



Article

Alternative ESG Ratings: How Technological Innovation Is Reshaping Sustainable Investment

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Abstract: Environmental, Social and Governance (ESG) rating agencies have been instrumental in mainstreaming sustainability in the investment industry. Traditionally, they have relied on company disclosure and human analysis to produce their ratings. More recently however, technological innovation in data scraping and Artificial Intelligence (AI) have undercut the traditional approach. Tech-driven Alternative ESG ratings are becoming increasingly influential yet remain critically underexplored in sustainable finance scholarship. Grounded within financial geography and using mixed methods, this paper fills this gap by comparing a set of Traditional ratings, sourced from MSCI ESG, with an Alternative AI-based set of ESG ratings sourced from Truvalue Labs. Our results expand upon recent research on ESG ratings by shedding new light on low commensurability between Traditional and Alternative ESG ratings. Specifically, we show that differences in ratings are driven by four main factors: differences in ESG theorisation based on key issue selection, differences in data sources analysed, differences in weighting structures for rating aggregation, and finally differences in controversy analysis. Our findings are contextualised using participatory observations collected during fieldwork at a leading asset manager in the City of London. Overall, we show that the advantages of Alternative ESG ratings include higher levels of standardisation, a transparent ‘outside-in’ perspective on ratings, a more democratic aggregation process, and rigorous real-time analytics. We argue that these characteristics reflect a geographic reconfiguration of ESG rating construction, expanding from financial agglomerations to technological and digital spaces of innovation. While Alternative ESG ratings make major promises on how technology can reform sustainable investing, we recognise that risks remain.

Keywords: environmental, social and governance (ESG); financial geography; sustainable investment; agglomerations; artificial intelligence



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1. Introduction

Asset managers provide investment products and services to institutional and retail clients and are a key player in free market economies [1]. In 2018, the global asset management industry held \$74.3 trillion under management [2]. Despite its considerable power, this industry has historically existed with little consideration for sustainability issues. A significant amount of investment activity has been mobilised to support profitable but unsustainable activities, funding businesses that degrade the environment and act irresponsibly in local communities. A shift to a sustainable world begs for systemic change within financial markets to avoid ‘business-as-usual’ pathways. To do so, a mainstream uptake in sustainable investment is required. While Milton Friedman argued that corporate social responsibility stemmed from profit maximisation [3], it is now widely recognised that companies and investors need to go further, and actively contribute to wider social and environmental issues.

Sustainable investment is a complex and often misunderstood concept, yet three main strands can be identified. The earliest form was referred to as Socially Responsible

Investment (SRI). SRI has its roots in the Quaker movement and religious groups of the 20th Century, which gave it an ethical focus [4]. It uses simple positive and negative screens to either include or exclude companies that violate particular ethical concerns from consideration in funds. The simplicity of these screens makes them easy to implement, with negative screens still the most popular form of sustainable investment [5]. Impact investing (II) has built on SRI to strive for measurable positive impact in sustainability issues, following frameworks such as the United Nations' Sustainable Development Goals (SDGs). SRI and II thus have an ethical focus, and while they still seek to sustain a viable business model by achieving strong returns, societal good is given priority. These sustainable investment strategies can thus be defined as *values-driven*; the balance between maximising returns and sustainability is positioned in favour of sustainability.

A different conception of sustainable investing has emerged in the form of Environmental, Social and Governance (ESG) integration. ESG integration is increasingly mainstream, with global assets under management (AUM) reaching \$17.5 trillion in 2018 and recording 69% growth since 2016 [5]. The key differentiator between ESG integration and SRI/II is that it is fundamentally a *value-driven* exercise, where attending to ethical or societal concerns are expected to deliver financial returns. It involves analysing how key sustainability issues across ESG dimensions can be integrated into the risk-return profile of a company or security. ESG integration is used to enhance financial returns. This is driven by the evidence and belief that companies that are aligned with long term sustainability issues will not only reduce investment risk but also create growth opportunities [6].

ESG investing thus involves analysis of the *extra-financial* elements of company performance. In order to make sustainability information as relevant as financial information [7], the practice involves identifying the sustainability issues that are financially relevant, or *material*, to the business model of companies [8]. These are commonly referred to in industry as key issues. Materiality is based on the theory that good ESG performance brings better financial performance, but only if companies focus on the key issues that are financially material to them [9]. For example, fuel management is undoubtedly more relevant to the profitability of airlines than it is to commercial banks. In this way, materiality highlights the theoretical differences between values and value-driven investors and ratings. A focus on ESG issues that are not material may not bring better financial performance and may even detract from returns [10]. A key player in this field is the Sustainability Accounting Standards Board (SASB), a San Francisco-based NGO that seeks to set global sustainability reporting standards. The organisation is rapidly gaining credibility and has been endorsed by several influential asset managers; Blackrock's CEO Larry Fink for example, in charge of \$8.6trn AUM, is a particularly vocal supporter (in his 2020 letter to CEOs, entitled "A Fundamental Reshaping of Finance", Larry Fink asked them to "publish a disclosure in line with industry-specific SASB guidelines by year-end"). In 2018 SASB published a mapping of financially material ESG key issues on the sector and sub-industry level. These key issues stemmed from 12 major public and stakeholder engagement rounds and serve as a guide to corporate disclosure and ESG investment strategies.

Third-party sustainable investment ratings have been heavily involved in the evolution of sustainable investment, helping resource-constrained asset managers to outsource sustainability expertise. They can be compared to the credit rating agencies that monitor the financial health of companies and governments, but instead analyse sustainability issues. This paper focuses on ESG ratings and providers (throughout the paper, both the ratings themselves and their providers will be analysed- ratings are treated as an output of the processes and spaces that providers are bound up in) that are value-driven, i.e., not driven by ethical considerations. Early attempts to define ESG rating providers described them as "any organisation that rates or assesses corporations according to a standard of social and environmental performance that is at least in part based on non-financial data" [11] (p. 1). This definition can be extended to include the assessment of governance issues, including compensation or business ethics. The industry has matured significantly, and recent years have seen a consolidation of the number of rating providers through a series of mergers

and acquisitions—the ESG ratings industry now consists of a small number of dominant companies [12,13].

Traditionally, ESG ratings have been developed by human research analysts following proprietary methodologies to analyse company disclosures, articles, and industry research among other sources to identify the ESG credentials of a company. Figure 1 shows the process underpinning analyst-driven ESG research, imbued with subjectivity during data analysis and rating generation. Yet innovations in financial technology are disrupting the world of ESG ratings. Within the last few years, developments in artificial intelligence (AI) and machine learning have led to the creation of a new type of ESG ratings provider; one that analyses the ESG risks and opportunities of companies by collecting (or ‘scraping’) and analysing unstructured data from internet sources using AI. Human research analysts are largely replaced by algorithms, particularly during the latter stages of data analysis and rating generation (Figure 1). As such, they appear to systematically apply standardised theorisations of ESG, such as SASB’s, offering a different perspective from Traditional ratings. Most importantly, they use no company disclosure information. These *Alternative ESG ratings providers* have emerged from Silicon Valley-like cultures of technological innovation, and are driven by computer engineers, coders, and AI rather than human research analysts within financial centres.

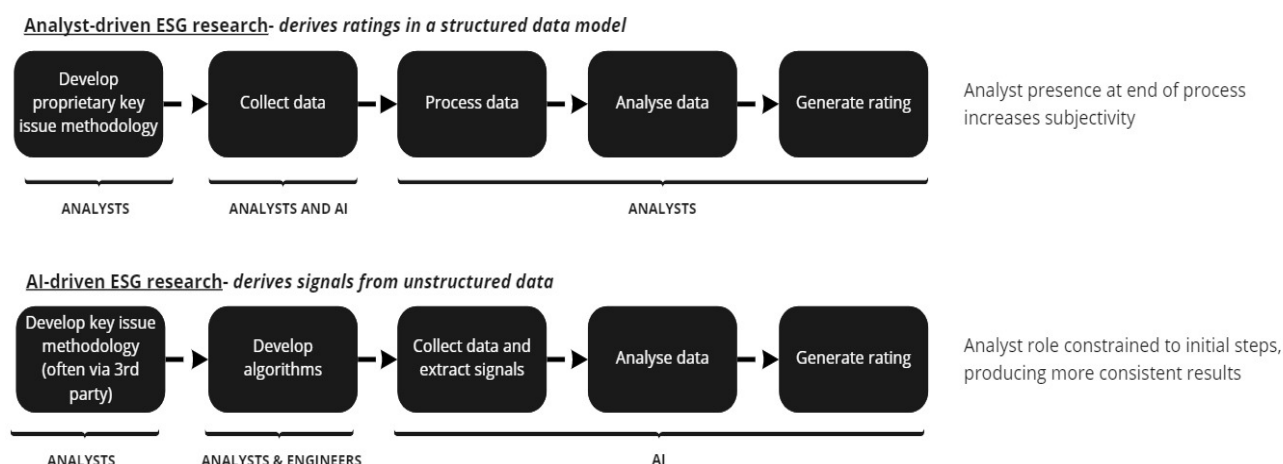


Figure 1. The contrasting role of human research analysts in the processes of Traditional (**top**) and Alternative (**bottom**) ESG ratings providers. Source: Author, adapted from information from TVL.

Alternative ratings are gaining traction in industry and in academia. Yet previous ESG literature has focused exclusively on understanding Traditional ESG ratings (analyst driven ESG ratings) and the divergence between them [14]. Little research has directly investigated whether Alternative AI-driven ratings differ from Traditional ones, and if so, then how and why this occurs. Furthermore, little has been said about how they could be contrasted spatially and what this means for sustainable investment from a geographical perspective. This paper thus compares Traditional and Alternative ESG ratings by addressing two main research questions: (1) How do Alternative ESG ratings differ from Traditional ratings? (2) What explains these differences methodologically, and why does this matter for sustainable investment from a geographical perspective?

The paper begins with a literature review of the major geographical ideas surrounding ESG, sustainable investment and the differences between Traditional and Alternative ESG ratings. We then outline our methodology and investigate how and why the ratings from two market-leading Traditional and Alternative providers differ (MSCI and Truvalue Labs, respectively). We then conclude with a summary of the key findings and make recommendations for future research.

