DAVE FERNANDEZ

Singapore Management University

WANYI YANG

Singapore Management University

Impact Measurements and Standards: Academic and Practical Perspectives

Introduction

Impact investing has fundamentally changed the way investors and enterprises engage in sustainable development. While trillions of dollars are invested in sustainability, we know little about whether these investments make positive changes. Understanding how to measure and assess the investment impact is critical. In this paper, which draws on work done at Singapore Management University,[1] we first discuss the development of the impact investment market. We will next show the differences between current impact measurement and environment, social, and governance (ESG) ratings, including recent research by academics and initiatives by finance practitioners. This article concludes by discussing the challenges impact measurement faces going forward.

Fast-growing Impact Investment Market

The traditional divide between for-profit enterprises seeking financial gain and non-profit organizations seeking social good is becoming blurred. Hybrid organizations that bring together profit-generating operations and social missions such as Socially Responsible Investments (SRIs) and impact investments are increasingly common. Unlike the more mature SRIs that minimize negative impact, impact investment proactively seeks financial returns and positive social and environmental impact.[2] Impact investing has channeled large-scale capital to address those most pressing social and environmental challenges. According to a report released by the International Finance Corporation (IFC), a total of USD2.3 trillion was invested for impact in 2020, accounting for about 2% of global assets under management (AUM). In the 2020 Global Impact Investing Network (GIIN) Annual Impact Investor Survey,[3] Southeast Asia, together with Western, Northern, and Southern Europe, is among the fastest-growing regions, with impact investing funds growing at an annual rate of 23%.[4] Many impact investors have begun to map their activities to the Sustainable Development Goals (SDGs), a set of 17 global goals intended to achieve a more sustainable future (Pineiro, Dithrich, and Dhar, 2018). If achievement of the SDGs is the aim, then the size of the challenge ahead points to an even greater inflow of funds, with one recent estimate stating that the world needs USD5-7 trillion of investment every year to complete the SDGs by 2030.[5]

Perhaps surprisingly, impact investing continued to grow robustly through the COVID-19 pandemic, perhaps due to the out-performance of impact investment funds and the increasing awareness of social challenges such as access to healthcare. While the globe wrestles with its response to the pandemic, it is essential that the finance community systematically support sustainable development and channel capital wisely to impact investments to support a durable, post-COVID economy recovery. For the specific goal of addressing climate change, the need for impact investment funds is urgent for the region of Southeast Asia, where most of the population is living close to low-lying coastal areas, vulnerable to climate risks such as rising sea levels and storms. Moreover, this region is also highly dependent on the agriculture and forestry industries that climate change could negatively affect. Capital markets play a critical role in increasing the flow of funds to sustainable enterprises and increasing their impact. A robust impact measurement framework

could help capital markets allocate investment pools towards a better combination of positive social and environmental impact and financial return.

Move from ESG Ratings to Impact Measurement

Understanding how to measure and assess investment impact is increasingly critical for entrepreneurs and investors. Every investment funds activities that positively and negatively affect people and the planet. More investors want to know not just about their money's financial return but also about what it does for a broader set of stakeholders, for example, whether it helps create jobs or supports automation that replaces human labor. Some may even want to see how the impact of their investments aligns with global standards like the SDGs. The recent GIIN report says that investors surveyed view the 'inability to demonstrate impact results' and the 'inability to compare impact results with peers' as key challenges that they face. Impact investors want to have more detailed social and environmental performance data to understand non-financial information and to have that information be central to their investment process.[6]

From the point of view of companies, some want to report, for example, their total carbon emissions, but it is challenging to identify the carbon emissions produced along supply chains. More ominously, other firms may be greenwashing and investing primarily in green marketing communications with a goal of being perceived as environmentally friendly and socially engaged. Knowing whether or not firms are on track to achieving the SDGs requires robust practices around impact measurement. These practices will help stakeholders make informed decisions about measuring and managing impacts.

