of Table 4 shows, pathos (references to desired characteristics of a high-quality database) is found in 61 studies (with an average of 27 words). The studies mention the following characteristics, including auditable, comparable, comprehensive, objective, relevant, systematic and trustworthy, in their manuscripts to foster the image of Asset4 as a high-quality database.

<sup>22</sup>We analysed and confirmed that environmental scores are used more often than social scores regardless of the geographical focus of the study, i.e., among UK, US, and cross-country studies.

<sup>23</sup>We acknowledge that for studies without any explicit justification, data availability (i.e., Asset4 was the only CSR database available to them) could have played a role. However, we encourage future researchers to explicitly justify their use of the Asset4 database, commenting on its appropriateness in answering their research questions.

**TABLE 4** How do the studies justify their use of Asset4?

<b>Panel A</b>						
	<b>Number of studies with justifications</b>		<b>Number of studies without justifications</b>		<b>Total</b>	
	<b>Number</b>	<b>Percentage</b>	<b>Number</b>	<b>Percentage</b>	<b>Number</b>	<b>Percentage</b>
2011	1	1	0	0	1	100
2012	1	1	0	0	1	100
2013	2	0.5	2	0.5	4	100
2014	5	0.833	1	0.167	6	100
2015	17	0.895	2	0.105	19	100
2016	18	0.643	10	0.357	28	100
2017	35	0.745	12	0.255	47	100
2018	33	0.733	12	0.267	45	100
2019	45	0.726	17	0.274	62	100
2020	44	0.611	28	0.389	72	100
Total	201		84		285	

  

<b>Panel B</b>		
	<b>Number of studies</b>	<b>Number of words (on average)</b>
Pathos (Total)	61	27
Logos		
(A) Information sources used by Asset4	69	39
(B) How Asset4 produces its ratings		
B1. Analysts	16	30
B2. Quality assurance	22	39
B3. Rating calculation	8	71
(C) Comprehensiveness of Asset4 ratings	68	64
(D) Issues/problems that other CSR ratings have	13	74
(E) Unique usefulness of Asset4 ratings	48	55
Ethos		
(A) Investors	39	34
(B) Prior studies using Asset4	97	34
(C) The market position of Asset4	4	14

*Note:* This table presents how the studies using Asset4 rationalise or justify the use of Asset4. According to rhetoric theory, we classify the justifications into three aspects: (1) pathos, (2) logos and (3) ethos. Panel A presents the number of studies with and without justifications by year. Panel B presents the number of studies adopting the three aspects of rhetoric (by the number of studies and the number of words).

## 5.2.2 | Logos

The logos detailed presents the facts, figures and other logical arguments that Asset4 is a high-quality database. Logos is used by 156 studies (with an average of 80 words). As shown in Panel B of [Table 4](#), we summarise logos into five themes: (A) the information sources of Asset4; (B) the rating process of Asset4 (this has three sub-arguments); (C) the comprehensiveness of Asset4; (D) issues/problems of other CSR databases; and (E) the uniqueness of Asset4.

Sixty-nine studies of Theme A mention that the information sources used by Asset4 are publicly available and diverse. For example, El Ghouli et al. (2016, p. 133) suggest that ‘this information is collected from publicly available sources (e.g., annual reports, NGO websites, CSR reports) and updated biweekly’.

To justify the high-quality rating process of Asset4 (Theme B), researchers use three aspects: (B1) analysts, (B2) assurance, and (B3) rating calculation. Sixteen studies convince audiences by suggesting that Asset4 analysts are well trained, and can comprehensively collect and process relevant information. For example, Lin and Ho (2016) highlight that Asset4 analysts are coached by experts from well-respected institutions.<sup>24</sup> Twenty-two studies refer to quality assurance strategies used by Asset4. For example, ‘verified in a multi-step process control procedure including data entry checks, automated quality rules, and historical comparisons’ (Hartmann & Uhlenbruck, 2015, p. 735). Eight studies elaborate on how Asset4 calculates a firm’s CSR ratings to persuade audiences. For example, as part of their justifications for using Asset4, Fauver and McDonald (2015) discuss how Asset4 ratings are calculated.

Sixty-eight studies refer to the comprehensiveness of Asset4 ratings in their logos (Theme C). For instance, ‘the ASSET4 database collects information for up to 500 specific points related to a firm’s sustainability practices’ (Baboukardos, 2018, p. 35).

Thirteen studies convince audiences by revealing issues or problems of other CSR databases (Theme D). KLD is the most frequently mentioned database by the 13 studies and is criticised for lack of transparency and providing limited data. For example, Hartmann and Uhlenbruck (2015, p. 735) argue that ‘KLD is limited to firms that are publicly traded on US stock markets. ASSET4 draws from a broader array of firms across the globe than KLD ... ASSET4 is, therefore, more detailed and granular than the KLD index’.

Forty-eight studies emphasise that Asset4 is uniquely useful to answer their questions (Theme E). Apparently, this approach would be applauded by Chatterji et al. (2016) and Roberts and Wallace (2015). For example, Liang and Renneboog (2017, pp. 882–883) rationalise their use of Asset4 by referring to the usefulness of Asset4 ratings in their data analysis: ‘we use the ASSET4 sample for these analyses because it has detailed sub-CSR scores for items such as cash donations and spill and pollution controls, which directly correspond to each of the shocks considered’.

### 5.2.3 | Ethos

Ethos (the endorsements from social actors) is used in 125 studies (with an average of 38 words). The studies using Asset4 tend to appeal to two social actors, namely investors and researchers who used Asset4. Thirty-nine studies appeal to the fact that (institutional) investors also use Asset4 in their investment decisions. For example, ‘it is estimated that investors that use the Asset4 data manage more than €2.5trillion assets’ (Ferrero-Ferrero et al., 2015, p. 197); and ‘Thomson Reuters ASSET4 database, which is a leading provider of ESG data’ (Mondejar-Jimenez et al., 2014, p. 1006). A total of 97 studies cite the prior studies using Asset4 to justify their usage of Asset4, thus corroborating our notion that using Asset4 is diffused among researchers. To further understand cross-citations occurred in the 97 studies, we manually conduct a citation analysis. Panel A of Table 5 shows the top 10 articles using Asset4 measured by citations per year (CPY) by other articles using Asset4. Two early adopters of Asset4, namely,

<sup>24</sup>Collaborating with experts from Swiss Federal Institute of Technology (ETH) who work at the Gesellschaft für Organisation & Entscheidung (GOE), as well as experts from the International Institute for Management Development (IMD) and the Copenhagen Business School (CBS), Thomson Reuter has 120 trained analysts’ (Lin & Ho, 2016, p. 769).



Cheng et al. (2014), Ioannou and Serafeim (2012), and some late adopters, including Ferrell et al. (2016), El Ghoul et al. (2017), Chatterji et al. (2016) and Luo et al. (2015), are frequently referred to by other studies to justify their use of Asset4. For example, ‘Thomson Reuters ASSET4, which has been widely used in previous CSR studies (e.g., Cheng et al., 2014; El Ghoul et al., 2017)’ (Gangi et al., 2019, p. 533). Expanding the analysis, Panel B of Table 5 shows the top 10 articles using Asset4, measured by CPY by other articles, including articles not using Asset4. We find that articles that use Asset4 are well recognised within the overall literature. The citation analysis reveals that appealing to prior studies which also use Asset4 is often used to convince readers in a form of ethos rhetoric.

Overall, three aspects discussed by rhetoric theory (pathos, logos and ethos) are found in the 285 studies. Among these studies, logos and ethos are more frequently used than pathos. Under logos, information sources used by Asset4 and the comprehensiveness of Asset4 are more frequently used by researchers to justify their rationale for choosing the Asset4 database. Under ethos, many researchers justify their use of Asset4 by citing (institutional) investors and prior studies that also use Asset4.

### 5.3 | Research themes of studies using Asset4

We identify the following research themes from the 285<sup>25</sup> studies:

- (A) consequences of CSR performance (124 studies),
- (B) antecedents of CSR performance (80 studies),
- (C) CSR disclosure (35 studies),
- (D) CSR databases (12 studies),
- (E) CSR assurance (8 studies),
- (F) corporate governance (23 studies), and
- (G) others (3 studies).

A summary of research themes is provided in Section 5.3.1 and a discussion and avenue for future studies are provided in Section 5.3.2.

#### 5.3.1 | Summary of research themes

##### *Theme A: Consequences of CSR performance*

Studies of Theme A predominantly focus on economic consequences of CSR performance, including firm value/firm performance/financial performance, portfolio returns, firm risk, financing decisions (e.g., cost of equity), earnings quality, firm innovation, mergers and acquisitions, and audit fees. Out of 124 Theme A studies, 51 investigate the relationship between CSR performance and firm value/firm performance/financial performance. For example, different sub-fields of environmental performance are considered, including carbon performance (Baboukardos, 2017; Lewandowski, 2017; Misani & Pogutz, 2015; Ziegler et al., 2011), energy efficiency (Bergmann et al., 2017), eco-activities (i.e., eco-collaboration and eco-certification) (Chopra & Wu, 2016) and green practices (Miroshnychenko et al., 2017); in addition, environmental performance in its entirety is examined in a number of studies, including Gonenc and Scholtens (2017), Miras-Rodríguez et al. (2015) and Trumpp and Guenther (2017); sub-fields with more social meanings, including employee training and

<sup>25</sup>Summaries of the 285 studies are provided in the Online Appendix: Summary of the Studies Using Asset4.

TABLE 5 Citation analysis

Authors (Year)	Journal	Citations per Year
Panel A: Top 10 CPY articles using Asset4 as cited by other articles using Asset4		
Cheng et al. (2014)	<i>Strategic Management Journal</i>	13.67
Ferrell et al. (2016)	<i>Journal of Financial Economics</i>	10.25
Ioannou and Serafeim (2012)	<i>Journal of International Business Studies</i>	8.63
El Ghouli et al. (2017)	<i>Journal of International Business Studies</i>	7.33
Chatterji et al. (2016)	<i>Strategic Management Journal</i>	5.25
Luo et al. (2015)	<i>Strategic Management Journal</i>	3.60
Hawn and Ioannou (2016)	<i>Strategic Management Journal</i>	3.25
Stellner et al. (2015)	<i>Journal of Banking &amp; Finance</i>	3
Halbritter and Dorfleitner et al. (2015)	<i>Review of Financial Economics</i>	2.60
Trumpp et al. (2015)	<i>Journal of Business Ethics</i>	2.60
Panel B: Top 10 CPY articles using Asset4 as cited by all other articles (including articles not using Asset4)		
Cheng et al. (2014)	<i>Strategic Management Journal</i>	321
Dyck et al. (2019)	<i>Journal of Financial Economics</i>	248
Ferrell et al. (2016)	<i>Journal of Financial Economics</i>	126.50
Drempetic et al. (2020)	<i>Journal of Business Ethics</i>	123
Liang and Renneboog (2017)	<i>The Journal of Finance</i>	118.60
Michelon et al. (2015)	<i>Critical Perspectives on Accounting</i>	107.71
Ioannou and Serafeim (2012)	<i>Journal of International Business Studies</i>	104.30
Qiu et al. (2016)	<i>The British Accounting Review</i>	101.67
Zhou et al. (2017)	<i>Abacus</i>	83
Jackson et al. (2020)	<i>Journal of Business Ethics</i>	82.50

Note: This table shows citations per year (CPY) to ensure recent articles are not disadvantaged. Panel A presents the top 10 articles using Asset4 by CPY as cited by other articles using Asset4 (2011–2020). Panel B shows the top 10 articles using Asset4 by CPY as cited by all other articles (including articles that do not use Asset4) (up to 16 June 2022). CPY statistics were generated using Harzing's Publish or Perish software.

development (Brahmana et al., 2018; Gupta & Krishnamurti, 2020; Lee & Kim, 2016) and donation (Chang et al., 2018), are also investigated. The majority of these studies (41 out of the 51 studies) find a positive relationship between CSR performance and firm value/firm performance/financial performance. Overall, given the international coverage of Asset4, these studies provide cross-country supportive evidence of 'a business case' for CSR performance (Terblanche & De Villiers, 2019).