2. Geographical Perspectives on ESG Ratings

ESG investing thus assumes that for a sustainability objective to be worthwhile, it has to be worthwhile from an investment perspective. It therefore attracts critical engagement from radical environmentalists who see ESG investing as a Gramscian ‘passive revolution’ [15], whereby the free market is portrayed as the ‘saviour’ for sustainability, and the only way environmental and social problems are to be avoided. Although such critiques of ESG investing are accepted, it is likely that the free-market, profit-oriented principles of our current economic system are now so embedded that matching sustainability concerns with the need for financial returns is the only realistic way to advance a sustainability agenda in the investment industry [16]. More radical strategies such as II simply do not yet have enough influence. Although at first it may appear ESG investing has diluted sustainability concerns, it may actually be an effective compromise to solve the world’s most pressing problems, by providing a vital link between sustainability and financial markets that can satisfy the need for progress in both areas. On the one hand we face the risk of ESG investing being used as a smokescreen for investors to follow business-as-usual strategies under the guise of sustainability [17]. On the other hand, if ESG investing is performed in a genuine way—not allowing the quest for profit to overshadow and compromise sustainability concerns within investment decisions—it can not only reduce societal and environmental harm, but also lay a foundation for more radical shifts to values-driven investment in the future. It is accepted that most, if not all ESG rating providers, both Traditional and Alternative, are profit-seeking firms and are concerned primarily with materiality. While acknowledging this fact, our argument is not necessarily to criticise it from a political economy perspective, but to address the challenge of making ESG ratings as standardised, transparent, and rigorous as possible.

A rich literature investigates problems with Traditional ratings that need to be solved in order to overcome this challenge [18,19]. In particular, there is a significant amount of subjectivity involved in the process, leading to a lack of standardisation and therefore multiple methodologies that result in low correlation between ratings [20,21]. As a result, sustainability integration is not easily carried out by investors who lack expertise in such areas [22], although it is important to recognise that there are tensions within asset managers as to whether standardisation is desirable, as they constantly search for competitive advantage to maximise returns [23,24]. Further criticism relates to low transparency, as Traditional providers lack the accountability of the credit rating industry due to the absence of regulatory standards [25] (although the situation is set to change, with Europe introducing initiatives such as the Sustainable Finance Disclosures Regulation (SFDR; Regulation 2019/2088) and the EU Taxonomy, specifically aimed at tackling greenwashing and improving the accountability of ESG disclosure in the financial markets). This raises questions about proprietary internal definitions, weightings, and criteria [26,27]. Coupled with the potential for greenwashing that comes with the unaccountable company disclosures that many Traditional ratings providers still rely on [28,29], the lack of transparency within ESG rating processes represents an urgent challenge [18].

To start to deal with these criticisms, Figure 2 represents models for how both Traditional and Alternative ratings providers operate. In both cases, data about a group of corporations is filtered through a number of actors, before a rating is generated and used by asset managers to guide their investment decisions.

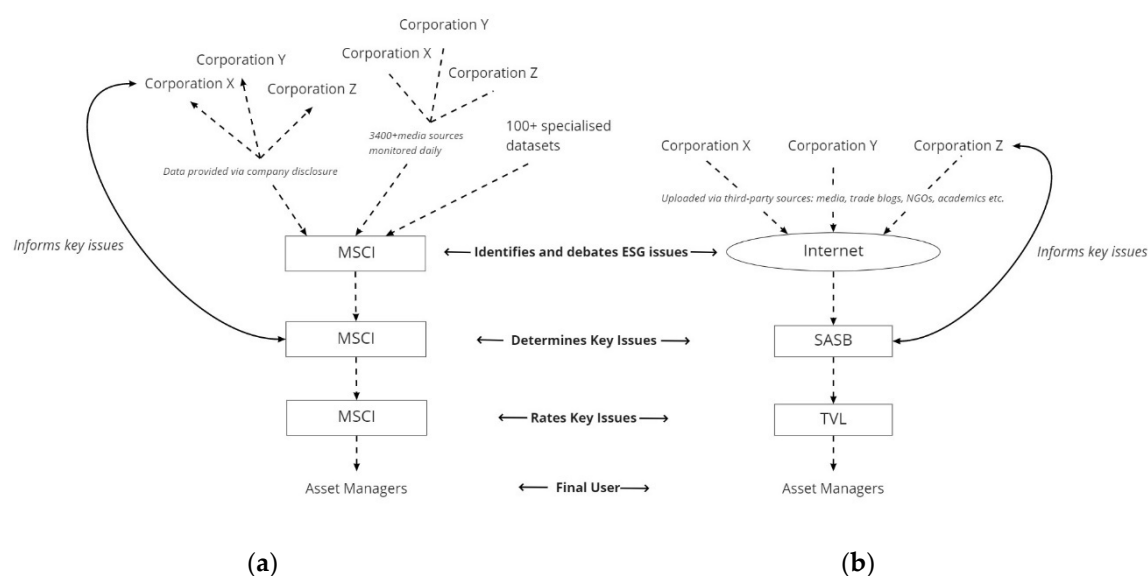


Figure 2. Traditional (a) vs. Alternative (b) ESG rating model (exemplified by TVL and MSCI). Source: Author.

Traditional ratings networks, as shown in Figure 2a, are composed of only three actors: rated corporations, rating agencies (e.g., MSCI) and end-users. Processes have thus been driven by a small corporate elite [30], usually embedded within the institutional environments of international financial centres (IFCs) and concentrated in IFCs such as Wall Street and the City of London to take advantage of the co-location benefits of cities [31]. Many Traditional providers have also been acquired by, linked to, or spun off from conventional financial services companies (e.g., MSCI, RobecoSAM, Bloomberg, FactSet). This activity in mergers and acquisitions, where financial institutions routinely purchase sustainability rating agencies as part of diversification strategies, only intensifies the spatial proximity between the two [32]. They form part of a network of Advanced Business Services that are located in these major cities that offer a strategic coupling opportunity [33]. Within financial centres Traditional providers are in close spatial proximity to the headquarters of the large companies they rate and have close relationships with the asset managers who pay for and use their services. Extensive literature addresses how these enclosed spaces of knowledge production (SKP) result in proprietary and less democratic practices [34]. Therefore, we refer to SKP to describe how “space and place shape . . . knowledge dynamics by proximity economies and the institutional embeddedness of actors” [35]. This is particularly pertinent to the ESG rating industry, which is a nascent industry that involves learning processes that are shaped by flows of tacit and codified knowledge via socially constructed processes.

Economic geographers have focused on how the flows of both tacit and codified knowledge facilitates and encourages the formation of such spatial agglomerations, and these flows are no different in the ESG rating industry [36]. As ESG has grown in recent years, a corporate definition of sustainable investment has emerged within these spaces, nurtured through localised ‘buzz’ [37,38] between ESG rating agencies, companies, and asset managers outlined in Figure 2. Traditional ratings providers that have offices around the world can then disseminate this knowledge globally. New York and London are particularly powerful IFCs that often create unsustainable and irresponsible cultures. Indeed, it has been argued that “if global finance is to change, the New York-London axis has to change” [39] (p. 1).

Codified knowledge flows in a two-way feedback cycle between companies and rating agencies in the form of company disclosures, questionnaires, and feedback on ratings [40], shown in the model in Figure 2a. Tacit knowledge surrounding investment processes flows from investment professionals to raters, through sustainable investment conferences, focus groups and informal networking in financial hubs. ESG ratings, built by human analysts imbued with subjectivities and positionalities, thus feed off face-to-face (F2F) contact

and the ‘trust’ that this builds across the investment chain [41]. However, this spatial proximity between Traditional raters and other financial stakeholders means that control of corporate sustainability information has become concentrated within F2F-intensive closed networks. They act as a black box where sustainability information is corporatised and made proprietary, to protect the financial interest of the actors involved.

The few actors involved and the opacity of the dialogue between them in Traditional networks thus risks encouraging biases in the ratings. For example, higher scores have been found to have been assigned to larger companies who have more resources to fill out the questionnaires that ratings providers send them [13,42]. Conflicts of interest may also exist; whereby higher ratings are sometimes given to the holdings of asset managers who are also heavily invested in the ratings providers themselves [43]. Beloe et al. [44] further highlighted a lack of independence between the rating agencies and the companies they were directly evaluating, while Eccles and Stroeble [14] build on these investigations by discussing the extent to which their consolidation history has influenced their current philosophies and methodologies. In a slightly different vein, Ioannou et al. [45] found that credit rating agencies give higher ratings to companies in leading financial centres, adding to the literature on cultural and geopolitical biases in ratings, which suggests that bias could also be prevalent among ESG ratings.

Technology, however, potentially offers a solution to these old problems. Developments in big data and AI are receiving increased interest from geographers, who are exploring how these innovations are reconfiguring digital geographies [46]. For ESG investing, asset managers are exploring ways they can utilise AI and big data to improve investment decisions by limiting the subjectivity and cognitive bias that often stems from human-led analysis [47]. These innovations have begun to be applied to ESG sustainability insights in the form of ‘Alternative data’ sources that supplement the core financial information, using data which has been scraped from the Internet [48]. In this way, AI is arguably being utilised for social good [49]. Alternative ESG ratings providers have begun to create ratings based on AI that provide a more objective, outside-in perspective of a companies’ sustainability performance [50]. They use natural language processing (NLP) to synthesise vast amounts of unstructured data from online media and the Internet to extract the public sentiment on a company through automatic summarisation, relationship extraction and sentiment analysis that effectively judges what the world thinks about the company. Machine learning is being applied to sustainable investment to give structure to unstructured datasets. For instance, Bala et al. [51] outlined how AI can successfully assign quantitative values to qualitative data based on cognitive computing processes.

Fundamentally, these AI techniques have started to redistribute the control of sustainability information away from just a handful of powerful actors in financial centres. Firstly, there are many more stakeholders than just the corporations themselves feeding into the discussion on relevant ESG issues. Figure 2 shows how the Internet acts as a quasi-objective collection of 3rd party *public* information on companies, coming from NGOs, national and international media sources, academic journals, trade blogs (completely removing reliance on any company disclosure, which still makes up about 45% of data in traditional networks, according to an interview participant at MSCI). Secondly, sustainability reporting standards initiatives such as SASB play an important role in defining the relevant ESG issues in these networks. This is in contrast to the Traditional model, where the ratings agency was responsible for identifying the key issues themselves.

While the traditional networks are usually found clustered in a handful of IFCs, alternative networks are split between IFCs and technology centres. This is because alternative ESG ratings providers are often born out of the start-up, Silicon Valley technocentric culture that represents a significantly different SKP to the corporate high-finance culture of Wall Street and the City of London. Alternative ratings are driven by innovation and an “anti-authoritarian” ideology originating from hacking culture, critical of corporate elites and prioritising the freedom of information [52]. As a result, these Alternative ESG ratings fundamentally contrast with Traditional ratings that are substantially based on

closed networks and company disclosure. Instead of the ‘inside-out’ perspective that this creates, Alternative providers follow an ‘outside-in’ perspective, which is based on a more democratic system that creates ratings using no company disclosure, analysing only publicly available data sources based on public perception.

