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The integration of ESG data into the valuation models of asset managers

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Résumé

Le développement de l'investissement responsable et durable ces dernières années a renforcé l'importance des données ESG dans la prise de décision d'investissement des gérants professionnels. Ces derniers peuvent les utiliser de manière diverse dans leur analyse. Ce mémoire de recherche s'intéresse à l'une de ces applications, à travers cette question : comment les gérants professionnels intègrent-ils les données ESG dans leurs modèles d'évaluation ? Après avoir établi une typologie des ajustements que les gérants peuvent réaliser pour intégrer l'ESG dans leur modélisation, en particulier dans le modèle DCF, nous nous sommes entretenus avec 17 gérants et analystes ESG, majoritairement des investisseurs dans les actions cotées, pour dresser une cartographie des pratiques réellement adoptées par les *asset managers*. Les résultats de ces entretiens montrent que l'intégration des données ESG dans les modèles d'évaluation est encore balbutiante mais fait l'objet de nombreuses discussions. Deux modèles se dessinent : l'ajustement du numérateur du DCF, *i.e.* des flux de trésorerie futurs (revenus, marges opérationnelles et CAPEX) et de la valeur terminale ; et l'ajustement du dénominateur du DCF, *i.e.* le coût du capital. Bien qu'il soit difficile de conclure à la généralisation de l'intégration des données ESG dans les modèles d'évaluation, son intérêt réside principalement dans l'amélioration de la compréhension des modèles économiques des sociétés et dans sa capacité à faciliter la gestion des risques auxquels sont exposées les entreprises. En particulier, cela permet aux gérants professionnels de prendre la mesure de l'influence des pratiques ESG des entreprises sur leur valeur.

Mots-clés : évaluation financière, ESG, Discounted-Cash-Flow, gérants professionnels, investissement

Abstract

The development of responsible and sustainable investment in recent years has increased the importance of ESG data in the investment decision-making of asset managers. The latest can use ESG data in a variety of ways in their analysis. This research paper focuses on one of these applications, through the question: how do asset managers integrate ESG data into their valuation models? After establishing a typology of the adjustments that investors can make to integrate ESG into their modelling, in particular in the DCF model, we interviewed 17 ESG managers and analysts, mainly investors in listed equities, to map the practices actually adopted by them. The results of these interviews show that the integration of ESG data into valuation models is still relatively new but is the subject of much discussion. Two models emerge: the adjustment of the numerator of the DCF, *i.e.* future cash flows (revenues, operating margins, and CAPEX) and terminal value; and the adjustment of the denominator of the DCF, *i.e.* the cost of capital. Although it is difficult to conclude that the integration of ESG data into valuation models is widespread, its value lies mainly in improving the understanding of companies' business models and in its ability to facilitate risk management to which companies are exposed. In particular, it allows asset managers to measure the influence of companies' ESG practices on their value.

Key words: Valuation, ESG, Discounted Cash-Flows, asset managers, investment

Resumen

El desarrollo de la inversión responsable y sostenible de los últimos años ha provocado un incremento de la importancia de los datos ASG en las decisiones de inversión de los gestores profesionales. These managers can use ASG data in various ways in their analyses. Este documento de investigación se centra en una de estas aplicaciones, respondiendo a la pregunta: ¿cómo integran los gestores profesionales los datos ASG en sus modelos de valoración? Tras establecer una lista de los ajustes que los gestores pueden hacer para integrar la ASG en su modelización, en particular en el modelo DCF, entrevistamos a 17 gestores y analistas de ASG, en su mayoría inversores en empresas cotizadas, para contrastar las prácticas realmente adoptadas por estos gestores. The results of these interviews show that the integration of ASG data into valuation models is still in its infancy and is the subject of much debate. Surgen dos modelos: el ajuste del numerador del DCF, es decir, los flujos de caja futuros (ingresos, márgenes de explotación y CAPEX) y el valor final; y el ajuste del denominador del DCF, es decir, el coste del capital. Aunque no se puede concluir que la integración de los datos ASG en los modelos de valoración está generalizada, si se puede afirmar que aporta valor principalmente en la mejora de la comprensión de los modelos de negocio de las empresas y en su capacidad para facilitar la gestionestión de los riesgos a los que las empresas se enfrentan. Es decir, los gestores si pueden incorporar los aspectos ASG a los métodos de valoración y ver como estos afectan al valor de la empresa.

Palabras claves: evaluación financiera, ASG, Discounted-Cash-Flow, gestiones de activos, inversión.

Zusammenfassung

Die Entwicklung verantwortungsbewusster und nachhaltiger Investitionen in den letzten Jahren hat die Bedeutung von ESG-Daten für die Anlageentscheidungen professioneller Vermögensverwalter erhöht. They can be used in different ways in their analyses. This research work is based on one of these applications and addresses the question of how professional managers integrate ESG data into their evaluation models. Nachdem wir eine Typologie der Anpassungen erstellt haben, die Manager vornehmen können, um ESG in ihre Modelle, insbesondere in das DCF-Modell, zu integrieren, haben wir mit 17 ESG-Managern und -Analysten, mehrheitlich Investoren in börsennotierte Aktien, gesprochen, um eine Kartografie der Praktiken zu erstellen, die von Asset Managern tatsächlich angewandt werden. Die Ergebnisse der Interviews zeigen, dass die Integration von ESG-Daten in Bewertungsmodelle noch in den Kinderschuhen steckt, aber viel diskutiert wird. Es zeichnen sich zwei Modelle ab: die Anpassung des Zählers des DCF, d.h. der zukünftigen Cashflows (Erträge, operative Margen und CAPEX) und des Endwerts; und die Anpassung des Nenners des DCF, d.h. der Kapitalkosten. Obwohl es schwierig ist, auf eine allgemeine Verbreitung der Integration von ESG-Daten in Bewertungsmodelle zu schließen, liegt ihr Nutzen hauptsächlich darin, das Verständnis der Geschäftsmodelle von Unternehmen zu verbessern und das Management der Risiken, denen die Unternehmen ausgesetzt sind, zu erleichtern. Insbesondere ermöglicht es professionellen Managern, den Einfluss der ESG-Praktiken von Unternehmen auf ihren Wert zu messen.

Schlüsselwörter: Finanzielle Bewertung, ESG, Discounted-Cash-Flow, professionelle Manager, Investitionen

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Affidavit

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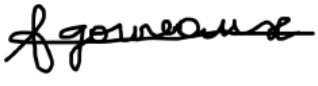

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List of abbreviations

AUM	Asset Under Management
Bn	Billions
CDSB	Climate Disclosure Standards Board
CSRD	Corporate Sustainability Reporting Directive
DCF	Discounted Cash-Flows
EBIT	Earnings before interest and taxes or earnings before interest and taxes
EBITDA	Earnings before interest, taxes, depreciation and amortisation
EFRAG	European Financial Reporting Advisory Group
EqV	Equity Value
ESG	Environmental, Social and Governance
EU	European Union
EV	Enterprise value
EY	Ernst & Young
et al.	et alii (means "others")
FCFE	Free Cash Flows to Equity
FCFF	Free Cash Flows to the Firm
GHG	Green House Gases
GIIN	Global Impact Investing Network
GRI	Global Reporting Initiative
Ibid.	Ibidem (means "same place")
ICMA	International Capital Market Association
IFRS	International Financial Reporting Standards
ISO	International Organization for Standardization
KPIS	Key performance indicators
LRQA	Lloyd's Register Quality Assurance
MSCI	Morgan Stanley Capital International
NFRD	Non-Financial Reporting Directive
NGFS	Network for Greening the Financial System
NOPAT	Net operating profit after tax
OECD	Organisation for Economic Cooperation and Development
op. cit.	Opus citatum (means "work cited")
PRI	Principles for Responsible Investment
SASB	Sustainability Accounting Standards Board
SBTi	Science Based Targets initiative
SFDR	Sustainable Finance Disclosure Regulation
SRI	Sustainable Responsible Investment
TCFD	Task Force on Climate Related Financial Disclosures
UNGC	United Nations Global Compact

Introduction

The term ESG (Environment, Social and Governance) is a recent concept. The "Who cares Wins" report[1] of the *International Finance Corporation* in 2005 can be considered a turning point in the development of this concept. Indeed, this document questions for the first time the financial materiality of environmental, social and governance issues on the value of companies. In particular, the report concludes that financial analysts should integrate ESG reviews into their investment processes and are convinced of the long-term effects of ESG factors on company value. Today, ESG criteria[2] constitute the three pillars of extra-financial analysis. In particular :

- The environmental criterion considers waste management, the reduction of greenhouse gas emissions and the prevention of environmental risks.
- The social criterion considers accident prevention, staff training, respect for employees' rights, supply chain and social dialogue.
- The governance criterion checks the independence of the board of directors, the management structure and the presence of an audit committee.

Moreover, according to the France Invest and the Forum pour l'Investissement Reponsable report on impact investing[3] , ESG, a term used by both listed and unlisted market players, refers to investor evaluation criteria mainly linked to the internal functioning of the companies in which they invest (the "how" or "means" approach). Indeed, ESG analysis is interesting because it can be applied to all companies, i.e. without taking into account the nature of their activities. ESG performance is usually assessed against managerial, sectoral and often risk management standards, or from a value creation perspective. The objective is most often based on identifying and reducing the negative externalities generated by the issuer's activities, products or services.

However, it is by no means obvious that investors, and in particular asset managers, take the ESG dimension into account when making their investment decisions. It should be noted we exclude asset *owners* and individual investors. Thus in the following paper, when we talk

[1] Who Cares Wins: Connecting Financial to a Changing World, *International Finance Corporation,* 2004

[2] Definition from Novethic (Caisse des Dépôts): https://www.novethic.fr/lexique/detail/esg.html

[3] Forum pour l'investissement responsable, France Invest. (2021). *Investissement à impact : une définition exigeante pour le coté et le non-coté.*

about “investors” we will refer to “asset managers”. In 2019, PwC conducted a survey of 162 private equity funds which showed that 91% of the funds surveyed had developed or were in the process of developing an ESG policy and that 72% of them used ESG KPIs to monitor their progress[4] . However, only 35% of them had dedicated ESG teams. Similarly, ShareAction[5] surveyed 75 of the largest asset managers in 2020 and 51% said they had no (or very little) ESG risk and opportunity approach and 16% said they had a 'limited approach', i.e. developed an ESG risk and opportunity approach for some topics only. Furthermore, in both questionnaires, asset managers stated the lack of a robust methodology and reliable data are the main obstacles to assessing and taking ESG into account in their investment decisions.

In fact, today it is not easy to talk about ESG data, as it is necessary to define its boundaries. The *OECD's* 2020 *Business and Finance Outlook* report on Sustainable and Resilient Finance points out that the various methodologies used do not all have the same scope, and they tend to be non-transparent. There are few widely accepted, consistent, comparable and verifiable indicators on which to base assessments. In practice, this means that a company may get a high ESG score from one service provider, but a much lower one from another. Thinking about how to take the ESG dimension into account is therefore inseparable from questioning the value of ESG information. In particular, it will be necessary to ask whether this information has been obtained directly or from infomediaries, whether the data is credible, i.e. whether it has been audited or not, and whether it is relevant, since not all ESG data is equally relevant to investors. For some asset managers, ESG data may result in the exclusion of certain financial products; for others, this information may be taken into consideration if *asset managers* anticipate that it will impact cash flows or risk.

It is in this context of lack of transparency and fragmented practices that the European Union (EU) has drawn up an action plan on sustainable finance. This has led to the revision of the NFRD (*Non-Financial Reporting Directive*) via the CSRD (*Corporate Sustainability Reporting Directive*) in April 2021, which obliges a growing number of companies to communicate on their extra-financial activities and works to standardise the indicators to be communicated. In parallel, to support this plan, the Taxonomy Regulation, a scientific classification of activities

[4] Jackson-Moore, W., Case, P., Bobin, E., Janssen, J., PwC. (2019). *Older and wiser: Is responsible investment coming of age? Private Equity Responsible survey 2019*

[5] ShareAction. (2020, March 9). *Point of No Returns A ranking of 75 of the world's largest asset Investors' approaches to responsible investment.*

according to their environmental impact, and the SFDR (*Sustainable Finance Disclosure Regulation*) came into force on March 10th 2021, the aim of which is to regulate the publication of sustainability information in the financial services sector. In particular, under the SFDR, 3 categories of assets are identified:

- Article 6 products that integrate ESG considerations into the investment decision-making process or explain why sustainability risk is not relevant;
- Article 8 products that promote environmental and/or social features;
- Article 9 products that aim at sustainable investment.

Depending on the category to which a financial product belongs, investors will have to comply with disclosure requirements. Article 6 financial products will publish information on how sustainability risks are incorporated into their investment decisions and an assessment of the likely impact of sustainability risks on the performance of financial products[6] . Article 8 and 9 financial products will have to publish more details. For example, they will have to make explicit the sustainability indices chosen to measure the environmental and social characteristics of the funds and show over time how well they are achieving them. Article 9 products will have to indicate whether their sustainable investments are made in activities aligned with the EU taxonomy and make explicit their carbon reduction targets.

These various directives should not only allow for greater comparability of market assets but should also facilitate the redirection of capital towards sustainable investments, allow for the systematic integration of sustainability into risk management and promote transparency and a long-term perspective. It should be noted that the EU is not the only institution promoting the standardisation of sustainable reporting. In November 2021, the IFRS Foundation created the International Sustainability Standard Board (ISSB), chaired by former Danone CEO Emmanuel Faber, which aims to develop *"a comprehensive global base of high-quality ESG disclosure standards to meet the information needs of investors*"[7] .

Given this desire to standardise extra-financial information, asset managers should find it easier to retrieve reliable ESG data to conduct their analyses and thus make their investment

[6]Explication du règlement SFDR de l'UE et de son importance pour les investisseurs (2021, juin 30) *JP Morgan Asset Management*, https://bit.ly/3wlAhqS

[7] *"a comprehensive global baseline of high-quality ESG disclosure standards to meet investors' information needs" (03/11/2021).*

decisions. Achieving greater transparency of ESG data should therefore enable professional managers to systematise their processing and integration into their investment decisions. This should lead to the development of "full integration" to use the terminology of Amir Amel-Zadeh and George Serafeim[8] in which asset managers integrate data into their financial forecasts and valuation models. Indeed, the literature formalises processes to enable professional asset managers to add ESG information into their financial modelling, notably in the DCF model. However, this is far from systematic, and it is difficult to know what asset managers actually implement. Moreover, this implies distinguishing between the uses of different valuation tools: the consideration of ESG will be very different if we are talking about asset-based methods, fundamental methods such as the DCF model (*discounted cash flow)* or analogical methods (multiples). Going further, we can even ask ourselves to what extent taking ESG into account in valuation methods leads to a shift favouring fundamental methods, which require more time, but allow the ESG dimension to be taken into account better than analogical methods.