Prior studies reveal that CSR performance improves firm innovation (Borghesi & Chang, 2020; Wu et al., 2020), provides better outcomes to acquirers and targets (Arouri et al., 2019; Bettinazzi & Zollo, 2017; Gomes & Marsat, 2018), and substantiates firm reputation (Dell'Atti et al., 2017; Gangi et al., 2020; Lloyd-Smith & An, 2019). CSR performance also negatively relates to information asymmetry (Diebecker & Sommer, 2017; Nguyen et al., 2019; Schiemann & Sakhel, 2019), cost of equity (Feng et al., 2015; Matthiesen & Salzmann, 2017), cost of debt (La Rosa et al., 2018; Stellner et al., 2015) and firm risks (Chollet & Sandwidi, 2018; Kölbel et al., 2017; Sassen et al., 2016). In addition, CSR performance is found to relate to a higher earnings quality (Alsaadi et al., 2017) and lower earnings management (Velte, 2019). Overall, the studies of Theme A provide supportive evidence that engaging in CSR performance makes good economic sense for firms.

However, prior studies do not provide consensus on whether investors should include CSR in their portfolios. For example, Halbritter and Dorfleitner et al. (2015), Hübel and Scholz (2020) and Kaiser (2020) suggest that integrating CSR performance in constructing portfolios does not provide higher returns. Gangi and Varrone (2018), Gasser et al. (2017) and Kaiser and Welters (2019) suggest that integrating CSR performance in portfolios even reduces returns. However, Dorfleitner et al. (2018) and Naughton et al. (2019) find that portfolios integrating CSR provide higher risk-adjusted returns. Leveraging the international coverage of Asset4, Badia et al. (2020), Bodhanwala and Bodhanwala (2020), Yen et al. (2019) and Utz (2018) reveal that country-level characteristics play a crucial role in this regard.

Prior studies investigating the economic consequences of CSR performance mainly focus on financial stakeholders. There is little evidence on the impacts of CSR performance on non-financial stakeholders. How CSR performance relates to non-financial stakeholders is examined by a handful of studies, including Alsaadi (2021), Graafland et al. (2016), Jarboui et al. (2020), Krishnamurti et al. (2018), and Salhi et al. (2020). For example, using an international sample, Graafland et al. (2016) find that countries with firms of higher CSR performance are likely to have lower greenhouse gas emissions. Krishnamurti et al. (2018) find a negative relationship between CSR performance and corporate corruption risk and find that this relationship is affected by country-level characteristics. In terms of tax avoidance, Alsaadi (2021) and Jarboui et al. (2020) show that CSR performance is positively related to aggressive tax avoidance, and CSR is found to also mediate the relationship between corporate governance and tax avoidance (Salhi et al., 2020).

### *Theme B: Antecedents of CSR performance*

Studies of Theme B predominantly investigate the antecedents of CSR performance at two levels, namely, country level and firm level. Leveraging the comprehensive coverage of Asset4, 10 Theme B studies, including Hartmann and Uhlenbruck (2015), Ioannou and Serafeim (2012), Miska et al. (2018), Ortas et al. (2015), Rathert (2016) and Roulet and Touboul (2015), focus on the relationship between a range of country-level characteristics (e.g., institutions, cultures and legal system) and CSR performance.

At the firm level, corporate governance and ownership attract much research interest. The board of directors, as a key governance mechanism, is examined in many studies. For example, eight Theme B studies, including Biswas et al. (2018), Ferrero-Ferrero et al. (2015), Haque (2017), Kyaw et al. (2017), Shaukat et al. (2016) and Velte (2016), inspect board gender diversity as an antecedent of CSR. Other mechanisms, including environmental management (Hartmann & Vachon, 2018), internal management system (Biscotti et al., 2018; Hartmann & Vachon, 2018; Hörisch et al., 2015), and managerial remuneration design (Baraibar-Diez et al., 2019; Haque, 2017; Mayberry, 2020), are also researched. In sum, corporate governance is found to be a key antecedent of CSR performance (Ferrell et al., 2016; Mackenzie et al., 2013).

Ownership as an antecedent of CSR performance is another frequently examined area. Family ownership as an antecedent of CSR performance is investigated by a number of studies (e.g., Abeysekera & Fernando, 2020; Biscotti et al., 2018; El Ghouli et al., 2016; Rees & Rodionova, 2015). It is noteworthy that these studies do not reach a consensus on the relationship between family ownership and CSR performance. Other types of ownership, including cross-listing (Del Bosco & Misani, 2016), institutional shareholders (Dyck et al., 2019), and strategic shareholders (Rees & Rodionova, 2013), are also examined.

Other firm characteristics, including internationalisation (Attig et al., 2016; Symeou et al., 2018), stakeholder engagement (Jo et al., 2016; Papagiannakis et al., 2019), shareholder activism (Eding & Scholtens, 2017), and inclusion and exclusion of stock indices (Mackenzie et al., 2013), are considered by the studies of Theme B.

However, managerial personal characteristics are largely omitted. Using Asset4 ratings, Arena et al. (2018) find a connection between CEO hubris and environmental performance. In contrast, the studies using other CSR ratings (e.g., KLD) investigate various managerial personal characteristics, including the gender of CEOs' children (Cronqvist & Yu, 2017) and managerial ability (Chatjuthamard et al., 2016; Yuan et al., 2019). We suggest future studies could look into how different managerial personal characteristics, including human capital and previous experience, influence CSR, and the channels through which this may occur.

### *Theme C: CSR disclosure*

The third theme is CSR disclosure (i.e., Theme C). In this group of studies, integrated reporting is an important topic. Leveraging the international coverage of Asset4, six studies of integrated reporting focus on South Africa, four studies examine cross-country samples, and one study inspects integrated reporting on Italy. The dominance of integrating reporting studies in Theme C corroborates De Villiers et al. (2017) who find that Asset4 provides much help to quantitative researchers interested in integrated reporting. Among other types of CSR disclosure, environmental disclosure (including carbon disclosure) is relatively frequently examined (e.g., Al-Shaer, 2018; Guenther et al., 2016; Luo & Tang, 2016; Radhouane et al., 2018). Some emerging novel types of CSR disclosure, including conflict minerals disclosure (Dalla Via & Perego, 2018), anti-corruption disclosure (Healy & Serafeim, 2016) and tax disclosure (Venter et al., 2017), are also examined by the studies of Theme C.

A range of antecedents of CSR disclosure is investigated. Examples include managerial remuneration (Dalla Via & Perego, 2018), corporate governance (Healy & Serafeim, 2016), CSR committee (Helfaya & Moussa, 2017), CSR assurance (Michelon et al., 2015), and cultural characteristics (Luo & Tang, 2016). Taking advantage of the international coverage of Asset4, Guenther et al. (2016), Healy and Serafeim (2016), Luo and Tang (2016), Melloni et al. (2017), and Stolowy and Paugam (2018) analyse the firm-level antecedents of CSR disclosure across countries or country-level characteristics. Prior studies show that CSR performance is associated with CSR disclosures (Guenther et al., 2016; Stolowy & Paugam, 2018). This is consistent with other literature reviews, including Fifka (2013).

CSR disclosure is found to have economic consequences. For example, it is positively related to firm value (Qiu et al., 2016; Radhouane et al., 2018) and analysts' recommendations (Al-Shaer, 2018). Moreover, CSR disclosure negatively relates to firm risk (Benlemlih et al., 2018) and cost of equity (Zhou et al., 2017). Overall, we saw supportive evidence of 'a business case' for engaging in CSR disclosure.

### *Theme D: CSR databases*

The fourth research theme is CSR databases (Theme D). The validity of CSR databases is an essential topic in this group of studies. For instance, by comparing CSR ratings provided by different CSR databases, Chatterji et al. (2016), Dorfleitner et al. (2015) and Semenova and Hassel (2015) shed light on the external validity of CSR databases. With regard to the internal validity of Asset4, how four pillars of Asset4 correlate is addressed by some researchers (e.g., Ait Sidhoum & Serra, 2018; Jitmaneeeroj, 2016).

### *Theme E: CSR assurance*

Compared with economic consequences and antecedents of CSR performance and CSR disclosure, CSR assurance (Theme E) attracts less research interest. Studies of Theme E inspect two types of assurance, namely, CSR assurance in general (six studies) and assurance on carbon disclosure (two studies). Leveraging the international coverage of Asset4, the studies examine different antecedents of using the assurance, including CSR performance (Braam & Peeters, 2018) and corporate governance (del Mar Miras-Rodríguez & Di Pietra, 2018). With regard to carbon assurance, Zhou et al. (2016) identify country-level characteristics (e.g.,

stakeholder orientation and legal enforcement) as its antecedents, and Datt et al. (2019) reveal that firm size, leverage and firm-level carbon emissions are related to more use of external carbon assurance in the US. In relation to the economic consequences of CSR assurance, prior studies find that CSR assurance is related to higher environmental reputation (Birkey et al., 2016) and lower information asymmetry (Fuhrmann et al., 2017). Overall, compared with the CSR assurance literature comprising single-country studies (Farooq & De Villiers, 2017; Velte & Stawinoga, 2017), the studies of Theme E provide cross-country evidence of firm-level antecedents and consequences of CSR assurance and country-level characteristics as the antecedents.

### *Theme F and Theme G: Corporate governance and others*

Studies of Theme F and G show the versatility of Asset4. In addition to environmental and social ratings, Asset4 also provides ratings for corporate governance. The studies of Theme F examine corporate governance or include corporate governance as a control. Leveraging the international coverage of Asset4, Duong et al. (2016) and Hayat and Hassan (2017) investigate cultural characteristics and religion as antecedents of corporate governance, and Iliev and Roth (2018) analyse how directors' foreign board experience relates to corporate governance. Different economic consequences of corporate governance have been explored. Examples include bond recovery rates (Mili & Abid, 2016), firm value (Zulkaflī et al., 2017), cash holdings (Seifert & Gonenc, 2018) and stock market liquidity (Loukil et al., 2019). The corporate governance pillar is also used as a control in some studies, including Abdelmotaal and Abdel-Kader (2016), Al-Shaer and Zaman (2019), Fauver and McDonald (2015) and Nemlioglu and Mallick (2017). There are three studies in Theme G. Chang and Young (2016) and van Doorn et al. (2017) use Asset4 ratings in marketing topics (brand and customer behaviour), and Demartini and Trucco (2016) shed light on intellectual capital disclosure and auditing. Overall, the studies in Theme F and G suggest that Asset4 is not confined to CSR research and can be used in other areas as well.

## 5.3.2 | Discussion and avenues for future research

After reviewing the research themes (Section 5.3.1), we make the following observations and suggestions.

First, although the 285 studies provide much cross-country evidence, many countries with unique socio-political characteristics are omitted from these studies (see Table 1). For example, given the increasing research interests in Directive 2014/95/EU (Grewal et al., 2019; Li & Jia, 2022), researchers may investigate how firms in Eastern European countries (experiencing both post-socialism and populism) react to the Directive. In addition, although Asset4 provides good coverage of firms in Asia (more than 1700 firms) (Refinitiv, 2020), the literature barely touches on CSR in Asian countries with different socio-political characteristics (e.g., Indonesia with the largest Muslim population in the world). Overall, the many opportunities represented by the diverse data in Asset4 have not been fully utilised by researchers. Therefore, we propose the following research direction:

What are the economic consequences and antecedents of CSR performance, disclosure and assurance in countries with unique socio-political characteristics?