Consequently, ESG analysis has been elevated from F2F contact within financial hubs to virtual, online spaces using big data and AI. Alternative ESG ratings have moved sustainability ratings into virtual ‘cyberspaces’ [53], which further distances the ratings from the worldviews of financial centres. There is no communication between them and the companies they rate, and dialogue with investors is based simply on online platforms rather than through in person communication between human analysts. AI is uncovering the ‘digital shadows’ of companies that can provide ‘augmented realities’ [54,55] of their ESG profiles, leveraging big data analytics to uncover deeper signals. The reliance on objective digital analysis and the dominant use of cyberspace removes ESG ratings from financial hubs. AI is also reconfiguring the temporal character of ESG information, speeding up processes with real-time analytics and altering the time-space dimensions of information flows [56].

Yet while there are valid reasons to welcome the fact that the traditional model of IFC-based F2F disclosure is being disrupted, the balance of power has now shifted towards a different kind of corporate elite with autocratic tendencies. There are concerns about how Silicon Valley has transitioned into being a similarly power-hungry and neoliberal space to Wall Street, placing the power of technology and control over the measuring and disclosing of corporate sustainability into the hands of a small, increasingly politicised minority [52]. Indeed, there is an increasingly symbiotic relationship between Wall Street and Silicon Valley; a new axis of unprecedented corporate power eager to claim financial and informational supremacy. There are also concerns over how transparent AI can be, with analysis of digital geographies documenting the unequal global access to the Internet [57,58], the positionalities of the analysts who write the code, and the potential for algorithms to ‘go bad’ [49]. The virtual spaces that Alternative ESG ratings are drawn from are still facilitated by physical infrastructures, such as data centres, cables, and routers [59], which can limit uninhibited global access. Proprietary algorithms of Alternative providers can also be vulnerable to ‘Google governance’ [60] that allows platforms to control what users see, mediating the mobility of information.

While it is clear that tacit knowledges of ESG based on human interactions in global financial hubs are being spatially disrupted by new digital geographies based on AI and big data, the *objectivity* of alternative networks must also not be exaggerated. While Truvalue Labs and SASB are close to Silicon Valley and operate digitally, they are located in San Francisco; now arguably the second most important financial centre in the US. Other AI-driven ratings providers are also based in financial centres globally, for example: RepRisk (Zurich), Sensefolio (London) and Arabesque S-Ray (Frankfurt). Truvalue Labs have also recently been acquired by FactSet, a global financial data and software company headquartered in Norwalk, Connecticut (a major centre for the US hedge-fund industry, and part of an extended financial city-region of New York). The apparently more democratised and open networks of alternative ESG ratings are thus still subject to close relationships with IFCs.

The alternative model laid out in Figure 2b may also create new tensions as existing relationships break down. There may sometimes be a case for closed networks and F2F interactions when it comes to corporate engagement. While it might make sense to have independent raters, there is still a need for power brokers to connect companies and investors within a productive dialogue—the latter may well still require closed networks and opaque knowledge. Conferences and informal meetings can be useful in facilitating conversations by pooling users and companies together. For these reasons, the alternative rating model may complement rather than substitute the conventional one, with both types of providers co-existing and possibly collaborating with each other. The relationship

between Traditional and Alternative networks may thus be more complex than simply one seeking to replace the other.

However, while these nuances are important to recognise, Figure 2 suggests that the power of traditional networks are indeed being disrupted to some extent. Alternative approaches are changing the spatiality of ESG ratings in two ways; firstly, by broadening their institutional embeddedness from financial centres to centres of technological innovation, and secondly, by reconfiguring rating construction to ‘virtual’ spaces online, creating new digital geographies of sustainable investment.

In summary, a large body of academic and practitioner literature has explored the rise of ESG ratings, their limitations, and their correlation with financial performance. However, this research has centred around Traditional ESG ratings. This paper contributes to the debate by comparing these Traditional ratings to Alternative ESG ratings that are leveraging technological advancements in AI and cognitive computing. It is positioned within the “second generation” of research of ESG ratings as called upon by Windolph [18] (p. 52). We argue that although it is inevitable that investment will remain concerned with profit, and value-driven ESG investing will dominate, it is important to make methodologies and ratings as transparent (open to public scrutiny), democratic (increased public participation), rigorous (real-time, objective analytics) and standardised as possible. These characteristics are perhaps more likely to be found in Alternative than in Traditional networks of ESG ratings. By comparing Traditional and Alternative ratings and understanding why differences occur, this paper seeks to understand how digital innovation could help a sustainability transition within finance and the creation of a new socio-technical regime [61].

3. Methods

The research questions were first addressed by carrying out a quantitative comparative analysis of datasets from TVL and MSCI. This paper will focus on an empirical comparison between Truvalue Labs (TVL) and MSCI ESG. These were chosen to act as proxies for both Traditional and Alternative ESG rating providers. TVL was selected as it was the first company to use AI to uncover real-time ESG insights. TVL spent 3 years from 2014 developing its proprietary platform to analyse ESG risks using AI and a ‘superabundance of unstructured data’ [62]. TVL uses scalable public data inputs to return ESG ratings at the company, industry, and sector level. Their philosophy stems from the subjectivity surrounding Traditional ESG data ratings [19]. Situated in San Francisco near Silicon Valley, TVL employs coders and computer engineers as well as sustainability and finance professionals. TVL’s key issue framework is driven by the materiality map from SASB, also based in San Francisco. TVL is gaining traction in academic studies [63]. MSCI ESG (henceforth MSCI) is the ESG research division of MSCI, a US financial services company. It is a Traditional provider whose culture is linked inherently to conventional financial services. They are headquartered in New York City and have a presence in many global financial hubs, with offices in cities including London, Tokyo, Mumbai, Sydney, and Paris. MSCI have a greater presence in financial indices and portfolio analytics than in ESG, but their ESG data is widely used in the investment industry and in academic literature. Gond et al., [64] found 573 articles that referenced elements of their 18 datasets. Detailed histories of MSCI can be found in published studies [14]. Access to data was gained by signing non-disclosure agreements with both providers through academic and industry contacts.

Although each provider has a hierarchy of different ratings, only the most conceptually similar scores were chosen for the analysis. For MSCI, the Weighted Average Key Issue Score (WAS) was selected. The WAS is an absolute average driven by underlying key issue scores, which rate categories deemed by MSCI to be material for each company. Each key issue is given a weighting that influences its impact on the WAS. For TVL, the Insight Materiality (IM) score was chosen to be the most conceptually similar to the WAS. As discussed, TVL’s aggregate scores are driven by SASB’s key issue framework. These scores are therefore defined as the ‘ESG ratings’ for each provider, as they both take materiality

into account through selection of industry specific key issues. Each score reflects companies' ESG performance over a period of 12 months. The IM scores (0–100) were scaled down (0–10) to match the WAS scores, with 5 assumed to be a neutral ESG score; above 5 is more sustainable, and below 5 less so. Throughout the study, the terms rating and score are used synonymously and interchangeably.

To obtain high-level statistics and correlation results, the MSCI ACWI (All Countries World Index) was used as a starting sample from both datasets. This index was selected as it includes large and mid-cap companies and covers both developed and emerging markets. Large and mid-cap refer to company size distinctions based on market capitalisation, which is the value of all outstanding shares (approximately >\$10bn and \$2bn–\$10bn respectively). This sample was reduced further to focus on the top 1000 companies in the MSCI ACWI sample that had complete datasets for both TVL and MSCI over the time period 2013–2019 (Figure 3). This allowed us to work efficiently with a useful, representative, and unbiased sample while considering the practical constraints of the research. Pre-2013 data was not used as there were significant gaps in the datasets.

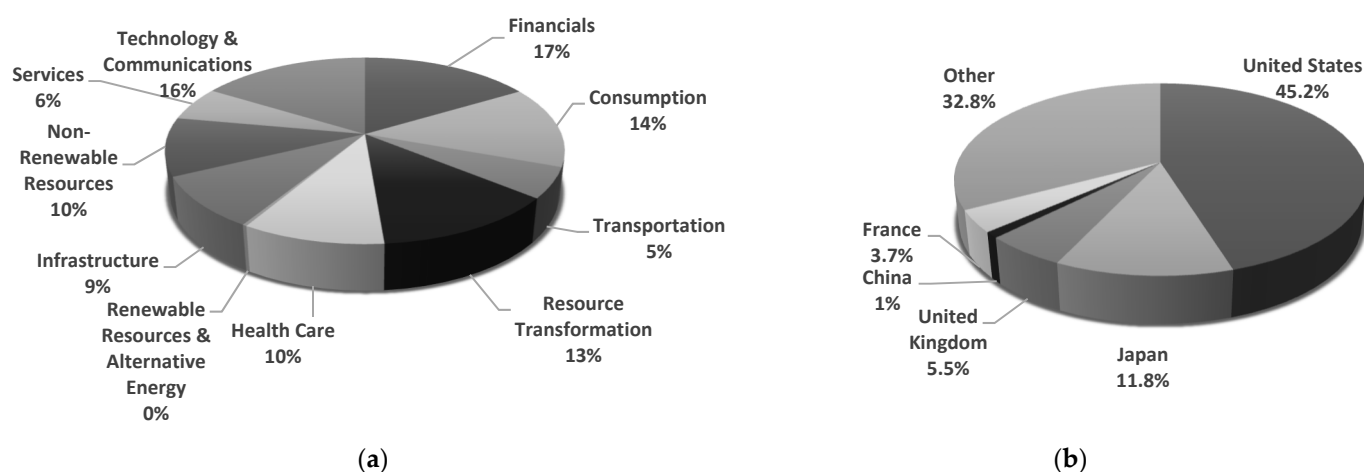


Figure 3. Structure of the sample used in the study. (a) sector weights; (b) geographical weights by country. Source: Author.

Significant work was required prior to analysis in order to clean both datasets into similar formats. Company International Securities Identification Number (ISIN) values were used to consolidate TVL and MSCI datasets. Manual editing was required to account for changes in the ISIN value for companies from 2013–2019, due to name changes, mergers, acquisitions, and other events that resulted in changes in the MSCI spreadsheets.

Correlation figures were then calculated using Pearson's Moment Correlation Coefficient. Sample correlation is tested based on the common sample of 1000 firms for June 2019. However, this can hide heterogeneity at the company level, and correlation was also tested between both providers over the historical period (2013–2019), at half year intervals with 14 data points per provider. This was to identify correlation on a company-specific level. For the percentile analysis, the 10th percentile groupings for both TVL Insight Materiality June 2019 and MSCI WAS June 2019 were observed, as well as the 90th percentile grouping of companies for the same scores. The lists were then compared to see whether the ratings providers agreed. These were taken from the common sample of 1000 companies.