Since John Elkington proposed the "triple bottom line" framework, various professional data providers have constructed and developed quantitative metrics of firms' environmental, social, and governance performance. These ratings increasingly shape the investment decisions of institutional investors. Gibson, Krueger, and Schmidt (2020) find that more than half of the equity owned by the institution is held by investors who have signed the Principles for Responsible Investment (PRI), calling for more proper quantitative ESG assessment.

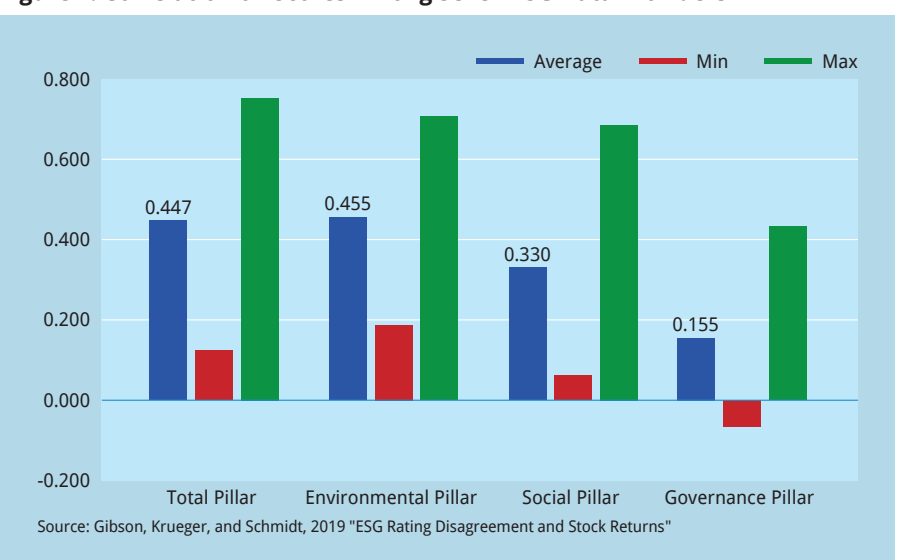
However, unfortunately, we should be cautious about the reliability of current ESG metrics. There are several reasons why the current ESG ratings are insufficient to guide impact investments. First, most current ESG ratings focus on large publicly traded stocks. Some well-known examples include Sustainalytics Company Ratings (covering over 11,000 companies), Refinitiv ESG (formerly Thomson Reuters ASSET4 ESG, with over 7,000 companies), and MSCI ESG STAT (formerly KLD, with over 3,000 US companies). This means that ESG ratings are largely silent with respect to such entities as private companies, start-ups, and projects.

Second, there is limited comparability across the large and growing set of ESG ratings. Ratings are subject to bias and inconsistencies as it is not clear how sustainable performance is evaluated for each existing ESG measurement framework. For example, larger companies may receive better ESG scores because they can dedicate more resources to preparing and publishing ESG disclosures and controlling reputational risks. The location may also make a difference as higher ESG assessments may be given to companies domiciled in regions with higher reporting requirements. Mackintosh (2018) discussed that ESG ratings mainly rely on non-standardized information, and methodologies can be opaque and proprietary, leading to substantial divergence. For example, Figure 1 shows the correlation among seven major ESG data providers analyzed in a recently published study by Gibson, Krueger, and Schmidt.[7] These ESG data providers include Asset 4 (Refinitiv), Sustainalytics, Inrate, Bloomberg, FTSE, KLD, and MSCI IVA. The correlations on the overall ratings and on the three pillar scores average 0.447 and range from 0.124 to 0.752, suggesting that the information from ESG rating agencies is relatively noisy. The figure also shows the magnitude of disagreement across different metrics, with the least disagreement on the Environmental pillar and the greatest on the Governance Pillar.

