White Paper

ESG Science-Based Analysis: A Universal Approach for Finance, Business and Policy-Makers.

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Abstract

This paper shows that two approaches - science-based ESG analysis and financial analysis of ESG data - do not contradict but complement each other. That is, finance analysis can be significantly improved by using concepts and methods from a science-based approach, offering a holistic view of ESG risks and performance. This article also claims that in order to ensure high-quality ESG data analysis, the process of a company-level ESG data collection should meet quality standards of science-based methodology, including state-of-the-art survey methods. Measurement asymmetries, the lack of comparability and validity of currently available ESG data, leading to confusing investment recommendations, can be overcome with this approach. Finally, in order to ensure comparability, we propose that a core standardized questionnaire be used by all data providers. This would not preclude the possibility for data providers to add additional questionnaire items that serve to distinguish them from competitors.

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1 Introduction

In the field of sustainable finance, the two approaches to ESG data analysis - science-based and finance analysis tend to be regarded as competing, and as such they lead to misaligned debates between finance and academia. We postulate that these two approaches fully complement each other and both should be taken into account by practitioners, policy-makers as well as academics, as they provide a more complete picture of ESG risks and opportunities, and sustainability performance.

We also claim that in order to ensure high-quality ESG data analysis, the process of ESG data collection should fulfil science-based methodology requirements. In agreement with the argument made by Eccles and Stroehle (2018) on the "social origins of ESG issues", particularly social research methods and survey methodology are pertinent in this context. Specifically, this would include common standards for ensuring data validity and reliability, as well as comparability across contexts through standardized questionnaire design (i.e. ESG assessment tools), relevant measurements tools, and standardized processes for coding data into variables. Fulfilling these requirements will lead not only to credible analysis but also a formulation of credible investment recommendations as well as overall improvements within the sustainability field.

2 Science-Based Approach to ESG Data Analysis

2.1 Advantages

Currently, the finance-oriented approach dominates the analysis of ESG data. It seeks to evaluate relevant sustainability-related features of the companies in terms of associated financial risks and their predicted impact on investments. In contrast, the science-based approach asks for a more comprehensive and holistic assessment, recognizing that financial and non-financial aspects are both relevant for companies and investors. Those risks are further embedded in contexts, affecting their magnitude and relevance.

We claim that ESG analysis should thus go beyond simply providing company, sectoral, and country-level ESG scorings along with their selected aspects and visualizations. Instead, we call for a more comprehensive and comparative approach. ESG data presents an enormous potential and the science-based comparative approach allows for more informative analyses, capturing differences and similarities between and within companies, sectors and regions as well as between countries on a global scale. Such an integrated and comparative analysis is crucial for all stakeholders involved: companies, investors and regulators.

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With such a more comparative perspective, we further argue that the often-discussed opposition between the two approaches to ESG analysis, science-based and finance analysis dissolves. The main source for the apparent opposition is the lack of appropriate exchange of information between finance-oriented experts and data-providers on the one hand, and academically-trained researchers specialized in social and organizational science on the other hand. The main communication barrier is the lack of open access to standardized and high-quality data.

2.2 Comparative & Multi-Level Analysis

Although contemporary ESG data sources do contain multiple indicators for environmental, social and governance-related aspects, the potential of these data is often not fully exploited in finance analysis. What is missing is the modern scientific know-how from the social and organizational sciences that provide tools to investigate these non-financial risks in more detail and in a proper, comparative and multi-level context.

A science-based quantitative analysis of ESG data allows, among other things, for an adequate assessment of a company's or sectoral sustainability performance as embedded in multiple layers of social, economic, and political settings with their own associated risks and opportunities. For example, a company's sustainability performance is embedded in the regional sustainability level and macro-economic performance, or various types of inequalities measured at the country level, or political instability (if present) at the country or regional level.

Moreover, a science-based approach can provide more insightful results by relying on modern tools in advanced statistics, Machine Learning, and data-driven Artificial Intelligence (AI). They allow to comprehensively analyze both ESG dimensions and their sub-dimensions either separately or by taking into account their interdependencies, or to decompose their variability in a multilevel manner into global, local and company-specific sources of risks. Such detailed information allows companies to improve on overall sustainability or its single aspects over time vis-à-vis specific stakeholder requirements.