In order to investigate the variation in underlying key issue selection between MSCI and TVL, a mapping exercise was first undertaken based on document analysis of methodology documents from both providers (for MSCI, we reviewed the *MSCI ESG Ratings Methodology*, Executive Summary, December 2020, and for TVL, information was taken from their website, as well as information sent to us by colleagues at the company), similar to Khan et al.'s [11] mapping of SASB to KLD (KLD was a values-driven ratings agency bought by Risk Metrics, and then MSCI ESG). After creating a common language between both sets of key issues by developing a Taxonomy described in Section 5.1, MSCI's Global

Industry Classification Standard (GICS) was combined with SASB's own Sustainability Industry Classification System (SICS), to create a common language for industries across the two providers. While the GICS sorts industries based on revenue, the SICS incorporates factors like human capital into its classification system. Overall, the two mapping exercises required informed judgment. Methodology document analysis was further used to investigate variation in data sources analysed across providers.

A case study analysis was then used to analyse changes in weightings, criteria, and scores over time at a more granular scale. Multiple case studies were used to increase the robustness of our results [65]. Glencore and Microsoft were selected because of the relevance to the asset manager where fieldwork took place (the lowest rated company and the highest rated company in terms of in-house sustainability ratings respectively). Key issue weighting differences were compared across the two providers for June 2019. The time period chosen for the controversy analysis was between July 2017 and June 2019, offering an up-to-date analysis while remaining feasible within the resource constraints of this paper. The TVL platform online was then used to track the most notable ESG events that were expected to influence the ESG score of the company, and the influence of these events on both TVL and MSCI weights and ratings was compared.

To contextualise these findings, the use of ESG ratings in industry was investigated over 8 weeks during the summer of 2019, through participant observation at an asset manager in the City of London. The firm manages more than £50 bn in assets through active equity, fixed income, and multi-asset strategies. While working in the investment research team as a participant observer, 'natural interactions' [66] were observed relating to how the analysts rate companies' ESG standards, and field diaries were kept throughout the placement. Through participant observation at the asset manager, a closeness to industry actors was obtained that would not have been possible with a sole reliance on the 'stylised facts' that underpin much economic research [67]. Valuable results were obtained on the social processes that shape decision-making in the financial industry, which is key to a robust financial geography perspective. During both formal and informal conversations with elite corporate employees in the City of London, we had to be aware of power imbalances involved between academic researchers and experienced analysts, as they had the potential to influence the direction of interviews [68,69]. Finally, we supplemented the qualitative empirical work with six dedicated interviews with executives from MSCI and TVL and engaged in multiple informal conversations with academic and industry experts at several major sustainable finance conferences held in London and Oxford in the autumn of 2019. These offered valuable informal data collection [70], which was recorded using field notes and manually coded. Permissions were obtained at every stage of the research process when accessing and handling the data. Using mixed methods provided a useful way to triangulate findings from multiple sources.

4. How Do the Ratings Differ?

Summary statistics highlight key differences in average (mean, median and modal) aggregate scores from the two providers, with TVL scores on average much higher than MSCI for the sample, sustained throughout the time period. In addition to average differences, TVL scores are more volatile than MSCI scores. Variance and standard deviation for TVL scores are much higher than MSCI. This is further shown by a greater spread of scores for TVL, having both higher maximum values and lower minimum values than MSCI. Overall, this high-level analysis reveals fundamental differences in both datasets (Table 1). It is perhaps counter-intuitive that the ratings with closer relations to the companies themselves are lower. While important to highlight, particularly in the case of mean values, the practical significance of these *absolute* value discrepancies should not be overstated. They are self-referential, and to an extent only make sense when looked at within the frameworks that created them.

Table 1. Summary statistics for the common sample (June 2019). Source: Author’s calculations, based on data from Truvalue Labs and MSCI ESG.

| | TVL IM | MSCI WAS |
|---------------|--------|----------|
| Mean | 6.15 | 5.08 |
| St. Deviation | 1.41 | 0.97 |
| Maximum | 9.84 | 8.80 |
| Minimum | 1.14 | 1.60 |

Figure 4 shows how the average scores of the different ratings providers vary geographically across the common sample. It is clear from the maps that TVL scores tend to be higher for developed market countries in Europe and North America, although Indian, Chinese, and South African companies score similarly highly, while Latin American companies see weaker scores. For MSCI, the developed/emerging market split is more evident, with European companies performing better on ESG issues.

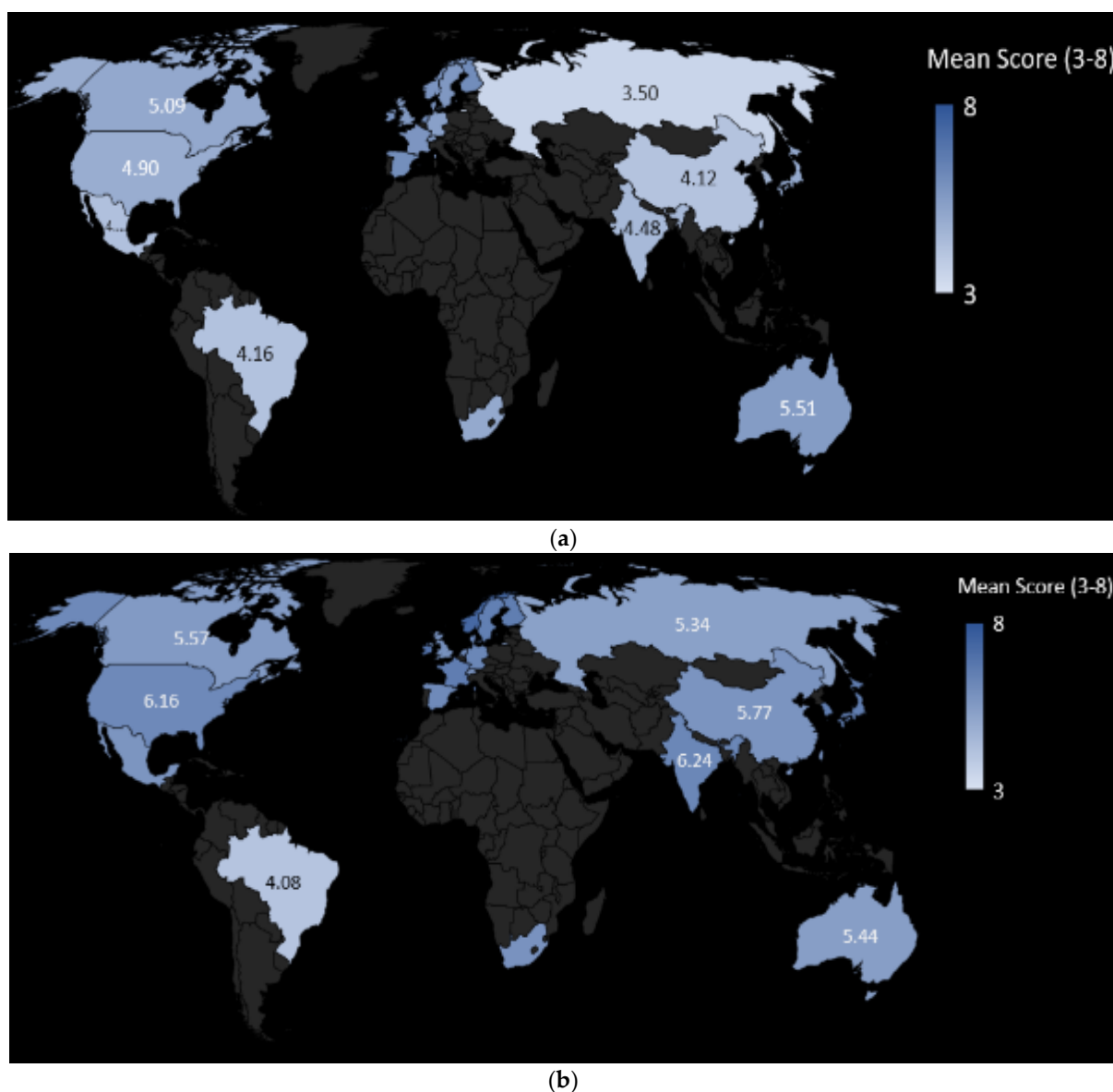


Figure 4. Maps showing geographical variation of scores for sample companies. A country is included if they have more than 5 companies in the sample. (a) Sample MSCI WAS rating distribution by country domicile; (b) Sample TVL IM rating distribution by country domicile. Source: Author, based on data from MSCI ESG and Truvalue Labs.

Correlation analysis was performed on the ESG Ratings from each provider. For the common sample, the positive correlation between the TVL IM score and MSCI WAS is very weak; Pearson's Moment Correlation Coefficient was 0.2 for the common sample in 2019. In theory, the ratings should be more strongly correlated with each other, as they both focus on materiality. Yet in reality, weak correlation suggests that the two providers either theorise sustainability differently or construct their ratings in completely different ways.

Correlation over time (2013–2019) for individual companies were even weaker on average (0.034). A total of 178 companies in the sample had correlations in the range 0.51 to 1, while 123 returned strongly negative values (-0.51 to -1). This suggests (using ± 0.5 as a cut-off point) that 699 companies in the sample had weak/no relationships (-0.5 to 0.5) between how they were rated over time by the two data providers. Overall, the findings over the historical period suggest that there is not a significant observable relationship between the ratings of the Alternative and Traditional ratings providers. Any correlation between the two only exists for some companies. While some companies in the sample are rated in similar ways over time, others are rated in opposite directions. The correlation results echo the literature on lack of correlation between Traditional ratings [1,11], and extend it to include Alternative ratings. The fact that a substantial proportion of companies returned negative correlation results is striking. It implies that two different asset managers, one using MSCI data and the other using TVL data, would have opposing views on whether a company's sustainability performance was increasing or decreasing over time.

Correlation was thus observed to be very low between the two providers in the actual ratings. However, the relative rankings of firms could still have exhibited similarities across the common sample, based on which companies each provider conceives to be the extreme instances of strong or weak ESG performance. Yet percentile analysis revealed only 24% company matches for the 10th percentile, and only 11% for the 90th percentile. Even for those that match across providers in each percentile, the order of these companies is not the same. These comparisons extend the difference between providers from score value to include score ranking.