So how do professional asset managers integrate ESG data into their valuation models?

The objective of the research is to map the practices implemented by professional managers to integrate ESG data into their valuation models, to highlight the difficulties encountered and the deviations from the literature. To this end, we will first attempt, through a literature review, to understand the relationship between ESG and investment decision-making by assessing the different degrees of ESG data integration, the different strategies implemented by investors, whether or not they claim to be responsible investors; to indicate the sources of information available to retrieve ESG data and to identify the motivations of asset managers in using this information to invest.

Second, we will try to understand why asset managers integrate ESG data in particular in their valuation methods. We will review the different methods used by professional managers and we will focus in particular on the DCF model which, according to the literature,

[8]Amel-Zadeh, A., & Serafeim, G. (2018). Why and How Investors Use ESG Information: Evidence from a Global Survey, *Financial Analysts Journal*, 74(3), 87-103.

allows us to show how ESG creates value for the companies. This will allow us to establish hypotheses regarding the practices of managers.

Finally, in the third part, based on qualitative interviews, we will map out the practices actually implemented by professional managers and then seek to identify the trends that may or may not emerge in the coming years in the face of growing investor interest in ESG.

1. Literature review

1.1. Different degrees of data integration by professional managers

1.1.1. Investor typologies according to their interest in ESG data

- *Traditional investors vs. SRI investors*

To understand what might lead asset managers to integrate ESG data into their valuation methods, it is necessary to understand how ESG data can influence their investment decisions. This can be done by first categorising asset managers according to their interest in ESG. Indeed, the growing attention to ESG has given rise to a wide universe of responsible investors ranging from those who 'negatively screen' for ESG risks to those who actively work to mitigate them during ownership.

In 2014, the *Social Impact Investment Taskforce* and the *Global Impact Investing Network* (GIIN) carried out definitional work to clarify the terms used to describe asset managers and their position in relation to their interest in ESG.

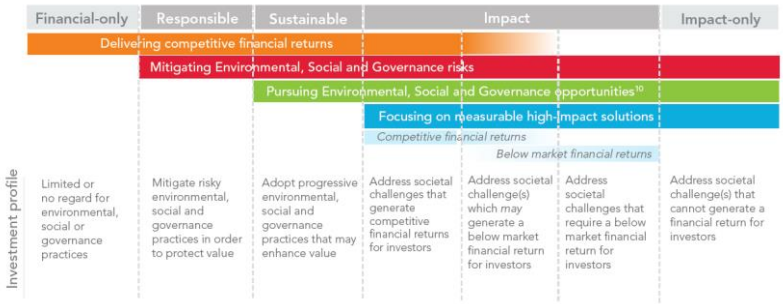
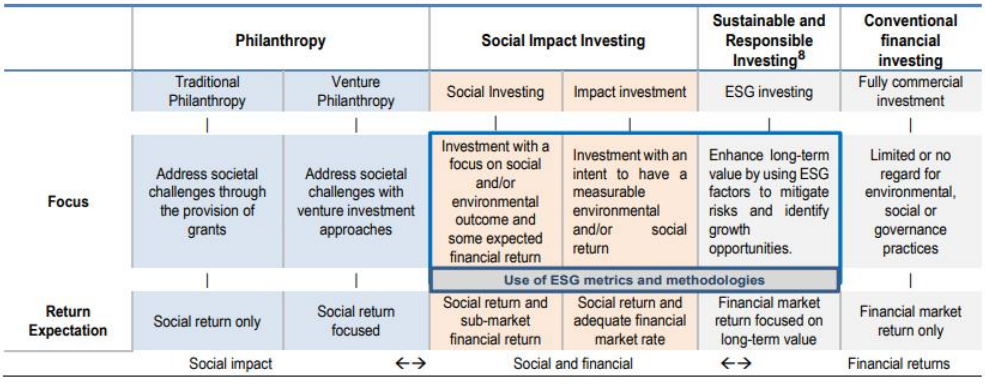


Figure 1 - Spectrum of capital (Bridges Ventures (2015))



Source: stylised adaptation from OECD (2019), "Social Impact Investment, the Impact Imperative for Sustainable Development," based on earlier versions from various organisations; for illustrative purposes only.

Figure 2 -The Spectrum of social and financial investing (OECD Paris, 2020, p.15)

Firstly, *responsible and sustainable investors* differ from *financial-only* investors in that they use a set of investment filters to select or exclude assets on the basis of non-financial criteria in support of financial criteria (Crifo and Forget 2013)[9] . This involves two main practices: (i) using filters to avoid (negative screening) or target (positive screening) specific stocks to build their portfolio (ii) using engagement or shareholder activism to encourage the development of CSR practices in companies. ESG is closely linked to sustainable and responsible investment as these approaches are based on the consideration of ESG criteria. Thus, one way of defining ESG investment[10] is to consider that it is " *It can be said that ESG investing is an interconnected amalgamation of sustainability and financial systems for better profits*" (Aish, Takur, Nanda, Tripathy and Kim, 2021). Furthermore, responsible and sustainable investment differs from traditional investment as it can have sustainability (i.e. the reduction of negative externalities) as an objective, which is not a financial objective. In the rest of this paper, we will include responsible and sustainable investment in the expression ESG investment.

- *The different ESG investors*

Within ESG investment, *responsible investment is* to be distinguished from sustainable *investment*: the former involves taking into account ESG practices because they mitigate risk; the latter selects companies because investors anticipate that they will outperform the market because they operate (or have the potential to operate) more sustainably than their peers over time - whether through their environmental management, stakeholder engagement or governance practices. Thus, sustainable investment is not just about protecting value from risk but about creating additional value. This distinction overlaps with that of Giese et al. (2019) who divide ESG investing into 3 groups[11] :

(i) *ESG integration* aims to improve the risk/return profile of a portfolio. This concept refers to responsible investment.

[9] Crifo P., Forget V. D. (2013). Think Global, Invest Responsible: Why the Private Equity Industry Goes Green, Journal of Business Ethics, 116, 21-48

[10] Aish, S., Thakur, A., Nanda D., Tripathy, S., Kim, H-C., (2021). Factors affecting ESG towards Impact on Investment: A structural approach, Sustainability, 13(19): 10868

[11] Giese, G., Lee, L-E., Melas, D., Nagy, Z., Nishikawa, L. (2019, July). Foundations of ESG Investing: How ESG Affects Equity valuation, risk and performance, The Journal of Portfolio management, MSCI, 45(5), 68-93

(ii) *Values-based investing*, in which the manager seeks to align his portfolio with his norms and beliefs. This concept corresponds to sustainable investment.

(iii) *Impact investing in* which investors want to use their capital to trigger change for social and environmental purposes.

- *ESG vs. impact investing*

It is necessary to distinguish ESG investment from impact investment. The latter goes further and aims to provide solutions to environmental and social problems. Impact investors often focus on one or a group of issues with the deliberate intention of having a positive social or environmental impact. The GIIN[12] defines it as an investment "*made with the intention of generating a positive return, with measurable social and environmental impact, while providing a financial return*". Three characteristics[13] define impact investment (France Invest, Forum pour l'investissement responsable, 2021):

(i) Intentionality i.e. the investor's desire to generate a measurable social or environmental benefit and thus contribute to sustainable development.

(ii) Additionality, which refers to the contribution of the investment to the impact;

(iii) Impact measurement which goes with assessment of investor remuneration, integration of impact outcomes in investment decisions and adjustments of impact goals.

In summary, ESG investing represents a type of approach that aims to avoid negative impacts and manage corporate reputation, while impact investing is clearly intentional. The two strategies are not contradictory.

However, despite these distinctions, the boundaries between traditional and ESG investing are becoming increasingly blurred. The use of ESG data in investment decision-making has become mainstream and the majority of asset managers are signatories to the PRI[14] showing that the issue of sustainability goes far beyond the group of managers who

[12] Global Impact Investing Network

[13] Forum pour l'investissement responsable, France Invest. (2021). Investissement à impact : une définition exigeante pour le coté et le non-coté.

[14] Principles for Responsible Investment

market themselves as responsible and/or sustainable investors[15] (Duuren, Plantiga and Scholtens, 2016). Moreover, asset managers have different investment vehicles under management that may belong to traditional investment, ESG investment or impact investment, which further blurs the boundaries.

1.1.2. The different strategies adopted by asset managers to integrate ESG data into their investment decisions

- *Overview of the different strategies*

In 2018, Serafeim and Amel-Zadeh[16] wrote that little was published on how asset managers used ESG information. Historically, the literature had focused on comparing the performance of SRI self-labelled funds[17] with that of traditional funds. These studies showed that there was little difference in performance between the two families[18] (Bauer, Derwall and Otten, 2007). Furthermore, these authors noted that the literature mainly analysed SRI funds that used negative screening in their investment process. In practice this meant that little was written about how mainstream funds used ESG data and how it could help them to go beyond simply excluding sectors deemed 'unethical'. This made it difficult to assess the different strategies available in terms of financial performance. For example, some studies have shown that portfolios excluding[19] (negative screening) (Hong and Kacperczyk 2009) or built on the basis of aggregate ESG measures[20] (Brammer, Brooks and Pavelin 2006) underperform their peers; others have shown that portfolios constructed after positive screening on material ESG issues[21] (Khan et al. 2016) or constructed on the basis of individual ESG indicators such as employee satisfaction[22] (Edmans 2011), outperform their peers.

[15] Duuren, E., Plantiga, A., Scholtens, B. (2016). ESG Integration and the Investment Management Process: Fundamental Investing Reinved, Journal of Business Ethics
[16] Amel-Zadeh, A., & Serafeim, G. (2018). Why and How Investors Use ESG Information: Evidence from a Global Survey, Financial Analysts Journal, 74(3), 87-103.
[17] Sustainable Reponsible Investment
[18] Bauer, R., Derwall, J., and Otten, R. (2007). The Ethical Mutual Fund Performance Debate: New Evidence from Canada. Journal of Business Ethics, 70(2), 111-24
[19] Hong, H., & Kacperczyk, M. (2009). The Price of Sin:The Effects of Social Norms on Markets. Journal of Financial Economics, 93(1), 15-36.
[20] Brammer, S., Brooks, C., and Pavelin, S. (2006). Corporate Social Performance and Stock Returns: UK Evidence from Disaggregate Measures. Financial Management, 35 (3), 97-116
[21] Khan, M., Serafeim, G., and Yoon, A. (2016, March). Corporate Sustainability: First Evidence on Materiality. Accounting Review 91(6), 1697-724
[22] Edmans, A. (2011). Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices. Journal of Financial Economics, 10(3), 621-40

For this reason, Serafeim and Amel-Zadeh[23] (2018) surveyed 4,523 asset managers in the United States to find out their ESG data processing habits. They came up with a list of eight practices that identify different investment styles:

- Engagement/active ownership refers to the use of shareholder power to influence corporate behaviour through direct engagement (i.e. communicating with senior management and/or company boards), filing or co-filing proposals and voting on ESG guidelines.
- Full integration into individual stock valuation refers to the explicit inclusion of ESG factors in traditional corporate financial analysis (for example, as an assumption in cash flow forecasts and/or cost of capital estimates). This is the approach favoured by this research.
- Negative screening is the exclusion of certain sectors, companies or practices from a fund or portfolio on the basis of specific ESG criteria.
- Positive screening is the inclusion of certain sectors, companies or practices in a fund or portfolio on the basis of specific minimum ESG criteria.
- Relative or best-in-class screening refers to investing in sectors, companies or projects selected for their ESG performance relative to peers in the sector.
- Overlay/portfolio tilt is the use of certain investment strategies or products to change the specific overall ESG characteristics of a fund or investment portfolio to a desired level (e.g. to facilitate the transition of an investment portfolio to a desired carbon footprint).
- Thematic investment is investing in themes or assets specifically related to ESG factors, such as renewable energy, green technology or sustainable agriculture.
- Risk factor/risk premium investing refers to the integration of ESG information into the analysis of systematic risks, for example in the context of smart beta indexing or factor investing (valuation, momentum, growth, volatility factor and quality).

We can note that absent from this classification is the "best-in-universe" approach that the Label ISR defines as "*an ESG selection process of companies that consists of favouring the best*

[23] Amel-Zadeh, A., & Serafeim, G. (2018), *op.cit.*

rated companies from an extra-financial point of view, regardless of their sector of activity. Within this framework, the sectors that are considered the most virtuous will be more represented in the final selection".

The value of this classification is that it segments usages according to the factors most likely to influence the investment decision.

This analysis can be contrasted with the initiatives of several investor groups that have developed similar classifications:

Serafeim & Amel-Zadeh (2018)	Eurosif-equivalent	GSIA-equivalent	PRI-equivalent	EFAMA-equivalent
Engagement/active ownership	Engagement and voting	Corporate engagement and shareholder	Engagement (three types)	Engagement (voting)
Full integration into stock valuation	ESG integration	ESG integration	Integration of ESG issues	-
Negative Screening	Exclusions	ESG Negative screening	ESG Negative /exclusionary screening	Negatif screening or exclusion
Positive screening	-	ESG positive screening	ESG positive screening	-
Relative screening/best in class screening	Best-in-class policy	Best-in class	Best-in-Class	Best-in class policy
Overlay/portfolio tilt	close to norms-based screening	close to norms-based screening	close to norms-based screening	close to norms-based approach
Thematic investment	Sustainability themed	Sustainability-themed	ESG-themed investments	Thematic investment
Risk factor or risk premium investing	-	-	-	-
-	Impact investing	Impact/Community investing		

Figure 3 - Summary of strategies adopted by asset managers

Unlike the EUROSIF classification[24] or GSIA[25] , Serafeim and Amel Zadeh[26] do not consider the practice of impact investing, which is not surprising given that their survey focuses on traditional asset managers (i.e. those who do not label themselves as SRI or impact investors), particularly American ones. It should also be noted that the majority of classifications equate positive screening with best-in-class screening, but that they have been separated to construct the above table. In contrast, Serafeim and Amel-Zadeh clearly distinguish these two strategies in their terminology. Furthermore, the authors do not consider filtering by standards (selecting investment opportunities that meet certain international standards set by e.g. the OECD or the UN) but a portfolio tilting approach towards objectives such as temperature trajectories etc. However, we can consider that these practices can lead to similar results. Furthermore, for Serafeim and Amel Zadeh, full integration implies integration up to the stage of company valuation, which is not the case for

[24] European Sustainable Investment Forum
[25] Global Sustainable Investment Alliance
[26] Amel-Zadeh, A., & Serafeim, G. (2018), *op.cit.*

the other classifications. Finally, none of the other classifications proposes a risk factor or risk premium investment approach.