3 Methodological Challenges with regard to ESG Data

3.1 Non-Standardized Assessment Tools

Recent literature points out that diversified and incomparable ESG scorings for both companies and sectors lead to identification of different investment universes, creation of different benchmarks and, consequently, divergent and often contradictory recommendations for investment decisions. Available ESG/sustainability assessment tools, which are based on diversified methodological approaches, lead also to significant analytical gaps (Berg et al., 2020).

While we agree that this is due to the lack of a commonality in defining ESG components, i.e. their characteristics, attributes, and standards among data providers (Billio et al., 2020), we argue that the measurement divergence stems from the lack of standardized ESG/sustainability performance assessment tools, which social research methods, including survey methodology offer. In order to ensure comparability of ESG data and their scorings across different raters, we propose a standardized core assessment tool to be included by all ESG data providers.

A standardized core questionnaire segment, therefore, should cover each ESG dimension in a representative way and contain a set of identical questions addressed to companies. These identically collected data points, in analogy to reputable world- or regional-surveys in the social sciences, will ensure availability of comparable and reliable data across different data providers. Additional questionnaire items, going beyond a core segment, will serve data providers to distinguish themselves from competitors.

3.2 Measurement Asymmetries

Moreover, we claim that ESG dimensions are not equally well represented by assessment tools/ available data, and thus do not reflect associated sustainability components in a complete way. This leads to data and measurements asymmetries, and further causes incomparability of company's scorings. Clearly, the environmental dimension (E) is reflected by the highest number of aspects, covered by assessment tools and further data points. Similarly, the governance dimension (G) is rather well-represented. In contrast, the social dimension (S) is significantly underrepresented by most available assessment tools/data providers and requires elaboration. In this context, it is important to note that contrary to a rather common view, social phenomena and societal contexts can be fully covered by both quantitative and qualitative data, obtained through properly formulated questionnaire items, and further standardized coding procedures.

Ensuring completeness of ESG dimensions coverage is important in order to enable an evaluation of each ESG dimension separately or their different combinations, while taking into account their interdependencies and showing how they evolve over time. This completeness would allow companies to improve on sustainability performance in a most efficient way and represent any changes in this regard with credible data.

3.3 Non-Standardized Approach to Qualitative Data

Another methodological challenge relates to the fact that some of ESG aspects, as represented by assessment tools, are measured using open-ended questions. These are traditionally analyzed using qualitative data-analytical tools. Naturally, such a non-standardized approach, which is usually performed manually, does not scale well with the growing size of ESG datasets.

Also, data providers use different types of non-standardized approaches for analyzing these qualitative data, which limits data validity, reliability, and comparability. A standardized science-based approach turns to modern tools of Natural Language Processing (NLP) for fully- and semi-automated data extraction methods. Analyzing open-ended questions in this way, makes the resulting data amenable to quantitative analysis and integrating it with other established quantitative ESG indicators.

Comprehensive and insightful analysis of ESG data needs to simultaneously meet specific goals of investment decision-making, policy-making or regulators, and thus scalability and data reproducibility is essential. In other words, analysis needs to be tailor-made to the problem, but in an extensible and generalizable way. No existing off-the-shelf analytic solutions satisfy these requirements. What is required is experience in modern programming tools for data science and the skills to provide tailored products and solutions in a rapid manner.

4 Conclusions

In conclusion, the two approaches, a science-based and financial analysis of ESG data do not contradict, but complement each other. Finance analysis can be significantly improved by using concepts and methods from a science-based approach. And when taken into account simultaneously, these two approaches provide a holistic picture of ESG risks and opportunities, measured at multiple levels, including the company, regional and country levels. As such, both approaches should be considered by practitioners, policy-makers, regulators, and academics.

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In order to achieve this holistic view, ESG data providers need to go hand in hand with academia and research institutes as well as policy makers in order to exchange expertise and to foster collaborative projects for shared, improved outcomes. This would result in improved and measurable sustainability performances of companies over time, better informed policy, and more accurate tools and standards for measuring both impact and sustainability progress. All of the above is essential to induce well-informed changes and a significant progress towards sustainable development, measurable at the corporate, regional and global level.

About Authors

Katarzyna Wilk is CEO of Swiss Impact Lead GmbH, an impact investing advisory and impact start-ups platform, based in Zurich. She received a PhD from Yale University. Formerly, served as a policy advisor at the European Commission. She was also a long-term collaborator of the Polish Academy of Science, specializing in advanced comparative analysis, hierarchical modeling and lonigitidulal analysis as well as cross-national survey design and inequalities. She is an expert in sustainability/impact management, impact/ESG investing, and author of academic and policy publications.

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