5. Why Do the Ratings Differ?

A quantitative comparative analysis of MSCI and TVL datasets thus indicates substantial difference between the aggregate ratings, both statistically and geographically. Difference may arise due to the following reasons (adapted from Berg et al., [14]):

a. Theorisation—what they measure

Each provider's aggregate scores, MSCI WAS and TVL IM, are driven by scores for underlying material key issue categories. The aggregate scores differ depending on what key issues are selected for each company.

b. Analysis—how they measure it

Regardless of underlying differences in key issue selection, aggregate scores could end up being different due to the ways the key issues are measured. This depends on what data sources are being used, and the depth and sophistication of the analysis that is being done on each data source through ongoing controversy analysis. The contrast between human-based analysis based partly on company disclosure versus AI that scrapes unstructured data from the Internet can result in incomparably different standards of analytics.

c. Aggregation—how scores are constructed

Ratings could further differ due to the weighting system that is in place to bundle the underlying key issue scores into high level ratings.

5.1. Key Issue Comparison: Theorisation

In order to compare theorisation (key issue selection) disparity across the providers, a Taxonomy was developed that created a common language between the two lists of indicators. This allowed an analysis of the key issues measured for one provider and not

the other. MSCI WAS are built using 37 proprietary key issues that consider both the risks and opportunities posed to the company surrounding that specific area of sustainability. TVL IM scores are based on the 30 categories developed by SASB.

The Taxonomy in Figure 5 was created to match up the different key issue lists from each provider and create a common language from which to investigate differences. For example, Global Warming Management matches up both SASB (Fuel Management, Energy Management and GHG Emissions) and MSCI (Carbon Emissions, Opportunities in Clean Technology, Opportunities in Green Building and Opportunities in Renewable Energy) key issue categories. The Taxonomy was then integrated with the materiality maps for each provider, showing which of the 15 combined key issues were measured for each of the 160 sub-industries. This revealed key differences in how the two providers rated the sustainability of companies.

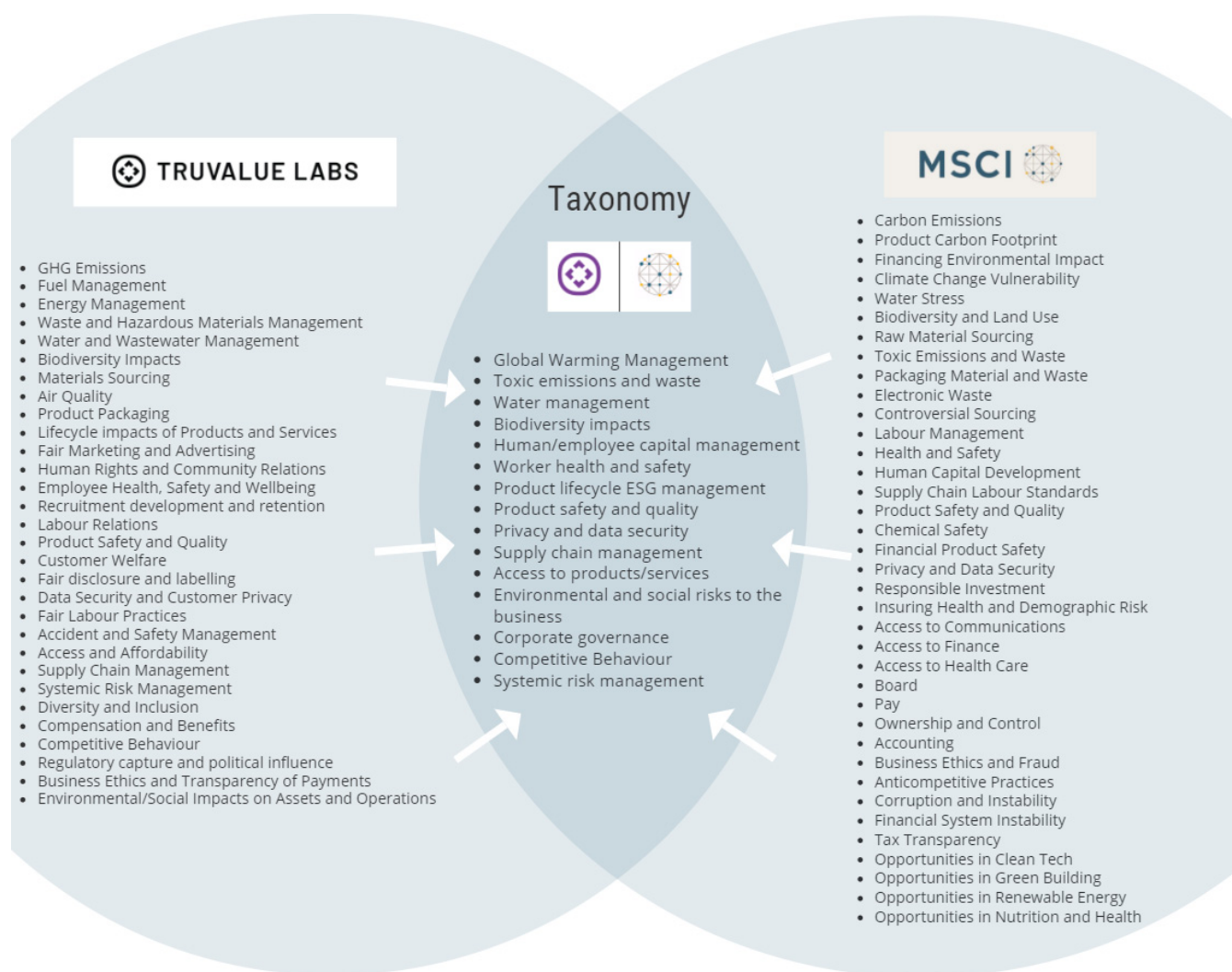


Figure 5. The ESG key issues considered by the two providers. Both lists combine to feed into the Taxonomy. Source: Author, based on data from SASB and MSCI ESG.

The Taxonomy mapping offers several insights. Firstly, there was obviously a distinction between the two providers regarding the key issues they were measuring for each sub-industry. Although there were 333 instances of overlap in the key issues, there were 267 cases of just MSCI scoring in a unique way, and 330 cases of TVL having their own opinion. Notably, MSCI measure Corporate Governance for every company they rate, which contrasts directly with TVL who only measure Corporate Governance for

93/160 sub-industries. During a conversation with a Senior Associate at MSCI ESG Research, he mentioned that the rationale behind this decision was that corporate governance issues were expected to “always have an impact” on the risks and opportunities that companies faced.

At the sub-industry level, there were instances of strong correlation in theorisation. The chemical industry had the same key issues across both providers. Conversely, raters strongly disagree on what key issues are important to homebuilders and pharmaceutical companies. The Taxonomy results also link well to results from the correlation analysis outlined previously. Notably, the non-renewable resources sector had the highest key issue agreement in the Taxonomy, while it also had the highest sample correlation in June 2019 out of all sectors, with a coefficient of 0.27. The Taxonomy reveals that TVL and MSCI have different conceptions of sustainability in terms of what key issues to base their ratings on. This is a common conclusion in the literature on divergence between Traditional ratings [14], which we extend to include Alternative ESG providers as well.

Traditional ratings use less transparent frameworks to define which key issues they use to build their ratings, information about which is hard to obtain as it relates to the intellectual property of the firm. The framework created by MSCI is internally constructed, by professionals whose outlook on sustainability is undoubtedly framed by working within and networking with colleagues in financial centres. This is problematic for geographers who are concerned that sustainability discourse in financial centres is not built upon wider, more open, if not democratic engagement with those with non-financial sustainability expertise. In contrast, the epistemological basis for the SASB framework which TVL use (Figure 2) is built on a more democratic conceptualisation of sustainability, that extends beyond just what one rating agency defines as the most important key issues. SASB was built after multiple years of stakeholder engagement from investors, companies, and rating agencies. This increased participation has returned more inclusive frameworks based on standardisation, meaning investors are less likely to use ESG as a smokescreen for unsustainable strategies. SASB acts as an answer to previous concerns about a lack of standardisation among Traditional ESG ratings. External frameworks like this are incorporated more easily by Alternative rather than Traditional providers, due to the providers focusing more on the technology rather than the development of in-house methodologies.

The inclusion of a more independent body like SASB in alternative ratings networks increases transparency. Although focus group conversations with MSCI ESG analysts revealed dialogue between them and SASB, contrary to MSCI, SASB’s framework is freely accessible online. This is characteristic of libertarian technology centres and the importance they place on an uninhibited access to information (as opposed to the common cultivation of opacity and secrecy within IFCs).

The standardisation that SASB brings is also geographically important. Regulation, such as the EU Taxonomy, the Task Force on Climate-related Financial Disclosures (TCFD) and the Global Reporting Initiative are being implemented in national and international markets. These highlight that ESG ratings need to cooperate with international frameworks that are going to regulate competitive advantage in sustainable investment. Alternative ESG ratings, whose value-add stems not from creating a unique ESG framework (as in the case of MSCI) but instead within the data analysis, are better placed than Traditional providers to capitalise on these international trends. Proprietary, opaque conceptions of sustainability in traditional networks are outdated.

5.2. Case Study Comparison: Analysis and Aggregation

The following section investigates potential analysis and aggregation-related causes of Alternative–Traditional difference using the case studies of Glencore and Microsoft outlined in Section 4, by looking at data sources, weighting, and controversy screening on a more granular scale. In terms of the key issues that each ratings provider is using to assess Glencore’s ESG profile, they are very similar. However, the ratings vary substantially. For example, MSCI give the company a 0 score for Labour Management, whereas TVL score its

Labour Relations (the corresponding key issue) at 5.6. Its MSCI Biodiversity and Land Use score is 2.5 while TVL's score Biodiversity Impacts score is 5.2.

Further evidence of differences in key issue scores can be observed in the case of Microsoft. While there is more variation in key issue selection here, with the inclusion of Water Management and Competitive Behaviour distinguishing TVL from MSCI, there is also difference in the scores for similar key issues. Notably, Privacy and Data Security is rated as a 10 by MSCI, but only as a 6.13 by TVL. MSCI rate Human Capital Development as 3.1, compared to Recruitment and Diversity issues from TVL rated above 6. These discrepancies drive the overall aggregate rating difference of over 1 point (TVL = 5.9, MSCI = 7.3) for Microsoft.

These case studies highlight how similar key issues across the providers can be scored very differently. One likely practical cause is difference in the data sources analysed by each provider. The models in Figure 2 suggest key differences in this regard. Methodology document analysis revealed how TVL algorithms mine data from over 100,000 English-language sources every day, including trade blogs, journals, local and international news, and NGO reports. This returns over 1 million datapoints a month on over 10,000 companies. They notably leave out social media sources, due to the amount of noise and unreliable insights surrounding them. They have recently expanded their language capabilities from English to several other major world languages. This data is uploaded to the Internet via third parties and is open to public scrutiny and debate. Although companies can influence the media and NGOs to portray their sustainability characteristics positively, this is much harder to achieve than through a company's own annual and quarterly sustainability reports. TVL also have safeguards in place to deal with fake news and are routinely updating their watch lists that help to avoid unreliable sources, particularly on social media.