- *Adoption of different strategies*

Amel-Zadeh and Serafeim[27] obtained 652 responses in their survey showing that the most adopted strategies by asset managers are shareholder engagement and ESG integration followed by negative screening (see Appendix 1). This measure hides great disparities depending on the size of the asset managers and the region in which they operate:

- Asset managers managing more than USD 5 billion are more likely to adopt negative screening and shareholder engagement; asset managers below USD 5 billion are more likely to favour shareholder engagement and full integration.
- In the US, the preference is largely for negative screening, while in Europe it is more for shareholder engagement, full integration and then negative screening and thematic investment.

The questionnaire also asks managers about the relevance and observed benefit of these strategies (see Annex 2). In contrast, full integration and shareholder engagement are seen as more relevant for ensuring financial performance. The rating for this strategy (3.71) is statistically higher than for the other strategies except for shareholder engagement, which is the second most popular strategy among asset managers. Thus, 61% of investors believe that full integration has a moderate or significantly positive impact on financial returns (53% share this same opinion for shareholder engagement). Finally, in 2018, the majority of asset managers surveyed by Serafeim and Amel-Zadeh believed that positive screening and shareholder activism would become dominant strategies.

It is interesting to compare this survey with those carried out by EUROSIF and the *Global Sustainable Investment Alliance* which also survey asset managers on their responsible investment strategies.

[27] *Ibid,* p.20

European SRI Study - 2018 (€bn)

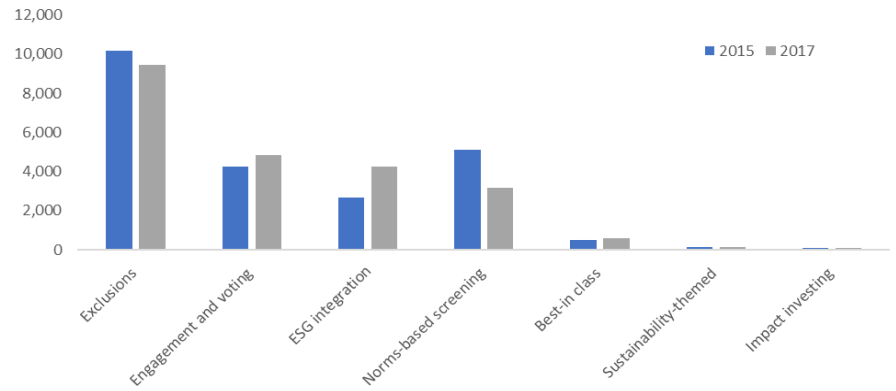


Figure 4 - Total amount of investment by strategy in Europe according to Eurosif

Global Sustainable Investment Review 2020 (USD bn)

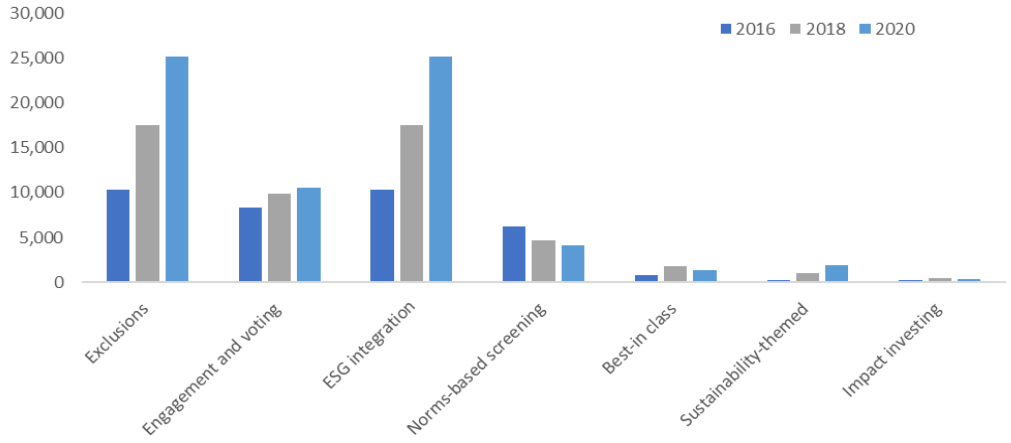


Figure 5 - Total amount of investment by strategy worldwide according to the GSIA

The results are fairly similar, but exclusion is by far the most popular strategy among investors' practices, followed closely by ESG integration and shareholder engagement.

Thus, asset managers have different strategies available that lead them to approach ESG data differently. For this paper, we decided to focus our research on one of the strategies, namely "full integration" in particular in valuation models as defined by Serafeim and Amel-Zadeh[28] .

[28] *Ibid*, p.21

1.2. Multiple sources of information for ESG data

Thinking about data integration also requires talking about the status of ESG data. Far from being easy to understand, it is currently the subject of much debate. The objective of this second sub-section is therefore to provide definitional details on ESG data, to characterise it and to explain the issues surrounding this data in order to facilitate its integration.

1.2.1. The different types of ESG data

ESG data covers three very broad themes, which themselves encompass distinct topics that will be materialised in the form of KPIs (*key performance indicators*). Some topics are cross-cutting, such as electricity consumption or employee training; others are more specific to certain sectors. For example, the fashion sector uses few rare metals, whereas the electronics sector is very concerned by this issue. We would therefore say that some indicators are more 'material' for some sectors than for others (see section 1.2.4.)

In order to map the existing indicators, several classifications have been established. The *German Society of Investment Professionals,* for example, has published a selection of 9 general KPIs and 5 industry-specific grids (industrial transport, automotive, electricity, banking and insurance). This selection is based on the study of 600 indicators from different classifications and allows the analysis of different sectors and companies in terms of ESG.

	E **Environmental**	**S** **Social**	**G** **Governance**	**V** **Longterm Viability**
General: ESGs which apply to all industry-groups	ESG 1 Energy efficiency ESG 2 GHG emissions	ESG 3 Staff turnover ESG 4 Training & qualification ESG 5 Maturity of Workforce ESG 6 Absenteeism rate	ESG 7 Litigation risks ESG 8 Corruption	ESG 9 Revenues from new products

Figure 6 - EFFAS/DVFA launch exposure draft KPIs for ESG 3.0 (p.7)

But this classification is far from being the only one. Today, in the ecosystem of stakeholders influencing ESG data reporting and participating in the development of ESG reporting standards and frameworks, three main groups can be distinguished (World economic forum ESG, ecosystem map, see Annex 3):

- Stakeholders developing reporting frameworks that provide principles to guide companies and help them better understand the importance of ESG. For example, TCFD, UNGC, NGFS, SBTi, CDSB etc[29] . Some are generalist and cover all ESG topics such as the UNGC while others are specific to one of the pillars such as the TFCD or CDSB which focus on climate change related topics.

- Actors developing reporting standards, i.e. best practice grids. These actors provide advice to companies to help them choose the information to be published as well as the methodologies to measure the different indicators. For example SASB, ISO, GRI, GHG Protocol[30] .

- Investor groups offering standards of analysis in line with their needs. These groups have a history of proposing common reporting frameworks and transparency standards for SRI investors so that they can compare and clarify the different strategies available for their funds. Examples include SIF, UN PRI, ICMA [31]

These classifications are intended to make it easier to compare companies and thus enable investors to make informed decisions. However, there is now such a wide range of standards that it is sometimes difficult to compare companies. The latter are in fact relatively free to choose the standard according to which they present the requested information, thus making comparisons difficult. Thus, they sometimes end up presenting several documents, such as Holcim Lafarge, which, in addition to its annual report and its ESG report, publishes a SASB analysis grid, a GRI grid and a materiality map[32] .

[29] TFCD = Task Force on climate-related financial disclosure / UNGC = United Nations Global Compact / NFGS = The Network for Greening the Financial system / SBTi = Science-Based Targets initiative / CDSB = Climate Disclosure Standard Board

[30] SASB = Sustainability Accounting Standards Board / ISO = International Standard Organisation / GRI = Global Reporting Initiative

[31] SIF = sustainable investment forum / UN PRI = United Nations Principles for Responsible Investment / ICMA = International capital market association

[32] Our integrated and sustainability reports. (2021). Holcim Lafarge. https://www.holcim.com/sustainability/reports

1.2.2. ESG data collection methods

As of today, investors have two main channels for collecting data: either directly from companies via annual reports or by exchanging information directly with them; or from intermediaries, in particular brokers or rating agencies. The latter fall into several groups:

- Those that provide market data including ESG data such as Bloomberg, MSCI, Thomson Reuters, FTSERussel, S&P
- Those that only provide ESG data that analyses the 3 pillars such as Sustainalytics, Arabesque, RobecoSAM, CSRHub, Vigeo Eiris, ISS-oekom, Truvalue Labs
- Those that specialise in one or two aspects of ESG such as CDP, RepRisk, Carbon Delta, trucost.

These intermediaries use alternative methods to analyse companies and different scales to rate them. This leads them to cover similar but substantially different topics and consequently to use different indicators:

Pillar	Thomson Reuters	MSCI	Bloomberg
Environmental	Resource Use	Climate Change	Carbon Emissions
	Emissions	Natural resources	Climate change effects
	Innovation	Pollution & waste	Pollution
		Environmental opportunities	Waste disposal
			Renewable energy
			Resource depletion
Social	Workforce	Human capital	Supply chain
	Human Rights	Product liability	Discrimination
	Community	Stakeholder opposition	Political contributions
	Product Responsibility	Social opportunities	Diversity
			Human rights
			Community relations
Governance	Management	Corporate governance	Cumulative voting
	Shareholders	Corporate behaviour	Executive compensation
	CSR strategy		Shareholders' rights
			Takeover defence
			Staggered boards
			Independent directors
Key metrics and submetrics	186	34	>120

Source: Refinitiv, MSCI, Bloomberg, FTSE; OECD assessment.

Figure 7 - ESG Criteria - major index providers (OECD Paris, 2021, p.22)

Eccles and Stroehle (2018) show in a study of five major rating agencies that the way they analyse companies is essentially based on their vision of sustainability and their definition of materiality. These agencies can be divided into two groups[33] : the "*value-based*" group, *i.e.* whose analysis ultimately aims to maximise the return on investment for shareholders, and the "*values-based"* group, which takes other stakeholders into account in its analysis and aims to understand the benefits for society as a whole.

Dimension	Vigeo-EIRIS	MSCI	Oekom	Sustainalytics	GES International
Rating	-- to ++	AAA to CCC	A+ to D-	0 - 100	n/a
Dimensions	38 sustainability criteria in six domains of analysis: - human resources, human rights at the workplace, - environment, - business behaviour, - corporate governance, and - community Involvement.	37 key issues, in ten themes: - climate change, - natural resources, - pollution/ waste, - environmental opportunities, - human capital, - product liability, - stakeholder opposition, - social opportunities, - corporate governance, - corporate behaviour.	100 sector-specific criteria in 2 categories: - Social: staff and suppliers, society and product responsibility, corporate governance and business ethics. - Environmental: environmental management, products and services, eco-efficiency.	Min 70 sector-specific issues per industry in the categories: E – operations, supply chain, products & services; S – employees, supply chain, customers and community & philanthropy; G – business ethics, corporate governance and public policy.	Screening violations against ten dimensions: - community involvement, - corp governance, - customer/ product - environment, health and safety, - human rights, - labour practices, - social, environm. and ethical risk, - stakeholder engagement, - supply chain responsibility
Emphasis	80% Qualitative Human/ Labour rights	Quantitative performance measures	50% Quantitative / 50% Qualitative	50% Quantitative / 50% Qualitative	Norm based screening and engagement
Benchmarks	Applying a wide variety of public and international standards	Using industry performance benchmarks	Applying a variety of public and international standards	Using industry performance benchmarks and some public standards.	Applying a wide variety of public and international standards
Values vs. Value-based	**Values-based**	**Value-based**	**Values-based**	**Hybrid**	**Values-based**

Figure 8 - ESD Data Dimensions and Benchmarks (Eccles R. G. & Stroehle, J. C., 2018, p.17)

These differences in ratings lead to large disparities between data providers to the extent that some companies may be rated positively in some agencies and negatively in others. Berg,

[33] Eccles R. G. & Stroehle, J. C. (2018, July 12) *Exploring social origins in the Construction of ESG Measures*

Koelbel and Rigobon (2019) show that these disparities can be explained by three main factors[34] :

(i) Differences in the scope of the rating *i.e.* companies are not rated on the same attributes

(ii) Differences in measurement as agencies analyse the same attributes but using different indicators. For example, working conditions may be measured by staff turnover or by the number of labour law cases against the company.

(iii) Differences in the weighting of attributes related to differences in the importance of some topics compared to others.

They conclude the correlation between the different ratings of 6 major rating agencies (Vigeo Eiris, MSCI, ISS Oekom, Sustainalytics, RobecoSAM, Thomson Reuters) is only 0.54 on average and varies from 0.38 to 0.71.

It is therefore not surprising that the Rate the Raters survey (2020) concludes the challenge in the coming years will be to improve the quality and transparency of rating methodologies but also to refine the relevance of analyses, particularly the materiality of certain subjects[35] .

It should be noted that some players also offer ESG indices for investors wishing to have an overall score for their portfolio. These include Bloomberg, Morning Star, Thomson Reuters and MSCI (see Figure 8).

Finally, asset managers also have the possibility of collecting data from suppliers and then reprocessing them via proprietary models allowing them to rate the companies themselves. These models are developed in-house to meet their needs, strategy and beliefs.

1.2.3. Credibility and relevance of ESG data

There is also the question of the credibility of ESG data, which is a determining factor in their integration by asset managers. Indeed, while most large companies now have reporting

[34] Berg, F., Koelbel, J.F., Rigobon, R. (2019). Aggregate Confusion: The divergence of ESG ratings, MIT Sloan School of Management Working Paper, 5822-19.
[35] SustainAbility (2020, March). Rate the Raters 2020: Investor Survey and Interview results.

obligations (the CSDR directive will apply to all companies with more than 250 employees from 2022 onwards), most companies do not publish ESG reports.