Moreover, it is challenging to compare different metrics, such as social versus environmental impact, using these ratings. Firms may have set and prioritized various SDG goals. For example, a medical firm may prioritize SDG #3 Good Health and Wellbeing, while an energy firm may rank SDG #7 Affordable and Clean Energy higher. Both firms may also look at SDG #8 Decent Work and Economic Growth. Moreover, the existing ESG ratings are expressed either in letter grades (e.g., D- to A+) or in percentile rank scores, making them difficult to compare or aggregate.

Finally, it is unclear whether and how much data on ESG practices and impact should be disclosed. A sustainability or ESG report should be the key platform for communicating sustainability performance and impact, whether positive or negative, to internal and external stakeholders. However, given the difficulties of defining acceptable errors for non-financial and qualitative information, judging

Figure 1: Correlation on Scores Among Seven ESG Data Providers



Source: Gibson, Krueger, and Schmidt, 2019 "ESG Rating Disagreement and Stock Returns"

which sustainability issues are material remains challenging.

With all these concerns on the current state of ESG ratings, the work of academics and practitioners toward developing a more consistent and complete impact measurement framework is receiving growing attention.

Impact Measurement

In the next section, we will highlight the difference between ESG ratings and impact measurement. A key feature of impact measurement is that it does not focus on input or output, but instead tries to quantify and compare the outcome and impact of an entity's activities. This approach provides a holistic perspective on how the entity (entrepreneurs, asset owners, and fund managers) performs according to SDGs. Meanwhile, instead of just focusing on publicly-listed index companies, impact measurements can be more easily extended to cover a broader set of entities, including private equity, debt, projects, and real assets.

Various impact measurement methods have been developed, such as the GIIN impact measurement scope,[8] expected return (or social return on investment) method, impact multiple of money (IMM),[9] mission alignment method, and experimental or quasi-experimental method. Here we show what we believe are promising examples of current developments in the area of impact measurement.

Harvard Business School's Impact-Weighted Accounts Project

Harvard Business School (HBS) launched its Impact-Weighted Accounts Project in 2019.[10] Impact-weighted accounts are line items on a traditional financial statement but supplement financial health and performance statements by reflecting a company's positive and negative impact on various stakeholders. Central to impact-weighted accounts is the monetary valuation of the social and environmental impact. Such monetization tries to translate all types of social and environmental impact into comparable units so that stakeholders can intuitively understand those impacts. By having these comparable units, stakeholders can aggregate them meaningfully and compare them in their decision-making process. Still in its early days, this project, at the time of this writing, includes 56 companies that have experimented with monetary impact valuation, allowing them to produce environmental or total profit and loss accounts. About 86% of these companies measure their environmental impact, 50% estimate employment/social impact, and 20% estimate product impact.

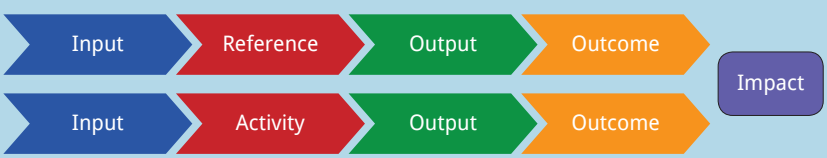
Impact Institute's Integrated Profit Loss Methodology

Impact Institute is a 2018 spin-off of True Price, based in the Netherlands. Like HBS' Impact-Weighted Accounts, the Impact Institute's Integrated Profit and Loss (IP&L) Assessment Methodology provides a rigorous approach to value the impact by extending the traditional financial statements. The IP&L gives an overview of all material impact that results from the organization's activities. This impact is usually expressed in a monetary unit and includes both financial and non-financial value-creation. For example, salaries, taxes, and profits have a positive economic/financial impact while creating job opportunities has a positive social impact. The gender skill gap may have a negative social impact and carbon emission could have a negative environmental impact. This methodology considers the value created for all stakeholders of an organization along the "impact pathway." It maps activities to six capitals (financial, manufactured, intellectual, natural, social, and human) and three domains (economic, environmental and social). Specifically, an impact pathway is a quantifiable chain of effects and counterfactual effects that link an organization's specific activity to its effect on a valuable outcome. Figure 2 provides an overview of how specific inputs and organizational activities lead to outcomes and then impacts.