Second, non-financial stakeholders are largely omitted. For instance, when justifying the use of Asset4, the 285 studies barely mention non-financial stakeholders (see Section 5.3.1); instead, these studies often refer to investors to convince readers (as Table 4 shows, 39 studies mention investors). The economic consequences of CSR performance are the focus (see Section Theme



**A: Consequences of CSR performance**), while very few studies consider non-financial stakeholders. Although CSR concerns the impacts of firm activities on non-financial stakeholders (Alrazi et al., 2015), the literature appears to ignore these impacts to a large extent. As Asset4 provides raw data to users (Huber & Comstock, 2017) and added the ESG Controversy pillar along with 23 controversy indicators in 2017 (Thomson Reuters, 2017), researchers may better use these data to measure the corporate impacts on non-financial stakeholders. For example, Gupta and Krishnamurti (2020) use raw data to construct an employee treatment index, which can be mobilised to measure the corporate impacts on employees. Therefore, we propose the following research direction:

How do CSR performance, disclosure and assurance influence, and are influenced by, non-financial stakeholders?

Third, in terms of the economic consequences of CSR performance, we concur with Wood (2010) and other literature reviews (e.g., Fifka, 2013; Gerde & Wokutch, 1998; Van der Byl & Slawinski, 2015) that the extant literature has provided much evidence on the relationship between CSR performance and firm value/firm performance/financial performance (see Section **Theme A: Consequences of CSR performance**). Thus, to further develop the literature, we propose three directions. Concurring with Christensen et al. (2021), we encourage future researchers to devote more research effort to examining how CSR performance is related to important investment policies, including labour, tangible assets, mergers and acquisitions, and diversification (Baker & Wurgler, 2013). Given that CSR performance is a multidimensional concept (Dahlsrud, 2008; Sarkar & Searcy, 2016), researchers may use Asset4's data points and indicators to tease out specific aspects of CSR performance (e.g., environmental product innovation – Biscotti et al., 2018; internal and external CSR – Hawn & Ioannou, 2016), thereby examining how the specific aspects are related to investment policies. In addition, future researchers may inspect how CSR performance relates to auditing. Among the studies focusing on the economic consequences of CSR performance, we find only one study, namely, LópezPuertas-Lamy et al. (2017), examining the relationship between CSR performance and audit fees. Asset4's data points and indicators can be used to inspect how specific aspects of CSR performance are related to auditing. For example, given increasing concerns about climate change,<sup>26</sup> researchers may use the data points and indicators (e.g., environmental monitoring – Trumpp et al., 2015; green supply chain management – Miroshnychenko et al., 2017; green product index – Miroshnychenko et al., 2017) to investigate how auditing services respond to corporate performance in climate change. Lastly, the non-economic consequences of CSR performance would provide many research opportunities (Christensen et al., 2021; Leuz, 2018; Leuz & Wysocki, 2016). Accordingly, we propose the following research questions:

How is CSR performance related to investments in labour and tangible assets, mergers and acquisitions, and diversification?

How is CSR performance related to auditing (e.g., audit quality and internal auditing)?

How does CSR performance affect non-economic outcomes (e.g., country-level greenhouse gas emissions)?

Fourth, in terms of the antecedents of CSR performance, as suggested by prior literature reviews (Aguinis & Glavas, 2012; Alrazi et al., 2015; Chrun et al., 2016; Malik, 2015; Mattingly, 2017; Thornton et al., 2003), we now have extensive knowledge regarding various antecedents of CSR performance. Because Asset4 has international coverage over a long period (e.g., Asset4 already covered 4000 firms in 2014) (Novethic, 2014), researchers may continue to explore how

<sup>26</sup><https://www.sec.gov/news/press-release/2022-46> (accessed 25 May 2022).

emerging country-level characteristics (e.g., populism) are related to CSR performance, an area not well understood. In addition, very few studies (e.g., Arena et al., 2018) explore the effects of managerial characteristics on CSR performance. Concurring with Baker and Wurgler (2013) and Malmendier (2018), we encourage researchers to apply insights from psychology to analyse personal-level antecedents (e.g., cognitive biases) of CSR performance. Seminal studies in this regard, including Al-Shammari et al. (2019), Cronqvist and Yu (2017) and Hegde and Mishra (2019), focus on firms in the US. Given the international coverage of Asset4 and the effects of national culture on decision makers (Karolyi, 2016), researchers could examine the personal-level antecedents using cross-country samples or samples from under-researched countries (e.g., Indonesia). Accordingly, we propose the following research direction:

What are the personal-level antecedents of CSR performance? How are cognitive biases related to CSR performance?

Fifth, with regard to CSR disclosure, prior literature reviews (Berthelot et al., 2003; Fifka, 2012, 2013; Gray, 2000; Gray et al., 1995; Ullmann, 1985) suggest that much research has been done. We also observed that Asset4 studies provide a large amount of evidence on CSR disclosure from different perspectives (see Section [Theme C: CSR disclosure](#)). Thus, we encourage future researchers to take advantage of Asset4's rich data points and indicators (e.g., the 23 controversy indicators – Thomson Reuters, 2017, and sustainable supply chain performance – Ortas et al., 2014) to explore some new and emerging types of CSR disclosure; for example, conflict minerals disclosure (Dalla Via & Perego, 2018) and supply chain disclosure (Christ et al., 2019).

What are the economic consequences and antecedents of novel types of CSR disclosure (e.g., conflict minerals disclosures)?

Lastly, although CSR assurance attracts less research interest in studies using Asset4, we are confident that many research opportunities of CSR assurance can be explored by using Asset4. Since Casey and Grenier (2014), Farooq and De Villiers et al. (2017), Simnett et al. (2009) and Velte and Stawinoga (2017) show that CSR assurance is different in each country, we suggest that researchers leverage the international coverage of Asset4 (e.g., it covers more than 1700 firms in Asia) (Refinitiv, 2020) to analyse how emerging country-level characteristics (e.g., growing impacts of climate change) and new regulations (e.g., Modern Slavery Act in Australia) shape CSR assurance, expanding the scope from a single country to an international level.

How do emerging country-level characteristics and new legislation influence the use of CSR assurance?

## 6 | CONCLUSION

Given the paucity of research on how researchers use CSR databases and the popularity of Asset4, we review prior studies using this database, aiming to help researchers have a clearer understanding of Asset4 and stimulate future research. Our paper reviews the 285 studies using Asset4 from different perspectives, makes research recommendations and proposes avenues for future research. In relation to the use of Asset4, we find that the indicators and data points show greater potential to measure constructs with novel theoretical meanings. Given that prior literature uses different terms to refer to similar (even the same) CSR constructs, and different measurements are used to measure the same CSR constructs, researchers need to pay closer attention to the alignment between the specific Asset4 measures and the underlying CSR constructs. Regarding the justifications of using Asset4, the most frequently used



justifications are: (1) information sources used by Asset4; (2) the comprehensiveness of Asset4; and (3) prior studies that used Asset4. Regarding opportunities in different research themes, we discuss eight avenues for future research using Asset4. We contribute to prior literature reviews on CSR research by focusing on an important, yet omitted aspect, namely, the use of CSR databases, contributing to a much better understanding of the topic that is often debated among researchers. Given the increasing popularity of CSR-related investment, our study is of interest to a range of practitioners.

The limitations in our review could also stimulate future research. First, given that our review is limited to the Asset4 database, future reviews may focus on other CSR databases to provide more insights into how the literature uses CSR databases. Such insights based on different CSR databases could improve our understanding of the appropriate use of CSR databases in research. Second, future reviews could compare studies with the same/similar CSR constructs and measurements but using different databases to show whether different databases lead to different results. This will be another promising way to respond to concerns about the use of CSR databases in research.

## DATA AVAILABILITY STATEMENT

All data used in the article were collected from published journal articles and can be accessed from the tables and appendices included in the article.

## ACKNOWLEDGEMENT

Open access publishing facilitated by The University of Auckland, as part of the Wiley - The University of Auckland agreement via the Council of Australian University Librarians.

## ORCID

Charl de Villiers  <https://orcid.org/0000-0002-0715-8957>

Jing Jia  <https://orcid.org/0000-0002-5193-8475>

Zhongtian Li  <https://orcid.org/0000-0001-9478-9804>

## REFERENCES

- Abdelmotaal, H. & Abdel-Kader, M. (2016) The use of sustainability incentives in executive remuneration contracts. *Journal of Applied Accounting Research*, 17, 311–330.
- Abeyssekera, A.P. & Fernando, C.S. (2020) Corporate social responsibility versus corporate shareholder responsibility: a family firm perspective. *Journal of Corporate Finance*, 61, 101–370.
- Adegbite, E., Guney, Y., Kwabi, F. & Tahir, S. (2019) Financial and corporate social performance in the UK listed firms: the relevance of non-linearity and lag effects. *Review of Quantitative Finance and Accounting*, 52(1), 105–158.
- Aguinis, H. & Glavas, A. (2012) What we know and don't know about corporate social responsibility: a review and research agenda. *Journal of Management*, 38, 932–968.
- Ait Sidhoum, A. & Serra, T. (2018) Corporate sustainable development. Revisiting the relationship between corporate social responsibility dimensions. *Sustainable Development*, 26, 365–378.
- Albuquerque, R., Koskinen, Y. & Zhang, C. (2019) Corporate social responsibility and firm risk: theory and empirical evidence. *Management Science*, 65, 4451–4469.
- Alrazi, B., De Villiers, C. & van Staden, C.J. (2015) A comprehensive literature review on, and the construction of a framework for, environmental legitimacy, accountability and proactivity. *Journal of Cleaner Production*, 102, 44–57.
- Alsaadi, A., Ebrahim, M.S. & Jaafar, A. (2017) Corporate social responsibility, shariah-compliance, and earnings quality. *Journal of Financial Services Research*, 51, 169–194.
- Alsaadi, A. (2020) Financial-tax reporting conformity, tax avoidance and corporate social responsibility. *Journal of Financial Reporting and Accounting*, 18(3), 639–659.
- Alsaadi, A. (2021) Can inclusion in religious index membership mitigate earnings management? *Journal of Business Ethics*, 169(2), 333–354.
- Al-Shaer, H. (2018) Do environmental-related disclosures help enhance investment recommendations? *Journal of Financial Reporting and Accounting*, 16, 217–244.