Moreover, when companies comply with reporting obligations, they are often audited by two main types of actors (see Annex 3)

- Generalist auditors such as EY, KPMG, PwC or Deloitte who have built dedicated teams for this task.
- Specialist ESG auditors such as LRQA.

Whether or not ESG data is audited will have an impact on how asset managers view and integrate it into their analysis, as these guarantors lend credence to the data.

Finally, ESG data has its own characteristics complicating the relationship asset managers can have with it. In, Rook and Monk (2019) analysed the intrinsic characteristics of ESG data and tried to understand how to assess their quality but also their effectiveness i.e. how they allow investors to make a decision[36] . For a long time, asset managers had to make a trade-off between the validity and reliability of ESG data. However, the development of technological tools has favoured the accessibility, availability and transparency of these data. According to them, ESG data is characterised by six dimensions: reliability, granularity, freshness, comprehensiveness, actionability, and scarcity. A dataset is unlikely to be reliable on all six dimensions and improvement in one of these characteristics will often mean deterioration in another quality. In other words, if an asset manager turns to highly reliable data, perhaps because it will come from data providers or audited annual reports, it is likely that he will have to give up another of the dimensions characterising ESG data. For example, scarcity, as it is likely that this data is widely available to other investors, thus preventing the asset manager from gaining a competitive advantage with this particular data set. Similarly, and taking the concrete example of scope 3 emissions, managers are often faced with a trade-off between comparability, comprehensiveness and reliability[37] (Institut Louis Bachelier et al., 2020). Indeed, asset managers prefer to use estimated scope 3 emissions (often obtained by converting monetary or accounting data into emissions using monetary emission factors)

[36] In S. Y., Rook, D., Monk, A. (2019). Integrating Alternative Data (Also Known as ESG Data) in Investment Decision Making, Global Economic Review, 48(3), 237-260.
[37] Institut Louis Bachelier et al (2020). *The Alignment Cookbook - A Technical Review of Methodologies Assessing a Portfolio's Alignment with Low-carbon Trajectories or Temperature Goal*

because they are comparable. However, it would be preferable for investors to use reported emissions, which are more reliable for their analysis because they are obtained via a physical approach to carbon accounting (i.e. by converting physical data such as km or kWh into emissions using physical emissions factors). These risks induce bias effects in stock picking: if a manager compares Nestlé and Unilever, two companies operating in similar sectors, it is plausible that the estimated scope 3 emissions levels of these two companies are quite similar since the estimates are made in relation to a sector. As a result, this would mean making a choice based almost entirely on financial performance and not on ESG performance.

1.2.4. The relevance of ESG data

Finally, in addition to the question of credibility, there is the problem of the relevance of ESG data both in terms of its materiality for professional managers and its capacity to enable managers to make investment decisions.

Kahn, Serafeim and Yoon (2015) define materiality in a 2015 article. For them, information can be considered material if it reflects significant economic, environmental and social impacts for the organisation and if it clearly influences the evaluation and decision of stakeholders[38] . Furthermore, a distinction is often made between simple or financial materiality and double materiality or impact materiality. Simple materiality, as defined by the ISSB, consists of taking an "*outside-in*" approach, *i.e.* taking into account information concerning the impacts that the environment has on the company.[39] This is the approach adopted by Khan Serafeim and Yoon (2015). In this context, negative impacts are risks (e.g. a natural disaster that destroys facilities) and positive impacts are opportunities. This approach is rather advocated by the Anglo-Saxons. With the CSRD, EFRAG has started to develop new reporting standards based not on single materiality but on double materiality. This consists of adding, in addition to the "*Outside-In"* approach, an *"Inside-Out"* vision that integrates information on the negative and positive impacts of the company on the environment (economic, social or natural)[40] . This is also the guideline 1 published by the EFRAG Taskforce on 18 January 2022, which considers that financial materiality is of equal importance to impact

[38] Khan, M., Serafeim, G., and Yoon, A. (2016). *op. cit.*
[39] Dual materiality analysis as a basis for the future CSRD. (2022, 8 February). *CSR Reporting.* https://rse-reporting.com/lanalyse-de-double-materialite-socle-de-la-future-csrd/
[40] *Ibid, p.30*

materiality because the two subjects are linked since impact materiality can give rise to financial materiality in the short, medium or long term: "*Impact materiality and financial materiality assessments are intertwined and interdependencies between the two dimensions should be considered in the assessments. In general, the starting point is assumed to be the impact materiality assessment, as a sustainability impact may become financially material when it translates for is likely to translate in the short-medium-long term into financial* effects"[41] .

Materiality is therefore an important concept for asset managers, since qualifying information as material means it can have a significant impact on the financial performance of the company and its value. Nowadays, managers are faced with a fairly large amount of ESG information due to the increasingly restrictive reporting obligations for companies. But this does not mean that all this information is used by managers to make their investment decisions. According to Kahn, Serafeim and Yoon (2015), only the crucial and truly material criteria allow managers to make decisions and be truly analysed[42] . Hence the importance of the notion of materiality when it comes to understanding the issues linking ESG data and the investment decision-making of professional managers.

Finally, talking about the relevance of data for asset managers is not limited to the topic of materiality. Indeed, asset managers still face a few obstacles that prevent them from fully integrating ESG data into their analysis. To begin with, some of the indicators disclosed by companies do not always allow relevant decisions to be made. In the example below[43] the indicators used are the carbon footprint expressed in tonnes of CO2 equivalent per year per million euros of enterprise value (EV) and the carbon intensity expressed in tonnes of CO2 equivalent per million euros of revenue. For the same financial performance, it is likely that the ESG investor would choose to divest from Alstom and Veolia and invest in Google and Zalando. However, the two indicators mentioned above are biased by the fact that the EVs of Google and Zalando are very high. The analysis cannot therefore be based on criteria of this type which do not really examine the impact of the companies.

[41] EFRAG (2022, 18 January*) PTF-ESRS Batch 1 working papers - Cover note and next steps*, (p.7)
[42] Khan, M., Serafeim, G., and Yoon, A. (2016). *op. cit.*
[43] Clément Bladier, President of the NEC Initiative, personal communication, 7 March 2022

The limits of carbon metrics

	Google	Zalando	Ferrari	Veolia	Alstom
Carbon footprint (tonnes CO2 eq./year/€M EV)	12	24	38	114	1316
Carbon intensity (tonnes CO2 eq. / m€ revenue)	80	77	287	159	1124

Figure 9 - The limits of carbon metrics (source: scope 1+scope 2 + scope 3 emissions, data as of 29/01/2021 from Trucost and Facset, example presented by the NEC in its general introduction in January 2022)

Secondly, some data are difficult to transpose into investment decision-making systems. This is the case for certain scientific data on climate change, particularly the scenarios associated with temperature trajectories. These data were not originally developed for investors, making it difficult to integrate them into the models of asset managers[44] (Institut Louis Bachelier et al., 2020). However, many players are now developing tools for professional managers to facilitate the integration of these topics, such as the NEC (Net Environmental Contribution) initiative launched by Sycomore Asset Management, Swen Capital Partners and OFI Asset Management, which measures the environmental contribution of products and services in a holistic manner.

To summarise, a lot of ESG data is available today and is at least partially used by asset managers, but they are far from satisfied with this information. According to In, Dane and Monk (2019), there are three barriers to the full engagement and integration of ESG into investor decision making[45] :

[44] Institut Louis Bachelier and al (2020), *op. cit*.
[45] In S. Y., Rook, D., Monk, A. (2019). Integrating Alternative Data (Also Known as ESG Data) in Investment Decision Making, *Global Economic Review*, *48*(3), 237-260.

(i) The difficulty of establishing universal ESG criteria

(ii) The unstructured, qualitative and incomplete nature of ESG data

(iii) The need for more robust and transparent tools to mainstream the use of ESG data in investment decision-making.

1.3. Multiple motivations of asset managers regarding ESG data

Having discussed the strategies of professional managers and the ESG data available to them in making their investment decisions, it is worth reflecting on the motivations of managers to integrate ESG data into their analysis. In its 2020 report on Sustainable and Resilient Finance, the OECD summarised the motivations of professional managers to integrate ESG into their analysis[46] .

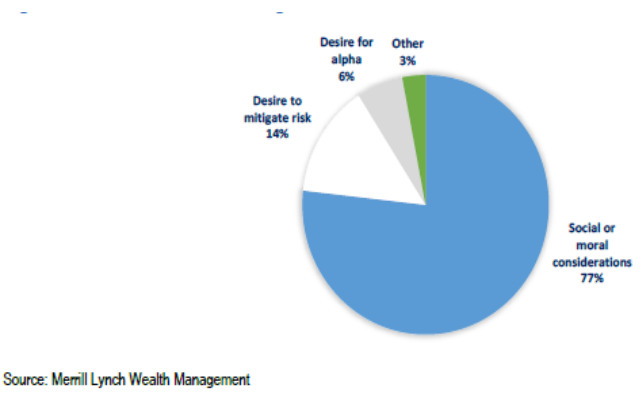


Figure 10 - Drivers of ESG investment (OECD, 2021)

First of all, the primary motivation of investors remains financial[47] (Amel-Zadeh, Serafeim, 2018), which is hardly surprising since asset managers have a fiduciary duty towards their shareholders. Investors therefore seek to protect the value of the company in the face of risks[48] (Boffo, Patalano, 2020). A company with a good ESG rating is assumed to have better governance and therefore to be more stable and less exposed to controversies[49] (Boffo, Patalano, 2020). This is closely linked to the

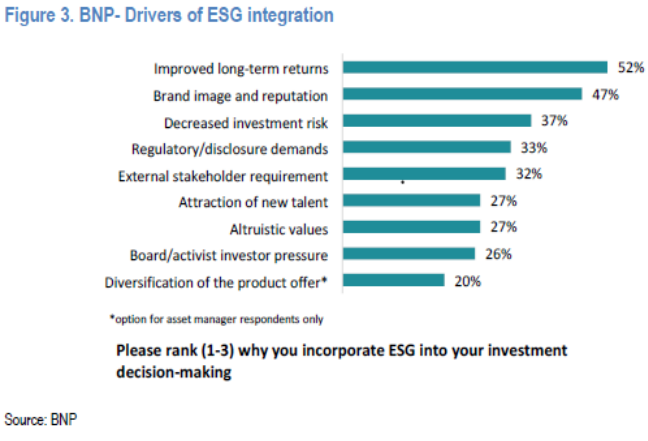


Figure 11 - Reasons for ESG data integration at BNP Paribas (OECD, 2021)

[46] Boffo, R., Patalano, R. OECD. (2020). *ESG Investing: Practices, Progress and Challenges.*
[47] Amel-Zadeh, A., & Serafeim, G. (2018). *op. cit.*
[48] OECD (2020), *op. cit.*
[49] *Ibid.*

asset managers' desire to protect themselves from reputational risks or to improve their brand image. For example, corruption can threaten the survival of companies[50] (Nam et al, 2020) or have a significant impact on company profitability and share price[51] (Aish et al, 2019). De Franco (2020) studied the impact of ESG controversies on the share price of companies and on the performance of selected investment portfolios and showed portfolios with stocks that are highly exposed to controversies or that have very low ESG ratings perform significantly poorly[52] . In short, ESG-virtuous companies are less affected when controversies arise.

Secondly, asset managers are interested in ESG data because it allows them to improve the performance of their portfolios[53] (Boffo, Patalano, 2020). In addition to risk mitigation, studies have shown that ESG investing by promoting ethical business practices actually not only protects value but also creates value (Broadstocks et al 2021)[54] . ESG investment portfolios would therefore have higher returns. Note that the notion of materiality is important to ensure this result because only companies which focus on the most material issues seem to perform better[55] (Amel-Zadeh, Serafeim, 2018). In other words, it is not so much creating ESG portfolios that allows asset managers to improve their performance but rather building portfolios around specific ESG criteria[56] . (Eccles and Serafeim 2013, Kahn, Serafeim and Yoon 2015).

Furthermore, and this is related to the previous motivation, asset managers may decide to make it a strategic portfolio construction decision, especially because they anticipate a growing importance of the best rated assets on ESG topics in the future[57] (Boffo, Patalano, 2020). Indeed, in addition to financial performance and value, a company with virtuous ESG practices may have other advantages for an investor. Its ESG practices may give it a competitive advantage or allow it to optimise its costs (Porter et al, 2019). It may also have

[50] Nam, V. H., Nguyen, M. M., Nguyen, D. A. and Luu, H. N. (2020). The impact of corruption on the performance of newly established enterprises: Empirical evidence from a transition economy. *Borsa Istanbul Review*, 20, 383-95.
[51] Aish, S., Thakur, A., Nanda D., Tripathy, S., Kim, H-C., (2021), *op. cit*.
[52] De Franco, C. (2020). ESG controversies and their impact on performance*. The Journal of Investing*, 29(2), 33-45
[53] OECD (2020), *op. cit.*
[54] Broadstock, D. C., Chan K., Cheng, L.T.W., and Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters* 38: 101716
[55] Amel-Zadeh, A., & Serafeim, G. (2018). *op. cit.*
[56] Eccles, R. G., and Serafeim, G. (2013). op.cit.; Khan, M., Serafeim, G., and Yoon, A. (2016). *op. cit.*
[57] OECD (2020), *op.cit.*

a positive effect on employee engagement (Agarwal et al, 2012), improve productivity (Park, 2020) or increase loyalty to the company (Kim and Park, 2017). Asset managers are increasingly adopting portfolio strategies aimed at supporting companies excelling in these areas.

Finally, this interest in ESG data also comes from a growing demand from stakeholders (Boffo, Patalano, 2020). The topic of ESG is now crucial for asset managers as underwriters are demanding more integration of ESG topics into investment strategies. This is a relatively recent phenomenon, but we are now witnessing a real shift from a small group of investors[58] who want to align their values with their investment strategies, to a mainstreaming of ESG investment as its impact on portfolio value has been demonstrated (Bernow et al., Mckinsey, 2019). Moreover, ESG investment is now becoming a powerful vector for attracting talent[59] (Boffo, Patalano, 2020). Finally, professional managers are also increasingly put under pressure by external stakeholders such as NGOs like Reclaim Finance, which each year produces a high-profile report, *Banking on Climate Chaos*[60] , in which the financing of major French banks in fossil fuels is analysed and denounced so that they gradually reduce their position in these companies.