MSCI on the other hand only monitor similar data from 3400 media sources, in addition to around 100 specialised government and NGO datasets (see *MSCI ESG Ratings Methodology*, Executive Summary, December 2020). According to an ESG analyst at MSCI, 45% of their data comes from company disclosures, in 10-K, sustainability, and proxy reports. This is perhaps the fundamental differentiator between MSCI and TVL; TVL completely ignore any data from company disclosures. Company disclosure has traditionally been at risk of score inflation from large companies being able to efficiently complete questionnaires and tick-box exercises that data providers send them. MSCI do however claim to have quality controls in place to mitigate risks of greenwashing from company disclosure. They do not use questionnaires to gather data from companies anymore, while also engaging with the companies they rate to verify the data collected, with 50% of companies rated in the ACWI by MSCI giving research feedback to them in 2018.

Nevertheless, the contrast in data sources that is driving difference between Alternative and Traditional ESG ratings is geographically important. With no analysis of company disclosure, Alternative providers have no F2F contact with the companies they rate. They offer a completely outside-in perspective that is much less vulnerable to the greenwashing of sustainability that has occurred in the past, and the risk of the rating inflation or bias that was observed with Traditional ESG ratings. Alternative ratings are more distant from the companies they rate, and data flows are one-directional, with no F2F communication with the companies rated (Figure 2).

Company disclosure standards also vary dramatically across different markets, with weak regulation in developing regions. This may be amplifying the biases in reported data analysed by Traditional providers like MSCI who have a strong presence in these markets, explaining geographical score discrepancies between TVL and MSCI in Figure 4. Although initiatives like the TCFD, SASB and the Global Reporting Initiative are helping to standardise company disclosures relating to ESG matters, at the moment globally recognised standards are not as developed as in financial accounting. Consequently, the outside-in perspective of Alternative ratings is a refreshing development in the proliferation of unbiased and transparent ESG ratings.

The method of key issue score aggregation into overall ESG ratings from both providers is carried out via a weighting process. In the case of MSCI, these weights are usually 5–30% of the total ESG rating. The weighting is thus a function of impact and the expected time-frame for this impact to materialise. Importantly, both key issues and associated weights must gain approval by the MSCI ESG Methodology Committee, as well as the ‘sector team leader’. At the beginning of each calendar year weights are set, and then apply throughout that year.

For TVL, the weight setting process is very different. Instead of being assigned a weighting at source, each key issue develops an ‘Impact %’ over a trailing 12-month period depending on its influence on the overall Insight score. The Impact % is influenced by how many data points and Spotlight Events (a specific ESG event with a large number of datapoints) are analysed by the TVL algorithms, on that key issue. Weightings also change in real time instead of per year, considering smaller ESG events, rather than just shifting every so often in light of major events. Weights for TVL are thus set by public sentiment, rather than by internal research analysts.

Variation in how weights are distributed across the data providers can be discerned from the weightings data from Microsoft. The general pattern observed is that the TVL scores are vulnerable to being skewed in favour of specific key issues. This occurs in the case of Microsoft, where Data Security dominates the weighting at 56% (Figure 6b). MSCI weights, in contrast, tend to be more evenly distributed, with 4/6 key issues having a weight of 20% (Figure 6a).



Figure 6. Key Issue weighting distributions by weight (%) for Microsoft, September 2019. Source: Author, based on data from MSCI ESG and Truvalue Labs. (a) MSCI WAS Ratings composition; (b) TVL IM Ratings composition.

MSCI ratings for Microsoft thus have an even distribution of weightings across the key issues, whereas the TVL scores were influenced more by a small subset of the key issues. This makes sense, as the kind of data sources that TVL monitors on the Internet are based primarily on the sustainability controversies that generate the most ‘noise’ by commentators, which fluctuate based on what seem to be important during the time period. This case study confirms a key difference between the spaces of Alternative and Traditional ESG ratings. While ESG matters are defined by internal debate and corporate decision making within MSCI, TVL allow sustainability to become more of a ‘public sentiment’ [68] issue. This increases public participation over how ratings aggregation, giving Alternative ratings a greater element of democracy. Control over how ESG issues are framed and weighted is being taken out of the Traditional financial hubs where Traditional ESG ratings from MSCI have normally been built. Alternative ratings networks use the Internet as a new technocentric space of ESG information (Figure 2).

However, the democratic extent of TVL’s weighting system may be limited. Firstly, TVL do not release any of the code that drives their ESG ratings, and it could be argued that having opaque algorithms lacks transparency just as much as Traditional ratings

providers who have opaque methodologies. Research has indeed been carried out across the social sciences into how only a small number of technocratic elites have control over these algorithms, hindering public participation. Correspondingly, it has been discussed how the spaces of technological innovation from which Alternative ESG ratings are increasingly constructed use this control and opacity to seek profit in the same way as financial networks [52]. They are in favour of de-regulation and have become more politically active in recent years. A final criticism levelled at the democratic nature of Alternative ratings is that the Internet is not entirely open to participation but is a contested and unequal space. Although being an ‘ethereal, alternate dimension’ that is everywhere [57], access to the Internet is still dominated by developed nations, and thus most online knowledge in the form of academic journals and newspaper articles is generated by developed regions. Thus, the big data that Alternative sources analyse is likely to “exhibit spatial cores and peripheries of knowledge” [54] (p. 3).

As Section 4 shows, a significant lack of correlation was observed between TVL and MSCI aggregate scores on a company-specific level over the historical period 2013–2019. As has been identified, a major distinction between the providers is that *controversy analysis* over time is carried out by either human analysts or AI. Due to practical time and cost constraints, human analysts can analyse significantly less data than machine learning platforms. This is crucial when ratings providers are screening for and analysing controversies and significant ESG events that should influence ESG scores. While each company is given at least an annual in-depth review by MSCI, they also maintain ‘daily monitoring of controversies and governance events’ that is included in weekly reports, with significant changes warranting an analyst review. However, this analyst-led daily monitoring of internet sources lacks the capabilities of the AI-led screening.

The TVL platform can be used to compare how TVL and MSCI respond to controversies and sustainability events of Glencore (Figure 7). Data from June 2017–2019 was analysed to remain up to date and practically feasible.



Figure 7. Insight Materiality trendline for Glencore from the TVL online platform. The dotted line refers to the daily pulse score, from which the Insight score (solid line) is derived as an average. The purple circles refer to ‘spotlight events’, ESG events which create a lot of data points. Larger circles equate to more datapoints. Source: Truvalue Labs.

More detail on the Spotlight events for Glencore is shown in Table 2. The significant ESG events for Glencore over the time period thus appear to be dominated by spotlight events relating to Business Ethics and Transparency of Payments, and multiple events related to corruption. In theory, one would expect MSCI to incorporate these events into their scoring systems and quickly downgrade scores in their models.

Table 2. Spotlight events for Glencore. Source: Truvalue Labs.

| Spotlight Event | Date | Datapoints | Material Key Issue Tags |
|---|------------------|--------------|---|
| Glencore fined \$200K for worker death at Sudbury, Ont. mine. | 28 August 2017 | 4 in 2 days | Employee Health, Safety and Wellbeing Labour Relations |
| Glencore Faces Bribery Probe Over Congo Unit. | 20 November 2017 | 7 in 2 days | Business Ethics and Transparency of Payments |
| Glencore shares fall on SFO probe fears | 18 May 2018 | 7 in 2 days | Business Ethics and Transparency of Payments |
| Glencore to Resume Payments to Sanctioned Billionaire Gertler | 15 June 2018 | 10 in 2 days | Business Ethics and Transparency of Payments |
| Glencore subpoenaed by DOJ in corruption probe | 3 July 2018 | 35 in 4 days | Business Ethics and Transparency of Payments |
| Multiple shareholder alerts on lawsuits against Glencore by investors | 9 July 2018 | 12 in 4 days | Business Ethics and Transparency of Payments |
| OSC settles with Glencore unit Katanga for \$30m for misleading about Congo operation | 16 December 2018 | 9 in 4 days | Business Ethics and Transparency of Payments |
| Glencore to cap coal output over climate | 20 February 2019 | 43 in 3 days | GHG Emissions |
| Glencore faces new corruption investigation with CFTC probe | 25 April 2019 | 11 in 7 days | Business Ethics and Transparency of Payments |

The corresponding key issue for MSCI is Corruption Instability. While MSCI monitored this key issue over the same time period, there was no immediate rating change after the controversy ‘spotlights’ in mid-2018 identified by TVL. Although their ratings decreased, there were time lags between when the controversy happened and when it was incorporated into key issue scores. The only time MSCI changed their scores during this period was when the annual Glencore review took place, showing that there was no interannual score change for this key issue based on controversies screened during the period. This contrasts directly with how TVL rated the corresponding key issue for Glencore in real-time during the same period.

TVL seem to incorporate controversies more frequently into updating scores, offering users more detailed, up to date insights. TVL technology is more effective at incorporating big data in real-time. While MSCI re-rate and monitor based on new information, their human analysts simply cannot keep pace with the data coverage capabilities of AI. The technology that TVL use to carry out their analysis can also be scaled up. They use multi-pipeline architecture that can incorporate different frameworks and increase the number of languages analysed. MSCI’s methodology, although being detailed and consistent, is less scalable since human analysts must cover the additional companies and ESG event screening. MSCI ESG rate 14,060 companies, with only 185 analysts, averaging out at approximately 76 companies per research analyst. This problem was highlighted in an analyst interview:

“With MSCI scores, there’s a lot more research that goes into them than I think people give them credit for. But it is somewhat arbitrary because they cover so many companies.”

Although MSCI have wide geographical scope, this suggests that rigour may be compromised by the spatial stretching of the analysis. Alternative ratings however should not have this problem. As quantity increases, AI analytical capabilities outstrip human analysis in terms of how much data can be assimilated from spatially uninhibited online sources.

The speed at which AI can not only mine this ‘superabundance of unstructured data’ [66], but also analyse it to produce useful real-time signals can revolutionise ESG

ratings. The temporal element to ESG ratings is crucial for geographers. Alternative ratings in real time are contributing to the space-time compression of information flows that have been central to debates on globalisation [56]. A shift away from human-based analysis allows ESG information to flow more quickly through space, enabling the immediate spread of knowledge from companies and markets across the world that are more physically isolated. In asset management, real-time analytics is crucial, giving firms the ability to reallocate resources dynamically in response to unforeseen events; delays can have serious consequences for fund value. Additionally, AI allows the analysis of controversies with more objectivity, relying just on patterns in the data rather than on human biases and subjectivities.