- Al-Shaer, H. & Zaman, M. (2019) CEO compensation and sustainability reporting assurance: evidence from the UK. *Journal of Business Ethics*, 158, 233–252.
- Al-Shaer, H. (2020) Sustainability reporting quality and post-audit financial reporting quality: Empirical evidence from the UK. *Business Strategy and the Environment*, 29(6), 2355–2373.
- Al-Shammari, M., Rasheed, A. & Al-Shammari, H.A. (2019) CEO narcissism and corporate social responsibility: does CEO narcissism affect CSR focus? *Journal of Business Research*, 104, 106–117.
- Amel-Zadeh, A. & Serafeim, G. (2018) Why and how investors use ESG information: evidence from a global survey. *Financial Analysts Journal*, 74(3), 87–103.
- Andrew, J. & Baker, M. (2020) Corporate social responsibility reporting: the last 40 years and a path to sharing future insights. *Abacus*, 56, 35–65.
- Aouadi, A. & Marsat, S. (2018) Do ESG controversies matter for firm value? Evidence from international data. *Journal of Business Ethics*, 151, 1027–1047.
- Arena, C., Michelon, G. & Trojanowski, G. (2018) Big egos can be green: a study of CEO hubris and environmental innovation. *British Journal of Management*, 29, 316–336.
- Arouri, M., Gomes, M. & Pukthuanthong, K. (2019) Corporate social responsibility and M&A uncertainty. *Journal of Corporate Finance*, 56, 176–198.
- Attig, N., Boubakri, N., El Ghouli, S. & Guedhami, O. (2016) Firm internationalization and corporate social responsibility. *Journal of Business Ethics*, 134, 171–197.
- Baalouch, F., Ayadi, S.D. & Hussainey, K. (2019) A study of the determinants of environmental disclosure quality: evidence from French listed companies. *Journal of Management and Governance*, 23(4), 939–971.
- Baboukardos, D. (2017) Market valuation of greenhouse gas emissions under a mandatory reporting regime: evidence from the UK. *Accounting Forum*, 41, 221–233.
- Baboukardos, D. (2018) The valuation relevance of environmental performance revisited: the moderating role of environmental provisions. *The British Accounting Review*, 50, 32–47.
- Badía, G., Cortez, M.C. & Ferruz, L. (2020) Socially responsible investing worldwide: do markets value corporate social responsibility? *Corporate Social Responsibility and Environmental Management*, 27, 2751–2764.
- Baker, M. & Wurgler, J. (2013) Behavioral corporate finance: an updated survey. In: Constantinides, G.M., Harris, M. & Stulz, R.M. (Eds.) *Handbook of the economics of finance*. Amsterdam: Elsevier, pp. 357–424.
- Banerjee, R. & Gupta, K. (2017) The effects of environmental sustainability and R&D on corporate risk-taking: International evidence. *Energy Economics*, 65, 1–15.
- Banerjee, R. & Gupta, K. (2019) The effect of environmentally sustainable practices on firm R&D: International evidence. *Economic Modelling*, 78, 262–274.
- Banerjee, R., Gupta, K. & McIver, R. (2019) What matters most to firm-level environmentally sustainable practices: firm-specific or country-level factors? *Journal of Cleaner Production*, 218, 225–240.
- Baraibar-Diez, E., Odriozola, M.D. & Fernandez Sanchez, J.L. (2019) Sustainable compensation policies and its effect on environmental, social, and governance scores. *Corporate Social Responsibility and Environmental Management*, 26, 1457–1472.
- Barkemeyer, R., Salignac, F. & Argade, P. (2019) CSP and governance in emerging and developing country firms: Of mirrors and substitutes. *Business and Politics*, 21(4), 540–568.
- Benlemlih, M., Shaukat, A., Qiu, Y. & Trojanowski, G. (2018) Environmental and social disclosures and firm risk. *Journal of Business Ethics*, 152, 613–626.
- Beretta, V., Demartini, M.C. & Trucco, S. (2020) Tone at top in integrated reporting: The role of non-financial performance. In: *Non-financial disclosure and integrated reporting: practices and critical issues*. Bingley: Emerald Publishing Limited, pp. 147–174.
- Berg, F., Fabisik, K. & Sautner, Z. (2020) Is history repeating itself? The (un)predictable past of ESG ratings. European Corporate Governance Institute – Finance Working Paper 708/2020. <https://doi.org/10.2139/ssrn.3722087>
- Bergmann, A., Rotzek, J.N., Wetzel, M. & Guenther, E. (2017) Hang the low-hanging fruit even lower—Evidence that energy efficiency matters for corporate financial performance. *Journal of cleaner production*, 147, 66–74.
- Berthelot, S., Cormier, D. & Magnan, M. (2003) Environmental disclosure research: review and synthesis. *Journal of Accounting Literature*, 22, 1–44.
- Bessire, D. & Onnée, S. (2010) Assessing corporate social performance: strategies of legitimation and conflicting ideologies. *Critical Perspectives on Accounting*, 21, 445–467.
- Bettinazzi, E.L. & Zollo, M. (2017) Stakeholder orientation and acquisition performance. *Strategic Management Journal*, 38, 2465–2485.
- Birkey, R.N., Michelon, G., Patten, D.M. & Sankara, J. (2016) Does assurance on CSR reporting enhance environmental reputation? An examination in the US context. *Accounting Forum*, 40, 143–152.
- Biscotti, A.M., D'Amico, E. & Monge, F. (2018) Do environmental management systems affect the knowledge management process? The impact on the learning evolution and the relevance of organisational context. *Journal of Knowledge Management*, 22, 603–620.

- Biswas, P.K., Mansi, M. & Pandey, R. (2018) Board composition, sustainability committee and corporate social and environmental performance in Australia. *Pacific Accounting Review*, 30, 517–540.
- Bodhanwala, S. & Bodhanwala, R. (2020) Relationship between sustainable and responsible investing and returns: a global evidence. *Social Responsibility Journal*, 16, 579–594.
- Boffo, R. & Patalano, R. (2020) *ESG investing: practices, progress and challenges*. Paris: OECD. Available at: <https://www.oecd.org/finance/ESG-Investing-Practices-Progress-Challenges.pdf>
- Borghesi, R. & Chang, K. (2020) Economic policy uncertainty and firm value: the mediating role of intangible assets and R&D. *Applied Economics Letters*, 27, 1087–1090.
- Boubakri, N., Guedhami, O., Kwok, C.C. & Wang, H.H. (2019) Is privatization a socially responsible reform? *Journal of corporate finance*, 56, 129–151.
- Boura, M., Tsouknidis, D.A. & Lioukas, S. (2020) The role of pro-social orientation and national context in corporate environmental disclosure. *European Management Review*, 17(4), 1027–1040.
- Braam, G. & Peeters, R. (2018) Corporate sustainability performance and assurance on sustainability reports: diffusion of accounting practices in the realm of sustainable development. *Corporate Social Responsibility and Environmental Management*, 25, 164–181.
- Brahmana, R., Brahmana, R.K. & Ho, T.C.F. (2018) Training and development policy, corporate governance, and firm performance. *Gadjah Mada International Journal of Business*, 20, 59–87.
- Braune, E., Charosky, P. & Hikkerova, L. (2019) Corporate social responsibility, financial performance and risk in times of economic instability. *Journal of Management and Governance*, 23(4), 1007–1021.
- Brennan, N.M. & Merkl-Davies, D.M. (2014) Rhetoric and argument in social and environmental reporting: the Dirty Laundry case. *Accounting, Auditing & Accountability Journal*, 27, 602–633.
- Budsaratragoon, P. & Jitmaneeroj, B. (2019) Measuring causal relations and identifying critical drivers for corporate sustainability: the quadruple bottom line approach. *Measuring Business Excellence*, 23(3), 292–316.
- Burkhardt, K., Nguyen, P. & Poincelot, E. (2020) Agents of change: Women in top management and corporate environmental performance. *Corporate Social Responsibility and Environmental Management*, 27(4), 1591–1604.
- Caglio, A., Melloni, G. & Perego, P. (2020) Informational content and assurance of textual disclosures: Evidence on integrated reporting. *European Accounting Review*, 29(1), 55–83.
- Cao, Z. & Rees, W. (2020) Do employee-friendly firms invest more efficiently? Evidence from labor investment efficiency. *Journal of Corporate Finance*, 65, 101744.
- Casey, R.J. & Grenier, J.H. (2014) Understanding and contributing to the enigma of corporate social responsibility (CSR) assurance in the United States. *Auditing: A Journal of Practice & Theory*, 34, 97–130.
- Chang, Y. & Young, M. (2016) Brand firm performance and tough economic times. *International Review of Finance*, 16, 357–391.
- Chang, K., Jo, H. & Li, Y. (2018) Is there informational value in corporate giving? *Journal of Business Ethics*, 151(2), 473–496.
- Chatjuthamard, P., Jiraporn, P., Tong, S. & Singh, M. (2016) Managerial talent and corporate social responsibility (CSR): how do talented managers view corporate social responsibility? *International Review of Finance*, 16, 265–276.
- Chatterji, A.K., Durand, R., Levine, D.I. & Touboul, S. (2016) Do ratings of firms converge? Implications for managers, investors and strategy researchers. *Strategic Management Journal*, 37, 1597–1614.
- Chatterji, A.K., Levine, D.I. & Toffel, M.W. (2009) How well do social ratings actually measure corporate social responsibility? *Journal of Economics & Management Strategy*, 18, 125–169.
- Cheng, B., Ioannou, I. & Serafeim, G. (2014) Corporate social responsibility and access to finance. *Strategic Management Journal*, 35, 1–23.
- Choi, J.J., Jo, H., Kim, J. & Kim, M.S. (2018) Business groups and corporate social responsibility. *Journal of Business Ethics*, 153, 931–954.
- Chollet, P. & Sandwidi, B.W. (2018) CSR engagement and financial risk: a virtuous circle? International evidence. *Global Finance Journal*, 38, 65–81.
- Chopra, S. & Wu, P.J. (2016) Eco-activities and operating performance in the computer and electronics industry. *European Journal of Operational Research*, 248(3), 971–981.
- Chouaibi, J. & Chouaibi, S. (2020) Does value added of intellectual capital influence voluntary disclosure? The moderating effect of CSR practices. *Accounting and Management Information Systems*, 19(4), 651–681.
- Christ, K.L., Rao, K.K. & Burritt, R.L. (2019) Accounting for modern slavery: an analysis of Australian listed company disclosures. *Accounting, Auditing & Accountability Journal*, 32, 836–865.
- Christensen, D., Serafeim, G. & Sikochi, A. (2022) Why is corporate virtue in the eye of the beholder? The case of ESG ratings. *The Accounting Review*, 97, 147–175.
- Christensen, H.B., Hail, L. & Leuz, C. (2021) Adoption of CSR and sustainability reporting standards: economic analysis and literature review. *Review of Accounting Studies*, 26, 1176–1248.
- Chrun, E., Dolšak, N. & Prakash, A. (2016) Corporate environmentalism: motivations and mechanisms. *Annual Review of Environment and Resources*, 41, 341–362.

- Clarkson, P., Li, Y., Richardson, G. & Tsang, A. (2019) Causes and consequences of voluntary assurance of CSR reports: International evidence involving Dow Jones Sustainability Index Inclusion and Firm Valuation. *Accounting, Auditing & Accountability Journal*, 32(8), 2451–2474.
- Cohen, J.R. & Simnett, R. (2014) CSR and assurance services: a research agenda. *Auditing: A Journal of Practice & Theory*, 34, 59–74.
- Cronqvist, H. & Yu, F. (2017) Shaped by their daughters: executives, female socialization, and corporate social responsibility. *Journal of Financial Economics*, 126, 543–562.
- Cui, X., Peng, X., Jia, J. & Wu, D. (2020) Does board independence affect environmental disclosures by multinational corporations? Moderating effects of national culture. *Applied Economics*, 52(52), 5687–5705.
- Dahlsrud, A. (2008) How corporate social responsibility is defined: an analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management*, 15, 1–13.
- Dal Maso, L., Liberatore, G. & Mazzi, F. (2017) Value relevance of stakeholder engagement: The influence of national culture. *Corporate Social Responsibility and Environmental Management*, 24(1), 44–56.
- Dal Maso, L., Mazzi, F., Soccia, M. & Terzani, S. (2018) The moderating role of stakeholder management and societal characteristics in the relationship between corporate environmental and financial performance. *Journal of Environmental Management*, 218, 322–332.
- Dal Maso, L., Basco, R., Bassetti, T. & Lattanzi, N. (2020) Family ownership and environmental performance: The mediation effect of human resource practices. *Business Strategy and the Environment*, 29(3), 1548–1562.
- Dalla Via, N. & Perego, P. (2018) Determinants of conflict minerals disclosure under the Dodd–Frank Act. *Business Strategy and the Environment*, 27, 773–788.
- Datt, R.R., Luo, L. & Tang, Q. (2019) The impact of legitimacy threat on the choice of external carbon assurance: evidence from the United States. *Accounting Research Journal*, 32, 181–202.
- De Villiers, C. & Hsiao, P.C.K. (2018) A review of accounting research in Australasia. *Accounting & Finance*, 58, 993–1026.
- De Villiers, C., Hsiao, P.-C.K., Zambon, S. & Magnaghi, E. (2022) Sustainability, non-financial, integrated, and value reporting (extended external reporting): a conceptual framework and an agenda for future research. *Meditari Accountancy Research*, 30(3), 453–471.
- De Villiers, C., Jia, J. & Li, Z. (2022) Are boards' risk management committees associated with firms' environmental performance? *The British Accounting Review*, 54(1), 101066. <https://doi.org/10.1016/j.bar.2021.101066>
- De Villiers, C., Rinaldi, L. & Unerman, J. (2014) Integrated reporting: insights, gaps and an agenda for future research. *Accounting, Auditing & Accountability Journal*, 27, 1042–1067.
- De Villiers, C. & Van Staden, C. (2010) Shareholders' corporate environmental disclosure needs. *South African Journal of Economic and Management Sciences*, 13(4), 437–446.
- De Villiers, C., Venter, E.R. & Hsiao, P.C.K. (2017) Integrated reporting: background, measurement issues, approaches and an agenda for future research. *Accounting & Finance*, 57, 937–959.
- Deegan, C. (2002) Introduction: the legitimising effect of social and environmental disclosures – a theoretical foundation. *Accounting, Auditing & Accountability Journal*, 15, 282–311.
- Deegan, C. (2017) Twenty five years of social and environmental accounting research within *Critical Perspectives of Accounting*: hits, misses and ways forward. *Critical Perspectives on Accounting*, 43, 65–87.
- Del Bosco, B. & Misani, N. (2016) The effect of cross-listing on the environmental, social, and governance performance of firms. *Journal of World Business*, 51, 977–990.
- Dell'Atti, S., Trotta, A., Iannuzzi, A.P. & Demaria, F. (2017) Corporate social responsibility engagement as a determinant of bank reputation: an empirical analysis. *Corporate Social Responsibility and Environmental Management*, 24, 589–605.
- Delmas, M. & Blass, V.D. (2010) Measuring corporate environmental performance: the trade-offs of sustainability ratings. *Business Strategy and the Environment*, 19, 245–260.
- Demartini, C. & Trucco, S. (2016) Does intellectual capital disclosure matter for audit risk? Evidence from the UK and Italy. *Sustainability*, 8(9), 1–19.
- Desender, K.A., LópezPuertas-Lamy, M., Pattitoni, P. & Petracci, B. (2020) Corporate social responsibility and cost of financing—The importance of the international corporate governance system. *Corporate Governance: An International Review*, 28(3), 207–234.
- Diebecker, J. & Sommer, F. (2017) The impact of corporate sustainability performance on information asymmetry: the role of institutional differences. *Review of Managerial Science*, 11, 471–517.
- Doh, J.P. & Quigley, N.R. (2014) Responsible leadership and stakeholder management: influence pathways and organizational outcomes. *Academy of Management Perspectives*, 28(3), 255–274.
- van Doorn, J., Onrust, M., Verhoef, P.C. & Bügel, M.S. (2017) The impact of corporate social responsibility on customer attitudes and retention – the moderating role of brand success indicators. *Marketing Letters*, 28, 607–619.
- Dorfleitner, G., Halbritter, G. & Nguyen, M. (2015) Measuring the level and risk of corporate responsibility – an empirical comparison of different ESG rating approaches. *Journal of Asset Management*, 16, 450–466.
- Dorfleitner, G., Utz, S. & Wimmer, M. (2018) Patience pays off – corporate social responsibility and long-term stock returns. *Journal of Sustainable Finance & Investment*, 8, 132–157.