Input refers to the resources used by the organization. A realized activity is an activity the organization has realized in the reporting period. A reference is an activity that would have otherwise occurred in the chosen timeframe had the organization not undertaken the actual activity. Output is any direct effect of the organization's activity during the reporting period. An outcome reflects the direct or indirect welfare effects of the outputs. An activity's impact is the difference between a valuable outcome of a realized activity and the counterfactual outcome in the reference activity.

As Table 1 shows, an impact is a combination of four types of impact: direct absolute impact, direct marginal impact, indirect absolute impact, and indirect marginal impact.[11] Specifically, an impact is absolute if derived using a "no alternative reference" scenario in the "impact pathway." The marginal impact is derived using an alternative reference scenario. The impact also depends on whether the impact is made through the organization in scope. Thus, the direct impact is created

Figure 2: The Impact Pathway (Adapted from Impact-Weighted Accounts Framework Consultation Draft 2021)



Source: Impact Institute

Table 1: Four Types of Impact

		Type of Reference Scenario	
Organizational Activities in Scope		Absolute Impact	Marginal Impact
	Direct Impact	Direct Absolute Impact	Direct Marginal Impact
	Indirect Impact	Indirect Absolute Impact	Indirect Marginal Impact

Source: Impact Institute

directly by the organization's operations in scope, whereas indirect impact is created by other organizations' operations, such as happening along supply chains.

Challenges Ahead

Work by academics and think tanks must be taken onboard by finance practitioners, which is why, in 2021, the "Banking for Impact" consortium was formed, including HBS, Impact Institute, Singapore Management University's Sim Kee Boon Institute for Financial Economics, together with ABN AMRO, Danske Bank, the Development Bank of Singapore (DBS) and UBS. While this consortium, and a growing number of others, are working towards ways to measure environmental and social impact more rigorously, academics and practitioners have long debated whether sustainability reporting and impact measurement is oversold. There is no doubt that attention to material ESG issues can deliver better social, environmental, and financial outcomes for individual companies. However, we should also pay attention to the risk of introducing a giant new accounting system.

One of the critical issues is whether we can get reliable data and whether an external empowered party can audit the sustainability report. Although 90% of the world's largest companies now produce corporate social responsibility (CSR) reports, a minority of them are assured by third parties. Thus, a lot of the input data might be unreliable. Executives tend to seek a favorable calculation of their company's impact. Some may even use their financial power to influence estimates of corporate impact to make themselves look good.

Moreover, impact accounting requires paying more attention to governance than does financial accounting since there is greater risk for mis-estimating the value of an item on its qualitative attributes. So, the risk of fraud and manipulation would be even higher for impact accounting than for financial accounting. Steadily improving impact data will allow investors and enterprises to better monitor, manage and communicate their contributions to selected SDGs and motivate more significant capital investment.

Another challenge faced by academics and practitioners is the opaque supply chain. For example, to get a complete picture of its carbon footprint, an enterprise needs to measure three greenhouse emissions classified as Scope 1, 2, and 3. Scope 1 emissions are those produced by its own facilities and vehicles and thus under its direct control; Scope 2 emissions are those from purchasing energy, such as electricity, steam, heat, or cooling; and Scope 3 emissions are all other upstream and downstream emissions, including those generated by suppliers and distributors, employees' business travel, and the use of products sold. Given the complexity and vagueness in figuring out upstream and downstream emissions, few companies report Scope 3 data, making it challenging to create a complete picture of the enterprise's emissions. However, we do see some positive progress. Climate TRACE, a coalition funded partly by Google, is developing a satellite-based tool to measure all emissions, including Scope 3, in real-time.