These insights relate to the differences in analyst versus AI capabilities in the ESG rating process outlined in Figure 1. Overall, the causal mechanisms for difference found highlight how Alternative ESG ratings are disrupting the status quo; through standardisation, a transparent ‘outside-in’ perspective, more democratic aggregate weighting processes, and rigorous, real-time controversy analysis that elevates analysis to ‘virtual spaces’ by leveraging AI.

6. Conclusions

Alternative data is becoming increasingly central to the sustainability transition and is not limited to the alternative ESG ratings that have been the focus of this paper. For example, spatial finance is a new focus for financial actors looking to integrate geospatial data with AI [71]. “Smart Earth” technologies are combining ICT with remote sensing technology, unleashing the power of the Internet of Things towards environmental applications [72]. We therefore attempted to investigate just one area of this Alternative data proliferation within the context of financial geography. The rise of AI-led Alternative ESG data has only recently started to permeate the investment management industry, and thus has been under-researched by the academic community. This paper seeks to advance the geographical understanding of how AI-driven ESG ratings differ from Traditional ones, both empirically and theoretically.

The first question addressed how Traditional and Alternative ESG ratings differ. This was to build on a previous literature that analysed correlation between Traditional ESG ratings providers, by incorporating an Alternative provider. Datasets from MSCI and TVL were selected as proxies for both the Traditional ratings and Alternative ratings industries, as leaders in their respective fields. Aggregate scores from both providers displayed weak correlation with each other at both the common sample and the company level. The data also exhibited strong geographical differences. These results were expected, as they were in line with the wider literature on the lack of correlation between Traditional ESG ratings providers.

The paper then aimed to dig deeper into the methodologies of the rating construction to understand why the ratings were different. We first developed a Taxonomy that sought to map the key issue selection differences between TVL (which uses SASB’s framework) and MSCI. This revealed contrasts between definitions of sustainability used by MSCI that were created within financial centres and the more standardised and transparent SASB framework used by TVL, which extends participation far beyond a limited number of finance professionals. Standardisation is an increasingly relevant concept in sustainable investment, and the fact that Alternative ESG ratings providers use these standardised frameworks more than Traditional providers suggests they are more in line with a globally interconnected field of sustainable investment.

Using a case study approach with Glencore and Microsoft, we found that both providers rated even similar key issues differently for each company. MSCI were found to rely on a significant amount of company disclosure to build their ESG ratings, while TVL used none, instead analysing only external sources of big data information available online. This has changed the spatiality of the rating process. Flows of information between Traditional ratings providers and the companies they rate have previously been based on

human communication and an element of spatial proximity. However, as flows of information exist only externally for Alternative providers, there is now a significant element of distance.

The case studies also revealed how each provider assigned weights to key issues, which influenced how much they contributed to the overall ESG rating. MSCI was found to use a more subjective decision-making process through human analysts to assign weights, while TVL base weights entirely on the volume of noise picked up by their algorithms in that key issue. This axis of difference highlights how the ESG knowledge production of Alternative providers is potentially more democratic, opening it up to public sentiment as opposed to inward looking corporate influence.

Finally, the case studies revealed variation in how the ongoing ESG analysis is carried out by each ratings provider. Although human analysis is also used by the Alternative providers to design algorithms, the ongoing analytical process is conducted completely by AI (Figure 1). AI influences ratings by incorporating more ESG events and controversies, in real time, to provide more up to date and sensitive scores over time than MSCI and other Traditional providers. The time-space dynamics of ESG ratings are changing, leading to real-time coverage of companies that are in physically distant markets around the globe.

Overall, both theoretical and practical analytical differences underlie aggregate rating differences; relating to key issue selection, data sources analysed, score aggregation, and finally controversy analysis. These are broadening the spatiality of ESG ratings towards centres of technology as opposed to just within financial centres. Technology is bringing in more geographical standardisation, an 'outside-in' perspective that relies on no company disclosure, a more democratic aggregation process that widens public participation, and finally are altering the time-space characteristics of the ratings process within digital spaces on the Internet.

However, it is important not to exaggerate the implications of these findings. Spaces of innovation like Silicon Valley have become increasingly profit-driven and exhibit close ties to financial centres. The autocratic tendencies of technology companies may simply be wresting control over sustainability information from financial centres. Alternative ESG ratings agencies are also often based in IFCs, are often acquired by major financial services firms, and are still driven by profit motives as opposed to radical sustainability concerns. Fake news and echo chambers online may skew results, while alternative providers have control over opaque and proprietary algorithms, which are still subject to analyst subjectivity in the engineering and design phase. It is hoped that Alternative providers will adapt to regulation and standardisation in order to alleviate these concerns.

This is the first paper, to the best of our knowledge, that directly compares Alternative AI-led ESG ratings with Traditional ratings. It has attempted to frame the comparison within distinctly geographical debates, surrounding the digital and knowledge spaces in which the different ESG ratings are constructed. Alternative ratings seem to offer a more optimistic future for sustainable investment and resist much of the criticism levied at Traditional ESG ratings. However, risks persist, and it is unlikely that Alternative ESG ratings will supplant Traditional models in the near future; instead, they will complement them. A more transparent blend of approaches is likely to arise, opening the ratings process up to include a more diverse range of stakeholders and utilising public participation on the Internet to go beyond corporate disclosure. Yet in the future international laws and initiatives should aim to improve the quality, accuracy, and accountability of company sustainability disclosures. These efforts should limit the amount of greenwashing found in company disclosures, and so may mean that Traditional ESG ratings begin to *converge* over time.

Going forward, further efforts to compare Alternative and Traditional ESG ratings should also attempt to incorporate more providers, to verify the extent to which the unique methodologies of MSCI and TVL are driving the observed difference. Future research would do well to dig deeper into how the algorithms are designed and maintained to further investigate the implications of a shift towards AI-driven Alternative ESG ratings.

An important final caveat to our research is the distinction between ESG *ratings* and *research*. MSCI complement their ESG ratings with a strong emphasis on written company, industry, and thematic research reports, as well as analyst calls and discussion. This qualitative element is important to many asset managers. TVL on the other hand prioritise the data and the numbers; they employ far fewer analysts to produce accompanying research reports. This paper has focused on the quantitative ratings, yet it must be appreciated that both Traditional and Alternative ratings agencies put varying levels of emphasis on the qualitative research side of their ESG offerings. Neither approach is necessarily better or worse. It is up to asset managers to work out what sort of ESG ratings/research mix they require from third-party agencies. Many indeed increasingly prefer to develop in-house solutions, methodologies, and ratings; a hybrid ESG approach that is tailored to their investment process.

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References

1. BCG. Global Asset Management 2019, Will These ‘20s Roar? Available online: <https://www.bcg.com/en-gb/publications/2019/global-asset-management-will-these-20s-roar.aspx> (accessed on 28 September 2020).
2. Harvey, D. *A Brief History of Neoliberalism*; Oxford University Press: Oxford, UK; New York, NY, USA, 2005.
3. Friedman, M. The social responsibility of business is to increase its profits. *The New York Times Magazine*, 13 September 1970; p. 17.
4. Revelli, C. Socially responsible investing (SRI): From mainstream to margin? *Res. Int. Bus. Financ.* **2017**, *39*, 711–717. [CrossRef]
5. GSIA. Global Sustainable Investment Alliance Investment Review. 2018. Available online: http://www.gsi-alliance.org/wp-content/uploads/2019/03/GSIR_Review2018.3.28.pdf (accessed on 13 December 2019).
6. Clark, G.L.; Feiner, A.; Viehs, M. From the Stockholder to the Stakeholder: How Sustainability Can Drive Financial Outperformance. *SSRN Electron. J.* **2014**. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2508281 (accessed on 12 August 2019). [CrossRef]
7. Eccles, R.G.; Krzus, M.P.; Rogers, J.; Serafeim, G. The need for sector-specific materiality and sustainability reporting standards. *J. Appl. Corp. Financ.* **2012**, *24*, 65–71. [CrossRef]
8. Bos, J. Integrating ESG factors in the investment process. *CFA Inst. Mag.* **2014**, *25*, 2. [CrossRef]
9. Jebe, R. The convergence of financial and ESG materiality: Taking sustainability mainstream. *Am. Bus. Law J.* **2019**, *56*, 645–702. [CrossRef]
10. Khan, M.; Serafeim, G.; Yoon, A. Corporate sustainability: First evidence on materiality. *Account. Rev.* **2016**, *91*, 697–1724. [CrossRef]