- Doyle, T. (2018) *Ratings that don't rate: the subjective world of ESG ratings agencies*. Washington, DC: American Council for Capital Formation. Available at: [https://accfcorgov.org/wp-content/uploads/2018/07/ACCF\\_RatingsESGReport.pdf](https://accfcorgov.org/wp-content/uploads/2018/07/ACCF_RatingsESGReport.pdf)
- Drago, D., Carnevale, C. & Gallo, R. (2019) Do corporate social responsibility ratings affect credit default swap spreads? *Corporate Social Responsibility and Environmental Management*, 26(3), 644–652.
- Drempetic, S., Klein, C. & Zwergel, B. (2020) The influence of firm size on the ESG score: Corporate sustainability ratings under review. *Journal of Business Ethics*, 167(2), 333–360.
- Dumay, J., Bernardi, C., Guthrie, J. & Demartini, P. (2016) Integrated reporting: a structured literature review. *Accounting Forum*, 40, 166–185.
- Duong, H.K., Kang, H. & Salter, S.B. (2016) National culture and corporate governance. *Journal of International Accounting Research*, 15, 67–96.
- Durand, R. & Jacqueminet, A. (2015) Peer conformity, attention, and heterogeneous implementation of practices in MNEs. *Journal of International Business Studies*, 46, 917–937.
- Duque-Grisales, E., Aguilera-Caracuel, J., Guerrero-Villegas, J. & García-Sánchez, E. (2020a) Can proactive environmental strategy improve Multilatinas' level of internationalization? The moderating role of board independence. *Business Strategy and the Environment*, 29(1), 291–305.
- Duque-Grisales, E., Aguilera-Caracuel, J., Guerrero-Villegas, J. & García-Sánchez, E. (2020b) Does green innovation affect the financial performance of Multilatinas? The moderating role of ISO 14001 and R&D investment. *Business Strategy and the Environment*, 29(8), 3286–3302.
- Dyck, A., Lins, K., Roth, L. & Wagner, H. (2019) Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics*, 131, 693–714.
- Eccles, R.G., Lee, L.-E. & Strohle, J.C. (2020) The social origins of ESG: an analysis of Innovest and KLD. *Organization & Environment*, 33(4), 575–596.
- Eding, E. & Scholtens, B. (2017) Corporate social responsibility and shareholder proposals. *Corporate Social Responsibility and Environmental Management*, 24, 648–660.
- El Ghoul, S., Guedhami, O. & Kim, Y. (2017) Country-level institutions, firm value, and the role of corporate social responsibility initiatives. *Journal of International Business Studies*, 48, 360–385.
- El Ghoul, S., Guedhami, O., Wang, H. & Kwok, C.C. (2016) Family control and corporate social responsibility. *Journal of Banking & Finance*, 73, 131–146.
- Escrib-Olmedo, E., Muñoz-Torres, M.J., Fernández-Izquierdo, M.Á. & Rivera-Lirio, J.M. (2017) Measuring corporate environmental performance: a methodology for sustainable development. *Business Strategy and the Environment*, 26, 142–162.
- Escrib-Olmedo, E., Rivera-Lirio, J.M., Muñoz-Torres, M.J. & Fernández-Izquierdo, M.Á. (2017) Integrating multiple ESG investors' preferences into sustainable investment: a fuzzy multicriteria methodological approach. *Journal of Cleaner Production*, 162, 1334–1345.
- Esteban-Sanchez, P., de la Cuesta-Gonzalez, M. & Paredes-Gazquez, J.D. (2017) Corporate social performance and its relation with corporate financial performance: International evidence in the banking industry. *Journal of cleaner production*, 162, 1102–1110.
- Farooq, M.B. & De Villiers, C. (2017) The market for sustainability assurance services: a comprehensive literature review and future avenues for research. *Pacific Accounting Review*, 29, 79–106.
- Fauver, L. & McDonald, M. (2015) Culture, agency costs, and governance: international evidence on capital structure. *Pacific-Basin Finance Journal*, 34, 1–23.
- Fauver, L., McDonald, M.B. & Taboada, A.G. (2018) Does it pay to treat employees well? International evidence on the value of employee-friendly culture. *Journal of Corporate Finance*, 50, 84–108.
- Feng, Z.Y., Wang, M.L. & Huang, H.W. (2015) Equity financing and social responsibility: Further international evidence. *The International Journal of Accounting*, 50(3), 247–280.
- Ferrell, A., Liang, H. & Renneboog, L. (2016) Socially responsible firms. *Journal of Financial Economics*, 122, 585–606.
- Ferrero-Ferrero, I., Fernández-Izquierdo, M.Á. & Muñoz-Torres, M.J. (2015) Integrating sustainability into corporate governance: an empirical study on board diversity. *Corporate Social Responsibility and Environmental Management*, 22(4), 193–207.
- Ferrero-Ferrero, I., Fernández-Izquierdo, M.Á. & Muñoz-Torres, M.J. (2016) The effect of environmental, social and governance consistency on economic results. *Sustainability*, 8(10), 1005.
- Fifka, M. (2012) The development and state of research on social and environmental reporting in global comparison. *Management Review Quarterly*, 62, 45–84.
- Fifka, M. (2013) Corporate responsibility reporting and its determinants in comparative perspective – a review of the empirical literature and a meta-analysis. *Business Strategy and the Environment*, 22, 1–35.
- Frynas, J.G. & Yamahaki, C. (2016) Corporate social responsibility: review and roadmap of theoretical perspectives. *Business Ethics: A European Review*, 25(3), 258–285.
- Fu, W. & Su, H.C. (2020) Take actions or outsource? An empirical examination of strategic environmental options on greenhouse gas emissions. *International Journal of Operations & Production Management*, 40(6), 753–776.

- Fuhrmann, S., Ott, C., Looks, E. & Guenther, T. (2017) The contents of assurance statements for sustainability reports and information asymmetry. *Accounting and Business Research*, 47, 369–400.
- Fuhrmann, S. (2019) A multi-theoretical approach on drivers of integrated reporting – uniting firm-level and country-level associations. *Meditari Accountancy Research*, 28(1), 168–205.
- Gangi, F., Daniele, L.M. & Varrone, N. (2020) How do corporate environmental policy and corporate reputation affect risk-adjusted financial performance? *Business Strategy and the Environment*, 29, 1975–1991.
- Gangi, F., Meles, A., D'Angelo, E. & Daniele, L.M. (2019) Sustainable development and corporate governance in the financial system: are environmentally friendly banks less risky? *Corporate Social Responsibility and Environmental Management*, 26, 529–547.
- Gangi, F. & Varrone, N. (2018) Screening activities by socially responsible funds: a matter of agency? *Journal of Cleaner Production*, 197, 842–855.
- Garcia, A.S., Mendes-Da-Silva, W. & Orsato, R.J. (2017) Sensitive industries produce better ESG performance: evidence from emerging markets. *Journal of Cleaner Production*, 150, 135–147.
- Garcia, A.S. & Orsato, R.J. (2020) Testing the institutional difference hypothesis: A study about environmental, social, governance, and financial performance. *Business Strategy and the Environment*, 29(8), 3261–3272.
- García-Sánchez, I.M., Hussain, N., Khan, S.A. & Martínez-Ferrero, J. (2020) Managerial entrenchment, corporate social responsibility, and earnings management. *Corporate Social Responsibility and Environmental Management*, 27(4), 1818–1833.
- Gasser, S.M., Rammerstorfer, M. & Weinmayer, K. (2017) Markowitz revisited: social portfolio engineering. *European Journal of Operational Research*, 258, 1181–1190.
- Gerde, V.W. & Wokutch, R.E. (1998) 25 years and going strong: a content analysis of the first 25 years of the social issues in management division proceedings. *Business & Society*, 37, 414–446.
- Gomes, M. & Marsat, S. (2018) Does CSR impact premiums in M&A transactions? *Finance Research Letters*, 26, 71–80.
- Gonenc, H. & Scholtens, B. (2017) Environmental and financial performance of fossil fuel firms: a closer inspection of their interaction. *Ecological Economics*, 132, 307–328.
- Gong, M., Gao, Y., Koh, L., Sutcliffe, C. & Cullen, J. (2019) The role of customer awareness in promoting firm sustainability and sustainable supply chain management. *International Journal of Production Economics*, 217, 88–96.
- Graafland, J., Hudson, P. & Werner, J. (2016) Does corporate social performance reduce greenhouse gas emissions at the macro level? *Journal of Environmental Planning and Management*, 59, 203–221.
- Graafland, J. & Smid, H. (2015) Competition and institutional drivers of corporate social performance. *De Economist*, 163, 303–322.
- Gray, R. (2000) Current developments and trends in social and environmental auditing, reporting and attestation: a review and comment. *International Journal of Auditing*, 4, 247–268.
- Gray, R. (2001) Thirty years of social accounting, reporting and auditing: what (if anything) have we learnt? *Business ethics: A European Review*, 10, 9–15.
- Gray, R., Kouhy, R. & Lavers, S. (1995) Corporate social and environmental reporting: a review of the literature and a longitudinal study of UK disclosure. *Accounting, Auditing & Accountability Journal*, 8, 47–77.
- Gray, R. & Milne, M.J. (2015) It's not what you do, it's the way that you do it? Of method and madness. *Critical Perspectives on Accounting*, 32, 51–66.
- Gray, R., Owen, D. & Adams, C. (1996) *Accounting and accountability: changes and challenges in corporate social and environmental reporting*. London: Prentice Hall.
- Green, S.E., Jr. (2004) A rhetorical theory of diffusion. *Academy of Management Review*, 29, 653–669.
- Grewal, J., Riedl, E.J. & Serafeim, G. (2019) Market reaction to mandatory nonfinancial disclosure. *Management Science*, 65, 3061–3084.
- Grewal, J. & Serafeim, G. (2020) Research on corporate sustainability: review and directions for future research. *Foundations and Trends in Accounting*, 14, 73–127.
- Guenther, E., Guenther, T., Schiemann, F. & Weber, G. (2016) Stakeholder relevance for reporting: explanatory factors of carbon disclosure. *Business and Society*, 55, 361–397.
- Gupta, K. (2018) Environmental sustainability and implied cost of equity: International evidence. *Journal of Business Ethics*, 147(2), 343–365.
- Gupta, K. & Krishnamurti, C. (2020) Do countries matter more in determining the relationship between employee welfare and financial performance? *International Review of Finance*, 20(2), 415–450.
- Gupta, K., Crilly, D. & Greckhamer, T. (2020) Stakeholder engagement strategies, national institutions, and firm performance: A configurational perspective. *Strategic Management Journal*, 41(10), 1869–1900.
- Habib, A. & Hasan, M.M. (2019) Corporate social responsibility and cost stickiness. *Business & Society*, 58(3), 453–492.
- Halbritter, G. & Dorfleitner, G. (2015) The wages of social responsibility – where are they? A critical review of ESG investing. *Review of Financial Economics*, 26, 25–35.
- Haque, F. (2017) The effects of board characteristics and sustainable compensation policy on carbon performance of UK firms. *The British Accounting Review*, 49, 347–364.