Unlike items, such as inventory and profit that are tabulated in financial statements, almost all ESG impacts do not have an observed price. Thus, accountants will be required to estimate a cost to attribute to these impacts, creating challenges around impact valuation. In conjunction with addressing the pressing global warming issue, many scholars have tried to estimate the price of CO_2, but yet no consensus has been reached. For example, the Biden Administration estimated the social cost of carbon to USD51 per ton well up from the USD1-7 range assigned under the previous U.S. administration, while economists Nicholas Stern and Joseph Stiglitz believe carbon's social cost could be closer to USD100 per ton by 2030.[12] Initiatives in this area have been increasing in Asia recently and the prices they attribute to CO_2 are quite different from American or European estimates. For example, when China launched the world's largest national emissions trading scheme (ETS) in 2021, on opening day the price of CO_2 was CNY49 per ton, or USD7.6, per ton. And according to a non-profit survey by the Chinese business media Caixin, carbon credits will likely be traded around CNY93 (or approximately USD14) per ton by 2030. Such wide differences in valuing impacts creates challenges for the governance of the valuation process.

Most Asian countries are vulnerable to climate change, and many are not ready to respond to its impacts. Low-lying cities like Indonesia's Jakarta are exposed to dramatic increases in temperature and in flood and typhoon risk. At the same time, Singapore has warmed 80% faster than the rest of the region over the past 70 years. The SDGs have mobilized trillions of dollars worldwide to combat climate change and created many opportunities for investors and corporations. However, there is also a mismatch between the SDG targets and impact-measurement practices due to the inconsistency in how ESG impact should be measured and assessed across asset classes, projects, and countries.

Our paper is a call for future research by academics, in close consultation with finance and business practitioners, in the area of impact measurement. Asia must be part of this global dialogue and workstream, including the region's family businesses and offices that continue to express concerns about impact measurement.[13] Asia has unique climate and social challenges, and an assessment and measurement framework that works in the U.S. and Europe may not work in countries in Asia. As we discussed, even for the well-known problem of pricing CO_2, it is hard to reach a consensus. Therefore, a globally standardized impact measurement framework with localization on specific parameters is required for more targeted climate and social solutions in Asia. In the meantime, we suggest that practitioners link impact measurements to findings from academic research and leading policy databases, such as that of the World Bank. Incorporating the SDGs into impact measurement through a more holistic stakeholders' perspective and in a way that is adapted to specific regional requirements is central to moving towards a new sustainability agenda.

Notes

1 Liang, Fernandez, and Larsen (2022) on impact assessment.

2 See O'Donohoe, Leijonhufvud, and Saltuk (2010) for an introduction to impact investing.

3 https://thegiin.org/research/publication/impinv-survey-2020

4 The growing interest in SE Asia is also reflected in the whole sample's investment plans. Over half of respondents (52%) plan to grow allocations to SE Asia over the next five years.

5 https://www.weforum.org/agenda/2021/01/the-sustainable-development-goals-can-get-back-on-track/

6 Investors' need for such non-financial information also was discussed in the report released by the World Bank Council for Sustainable Development (WBCSD 2018): "investors are not getting the sustainability information they want or need to make informed decisions. Reasons for this include the fact that there's too much information across conflicting frameworks and that there are differing definitions for what sustainability is and does from company to company. Plus, investors have difficulty assessing to what extent the information can be relied on."

7 Several academic studies also look into this issue. For example, Berg, Koelbel and Rigobon (2019) decompose ESG rating divergence into scope, measurement and weights. "Measurement" explains 53% of the overall divergence, scope counts for 44% of the divergence and 3% is due to different weights. The authors also show that rating agencies' evaluations in individual categories are influenced by their views of the analyzed company. Also see Chatterji, Durand, Levine, Touboul (2016); Kotsantonis and Serafeim (2019).