Having explored the strategies available to asset managers for integrating ESG data into their investment decision-making, defined the contours of this data and reviewed the motivations behind investors' increasing emphasis on ESG data, we will now look in detail at one of the strategies discussed in this first part: the integration of ESG data into company valuation models.

[58] Bernow, S., Godsall, J., Klempner, B., Merten, C. (2019, August 7*). More than values: the value-based sustainability reporting that investors want*. McKinsey.
[59] OECD (2020), *op.cit.*
[60] Reclaim Finance. (2022). *Banking on climate chaos.*

2. ESG data, non-financial information creating value for the company.

2.1. The different valuation methodologies used by professional asset managers (REMINDER)

Before going further into the links between value and ESG, let's look at the notion of company value and how it is a determining factor for professional managers. At first sight, price may seem more decisive than value for managers. It is determined by two people in a negotiation in which, in the end, only the price counts, since it is the amount that investors pay (or get back) to buy (or sell) shares in a company[61] . The price is observed on the market and is determined according to the law of supply and demand. Value, on the other hand, is estimated in a model and is not a priori subject to negotiation. To resume Warren Buffet "*price is what you pay - value is what you get.*" Why then calculate the value of a company? Because it allows[62] :

- The investors to judge whether the price of the stock exchange is acceptable and thus convince their investment committees to make the purchase.
- To better understand the strengths and weaknesses of the company

In short, it is an exercise allowing the investor to ask himself fundamental questions and to better understand the company. It allows helps to build a conviction about its development and thus make an investment decision.

To talk about enterprise value, it is necessary to distinguish between two types of value: on the one hand, equity value; and on the other, enterprise value, which corresponds to economic assets. Enterprise value is linked to market value by the following formula: *Enterprise value (EV) = Equity Value (EqV) + Net financial debt (NDF).* Several methods are available to determine the value of a company: asset-based approaches such as the net asset value method or the goodwill method; comparative approaches, in particular the multiples method; and finally fundamental approaches such as the discounted cash flow method (DCF). Among these methods, the most commonly used are the DCF method and the multiples

[61] Thibierge, C. (2019). Comprendre toute la finance : l'essentiel de la finance pour tous. (4ème édition). Vuibert, p.191
[62] Thibierge, C. (2019). *op.cit*, p.191

method (see Figure 12). It should be noted that the discounted future dividend and free cash flow to equity methods are fundamental approaches in the same way as the DCF. On the other hand, the net asset value method, which is one of the asset-based approaches, is rarely used by asset managers. This explains why we will not include them in this study.

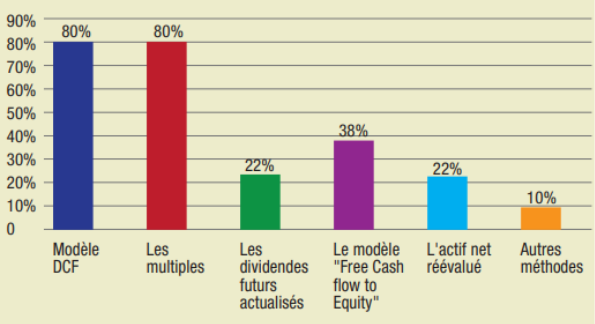


Figure 12 - The different evaluation methods used (Bancel, Mittoo, 2013)

2.1.1. Comparative or analogical approaches

Benchmarking or valuation by multiples is an approach based on the application to the company being valued of multiples observed in recent transactions (acquisitions, sessions) in the same sector or in stock market listings.[63] The multiples are thus used to estimate the value of a company by comparing it to the values assessed by the market for comparable companies.

The valuation of a company using the multiples method follows the following procedure[64]:

- Identifying comparable companies (comparable company, peer group of companies or respective sector) and obtaining market values for these assets.
- Converting these market values into a multiple based on a key aggregate (e.g. turnover) since absolute prices cannot be compared.
- Application of the valuation multiple to the key measure of the asset being valued.

On a reference sample (listed companies, transactions), an average or median multiple is calculated:

$$Multiple = \frac{Enterprise\ Value}{Aggregate}$$

Then the reasoning on the company to be evaluated is reversed:

$$Enterprise\ value = Aggregate\ chosen\ to\ make\ the\ valuation \times Multiple\ computed$$

Thus, two elements are key in this approach: the choice of the multiples and the sample of comparables

2.1.2. Fundamental approaches

[63] Duplat, C-A. (2007). *Evaluer votre entreprise*. Vuibert. p.151
[64] Berk, J., DeMarzo, P., Harford, J. (2019). *op. cit.*

Fundamental approaches refer to Fisher's (1930) separation theorem: the value of an asset is equal to the net present value of the cash flows it generates. The value of an asset or entity is thus calculated as the sum of the future cash flows, discounted at a rate reflecting the level of risk of the asset or entity in question. The DCF model, the best-known approach, discounts the *free cash flow to the firm (FCFF*) or economic cash flows*, i.e.* the cash flows available to all investors, whether bankers or shareholders, by the cost of capital (see Appendix 3)

Free Cash Flow to Firm (FCFF)
Operating Income
-Tax on operating income
= NOPAT
+ Depreciation and amort.
+/- change in non current assets
+/- change in relevant BS positions
+/- change in NWC
= FCFF

Notes : amort = amortization / BS = balance sheet

There are many methods of discounting future flows, including:

Model	Measure	Discount factor	Assessment
Enterprise discounted cash flow	Free cash flow	Weighted average cost of capital	Works best for projects, business units, and companies that manage their capital structure to a target level.
Discounted economic profit	Economic profit	Weighted average cost of capital	Explicitly highlights when a company creates value.
Adjusted present value	Free cash flow	Unlevered cost of equity	Incorporates changing capital structure more easily than WACC-based models.
Capital cash flow	Capital cash flow	Unlevered cost of equity	Combines free cash flow and the interest tax shield in one number, making it difficult to compare operating performance among companies and over time.
Equity cash flow	Cash flow to equity	Levered cost of equity	Difficult to implement correctly because capital structure is embedded within the cash flow. Best used when valuing financial institutions.

Figure 13 - The different evaluation models (Koller, Goedhart, Wessels, 2020, p. 287)

However, all these methodologies are based on a similar approach:

(i) Computing future cash flows

(ii) Computing the discount rate

(iii) Determine and discount the final value

(iv) Analyse the sensitivity of the results.

a. Determining future cash flows and terminal value

Carrying out a company DCF requires determining the hypotheses for building a future development plan and in particular identifying the factors creating cash flows and value. This requires a reorganisation of the financial statements by showing NOPAT (income statement) and invested capital (balance sheet). Invested capital represents the capital needed to finance operations, without distinguishing how this capital is financed. NOPAT represents the after-

tax economic returns generated by the company's employed capital, available to all shareholders. Once this has been done, a careful analysis of historical performance is needed to understand how the company has created value, how fast it has grown and how it is positioned relative to its competitors. A good analysis will focus on the key drivers of value: ROIC[65] , revenue growth and free cash flow. Understanding how these factors have evolved in the past will help make more reliable estimates of future cash flows. Then, taking into account historical analysis and future market trends, it is possible to project the overall financial statements over an explicit time horizon (usually that of the company's business plan, i.e. 5 years).

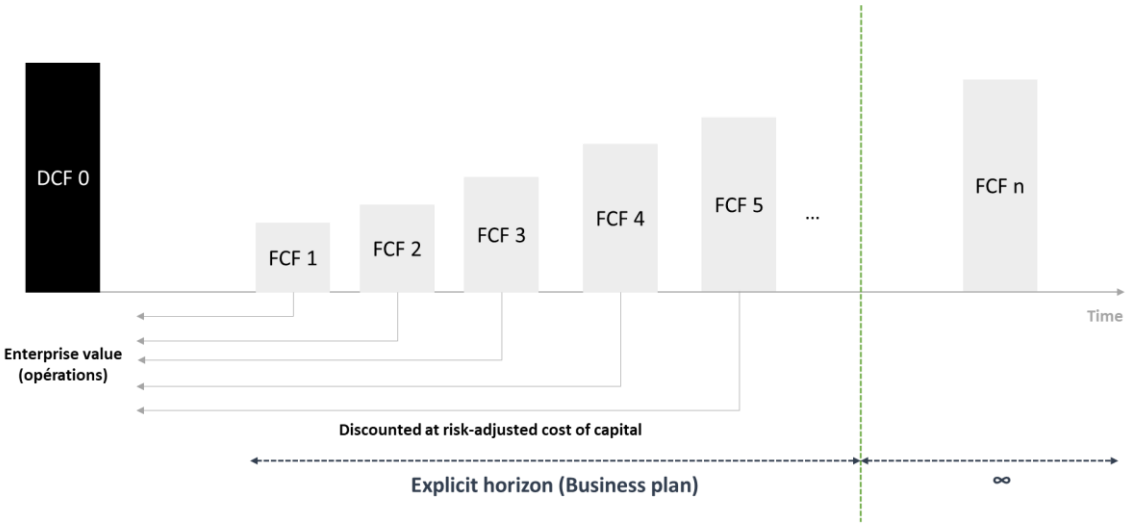


Figure 14 - Discounted cash flow method

To calculate the terminal value, the approach changes because a sequence of cash flows must be simulated to infinity. The terminal value is therefore the value of the expected cash flows beyond the explicit period. There are many approaches to calculating the terminal value (see Appendix 4). One of these is the projection of normative cash flows to infinity. This is the best known and most widely taught method today and is based on the concept of perpetual annuity.

$$Terminal\ value = \frac{FCF_{t+1}\,(1+g)}{(WACC-g)}\ where$$

- FCF_{t+1} is the normalized level of free cash flows in the first year following the explicit period. [66]
- g the perpetual growth rate

[65] Return on capital employed = return on capital invested.
[66] The normative flow can be calculated with or without growth.

- $WACC$ the weighted average cost of capital

b. Determining the discount rate

In the DCF model, future cash flows are discounted at the weighted average *cost* of capital (WACC). The WACC is the "*discount rate (i.e. the value of money over time) that converts future cash flows into a present value for all investors*"[67] . In other words, it is the cost to creditors and shareholders of investing their capital in one company rather than another of equivalent risk. It is therefore a financing cost. We will briefly return to the calculation of the WACC as it will be discussed in the next section.

The WACC has three main components: the cost of equity, the after-tax cost of debt and the financing structure determined by the company's financial policy. The general formula for estimating the after-tax WACC is the weighted average of the marginal after-tax cost of each of the financing sources:

$$WACC = \frac{D}{V}k_d(1 - T_m) + \frac{E}{V}k_e \text{ où}$$

- D market value of the debt
- E market value of equity
- $V = D + E$ market value of the entity being valued
- k_d cost of debt (rate of return required by debt holders) net of corporate tax
- k_e cost of equity (return required from equity holders)
- T_m marginal tax rate of the assessed entity

The cost of equity (k_e) is determined by estimating the expected return on the market portfolio, adjusted by the risk of the business being valued. We estimate the risk using the Capital Asset Pricing Model (CAPM[68]). The CAPM assumes that the opportunity cost of equity equals the return on risk-free securities plus the company's systematic risk (beta) multiplied by the market value of risk (the risk premium).

$$k_e = r_f + \left[E(r_m) - r_f\right]\beta \text{ où}$$

- r_f risk-free rate of return

[67] Koller, T., Goedhart, M., Wessels, D. (2020). *op.cit*, chapter 15
[68] Capital Asset Pricing Model

- $E(r_m)$ Expected return of the market
- $E(r_m) - r_f$ the risk premium granted by the market
- β Systematic equity risk

The CAPM adjusts for firm-specific risk using beta, which measures how a company's share price reacts to movements in the overall market. High beta stocks have expected returns that exceed the market return; the reverse is true for low beta stocks. Only the beta risk is assessed. Thus, the cost of equity capital increases linearly with non-diversifiable beta risk. Any remaining risk, which academics call idiosyncratic risk, can be diversified by holding several securities. In practice, beta is very volatile. Therefore, it is recommended to use a set of peer company betas to estimate a sector beta[69] .

In the DCF model free cash flow is measured without the tax shield of interest. Consequently, the after-tax cost of debt should be used (k_d) to incorporate the tax benefit into the WACC.

Finally, it is necessary to estimate the current financing structure using market values to weight the after-tax cost of debt and the cost of equity[70] .

2.1.3. Advantages and limitations of the two approaches in the context of ESG integration

The analogue and fundamental approaches have their own interests and limitations, which we will not go into at length, as this is not the purpose of the present work.

As far as our topic is concerned, the main interest of analogical methods lies in the fact that they seem to be simple to implement: multiples are quite easy to apply and they contain fewer assumptions than fundamental approaches. Moreover, they avoid the possibility that the company to be valued is over- or undervalued compared to the average or median of the selected sample of multiples. However, this method does not seem to be very conducive to the integration of ESG data, as it is not very easy to impact a multiple on the basis of ESG data.

In contrast, fundamental methods, because they make more assumptions, allow for the integration of ESG data. ESG issues influence the financial performance of companies in

[69] Koller, T., Goedhart, M., Wessels, D. (2020). op.cit, chapter 15
[70] *Ibid.*

terms of costs, revenues, operating profits, profitability and cash flows (Eccles et al, 2014)[71] . Some of them have a direct impact, such as environmental costs or penalties for non-compliance with environmental laws, which a priori require no justification. The influence of other ESG aspects, such as company investments in human capital on financial performance, is not as clear (Eccles& Serafeim, 2013)[72] and requires regression analysis to identify the links and the direction of impact (positive, negative, neutral)[73] . Accurate modelling of these issues therefore requires a granularity specific to fundamental approaches. For example, Derrien, Krueger, Landier and Yao (2021) conducted a survey of US sell-side analysts and showed that they adjust their earnings forecasts according to ESG controversies[74] . They find that when a controversy is announced, analysts significantly revise their earnings forecasts downwards at all horizons. Negative earnings revisions reflect expectations of lower future sales. This is only possible in the context of fundamental analysis.