- Haque, F. & Ntim, C.G. (2018) Environmental policy, sustainable development, governance mechanisms and environmental performance. *Business Strategy and the Environment*, 27, 415–435.
- Hartmann, J. & Uhlenbruck, K. (2015) National institutional antecedents to corporate environmental performance. *Journal of World Business*, 50(4), 729–741.
- Hartmann, J. & Vachon, S. (2018) Linking environmental management to environmental performance: the interactive role of industry context. *Business Strategy and the Environment*, 27, 359–374.
- Hawn, O. & Ioannou, I. (2016) Mind the gap: the interplay between external and internal actions in the case of corporate social responsibility. *Strategic Management Journal*, 37, 2569–2588.
- Hayat, R. & Hassan, M.K. (2017) Does an Islamic label indicate good corporate governance? *Journal of Corporate Finance*, 43, 159–174.
- Hayat, U. & Orsagh, M. (2015) *Environmental, social, and governance issues in investing – a guide for investment professionals*. New York: CFA Institute.
- Healy, P.M. & Serafeim, G. (2016) An analysis of firms' self-reported anticorruption efforts. *The Accounting Review*, 91, 489–511.
- Hegde, S.P. & Mishra, D.R. (2019) Married CEOs and corporate social responsibility. *Journal of Corporate Finance*, 58, 226–246.
- Helfaya, A. & Moussa, T. (2017) Do board's corporate social responsibility strategy and orientation influence environmental sustainability disclosure? UK evidence. *Business Strategy and the Environment*, 26, 1061–1077.
- Higgins, C. & Walker, R. (2012) Ethos, logos, pathos: strategies of Persuasion in social/environmental reports. *Accounting Forum*, 36, 194–208.
- Hörisch, J., Ortas, E., Schaltegger, S. & Álvarez, I. (2015) Environmental effects of sustainability management tools: an empirical analysis of large companies. *Ecological Economics*, 120, 241–249.
- Hsiao, P.-C.K., De Villiers, C., Horner, C. & Oosthuizen, H. (2022) A review and synthesis of contemporary sustainability accounting research and the development of a research agenda. *Accounting & Finance*. <https://doi.org/10.1111/acfi.12936>. forthcoming.
- Hübel, B. & Scholz, H. (2020) Integrating sustainability risks in asset management: the role of ESG exposures and ESG ratings. *Journal of Asset Management*, 21, 52–69.
- Huber, B.M. & Comstock, M. (2017) *ESG reports and ratings: what they are, why they matter?* Davis Polk & Wardwell LLP. Available at: [https://www.davispolk.com/sites/default/files/2017-07-12\\_esg\\_reports\\_ratings\\_what\\_they\\_are\\_why\\_they\\_matter.pdf](https://www.davispolk.com/sites/default/files/2017-07-12_esg_reports_ratings_what_they_are_why_they_matter.pdf)
- Hull, C.E., Rothenberg, S. & Vogt, S. (2019) The Financial Impact of High-Performance Work Practices. *Contemporary Management Research*, 15(4), 247–272.
- Iliev, P. & Roth, L. (2018) Learning from directors' foreign board experiences. *Journal of Corporate Finance*, 51, 1–19.
- Ioannou, I. & Serafeim, G. (2012) What drives corporate social performance? The role of nation-level institutions. *Journal of International Business Studies*, 43, 834–864.
- Jackson, G., Bartosch, J., Avetisyan, E., Kinderman, D. & Knudsen, J.S. (2020) Mandatory non-financial disclosure and its influence on CSR: An international comparison. *Journal of Business Ethics*, 162(2), 323–342.
- Jarboui, A., Saad, M.K.B. & Riquen, R. (2020) Tax avoidance: do board gender diversity and sustainability performance make a difference? *Journal of Financial Crime*, 27, 1389–1408.
- Jia, J. & Li, Z. (2020) Does external uncertainty matter in corporate sustainability performance? *Journal of Corporate Finance*, 65, 101743.
- Jitmaneeroj, B. (2016) Reform priorities for corporate sustainability: environmental, social, governance, or economic performance? *Management Decision*, 54, 1497–1521.
- Jitmaneeroj, B. (2018) A latent variable analysis of corporate social responsibility and firm value. *Managerial Finance*, 44(4), 478–494.
- Jo, H., Song, M.H. & Tsang, A. (2016) Corporate social responsibility and stakeholder governance around the world. *Global Finance Journal*, 29, 42–69.
- Jo, H. & Park, K. (2020) Controversial industries, regional differences, and risk: Role of CSR. *Asia-Pacific Journal of Financial Studies*, 49(6), 911–947.
- Kaiser, L. (2020) ESG integration: value, growth and momentum. *Journal of Asset Management*, 21, 32–51.
- Kaiser, L. & Welters, J. (2019) Risk-mitigating effect of ESG on momentum portfolios. *Journal of Risk Finance*, 20, 542–555.
- Karolyi, G.A. (2016) The gravity of culture for finance. *Journal of Corporate Finance*, 41, 610–625.
- Karpoff, J.M., Koester, A., Lee, D.S. & Martin, G.S. (2017) Proxies and databases in financial misconduct research. *The Accounting Review*, 92(6), 129–163.
- Khlif, H., Hussainey, K. & Acheh, I. (2015) The effect of national culture on the association between profitability and corporate social and environmental disclosure: a meta-analysis. *Meditari Accountancy Research*, 23, 296–321.
- Kiesewetter, D. & Manthey, J. (2017) Tax avoidance, value creation and CSR – a European perspective. *Corporate Governance*, 175, 803–821.



- Kölbel, J.F., Busch, T. & Jancso, L.M. (2017) How media coverage of corporate social irresponsibility increases financial risk. *Strategic Management Journal*, 38, 2266–2284.
- Krishnamurti, C., Shams, S. & Velayutham, E. (2018) Corporate social responsibility and corruption risk: a global perspective. *Journal of Contemporary Accounting & Economics*, 14, 1–21.
- Kyaw, K., Olugbode, M. & Petracchi, B. (2017) Can board gender diversity promote corporate social performance? *Corporate Governance*, 17, 789–802.
- Lam, H.K. (2018) Doing good across organizational boundaries: Sustainable supply chain practices and firms' financial risk. *International Journal of Operations & Production Management*, 38(12), 2389–2412.
- La Rosa, F., Liberatore, G., Mazzi, F. & Terzani, S. (2018) The impact of corporate social performance on the cost of debt and access to debt financing for listed European non-financial firms. *European Management Journal*, 36, 519–529.
- Lee, J. & Kim, H. (2016) Do employee relation responsibility and culture matter for firm value? International evidence. *Pacific-Basin Finance Journal*, 40, 191–209.
- Lee, S.N., Hooy, C.W. & Taib, F.M. (2019) The effect of corporate governance on firm stock volatility in Asia. *Journal of Asia-Pacific Business*, 20(1), 25–47.
- Lee, G. & Xiao, X. (2020) Voluntary engagement in environmental projects: evidence from environmental violators. *Journal of Business Ethics*, 164, 325–348.
- Leuz, C. (2018) Evidence-based policymaking: promise, challenges and opportunities for accounting and financial markets research. *Accounting and Business Research*, 48, 582–608.
- Leuz, C. & Wysocki, P.D. (2016) The economics of disclosure and financial reporting regulation: evidence and suggestions for future research. *Journal of Accounting Research*, 54, 525–622.
- Lewandowski, S. (2017) Corporate carbon and financial performance: the role of emission reductions. *Business Strategy and the Environment*, 26, 1196–1211.
- Li, L., McMurray, A., Xue, J., Liu, Z. & Sy, M. (2018) Industry-wide corporate fraud: The truth behind the Volkswagen scandal. *Journal of Cleaner Production*, 172, 3167–3175.
- Li, Z. & Jia, J. (2022) Effect of mandatory sustainability disclosure announcements: cross-country evidence. *Pacific Accounting Review*, 34, 127–155.
- Liang, H. & Renneboog, L. (2017) On the foundations of corporate social responsibility. *The Journal of Finance*, 72, 853–910.
- Lin, L.-H. & Ho, Y.-L. (2016) Institutional pressures and environmental performance in the global automotive industry: the mediating role of organizational ambidexterity. *Long Range Planning*, 49, 764–775.
- Ling, W.T. & Abdul Wahab, N.S. (2018) Roles of tax planning in market valuation of corporate social responsibility. *Cogent Business & Management*, 5(1), 1482595.
- Ling, T.W. & Abdul Wahab, N.S. (2019) Components of book tax differences, corporate social responsibility and equity value. *Cogent Business & Management*, 6(1), 1617024.
- Lloyd-Smith, P. & An, H. (2019) Are corporate social responsibility and advertising complements or substitutes in producing firm reputation? *Applied Economics*, 51, 2275–2288.
- LópezPuertas-Lamy, M., Desender, K. & Epure, M. (2017) Corporate social responsibility and the assessment by auditors of the risk of material misstatement. *Journal of Business Finance & Accounting*, 44(9-10), 1276–1314.
- López-Arceiz, F.J., Del Río, C. & Bellostas, A.J. (2020) Sustainability performance indicators: Definition, interaction, and influence of contextual characteristics. *Corporate Social Responsibility and Environmental Management*, 27(6), 2615–2630.
- Loukil, N., Yousfi, O. & Yerbanga, R.W.K. (2019) Does gender diversity on boards reduce information asymmetry problems? Empirical evidence from the French market. *Journal of Family Business Management*, 10(2), 144–166.
- Luo, L.L. & Tang, Q. (2016) Does national culture influence corporate carbon disclosure propensity? *Journal of International Accounting Research*, 15, 17–47.
- Luo, X., Wang, H., Raithel, S. & Zheng, Q. (2015) Corporate social performance, analyst stock recommendations, and firm future returns. *Strategic Management Journal*, 36, 123–136.
- Mackenzie, C., Rees, W. & Rodionova, T. (2013) Do responsible investment indices improve corporate social responsibility? FTSE4Good's impact on environmental management. *Corporate Governance: An International Review*, 21, 495–512.
- Maignan, I. & Ferrell, O.C. (2000) Measuring corporate citizenship in two countries: the case of the United States and France. *Journal of Business Ethics*, 23, 283–297.
- Malik, M. (2015) Value-enhancing capabilities of CSR: a brief review of contemporary literature. *Journal of Business Ethics*, 127, 419–438.
- Malmendier, U. (2018) Behavioral corporate finance. In: Bernheim, B.D., DellaVigna, S. & Laibson, D. (Eds.) *Handbook of behavioral economics: applications and foundations I*. Amsterdam: North-Holland, pp. 277–379.
- Maniora, J. (2017) Is integrated reporting really the superior mechanism for the integration of ethics into the core business model? An empirical analysis. *Journal of Business Ethics*, 140, 755–786.