11. Scalet, S.; Kelly, T.F. CSR rating agencies: What is their global impact? *J. Bus. Ethics* **2010**, *94*, 69–88. [CrossRef]
12. Mooij, S. The ESG rating and ranking industry: Vice or virtue in the adoption of responsible investment? *J. Environ. Investig.* **2017**, *8*, 331–351.
13. Eccles, R.G.; Strohle, J.C. Exploring social origins in the construction of ESG measures. *SSRN Electron. J.* **2018**. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3212685 (accessed on 12 December 2019). [CrossRef]
14. Berg, F.; Kölbel, J.F.; Rigobon, R. *Aggregate Confusion: The Divergence of ESG Ratings*; MIT Press: Cambridge, MA, USA, 2019.
15. Wanner, T. The new ‘passive revolution’ of the green economy and growth discourse: Maintaining the ‘sustainable development’ of neoliberal capitalism. *New Political Econ.* **2015**, *20*, 21–41. [CrossRef]
16. Porritt, J. *Capitalism: As If the World Matters*; Earthscan: London, UK, 2007.
17. Delmas, M.A.; Burbano, V.C. The drivers of greenwashing. *Calif. Manag. Rev.* **2011**, *54*, 64–87. [CrossRef]
18. Windolph, S.E. Assessing corporate sustainability through ratings: Challenges and their causes. *J. Environ. Sustain.* **2011**, *1*, 5.
19. Hawley, J. *ESG Ratings and Rankings—All over the Map. What Does It Mean?* Truvalue Labs Whitepaper: San Francisco, CA, USA, 2017. Available online: <https://www.truvaluelabs.com/wp-content/uploads/2017/12/ESG-Ratings-and-Rankings-All-Over-the-Map.pdf> (accessed on 23 December 2019).
20. Chatterji, A.K.; Durand, R.; Levine, D.; Touboul, S. Do ratings of firms converge? Implications for managers, investors, and strategy researchers. *Strateg. Manag. J.* **2016**, *37*, 1597–1614. [CrossRef]
21. Dorfleitner, G.; Halbritter, G.; Nguyen, M. Measuring the level and risk of corporate responsibility—An empirical comparison of different ESG rating approaches. *J. Asset Manag.* **2015**, *16*, 450–466. [CrossRef]
22. Semenova, N.; Hassel, L.G. On the validity of environmental performance metrics. *J. Bus. Ethics* **2015**, *132*, 249–258. [CrossRef]
23. Sandberg, J.; Juravle, C.; Hedesström, T.M.; Hamilton, I. The heterogeneity of socially responsible investment. *J. Bus. Ethics* **2009**, *87*, 519. [CrossRef]
24. O'Rourke, A. The message and methods of ethical investment. *J. Clean. Prod.* **2003**, *11*, 683–693. [CrossRef]
25. Dillenburg, S.; Greene, T.; Erikson, O.H. Approaching socially responsible investment with a comprehensive ratings scheme: Total social impact. *J. Bus. Ethics* **2003**, *43*, 167–177. [CrossRef]
26. Dilla, W.; Janvrin, D.; Perkins, J.; Raschke, R. Investor views, investment screen use, and socially responsible investment behaviour. *Sustain. Account. Manag. Policy J.* **2016**, *7*, 246–267. [CrossRef]
27. Escrig-Olmedo, E.; Munoz-Torres, M.J.; Fernandez-Izquierdo, M.A. Socially responsible investing: Sustainability indices, ESG rating and information provider agencies. *Int. J. Sustain. Econ.* **2010**, *2*, 442–461. [CrossRef]
28. Healy, P.M.; Palepu, K.G. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *J. Account. Econ.* **2010**, *31*, 405–440. [CrossRef]
29. Epstein, M.J.; Roy, M.J. Implementing a corporate environmental strategy: Establishing coordination and control within multinational companies. *Bus. Strategy Environ.* **2007**, *16*, 389–403. [CrossRef]
30. Parfitt, C. Contradictions of financialised neoliberalism: The contemporary practice of responsible investment. *J. Sociol.* **2018**, *54*, 64–76. [CrossRef]
31. Castells, M. *The Information Age: Economy, Society and Culture*; Blackwell: Oxford, UK, 1997.
32. Eccles, R.G.; Lee, L.E.; Strohle, J.C. The social origins of ESG? An analysis of Innovest and KLD. *Organ. Environ.* **2020**, *33*, 575–596. [CrossRef]
33. Coe, N.M.; Lai, K.P.; Wójcik, D. Integrating finance into global production networks. *Reg. Stud.* **2014**, *48*, 761–777. [CrossRef]
34. Bruff, I. Overcoming the allure of neoliberalism's market myth. *South Atl. Q.* **2019**, *118*, 363–379. [CrossRef]
35. Strambach, S.; Klement, B. Cumulative and combinatorial micro-dynamics of knowledge: The role of space and place in knowledge integration. *Eur. Plan. Stud.* **2012**, *20*, 1843–1866. [CrossRef]
36. Howells, J.R. Tacit knowledge, innovation, and economic geography. *Urban Stud.* **2002**, *39*, 871–884. [CrossRef]
37. Gertler, M.S. Tacit knowledge and the economic geography of context, or the undefinable tacitness of being (there). *J. Econ. Geogr.* **2003**, *3*, 75–99. [CrossRef]
38. Storper, M.; Venables, A.J. Buzz: Face-to-face contact and the urban economy. *J. Econ. Geogr.* **2004**, *4*, 351–370. [CrossRef]
39. Wójcik, D. The dark side of NY-LON: Financial centres and the global financial crisis. *Urban Stud.* **2013**, *50*, 2736–2752. [CrossRef]
40. Huber, B.M.; Comstock, M.; Polk, D.; Wardwell LLP. *ESG Reports and Ratings: What They Are, Why They Matter*. Available online: <https://corpgov.law.harvard.edu/2017/07/27/esg-reports-and-ratings-what-they-are-why-they-matter/> (accessed on 21 March 2021).
41. Bathelt, H.; Turi, P. Local, global and virtual buzz: The importance of face-to-face contact in economic interaction and possibilities to go beyond. *Geoforum* **2011**, *42*, 520–529. [CrossRef]
42. Drempetic, S.; Klein, C.; Zwergel, B. The influence of firm size on the ESG score: Corporate sustainability ratings under review. *J. Bus. Ethics* **2019**, *167*, 1–28. [CrossRef]
43. Shackleton, M.; Tang, D.Y.; Yan, J.; Yao, C.Y. *In the Eyes of the Beholder: Shareholder Connection and ESG Rating Inflation*; Lancaster University Working Paper; Lancaster University: Lancaster, UK, 2019.
44. Beloe, S.; Scherer, J.; Knoepfel, I. *Values for Money: Reviewing the Quality of SRI Research*; SustainAbility Ltd.: London, UK, 2004.
45. Ioannou, S.; Wójcik, D.; Pažitka, V. Financial centre bias in sub-sovereign credit ratings. *J. Int. Financ. Mark. Inst. Money* **2020**, *70*, 101261. [CrossRef]

46. Leetaru, K. Is Elon Musk Right and Will AI Replace Most Human Jobs? Available online: <https://www.forbes.com/sites/kalevleetaru/2016/11/08/is-elonmusk-right-and-will-ai-replace-most-human-jobs/#6c6b41a860f4> (accessed on 22 February 2020).
47. Kramer, L. Humans Often Make Costly Errors. Available online: <https://www.wsj.com/articles/can-robo-advisers-replace-human-financial-advisers-1456715553> (accessed on 15 January 2020).
48. In, S.Y.; Rook, D.; Monk, A. Integrating alternative data (also known as ESG data) in investment decision making. *Glob. Econ. Rev.* **2019**, *48*, 237–260. [CrossRef]
49. Cowsls, J.; King, T.; Taddeo, M.; Floridi, L. Designing AI for social good: Seven essential factors. *SSRN Electron. J.* **2019**. [CrossRef]
50. Citi Research. *The Rise of AI in ESG Evaluation*; Citi Global Data Insights: London, UK, 2019.
51. Bala, G.; Bartel, H.; Hawley, J.P.; Lee, Y.J. Tracking Companies' Real Time Sustainability Trends: Cognitive Computing's Identification of Short-Term Materiality Indicators. Available online: <https://www.stmarys-ca.edu/sites/default/files/attachments/files/JACF%20paper%20ver%202..25.pdf> (accessed on 21 March 2021).
52. Cohen, N. *The Know-It-Alls: The Rise of Silicon Valley as a Political Powerhouse and Social Wrecking Ball*; Oneworld: London, UK, 2018.
53. Dodge, M. *The Geographies of Cyberspace*; Centre for Advanced Spatial Analysis (UCL): London, UK, 1999.
54. Graham, M.; Zook, M. The creative reconstruction of the Internet: Google and the privatization of cyberspace and DigiPlace. *Geoforum* **2007**, *38*, 1322–1343.
55. Graham, M.; Zook, M. Augmented realities and uneven geographies: Exploring the geolinguistic contours of the web. *Environ. Plan. A* **2013**, *45*, 77–99. [CrossRef]
56. Harvey, D. Between space and time: Reflections on the geographical imagination. *Ann. Assoc. Am. Geogr.* **1990**, *80*, 418–434. [CrossRef]
57. Graham, M. Internet geographies: Data shadows and digital divisions of labor. In *Society and the Internet*; Oxford University Press: Oxford, UK, 2014.
58. Benner, C. Learning communities in a learning region: The soft infrastructure of cross-firm learning networks in Silicon Valley. *Environ. Plan. A* **2003**, *35*, 1809–1830. [CrossRef]
59. Blum, A. *Tubes: A Journey to the Center of the Internet*; Ecco: New York, NY, USA, 2012.
60. Graham, M.; De Sabbata, S.; Zook, M. Towards a study of information geographies: (Im)Mutable augmentations and a mapping of the geographies of information. *Geo Geogr. Environ.* **2015**, *2*, 88–105. [CrossRef]
61. Urban, M.A.; Wójcik, D. Dirty banking: Probing the gap in sustainable finance. *Sustainability* **2019**, *11*, 1745. [CrossRef]
62. Kuh, T. ESG Research in the Information Age. *Truvalue Labs Whitepaper*. 2019. Available online: https://cdn2.hubspot.net/hubfs/4137330/White%20Papers/WP_ESGResearch_InfoAge.pdf?__hssc=16054825.1.1578655262760&__hstc=16054825.bac067346c4aad8a5c43f15f7d0ae07.1578655262760.1578655262760.1578655262760.1&__hsfp=1603390744&hsCtaTracking=60c937d4--47dd-4a22-bdfc-2d575f9cd566%7C1a3c1c13-d812--4521--811b-e5f05cf1f141 (accessed on 8 December 2019).
63. Serafeim, G. Public sentiment and the price of corporate sustainability. *Financ. Anal. J.* **2020**, *76*, 26–46. [CrossRef]
64. Gond, J.-P.; Vigneau, L.; Johnson-Cramer, M. How do measures become academically acceptable? A case study of the Kinder Lydenberg and Domini (KLD) Database. *Acad. Manag. Proc.* **2018**, *28*, 1.
65. Yin, R.K. *Case Study Research: Design and Methods (Applied Social Research Methods)*; Sage Publications: Thousand Oaks, CA, USA, 2014.
66. Kearns, R. Seeing with clarity: Undertaking observational research. In *Qualitative Research Methods in Human Geography*, 4th ed.; Hay, I., Ed.; Oxford University Press: Don Mills, ON, USA, 2016.
67. Clark, G.L. Stylized facts and close dialogue: Methodology in economic geography. *Ann. Assoc. Am. Geogr.* **1998**, *88*, 73–87. [CrossRef]
68. Schoenberger, E. The corporate interview as a research method in economic geography. *Prof. Geogr.* **1991**, *43*, 180–189. [CrossRef]
69. McDowell, L. Elites in the city of London: Some methodological considerations. *Environ. Plan. A* **1998**, *30*, 2133–2146. [CrossRef]
70. Krueger, R.A.; Casey, M.A. *Focus Groups: A Practical Guide for Applied Research*, 3rd ed.; Sage Publications: Thousand Oaks, CA, USA, 2000.
71. Caldecott, B. Viewpoint: Spatial Finance Has a Key Role. Available online: <https://www.ipe.com/viewpoint-spatial-finance-has-a-key-role-/10034269.article> (accessed on 16 November 2019).
72. Bakker, K.; Ritts, M. Smart Earth: A meta-review and implications for environmental governance. *Glob. Environ. Chang.* **2018**, *52*, 201–211. [CrossRef]