2.2. The influence of ESG data on the components of the DCF model

After having seen the different valuation methods used by professional managers, we will discover how ESG data can influence them. Two studies by El Ghoul et al (2011)[75] and Gregory, Tharyan and Wittaker[76] (2014) show that the DCF model we defined earlier remains the most appropriate method to analyse how the ESG profile of a company influences its *equity* value[77]. It illustrates how ESG could compenetrate cash flows, risk and cost of capital. For this reason, this part focuses mainly on the DCF model. Giese et al (2019) summarised in an article that was picked up by MSCI[78] the different possible approaches to integrate ESG into the DCF

[71] Eccles, R. G., Ioannou, I., and Serafeim, G. (2014). The Impact of Corporate Sustainability on Organizational Processes and Performance, Management Science, 60 (11), 2835-2857.
[72] Eccles, R. G., and Serafeim, G. (2013). The Performance Frontier: Innovating for a Sustainable Strategy. Harvard Business Review, 91(5), 50-60.
[73] Efimova, O., (2018). Integrating Sustainability Issues Into Investment Decision Evaluation. Journal of Reviews on Global Economics, 7, 668-681.
[74] Derrien, F., Krueger, P., Landier, A., and Yao, T., (2022). ESG News, Future Cash Flows, and Firm Value. Swiss Finance Institute Research Paper, 21-84.
[75] El Ghoul, S., Guedhami O., Kwok C., and Mishra, R. (2011). Does Corporate Social Responsibility Affect the Cost of Capital? Journal of Banking and Finance, 35(9), 2388-2406
[76] Gregory, A., Tharyan, R., Whittaker, J. (2014). *op.cit.*
[77] Market value of equity
[78] Morgan Stanley Capital International is a financial services company, publishing the stock market indices, MSCI World, MSCI EAFE and MSCI Emerging Markets.

model[79] . As a preamble, they point out an important distinction for the rest of our analysis: a company is exposed to two main types of risk:

- Systematic risk (or market risk or non-diversifiable risk): macroeconomic in nature, it can be equated with market risks in general. It may include, for example, the risks of financial crises or commodity price shocks, interest rate changes (including inflation). This systematic risk also includes risks specific to the sector in which the company operates. For example, legislative or regulatory changes or technological developments.
- A specific risk (or idiosyncratic or diversifiable risk) to the company and the way it operates. This risk is *"inherent to the company's operating activity and its management style, independently of the influence of the market*"[80] .

The distribution between these two types of risk is important because professional managers are able to minimise company-specific risks by diversifying their portfolios. As a result, the required rate of return is intended to compensate for the systematic risk that asset managers are exposed to when they invest. In the DCF model, systematic risk is captured in the cost of capital while specific risk is captured in the numerator of the DCF i.e. future cash flows.

This distinction therefore leads us to observe two possible approaches in adapting the DCF to ESG issues, namely an 'idiosyncratic approach'[81] (Giese et al., 2019) where the impact of a company's specific ESG practices is measured in the financial statements; and a 'systematic risk approach'[82] (Giese et al., 2019) where market or sector ESG practices influence the value of the company via the cost of capital.

2.2.1. Influence on the financial statements: income statement, balance sheet and cash flow

Here we will focus on company-specific ESG impacts. Giese et al (2019) consider that ESG influences the company specifically on two levels[83] : on the one hand it affects the future opportunities of the company and thus its profitability and on the other hand it affects the

[79] Giese, G., Lee, L-E., Melas, D., Nagy, Z., Nishikawa, L. (2019). *op. cit*.
[80] Specific risk, Mazars, France: https://bit.ly/3LXEPKC
[81] "*Idiosyncratic transmission channels*" - *(Giese et al., 2019)*.
[82] "*Systematic risk transmission channels*" - *(Giese et al., 2019).*
[83] Giese, G., Lee, L-E., Melas, D., Nagy, Z., Nishikawa, L. (2019). *op. cit.*

specific risk of the company. Another way of putting it is that good ESG practices protect value by reducing risk on the one hand and create value on the other.

- *Protecting value*

Godfrey, Merrill and Hensen[84] (2009), Jo and Na[85] (2012) and Oikonomou and Hansen[86] (2009) show that companies with a high ESG rating are better equipped to optimally manage the operational risks of their business.

Figure 15 - Chain of influence of ESG good practice on company-specific risk (Giese et al., 2019)

(i) Better risk management: ESG virtuous companies generally have higher standards of risk control and compliance across their internal processes and value chain.

(ii) Low risk of severe incidents: due to better control and compliance standards, they suffer less frequently from serious incidents such as fraud, embezzlement, corruption or litigation. Hopner, Rezec and Siegl (2017) call this an "*insurance of the company's value against adverse events.* "[87]

(iii) Lower trail risks: less frequent incidents lead to a reduction in the risk of extreme events (*tail risks*) that would impact the company's share price.

Based on this assumption, managers can adopt an ESG risk management approach. This allows them to form an opinion on the company's ability to protect its value and therefore to adjust certain assumptions in the financial model.

[84] Godfrey, P., Merrill C., and Hansen, J. (2009). The Relationship between Corporate Social Responsibility and Shareholder Value: An Empirical Test of the Risk Management Hypothesis, *Strategic Management Journal*, *30* (4), 425-445

[85] Jo, H., & Na, H. (2012). Does CSR Reduce Firm Risk? Evidence from Controversial Industry Sectors. Journal of Business Ethics, 110(4), 441-456

[86] Oikonomou I., Brooks C., and Pavelin S. (2012). The Impact of Corporate Social Performance on Financial Risk and Utility: A Longitudinal Analysis. Financial Management, 41(2), 483-515.

[87] "*Insurance-like protection of firm value against negative events*" - Hoepner, A. G. F., Rezec, M, and Siegl, K. S. (2011). Does Pension Funds' Fiduciary Duty Prohibit the Integration of Environmental Responsibility Criteria in Investment Processes: A Realistic Prudent Investment Test.

Adjustments in financial modelling related to ESG risk management

Risk	Impact	Description	Example
Reputational	Indirect	Protection of the company's image and reputation: avoidance of bad publicity, shareholder pressure, consumer boycott	INDITEX, which was boycotted following the Uyghur scandal Restriction on advertising and points of sale
Financial	Indirect	More difficult access to finance	Increase in the cost of capital for ongoing projects.
Operational	Indirect	Management of physical risks related to climate change or the actions of certain stakeholders	Impact of a natural disaster (cyclone that damages a factory, cold wave that impacts farmers)
On the value chain	Indirect	Management of reputational, regulatory and market risks related to the value chain	Accident at work Collapse of a supplier's factory that did not meet safety standards (e.g. Rana Plaza)
Regulatory	Indirect	Managing risks related to regulatory changes or the implementation of new regulations	Fines for non-compliance with regulations.

Sources
- Koller, T., Goedhart, M., Wessels, D. (2020). *op.cit.* chapter 7
- PRI Fundamental Strategies: https://www.unpri.org/listed-equity/esg-integration-in-fundamental-strategies/12.article
- Giese, G., Lee, L-E., Melas, D., Nagy, Z., Nishikawa, L. (2019). op. cit.

This approach aims to identify more extreme situations and is more in line with a value protection approach. It is probably the easiest technique to implement. Indeed, it can be part of the overall risk management approach professional managers take to any investment. Furthermore, it is an approach that does not seek to assess ESG opportunities (i.e. looks at value creation) which are more difficult to measure.

- *Create or destroy value*

Gregory Tharyan and Wittaker (2014) explain the theory behind the idea that companies' ESG practices can have a significant impact on a company's cash flows and can help to create opportunities and therefore value[88] :

[88] Gregory, A., Tharyan, R., Whittaker, J. (2014). *op. cit.*

Figure 16 - Chain of influence of ESG good practice on cash flow (Giese et al., 2019)

(i) ESG virtuous companies have competitive advantages over their peers. In addition, companies with high ESG scores are generally better at developing long-term development plans and incentive programmes for experienced managers (which increases their retention).

(ii) As a result, the company uses its competitive advantages to generate higher returns leading to better profitability.

(iii) High profitability leads to higher dividends.

Based on this conviction, it would therefore be possible to adjust the numerator of the DCF to take into account the ESG practices implemented by companies, which in the long term should make it possible to create or destroy value. Many adjustments are possible with direct and indirect impacts on value:

Adjustments of assumptions on the income statement and cash flows: value creation/destruction

Income Statements and Cash Flows				
Aggregates	**Driver**	**Impact**	**Positive adjustments: (+)**	**Negative adjustments: (-)**
Top line: revenues and growth	Product development Innovation	Direct	Development of new revenues in line with the ecological transition (e.g. Darty and its Darty MAX offer to repair household appliances)	Closure of certain product lines (e.g. diesel cars)
		Direct	Creation of products responding to unmet societal needs (e.g. electric cars, femtech companies)	
	Public aid, grants and contracts	Direct	Obtaining government grants and support	Less subsidies Loss of tenders
	Product differentiation Improvement of the brand image	Indirect	Customers buy more from virtuous companies (increased market share and customer retention)	Customers are less likely to buy from companies with a bad reputation (especially on the subject of human rights and value chain transparency) or with products perceived as

				dangerous or polluting (e.g. Ferrero's Kinder)
		Indirect	Obtaining labels can be used to justify price increases.	
Operating costs (impact on operating margin) (*)	Eco-efficiency	Direct	Reduced energy and water consumption Reduction of waste generation	Significant waste generation and waste management costs
		Direct	Reducing compliance costs through sustainable practices	
	Security and quality of resources	Indirect	Easier access to resources through good relationships with stakeholders including suppliers	Loss of access to certain resources, including the closure of certain sites.
	Employee productivity	Indirect	Increased employee motivation through training and the implementation of a wellbeing policy at work. Attraction of talent and ease of recruitment.	Social stigma that reduces the recruitment universe Loss of talent as a result of an unambitious HR policy. Loss of production and high HR costs due to work accidents and non-compliance with safety standards.
CAPEX	Innovation Technology development	Direct	Investments in sustainable technologies (e.g. carbon capture technologies) Improved ROCE due to better allocation of capital to long-term investments	*Stranded* assets
		Indirect		Lagging behind competitors who have invested in more energy-efficient technologies
Balance sheet				
Aggregates	**Positive adjustments: (+)**		**Negative adjustments: (-)**	
***Book* value**	N/A		This is done to negatively impact a company. ESG data pushes managers to anticipate the loss of value of an asset (e.g. closure of coal mines in 2030). This will be done mainly through an *impairment charge* to adjust the book value downwards.	

Notes

(*) Regarding the impact on operating costs, we observe that in the short term, these expenses tend to increase when companies seek to have better ESG practices because it is necessary to "invest" to enable the implementation of these good practices. However, in the long term, expenses decrease in proportion to sales, leading to an improvement in operating margin. The reverse is true for companies with poor ESG practices.

Sources

- Koller, T., Goedhart, M., Wessels, D. (2020). *op.cit.* chapter 7
- PRI Fundamental Strategies: https://www.unpri.org/listed-equity/esg-integration-in-fundamental-strategies/12.article
- Giese, G., Lee, L-E., Melas, D., Nagy, Z., Nishikawa, L. (2019). op. cit.

We can see here that the boundary between financial and non-financial analysis is very blurry. This is because some ESG commitments are strategic choices made by the company and integrated into its business model. These choices are therefore systematically taken into account in a traditional financial analysis, provided that they have been communicated to the market. Let us consider a company that develops a new line of services by proposing, like Darty, a monthly offer for the repair of household appliances[89] . This will lead to increased revenues. But there are also additional costs to the business such as recruiting and training new repairers, perhaps opening a repair shop, marketing expenses to make the offer known to new customers. Although motivated by a desire to develop a more environmentally sustainable business, this has a very tangible financial materiality for the company. In practice, this means that a financial analyst should have taken this into account in his or her forecasts regardless of the company's motivation to develop a more ESG aligned business.

Finally, we note that we could have included an extended balance sheet or income statement approach in which, for example, river use rights in the assets with a counterpart environmental debt in the liabilities; employee skills in the assets and a social debt in the liabilities.

Figure 17 - Schematic example of an extended balance sheet

However, these models are part of an approach known as 'dual materiality' as we defined it in the first part. It implies a redefinition of certain key notions such as capital or assets in order to recognise that nature and human beings are capital for the company, as considered in Alexandre Rambaud's CARE method[90] . It should be noted that this vision is not yet very current among asset managers.

2.2.2. Influence on the valuation model: terminal value and cost of capital

In the previous section, we focused on the adjustments that can be made to the company's financial statements. These adjustments, although made in the context of a valuation exercise, could be made by the company itself independently of the valuation exercise. In this sub-section, we will therefore focus on the elements specific to the valuation model, in particular the terminal value and the cost of capital.

In the introduction to this section, we distinguished between two types of risk: the firm-specific risk that was developed in the previous section and which is captured in the numerator

[89] Darty Max offer: https://bit.ly/39zWQQY
[90] Rambaud, A., & Feger, C. (2019, November). Natural capital visibility in financial accounting - Method 3 - Extended Version. p.5-7

of the DCF, i.e. future cash flows; and the systematic risk intrinsic to the market or sector in which the company operates, which will be captured in the cost of capital. Giese et al (2019) show that the ESG profile of a company is an important signal for understanding how a company can manage to withstand market risks[91] . This will mainly influence the denominator of the DCF i.e. the cost of capital and more specifically the beta. To give a concrete example, following the publication of Victor Castanet's book *Les Fossoyeurs*, ORPEA's share price fell by 60%. However, this also had an impact on its competitors such as Korian, which also lost 20% of its value in the month that followed, emphasising that the revelation of ORPEA's bad practices had an impact on the whole market.

Eccles, Ioannou and Serafeim[92] (2014), El Goul et al[93] . (2011) and Gregory Tharyan and Whittaker[94] (2014) consider that a company with a strong ESG profile can achieve a higher value than its peers with less virtuous ESG practices by the following reasoning:

(i) Companies with a strong ESG profile are less vulnerable to market shocks and therefore have lower systematic risk.

(ii) Lower systematic risk means that investors demand a lower rate of return. Ultimately, this translates into a lower cost of capital for a company.

(iii) In a DCF model, a company with a lower cost of capital would then have a higher valuation.

Furthermore, this should be seen in the context of the fact that companies with poorer ESG practices have a smaller investor base than companies with a strong ESG profile[95] . As a result, this increases the cost of financing for the company and leads to an increase in the cost of capital. There are two reasons for this: (i) investors' preferences go to more virtuous companies because they are aware that these companies are less exposed to risks (ii) the information asymmetry is greater between investors and companies with a lower ESG rating than with virtuous companies. The latter are often more transparent and better respect the principles of good governance.