- Manning, B., Braam, G. & Reimsbach, D. (2019) Corporate governance and sustainable business conduct—Effects of board monitoring effectiveness and stakeholder engagement on corporate sustainability performance and disclosure choices. *Corporate Social Responsibility and Environmental Management*, 26(2), 351–366.
- del Mar Miras-Rodríguez, M. & Di Pietra, R. (2018) Corporate governance mechanisms as drivers that enhance the credibility and usefulness of CSR disclosure. *Journal of Management and Governance*, 22, 565–588.
- Marston, C.L. & Shrives, P.J. (1991) The use of disclosure indices in accounting research: a review article. *The British Accounting Review*, 23, 195–210.
- Martin, C.J.G. & Herrero, B. (2020) Do board characteristics affect environmental performance? A study of EU firms. *Corporate Social Responsibility and Environmental Management*, 27(1), 74–94.
- Matthiesen, M.-L. & Salzmann, A.J. (2017) Corporate social responsibility and firms' cost of equity: how does culture matter? *Cross Cultural and Strategic Management*, 24, 105–124.
- Mattingly, J.E. (2017) Corporate social performance: a review of empirical research examining the corporation–society relationship using Kinder, Lydenberg, Domini social ratings data. *Business & Society*, 56, 796–839.
- Mayberry, M. (2020) Good for managers, bad for society? Causal evidence on the association between risk-taking incentives and corporate social responsibility. *Journal of Business Finance & Accounting*, 47, 1182–1214.
- McGuinness, P.B., Vieito, J.P. & Wang, M. (2020) Proactive government intervention, board gender balance, and stakeholder engagement in China and Europe. *Asia Pacific Journal of Management*, 37(3), 719–762.
- Melloni, G., Caglio, A. & Perego, P. (2017) Saying more with less? Disclosure conciseness, completeness and balance in Integrated Reports. *Journal of Accounting and Public Policy*, 36, 220–238.
- Mervelskemper, L. & Streit, D. (2017) Enhancing market valuation of ESG performance: is integrated reporting keeping its promise? *Business Strategy and the Environment*, 26(4), 536–549.
- Michelon, G., Pilonato, S. & Ricceri, F. (2015) CSR reporting practices and the quality of disclosure: an empirical analysis. *Critical Perspectives on Accounting*, 33, 59–78.
- Mili, M. & Abid, S. (2016) Do corporate bond recovery rates monitored by corporate governance mechanisms? *Managerial Finance*, 42, 830–848.
- Miras-Rodríguez, M.D.M., Carrasco-Gallego, A. & Escobar-Pérez, B. (2015) Has the CSR engagement of electrical companies had an effect on their performance? A closer look at the environment. *Business strategy and the Environment*, 24(8), 819–835.
- Miras-Rodríguez, M.D.M., Bravo-Urquiza, F. & Escobar-Pérez, B. (2020) Does corporate social responsibility reporting actually destroy firm reputation? *Corporate Social Responsibility and Environmental Management*, 27(4), 1947–1957.
- Miroshnychenko, I., Barontini, R. & Testa, F. (2017) Green practices and financial performance: a global outlook. *Journal of Cleaner Production*, 147, 340–351.
- Misani, N. & Pogutz, S. (2015) Unraveling the effects of environmental outcomes and processes on financial performance: a non-linear approach. *Ecological Economics*, 109, 150–160.
- Miska, C., Szöcs, I. & Schiffinger, M. (2018) Culture's effects on corporate sustainability practices: a multi-domain and multi-level view. *Journal of World Business*, 53, 263–279.
- Mitra, A. & Gaur, S.S. (2020) Does environmental concern drive Asian firms' governance? *Journal of Asia Business Studies*, 14(4), 481–503.
- Mondejar-Jimenez, J., Peiro-Signes, A. & Segarra-Oña, M. (2014) The impact of social policies' promotion and the moderating role of location on firm's environmental scores. *International Journal of Environmental Research*, 8, 1005–1010.
- Moneva, J.M., Bonilla-Priego, M.J. & Ortas, E. (2020) Corporate social responsibility and organisational performance in the tourism sector. *Journal of Sustainable Tourism*, 28(6), 853–872.
- Moussa, T., Allam, A., Elbanna, S. & Bani-Mustafa, A. (2020) Can board environmental orientation improve US firms' carbon performance? The mediating role of carbon strategy. *Business Strategy and the Environment*, 29(1), 72–86.
- Nadeem, M., Gyapong, E. & Ahmed, A. (2020) Board gender diversity and environmental, social, and economic value creation: Does family ownership matter? *Business Strategy and the Environment*, 29(3), 1268–1284.
- Naseem, T., Shahzad, F., Asim, G.A., Rehman, I.U. & Nawaz, F. (2020) Corporate social responsibility engagement and firm performance in Asia Pacific: The role of enterprise risk management. *Corporate Social Responsibility and Environmental Management*, 27(2), 501–513.
- Naughton, J.P., Wang, C. & Yeung, I. (2019) Investor sentiment for corporate social performance. *The Accounting Review*, 94, 401–420.
- Nemlioglu, I. & Mallick, S. (2017) Do managerial practices matter in innovation and firm performance relations? New evidence from the UK. *European Financial Management*, 23, 1016–1061.
- Nguyen, V.H., Agbola, F.W. & Choi, B. (2019) Does corporate social responsibility reduce information asymmetry? Empirical evidence from Australia. *Australian Journal of Management*, 44, 188–211.
- Novethic. (2014) *Overview of ESG rating agencies*. Paris: Novethic. Available at: [https://www.novethic.com/fileadmin/user\\_upload/tx\\_ausynovethicetudes/pdf\\_complets/2014\\_Overview-of-ESG-rating-agencies.pdf](https://www.novethic.com/fileadmin/user_upload/tx_ausynovethicetudes/pdf_complets/2014_Overview-of-ESG-rating-agencies.pdf)
- Nuber, C., Velte, P. & Hörisch, J. (2020) The curvilinear and time-lagging impact of sustainability performance on financial performance: Evidence from Germany. *Corporate Social Responsibility and Environmental Management*, 27(1), 232–243.

- Obermann, J. (2020) Let's talk about money! Assessing the link between firm performance and voluntary Say-on-Pay votes. *Journal of Business Economics*, 90(1), 109–135.
- Orazalin, N. (2020) Do board sustainability committees contribute to corporate environmental and social performance? The mediating role of corporate social responsibility strategy. *Business Strategy and the Environment*, 29(1), 140–153.
- Orazalin, N. & Baydauletov, M. (2020) Corporate social responsibility strategy and corporate environmental and social performance: The moderating role of board gender diversity. *Corporate Social Responsibility and Environmental Management*, 27(4), 1664–1676.
- Orlitzky, M. (2001) Does firm size confound the relationship between corporate social performance and firm financial performance? *Journal of Business Ethics*, 33, 167–180.
- Orlitzky, M. (2008) Corporate social performance and financial performance: a research synthesis. In: Crane, A., Matten, D., McWilliams, A., Moon, J. & Siegel, D.S. (Eds.) *The Oxford handbook of corporate social responsibility*. Oxford: Oxford University Press, pp. 113–134.
- Orlitzky, M. & Benjamin, J.D. (2001) Corporate social performance and firm risk: a meta-analytic review. *Business & Society*, 40, 369–396.
- Orlitzky, M., Schmidt, F.L. & Rynes, S.L. (2003) Corporate social and financial performance: a meta-analysis. *Organization Studies*, 24, 403–441.
- Ortas, E., Moneva, J.M. & Álvarez, I. (2014) Sustainable supply chain and company performance: a global examination. *Supply Chain Management*, 19, 332–350.
- Ortas, E., Álvarez, I., Jaussaud, J. & Garayar, A. (2015) The impact of institutional and social context on corporate environmental, social and governance performance of companies committed to voluntary corporate social responsibility initiatives. *Journal of Cleaner Production*, 108, 673–684.
- Ortas, E., Gallego-Álvarez, I. & Álvarez, I. (2019) National institutions, stakeholder engagement, and firms' environmental, social, and governance performance. *Corporate Social Responsibility and Environmental Management*, 26(3), 598–611.
- Ortas, E. & Gallego-Álvarez, I. (2020) Bridging the gap between corporate social responsibility performance and tax aggressiveness: The moderating role of national culture. *Accounting, Auditing & Accountability Journal*, 33(4), 825–855.
- Pagano, M.S., Sinclair, G. & Yang, T. (2018) Understanding ESG ratings and ESG indexes. In: Boubaker, S., Cumming, D. & Nguyen, D.K. (Eds.) *Research handbook of finance and sustainability*. Cheltenham: Edward Elgar Publishing, pp. 339–371.
- Palea, V. & Drogo, F. (2020) Carbon emissions and the cost of debt in the eurozone: The role of public policies, climate-related disclosure and corporate governance. *Business Strategy and the Environment*, 29(8), 2953–2972.
- Papagiannakis, G., Voudouris, I., Lioukas, S. & Kassinis, G. (2019) Environmental management systems and environmental product innovation: the role of stakeholder engagement. *Business Strategy and the Environment*, 28, 939–950.
- Parker, L.D. (2005) Social and environmental accountability research: a view from the commentary box. *Accounting, Auditing & Accountability Journal*, 18, 842–860.
- Parker, L.D. (2011a) Building bridges to the future: mapping the territory for developing social and environmental accountability. *Social and Environmental Accountability Journal*, 31, 7–24.
- Parker, L.D. (2011b) Twenty-one years of social and environmental accountability research: a coming of age. *Accounting Forum*, 35, 1–10.
- Parker, L.D. & Guthrie, J. (2014) Addressing directions in interdisciplinary accounting research. *Accounting, Auditing & Accountability Journal*, 27, 1218–1226.
- Patten, D.M. (2015) An insider's reflection on quantitative research in the social and environmental disclosure domain. *Critical Perspectives on Accounting*, 32, 45–50.
- Pérez-Cornejo, C., de Quevedo-Puente, E. & Delgado-García, J.B. (2019) How to manage corporate reputation? The effect of enterprise risk management systems and audit committees on corporate reputation. *European Management Journal*, 37(4), 505–515.
- Pisani, N., Kourula, A., Kolk, A. & Meijer, R. (2017) How global is international CSR research? Insights and recommendations from a systematic review. *Journal of World Business*, 52, 591–614.
- Qian, C., Lu, L.Y. & Yu, Y. (2019) Financial analyst coverage and corporate social performance: evidence from natural experiments. *Strategic Management Journal*, 40, 2271–2286.
- Qiu, Y., Shaikat, A. & Tharyan, R. (2016) Environmental and social disclosures: link with corporate financial performance. *The British Accounting Review*, 48, 102–116.
- Quantitative Services Group. (2009) *The ASSET4 framework: adding value through environmental, social & corporate governance information*. Available at: [https://cdn.ihs.com/www/pdf/Adding\\_Value\\_through\\_Environmental\\_Social\\_\\_Corporate\\_Governance\\_Information.pdf](https://cdn.ihs.com/www/pdf/Adding_Value_through_Environmental_Social__Corporate_Governance_Information.pdf).
- Radhouane, I., Nekhili, M., Nagati, H. & Paché, G. (2018) The impact of corporate environmental reporting on customer-related performance and market value. *Management Decision*, 56, 1630–1659.