8 According to GIIN, the scope of impact measurement includes: (1) setting goals and expectations; (2) defining impact strategies and searching for evidence; (3) selecting metrics and setting targets; and (4) measuring, tracking, using data and reporting

9 See Addy, Chorengel, Collins, Etzel (2019). Also, a monetization framework has been developed by TPG's RISE Fund, which is based on the calculation of an IMM in the spirit of Addy et al. (2019) that quantifies and monetizes an investment's net social and environmental impact.

10 SMU collaborates with Harvard Business School's Impact Weighted Accounts Initiative and the Impact Institute on the 'Impact Weighted Account Framework' (IWAF) project.

11 The Table is modified from Integrated Profit & Loss Assessment Methodology (IAM): Supplement Impact Contribution (Figure 1: Four types of impact), compiled by Impact Institute.

12 https://www.project-syndicate.org/commentary/biden-administration-climate-change-higher-carbon-price-by-nicholas-stern-and-joseph-e-stiglitz-2021-02

13 https://www.ubs.com/global/en/global-family-office/reports/gfo-r-21-4-client.html

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DAVE FERNANDEZ

Director, Sim Kee Boon Institute for Financial Economics, Lee Kong Chian School of Business, Singapore Management University

Professor Dave Fernandez is Director of the Sim Kee Boon Institute (SKBI) for Financial Economics and Professor of the Practice of Finance at the Lee Kong Chian School of Business at Singapore Management University (SMU). He is also the Co-Director of the Singapore Green Finance Centre which is jointly run by SKBI and Imperial College London's Centre for Climate Finance & Investment. Outside of SMU, he is the Chairman of the Advisory Panel of the ASEAN+3 Macroeconomic Research Office.

Prior to returning to academia in 2018, he worked as an economist in the private sector at Barclays and J.P. Morgan. He started his career in the public sector, serving as an economist in the administration of President George H.W. Bush and at the Federal Reserve Bank of New York.

Outside of his activities as an economist, he sits on the board of EMpower, a global philanthropy focused on at-risk youth in emerging market countries. He is also a member of Phillips Exeter Academy's Asia Council and the Exco of the Princeton Alumni Association of Singapore.

He holds an M.A. and Ph.D. in Economics from Princeton University where he completed his dissertation under the guidance of Ben S. Bernanke. His undergraduate degree is from the University of Pennsylvania where Robert S. Mariano was his mentor.

WANYI YANG

Visiting Faculty, Sim Kee Boon Institute for Financial Economics, Singapore Management University

Dr. Wanyi Yang is Visiting Faculty of the Sim Kee Boon Institute (SKBI) for Financial Economics at the Singapore Management University (SMU) and Lecturer (Assistant Professor) in Finance at the Lincoln University in New Zealand.

She completed her Ph.D. in Finance at the University of Auckland. Wanyi has research interests focusing on sustainable finance and international asset pricing and published in the *Journal of Banking and Finance*. Her works have been presented in several leading academic conferences, such as American Finance Association Annual Conference, Asian Finance Association Annual Meeting, and SIRCA Young Researcher Workshop, among others, and obtained the INFINZ-Best Paper Award for investment.

Sim Kee Boon Institute for Financial Economics:
The Sim Kee Boon Institute (SKBI) generates financial economic research through multidisciplinary collaborations involving not only the SMU community, but also research talent from around the world as well as industry and public-sector partners. The Institute focuses on the areas of financial inclusion and literacy, sustainable finance, financial technology, and data and governance. To maintain relevance to finance practitioners and policy-makers, SKBI also adopts a view on Asian and global economic trends.

Singapore Green Finance Centre:
The Singapore Green Finance Centre (SGFC) is an initiative of Imperial College Business School and Singapore Management University, backed by the Monetary Authority of Singapore and leading global financial institutions. The SGFC is building a new ecosystem for sustainable investing in Asia, attracting mainstream investment towards the biggest developmental and economic challenge of our time: climate change. The Centre's academic scholars, governments, policymakers, and finance executives are committed to developing green capital markets in Singapore. They aim to mobilize a growing community of practitioners who are armed with knowledge, hungry for action, and biased towards solutions.