[91] Giese, G., Lee, L-E., Melas, D., Nagy, Z., Nishikawa, L. (2019). *op. cit.*

[92] Eccles, R. G., Ioannou, I., and Serafeim, G. (2014). The Impact of Corporate Sustainability on Organizational Processes and Performance, Management Science, 60 (11), 2835-2857.

[93] El Ghoul, S., Guedhami O., Kwok C., and Mishra, R. (2011). *op. cit.*

[94] Gregory, A., Tharyan, R., Whittaker, J. (2014). *op. cit.*

[95] Giese, G., Lee, L-E., Melas, D., Nagy, Z., Nishikawa, L. (2019). *op. cit.*

As a result, this means that professional managers could make upward or downward adjustments to their beta, or more broadly to the cost of capital, based on their ESG diagnosis. Given the subjective nature that these adjustments may have, the PRI[96] suggests benchmarking several companies and ranking them using ESG criteria. Subsequently, the manager may make upward (downward) adjustments for the best (worst) rated companies.

In addition to cost of capital adjustments, the PRI suggests two possible valuation model-specific adjustments to reflect ESG in the value of companies[97] .

First, it proposes to adjust the terminal value. Indeed, we know that the terminal value is calculated according to the logic of the perpetual annuity. This means that managers consider that an asset has an infinite life. However, certain companies or activities could cease to exist, particularly in the context of the ecological transition. For example, companies in the coal or oil sectors may be considered as future "*stranded* assets" because of the many questions surrounding the sustainability of their business model (closure of coal-fired power stations by 2030). In this case, the value may fall to zero, forcing managers to adapt the calculation of the terminal value.

Finally, the PRI recommends carrying out these ESG evaluation exercises by taking into account several scenarios, in particular two main ones: the first by taking into account ESG criteria and the other by carrying out a "classic" evaluation (*baseline valuation*). The difference between the two would make it possible to realise the materiality of ESG on the company and to measure the magnitude of this materiality. The auditing firm KPMG, which has developed a method for adjusting the DCF to ESG issues, also proposes introducing several ESG scenarios, given the sometimes-subjective nature of ESG data and the assessment of their materiality for the company[98] . The final assessment presents several company values attached to different scenarios, weighted according to their probability of occurrence.

[96] *Fundamentals Strategies*. n.d. UN PRI. https://www.unpri.org/listed-equity/esg-integration-in-fundamental-strategies/12.article
[97] *Ibid.*
[98] Cheung, J., Zhang, D., Shen, N., Wang, W., KPMG. (2021, June). *Incorporating an ESG lens in business valuations.*

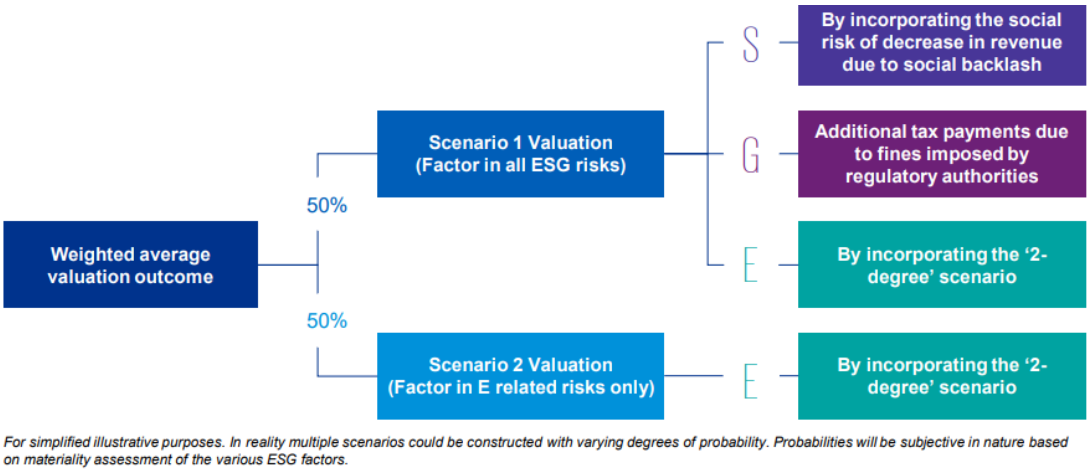


Figure 18 - KMPG's proposal to mitigate the subjectivity of ESG data (KPMG, 2021)

2.3. Assumptions about the practices of asset managers.

It should be remembered that the objective of this thesis is to map the practices implemented by professional managers to integrate ESG data into their valuation models, to highlight the difficulties encountered and the deviations from the literature. We have just identified the different adjustments that can be made to integrate ESG into a company's valuation model. This has allowed us to establish the following hypotheses, which we will verify with the investors.

#	Hypothesis
H1	Asset managers (AM) integrate ESG data in their assessment
H2	The AM give more importance to the G than to the E or S.
H3	When considering ESG data, AM work by materiality, selecting the most relevant data for each asset
H4	AM make adjustments to turnover based on available ESG information
H5	AM make adjustments to operating costs and margins based on available ESG information
H6	AM modify Capex according to ESG data in order to prepare their assets for ESG issues, which impacts ROCE
H7	AM write down the net present value of an asset if they anticipate that the asset may lose value for environmental or social reasons
H8	AM adjust the terminal value of an asset with the ESG information available to them
H9	AM adjust a company's beta and/or cost of capital based on ESG information

H10	The inclusion of ESG data leads to an increase in the time horizon considered by AM in their modelling.
H11	When considering ESG data in their valuation model, AM consider several scenarios which are then weighted.

After detailing the different approaches to evaluating companies, we explained the adjustments asset managers can make to incorporate ESG data into their valuation model. This allowed us to establish a list of assumptions we will test in a third part by interviewing asset managers.

3. What are the practices today? Interviews with asset managers

In the previous section, we looked at what the literature suggests for integrating ESG into company valuation. In this third part, we will try to identify the practices actually implemented by professional managers. The latter use company valuation to help them in their investment decisions. In the first part, we showed that the current development of sustainable and responsible investment was leading managers to integrate ESG data into their analysis. In particular, Serafeim and Amel-Zadeh had identified the practice of "full integration", i.e. the integration of ESG data into the practice of company evaluation by asset managers[99] . We therefore decided to interview asset managers to take stock of current practices.

3.1. Research methodology and data collection

3.1.1. Methodology: structured interviews

There were two methodological options for conducting this survey. On the one hand, a quantitative questionnaire in the form of a self-administered questionnaire sent to numerous professional associations. The questionnaires would have been collected anonymously in order to promote honesty and sincerity. This would have avoided interviewer bias and allowed greater flexibility for asset managers to respond if they wished to.

In the end, we abandoned this method for two reasons:

- The response rate is generally lower and the time constraints associated with the submission of this paper meant that we had to get responses fairly quickly
- This type of questionnaire does not allow for many open questions. As the subject is still not very mature, we were also looking to measure the "feeling" of managers with regard to this practice and its development.

Thus we chose to conduct structured qualitative interviews in order to adapt more easily to the answers given. The interview guide, which was distributed to the managers prior to the exchange, contained nine main questions (see document sent to the investors in Appendix 4). Follow-up questions were also prepared to react to the asset managers' answers (see detailed interview guide in Annex 6).

[99] Amel-Zadeh, A., & Serafeim, G. (2018). *op. cit.*

3.1.2. Data collection.

In total, 17 people were interviewed in 16 interviews between 15 March 2022 and 25 April 2022. The interviews lasted between 30 min and 1h10.

	Structure				Caracteristics of the interviewees and the funds managed			
Asset manager	AUM [1] (MM €)	Creation	Type	# interviews	Function	Invest. Type	Geography	SFDR
DWS	928	1956	Privé	1	Head of research equities	Listed Equity	Europe	8
ERAFP	37.5	2005	Public	1	Portfolio manager	Credit	World	n.a.
Groupama AM	117.2	1993	Privé	1	Portfolio manager	Listed Equity	Europe	8
La Financière de l'Echiquier	14.5	1991	Privé	1	Portfolio manager	Listed Equity	Europe	8&9
Edmond de Rotschild	70	1953	Privé	1	Portfolio manager	Listed Equity	Europe & World	8
Sycomore AM	8.3	2001	Privé	1	ESG Analyst	Listed Equity	Europe	8&9
Allianz Global Investors	673	1998	Privé	1	Portfolio manager	Listed Equity	Europe	8
Comgest	38.8	1985	Privé	1	Portfolio manager and ESG Analyst	Listed Equity	World	n.a.
OFI AM	72	1971	Privé	1	Portfolio manager	Listed Equity	Europe	8&9
Moneta	4,2	2003	Privé	2	Portfolio manager and ESG Analyst	Listed Equity	Europe	8
Talence Gestion	1.2	2010	Privé	1	Portfolio manager	Listed Equity	France & Europe	8&9
La Banque Postale AM	60	1988	Privé	1	ESG Buy-Side analyst	Credit	World	8&9
CIAM [2]	n.a.	2010	Privé	1	Portfolio manager	Listed Equity	Europe	n.a.
Mirova	27.2	2012	Privé	2	Portfolio Manager/ESG Analyst	Listed Equity	Europe	9
Amundi	2021	2010	Privé	1	Head of ESG Scoring and methology	n.a.	n.a.	n.a.

Notes 17

(1) AUM as of 31/12/2021 except for ERAFP (31/12/2020), Mirova (31/03/2022), Amundi (31/03/2022)

(2) CIAM = hedge funds

Figure 19 - Characteristics of the asset managers interviewed

The management companies interviewed were all private except the ERAFP (Etablissement de la Retraite additionnelle de la fonction publique). Their size varies from €bn1.2 billion AUM to €bn2,021 for the largest, with an average of €bn 312 and a median of €bn 60 AUM. Overall, only one person was interviewed per fund, except for Mirova and Moneta where two people were interviewed: in each case, a portfolio manager and an ESG analyst.

Of the seventeen interviewees, eleven were portfolio managers and six were ESG analysts or ESG methodology managers. The overwhelming majority (14/17) of the managers and analysts interviewed invest in listed equities and thirteen of the fourteen in European listed equities.

Finally, as regards to the strategy of those asset managers, all of them consider themselves to be minimum ESG investors (as evidenced by the classification of their funds in article 8 of the SFDR[100]) and six of them also manage impact funds meeting the definition of article 9 of the SFDR. Mirova is the only player whose funds are all classified under article 9.

[100] For those who are not, they are generally Investors who do not work solely on European funds, who are not yet classified by the SFDR and/or profiles of people who are not Investors directly for whom this criterion did not make sense.

3.2. Presentation of results

The results presented below are anonymous in response to the request for anonymity from some asset managers. As a result, they do not correspond to the ranking of the previous sub-section (e.g. the results in line 1 do not correspond to the responses of DWS and so on). Similarly, the quotes reported below are from personal communications but will not be attributed to specific individuals. Investors are specifically quoted when the information presented is also in the public domain.

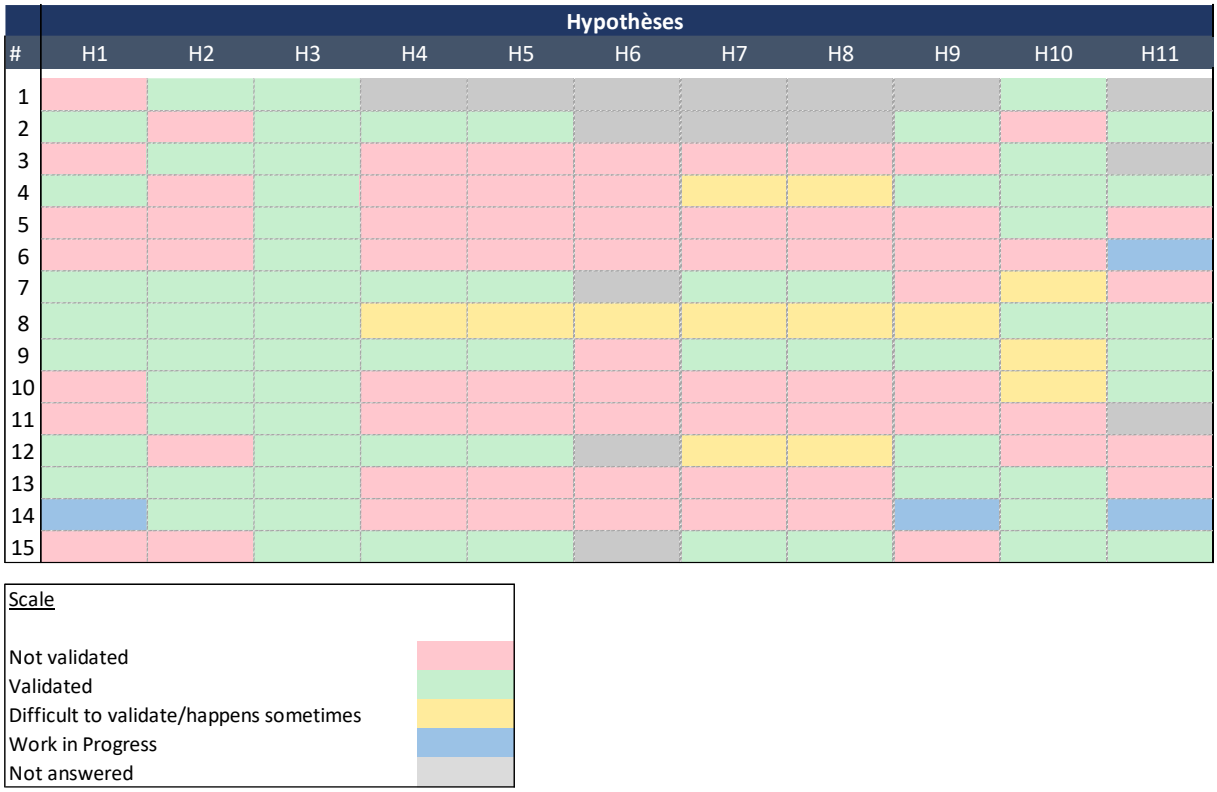


Figure 20 - Status of hypothesis validation after asset manager interviews

3.3.1. Characterisation of ESG data used by managers in their decision making

- *Source of ESG data*

Unsurprisingly, managers use two main types of ESG information sources: data from external providers such as rating agencies and data collected directly from companies.