- Rajesh, R. & Rajendran, C. (2020) Relating environmental, social, and governance scores and sustainability performances of firms: An empirical analysis. *Business Strategy and the Environment*, 29(3), 1247–1267.
- Rathert, N. (2016) Strategies of legitimation: MNEs and the adoption of CSR in response to host-country institutions. *Journal of International Business Studies*, 47, 858–879.
- Rees, W. & Rodionova, T. (2013) What type of controlling investors impact on which elements of corporate social responsibility? *Journal of Sustainable Finance & Investment*, 3, 238–263.
- Rees, W. & Rodionova, T. (2015) The influence of family ownership on corporate social responsibility: an international analysis of publicly listed companies. *Corporate Governance: An International Review*, 23, 184–202.
- Refinitiv. (2020) *Environmental, social and governance (ESG) scores from Refinitiv*.
- Rekker, S.A.C., Humphrey, J.E. & O'Brien, K.R. (2021) Do sustainability rating schemes capture climate goals? *Business & Society*, 60, 125–160.
- Ribando, J.M. & Bonne, G. (2010) *A new quality factor: finding alpha with ASSET4 ESG data*. Starmine Research Note, Thomson Reuters.
- Richardson, A.J. (2015) Quantitative research and the critical accounting project. *Critical Perspectives on Accounting*, 32, 67–77.
- Roberts, R.W. & Wallace, D.M. (2015) Sustaining diversity in social and environmental accounting research. *Critical Perspectives on Accounting*, 32, 78–87.
- Rost, K. & Ehrmann, T. (2017) Reporting biases in empirical management research: the example of win-win corporate social responsibility. *Business & Society*, 56, 840–888.
- Roulet, T.J. & Touboul, S. (2015) The intentions with which the road is paved: attitudes to liberalism as determinants of greenwashing. *Journal of Business Ethics*, 128, 305–320.
- Sahin, Ö., Bax, K., Paterlini, S. & Czado, C. (2022) The pitfalls of (non-definitive) environmental, social, and governance scoring methodology. Available at: <https://ssrn.com/abstract=4020354>
- Salhi, B., Riquen, R., Kachouri, M. & Jarboui, A. (2020) The mediating role of corporate social responsibility on the relationship between governance and tax avoidance: UK common law versus French civil law. *Social Responsibility Journal*, 16(8), 1149–1168.
- Sarkar, S. & Searcy, C. (2016) Zeitgeist or chameleon? A quantitative analysis of CSR definitions. *Journal of Cleaner Production*, 135, 1423–1435.
- Sassen, R., Hinze, A.K. & Hardeck, I. (2016) Impact of ESG factors on firm risk in Europe. *Journal of Business Economics*, 86, 867–904.
- Schäfer, H., Beer, J., Zenker, J. & Fernandes, P. (2006) *Who is who in corporate social responsibility rating? A survey of internationally established rating systems that measure corporate responsibility*. Gütersloh, Germany: Bertelsmann Foundation.
- Schiemann, F. & Sakhel, A. (2019) Carbon disclosure, contextual factors, and information asymmetry: the case of physical risk reporting. *European Accounting Review*, 28, 791–818.
- Seaborn, P., Olsen, T.D. & Howell, J. (2020) Is insider control good for environmental performance? Evidence from dual-class firms. *Business & Society*, 59(4), 716–748.
- Seifert, B. & Gonenc, H. (2018) The effects of country and firm-level governance on cash management. *Journal of International Financial Markets, Institutions and Money*, 52, 1–16.
- Semenova, N. & Hassel, L.G. (2015) On the validity of environmental performance metrics. *Journal of Business Ethics*, 132, 249–258.
- Shaukat, A., Qiu, Y. & Trojanowski, G. (2016) Board attributes, corporate social responsibility strategy, and corporate environmental and social performance. *Journal of Business Ethics*, 135, 569–585.
- Shakil, M.H., Mahmood, N., Tasnia, M. & Munim, Z.H. (2019) Do environmental, social and governance performance affect the financial performance of banks? A cross-country study of emerging market banks. *Management of Environmental Quality: An International Journal*, 30(6), 1331–1344.
- Sidhoum, A.A. & Serra, T. (2017) Corporate social responsibility and dimensions of performance: An application to US electric utilities. *Utilities Policy*, 48, 1–11.
- Sidhoum, A. & Serra, T. (2018) Corporate sustainable development. Revisiting the relationship between corporate social responsibility dimensions. *Sustainable Development*, 26(4), 365–378.
- Simoni, L., Bini, L. & Bellucci, M. (2020) Effects of social, environmental, and institutional factors on sustainability report assurance: Evidence from European countries. *Meditari Accountancy Research*, 28(6), 1059–1087.
- Simnett, R., Vanstraelen, A. & Chua, W.F. (2009) Assurance on sustainability reports: an international comparison. *The Accounting Review*, 84, 937–967.
- Spence, C., Husillos, J. & Correa-Ruiz, C. (2010) Cargo cult science and the death of politics: a critical review of social and environmental accounting research. *Critical Perspectives on Accounting*, 21, 76–89.
- Stellner, C., Klein, C. & Zwergel, B. (2015) Corporate social responsibility and Eurozone corporate bonds: the moderating role of country sustainability. *Journal of Banking & Finance*, 59, 538–549.
- Stolowy, H. & Paugam, L. (2018) The expansion of non-financial reporting: an exploratory study. *Accounting and Business Research*, 48, 525–548.



- Sun, J., Yoo, S., Park, J. & Hayati, B. (2019) Indulgence versus restraint: The moderating role of cultural differences on the relationship between corporate social performance and corporate financial performance. *Journal of Global Marketing*, 32(2), 83–92.
- SustainAbility. (2019) *Rate the raters 2019: expert views on ESG ratings*. London: SustainAbility.
- SustainAbility. (2020) *Rate the raters 2020: investor survey and interview results*. London: SustainAbility.
- Symeou, P.C., Zygliopoulos, S. & Williamson, P. (2018) Internationalization as a driver of the corporate social performance of extractive industry firms. *Journal of World Business*, 53, 27–38.
- Tampakoudis, I. & Anagnostopoulou, E. (2020) The effect of mergers and acquisitions on environmental, social and governance performance and market value: Evidence from EU acquirers. *Business Strategy and the Environment*, 29(5), 1865–1875.
- Tan, S.H., Habibullah, M.S., Tan, S.K. & Choon, S.W. (2017) The impact of the dimensions of environmental performance on firm performance in travel and tourism industry. *Journal of environmental management*, 203, 603–611.
- Terblanche, W. & De Villiers, C. (2019) The influence of integrated reporting and internationalisation on intellectual capital disclosures. *Journal of Intellectual Capital*, 20(1), 40–59.
- Testa, F., Boiral, O. & Iraldo, F. (2018) Internalization of environmental practices and institutional complexity: can stakeholders pressures encourage greenwashing? *Journal of Business Ethics*, 147, 287–307.
- Thomson Reuters. (2011) *ASSET4 Assetmaster professional reference guide*. Canada: Thomson Reuters.
- Thomson Reuters. (2017) *Thomson Reuters ESG scores*. Canada: Thomson Reuters.
- Thornton, D., Kagan, R.A. & Gunningham, N. (2003) Sources of corporate environmental performance. *California Management Review*, 46, 127–141.
- Tommaso, C.D. & Thornton, J. (2020) Do ESG scores effect bank risk taking and value? Evidence from European banks. *Corporate Social Responsibility and Environmental Management*, 27(5), 2286–2298.
- Trumpp, C., Endrikat, J., Zopf, C. & Guenther, E. (2015) Definition, conceptualization, and measurement of corporate environmental performance: a critical examination of a multidimensional construct. *Journal of Business Ethics*, 126, 185–204.
- Trumpp, C. & Guenther, T. (2017) Too little or too much? Exploring U-shaped relationships between corporate environmental performance and corporate financial performance. *Business Strategy and the Environment*, 26, 49–68.
- Ullmann, A.A. (1985) Data in search of a theory: a critical examination of the relationships among social performance, social disclosure, and economic performance of US firms. *Academy of Management Review*, 10, 540–557.
- Usman, B. (2020) CSR performance, firm's attributes, and sustainability reporting. *International Journal of Business and Society*, 21(2), 521–539.
- Utz, S. (2018) Over-investment or risk mitigation? Corporate social responsibility in Asia-Pacific, Europe, Japan, and the United States. *Review of Financial Economics*, 36, 167–193.
- Van der Byl, C.A. & Slawinski, N. (2015) Embracing tensions in corporate sustainability: a review of research from win-wins and trade-offs to paradoxes and beyond. *Organization & Environment*, 28, 54–79.
- Velte, P. (2016) Women on management board and ESG performance. *Journal of Global Responsibility*, 7, 98–109.
- Velte, P. (2017) Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility*, 8(2), 169–178.
- Velte, P. (2019) The bidirectional relationship between ESG performance and earnings management—empirical evidence from Germany. *Journal of Global Responsibility*, 10(4), 322–338.
- Velte, P. & Stawinoga, M. (2017) Empirical research on corporate social responsibility assurance (CSRA): a literature review. *Journal of Business Economics*, 87, 1017–1066.
- Venter, E.R., Stiglingh, M. & Smit, A.R. (2017) Integrated thinking and the transparency of tax disclosures in the corporate reports of firms. *Journal of International Financial Management & Accounting*, 28, 394–427.
- Wamba, L.D., Braune, E. & Hikkerova, L. (2018) Does shareholder-oriented corporate governance reduce firm risk? Evidence from listed European companies. *Journal of Applied Accounting Research*, 19(2), 295–311.
- Wamba, L.D., Sahut, J. M., Braune, E., & Teulon, F. (2020) Does the optimization of a company's environmental performance reduce its systematic risk? New evidence from European listed companies. *Corporate Social Responsibility and Environmental Management*, 27(4), 1677–1694.
- Wang, R., Zhou, S. & Wang, T. (2020) Corporate governance, integrated reporting and the use of credibility-enhancing mechanisms on integrated reports. *European Accounting Review*, 29(4), 631–663.
- Wood, D.J. (1991a) Corporate social performance revisited. *Academy of Management Review*, 16, 691–718.
- Wood, D.J. (1991b) Social issues in management: theory and research in corporate social performance. *Journal of Management*, 17, 383–406.
- Wood, D.J. (2010) Measuring corporate social performance: a review. *International Journal of Management Reviews*, 12, 50–84.
- Wood, D.J. & Jones, R.E. (1995) Stakeholder mismatching: a theoretical problem in empirical research on corporate social performance. *The International Journal of Organizational Analysis*, 3, 229–267.

- Wu, W., Liang, Z. & Zhang, Q. (2020) Effects of corporate environmental responsibility strength and concern on innovation performance: the moderating role of firm visibility. *Corporate Social Responsibility and Environmental Management*, 27, 1487–1497.
- Xue, B., Zhang, Z. & Li, P. (2020) Corporate environmental performance, environmental management and firm risk. *Business Strategy and the Environment*, 29(3), 1074–1096.
- Yen, M.F., Shiu, Y.M. & Wang, C.F. (2019) Socially responsible investment returns and news: evidence from Asia. *Corporate Social Responsibility and Environmental Management*, 26, 1565–1578.
- Younas, Z.I. & Zafar, A. (2019) Corporate risk taking and sustainability: a case of listed firms from USA and Germany. *Journal of Global Responsibility*, 10(1), 2–15.
- Yuan, Y., Tian, G., Lu, L.Y. & Yu, Y. (2019) CEO ability and corporate social responsibility. *Journal of Business Ethics*, 157, 391–411.
- Zhou, S., Simnett, R. & Green, W.J. (2016) Assuring a new market: The interplay between country-level and company-level factors on the demand for greenhouse gas (GHG) information assurance and the choice of assurance provider. *Auditing: A Journal of Practice & Theory*, 35(3), 141–168.
- Zhou, S., Simnett, R. & Green, W. (2017) Does integrated reporting matter to the capital market? *Abacus*, 53, 94–132.
- Ziegler, A., Busch, T. & Hoffmann, V.H. (2011) Disclosed corporate responses to climate change and stock performance: an international empirical analysis. *Energy Economics*, 33, 1283–1294.
- Zulkafli, A.H., Hooy, C.-W. & Ooi, C.-A. (2017) Investigating the effectiveness of corporate governance code revisions on the perspective of the revision interval. *International Journal of Business and Society*, 18, 503–514.

## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** de Villiers, C., Jia, J. & Li, Z. (2022) Corporate social responsibility: A review of empirical research using Thomson Reuters Asset4 data. *Accounting & Finance*, 62, 4523–4568. Available from: <https://doi.org/10.1111/acfi.13004>