The data providers that came up frequently in our discussions were: ISS-Oekom, Vigeo Eiris, Sustainalytics, Bloomberg, MSCI, Ethifinance, Humpact, truecost, Carbon 4. The larger the size of the management companies surveyed, the greater the use of external data

providers in the ESG rating models used by the managers. This is hardly surprising, since as the size of investment vehicles increases, so does the number of stocks monitored, necessitating the outsourcing of data collection for the sake of efficiency. Asset managers also use brokers, which we can consider as external data providers. However, their approach is different from that of the rating agencies.

The sources of data collected from companies are multiple in nature. Firstly, the reports published by the companies are reviewed by the managers (annual report, ESG report, governance report for companies in the UK). Then, the asset managers investigate the companies' websites. Investor 8 told us that he pays particular attention to the "job vacancies" section to understand "*how the company talks about itself. What profiles they are looking for.*[101] " This provides key information on the company's ability to recruit new profiles. A lot of information can also be gathered from the internet. For example, a thorough review of sites such as Glassdoor can help to measure the social climate of a company[102] . The use of stakeholders is also a determining element that came up a lot in the interviews. ESG teams talk to NGOs, professional unions, the media, former employees contacted via expert networks, supplier and customer groups, consumer associations, etc. Lastly, the asset managers talk to companies on a regular basis, often after an initial analysis, so that they can answer any outstanding questions.

- *Reprocessing and assessment of ESG data*

Of all the managers we interviewed, all have a proprietary model for processing ESG data, which in most cases leads to their own rating. We can cite a few examples of the methodologies cited: BUILD at Edmond de Rotschild, SPICE at Sycomore Asset Management, GREaT at La Banque Postale Asset Management, Net SDG Score at La Financière de l'Echiquier, VIDA at Moneta... Among the proprietary methodologies deployed, some are purely quantitative while others mix quantitative and qualitative. The reasons given for the development of these internal models are varied.

To begin with, almost all the asset managers stress the need to cross-check the data provided by the rating agencies and to compare them. In a sense, ESG data is very subjective

[101] Investor 8, personal communication, 7 April 2022
[102] Investor 5, personal communication, 13 April 2022

(see part 1) and as investor 6 says: "*added value exists where there are discrepancies*[103] ". Thus, the differences in ratings between the various providers allow the implementation of an alert system to help asset managers identify companies requiring in-depth analysis.

These methodologies reduce reliance on rating agencies, which only provide raw data (not ratings), while tailoring asset managers' research to their needs.

These methods, which cross-reference several sources of information, reduce the bias associated with the use of a single source. Several data providers focus on certain types of indicators or on certain companies. For example, small and mid-cap companies[104] are poorly covered by the rating agencies. Conversely, in certain geographical areas, the agencies have information that is difficult to find in the public domain, particularly in emerging countries. Other providers are also often recommended for specific reasons, such as MSCI, whose controversy analyses are often praised by asset managers.

Moreover, the asset managers who are most critical of the rating agencies use this data to make an initial "*rough"* filter and then concentrate on analysing data with greater "*added value*"[105] . One example stated is the composition of boards of directors: the percentage of women in these management bodies is now included in company reports. It is therefore communicated by all the rating agencies. This information has little added value. On the other hand, it is preferable for an analyst to review the composition of the board of directors to identify the ESG skills of its various members and thus form an opinion on the capacity of the company and its management team to address ESG issues.

Finally, for those managers who do not reprocess ESG data from data providers, we have seen that they form very strong partnerships with these providers and actively participate in the construction of benchmarks so that they correspond to investors' needs. For example, Ethifinance is in partnership with Talence Gestion for the Talence Epargne Utile fund or with Humpact for the Talence Humpact Emploi France fund. Mirova has jointly developed a method with Carbone 4 to measure the contribution of companies to the energy transition.

[103] Investor 6, personal communication, 1er April 2022
[104] Small and medium market capitalisation
[105] Investor 13, personal communication, 30 March 2022.

- *Weighting and importance of the different pillars*

The managers we interviewed deploy their own proprietary model. This requires analysts to recalculate company ratings and revise the weighting of the E, S and G pillars. All the managers we consulted told us that they attach particular importance to the materiality of data for companies (Hypothesis 3). In most cases, this materiality is sector specific. This means the ESG teams have selected the most relevant criteria by sector and update them regularly. The smaller the management companies, the more time they can afford to spend on these materiality criteria and customise the models. One of the managers told us: "*Without falling into the caricature of saying that we build a model for each company, our approach tends towards this: we try to adapt the model to each company.*[106] "

This weighting is influenced by professional managers' beliefs about the relative importance of the E, S and G pillars. 60% of the managers surveyed[107] consider governance to be the most important pillar of the three, compared to 40% who have developed balanced proprietary models and appear to give equal weight to each pillar (Hypothesis 2). [108]According to the former, governance should be given primary importance as it is the "keystone" of the environmental and social pillars. In the words of Investor 10: "*Our rational is to say that often when the G is good, the E and S are good.*[109] " Furthermore, as soon as governance is deficient, the risk increases[110] . Finally, if managers are not comfortable with governance, they acknowledge that they do not trust information on the social and environmental pillars. Thus, this pillar accounts for between 40 and 70% of the total ESG score for managers who place a premium on governance, while the E and S pillars vary according to the sectors in which the companies operate. This weighting is often relatively fixed because governance rules are not likely to change significantly from one sector to another. It should be noted that for two of the managers interviewed, governance is divided into two parts: corporate governance and a second part that relates more to the company's relations with its stakeholders (also called "market behaviour").

According to the asset managers, the environmental pillar is becoming easier to integrate into their analyses. A strong demand for environmental reporting and the entry into force of

[106] Investor 9, personal communication, 7 April 2022
[107] 9 out of 15 asset Investors stated that G was more important than E and S.
[108] Investor 7, personal communication, 15 March 2022
[109] Investor 10, personal communication, 29 March 2022.
[110] Investor 1, personal communication, 25 March 2022

the European taxonomy are helping to improve the quality of information on this aspect. This last event is correlated with an increase in the risk of exclusion for companies that do not have serious long-term environmental practices.

Finally, the social pillar seems to be the most difficult to grasp and therefore the most difficult to integrate. Some managers believe this does not create a discount, but that in the future this could be the case. For them it remains a latent risk of companies dropping out. "*If, for example, a company experiences high turnover at the top management level, if there is too much of a pay gap, if there is a lack of diversity in the comex, if supply chains are not looked at, analysed and monitored. All these issues will create downgrades even if, again, it will remain a bit more latent*[111] . Consequently, the S must be analysed in depth so as not to miss out on issues that would jeopardise the value of the company. It should be noted we were able to discuss with one of the asset managers the special treatment given to the analysis of respect for human rights[112] . It is indeed difficult to say that one company is better than another in this area. As a result, this asset manager favours an "*absolute assessment*" of this specific aspect because the reputational risk is very important for managers.

This understanding of the three pillars is very different for thematic funds. Several of the asset managers interviewed managed both generalist and thematic funds. The latter may, through the theme chosen, favour a sector. Examples include Groupama Asset Management's G Fund Future for Generations, Financière de l'Echiquier's Echiquier Climate and Biodiversity Impact, Sycomore Asset Management's Sycomore Shared Growth, Talence Gestion's Talence Humpact Emploi France, and Mirova's Women leaders equity fund.

Finally, one of the asset managers drew our attention to the potential problem of ex-ante weighting of criteria. According to investor 9, ex-ante weighting can lead asset managers to underestimate certain criteria because they anticipate that this criterion could be a problem. The rating should therefore be reviewed ex post to ensure that the criteria have been correctly weighted and are true to the company's operations [113]

[111] Investor 8, personal communication, 15 April 2022
[112] Investor 6, personal communication, 1er April 2022
[113] Investor 9, personal communication, 7 April 2022.

- *Data quality*

We also asked managers about their feelings on the quality of ESG data. This is crucial for the integration of the data in the evaluation.

With regard to the data provided by the companies themselves, our discussions revealed the existence of major disparities between companies: some are ahead of the game while others still have a long way to go. There are also clear differences from one geographical area to another: little data is available in emerging countries, while in Europe the amount of information published is much more notable due to regulatory obligations. This necessarily affects the analysis that managers can make and thus their investment choices.

The data providers were then at the heart of our discussions. ESG data and associated scores are static as they are often only reviewed once a year or even every two years. We note a great deal of volatility in the scores between the different providers, which sometimes makes analysis difficult. For example, one asset manager told us: "*we have to admit that it [the rating agencies' data] is not very valuable, except perhaps for saving a little time and recovering some interesting elements in the emerging countries. It makes it easier to write reports. But otherwise, it has little informational value*[114] . On the other hand, operational problems of adequacy between the rating agencies' systems and those of asset managers emerge from our study. This is especially true since the agencies' rating rules are not standardised, which increases the workload for asset managers in adapting to the suppliers' databases and integrating them into their own analysis model[115] . Finally, more radically, some managers do not trust the information provided by rating agencies: "*To be quite honest, we have lost confidence in ESG ratings. We think it's an industry that is not regulated enough, that is far too fragmented and that has no common paradigm for analysing ESG issues. For the same company, having such disparate ratings poses a problem for us. In addition, we have realised that companies have a fairly strong influence on these rating agencies*.[116] "

Furthermore, a paradoxical situation is observed in the ESG data market. On the one hand, asset managers need more and more information to meet regulatory requirements, which encourages companies to publish more information and external providers to expand their

[114] *Ibid*, p.73
[115] Investor 3, personal communication, 1er April 2022
[116] Investor 8, personal communication, 15 April 2022

databases. On the other hand, this inflation of material does not mean that it is "good" data[117]. Indeed, this profusion does not improve the quality of portfolios. "*The driving force behind the development of ESG data has been regulation. So, companies are setting out to publish as much data as possible to comply with this regulation. But this does not mean this information is useful for our analysis*[118] . Thus, some managers consider that to encourage the integration of ESG data into their analyses, and particularly in the valuation, it is necessary to move towards data that is closer to the company's economic model, allowing its real impact on society to be measured. For example, it would be desirable for the Nutriscores[119] or the SIGA[120] scores of all products marketed by mass retailers to be available. This would make it possible to carry out interesting analyses of the impact of processed products sold to consumers and thus to estimate the negative externalities induced by the sale of certain products or even to anticipate food controversies.

Finally, as mentioned in the first part, ESG data are often intended to be a quantitative summary of qualitative phenomena. As a result, these data will always remain imperfect and subject to discussion[121] .

- *The value of ESG data analysis*

The managers told us what they found interesting about systematically analysing a company's ESG data from an investment perspective.

In a context where all the managers we met are long-term investors, their objective is that a stock entering their portfolio stays there for a long time. To achieve this, they need to have a good understanding of the company. ESG helps to better analyse companies and more particularly their business model[122] . Having discussions about ESG practices also helps to clarify certain doubts about the adjustments to be made. Should a salary increase be planned and if so, will it be 6 or 7%? Depending on the analysis of the social climate and the company's

[117] Investor 13, personal communication, 30 March 2022
[118] *Ibid.*
[119] Nutriscore: a logo on the front of packaging that provides information on the nutritional quality of products in a simplified form that complements the mandatory nutrition declaration (set by European regulations). Based on a scale of 5 colours: from dark green to dark orange. Associated with letters ranging from A to E to optimise its accessibility and understanding by the consumer (source: santé publique France)
[120] The SIGA index: This is the only scientific index that evaluates the degree of food processing, in order to highlight the simplest recipes and to identify ultra-processed foods (UTFs) to be consumed sparingly in light of the latest epidemiological studies (source: Siga.care)
[121] Investor 3, personal communication, 1er April 2022
[122] Investor 10, personal communication, 29 March 2022; Investor 12, personal communication, 11 April 2022

HR practices, certain assumptions can be better adjusted. Furthermore, this better understanding of companies often makes it easier to spot investment opportunities: "*I have become convinced that what makes companies successful is things that are non-financial, but which manage to become so.*[123] ".

Secondly, some managers have drawn our attention to the fact that a responsible company does not formally mean value creation[124] . On the other hand, a company wanting to create value and achieve sustainable financial performance must have good ESG practices. These practices appear as guarantees of the sustainability of the company's performance and make it possible to avoid the risks that could jeopardise its terminal value. Thus, one of the asset managers we met stated: "*I consider that the more expensive a stock is, the more it must have a high ESG quality to justify its terminal value (which depends on its capacity to maintain its right to operate and to face up to the transformations of its environment).*[125] " For example, in a SaaS company, the developers are the keystone of the company's development (the "brain power"). The company must therefore have good social practices in order to retain good profiles and recruit new ones. However, if social practices prove to be poor, the asset manager is entitled to doubt the company's sustainability.

3.3.2. Integration of ESG data in valuation models

First of all, let's go back to the valuation models used by the asset managers we talked to. The DCF model and its variant, the adjusted present value model, are the most common, followed by stock market and transaction multiples, and mixed methods. One of the asset managers also uses a "rolling 5 year" methodology.

Of the managers surveyed, 40% incorporate ESG data into their valuation model[126] . This does not mean they have all developed systematic methods. It may be done in a more or less artisanal way. But there is an intentionality and a regular practice of such adjustments. Moreover, this does not imply all the management teams of the different companies do it. The practice is sometimes limited to certain managers, such as asset manager 2, where it concerns a small part of the management teams. Moreover, the integration of ESG data into

[123] Investor 9, personal communication, 7 April 2022.
[124] Investor 14, personal communication, 13 April 2022
[125] Investor 11, personal communication, 8 April 2022
[126] 5 out of 15 interviewed: investors 7, 4, 13, 9, 12 and 15.

valuation models is more developed in European fundamental asset management where the information is more mature and therefore easier to integrate. In addition, two of the managers interviewed, investors 5 and 14, have plans to develop this use. Finally, we note that some investors integrate ESG data into their financial modelling, but do not consider this to be an adaptation of their valuation models. We will return to this point later in this section.

- *DCF numerator: future cash flows*

In the second part, five assumptions have been made that relate to the numerator adjustments of the DCF:

H4	AM make adjustments to turnover based on available ESG information
H5	AM make adjustments to operational costs and margins based on available ESG information
H6	AM modify Capex according to ESG data to prepare their assets for ESG issues, which impacts ROCE
H7	AM write down the net present value of an asset if they anticipate that the asset may lose value for environmental or social reasons
H8	AM adjust the terminal value of an asset with the ESG information available to them

Of the 15 asset managers surveyed, 33% make adjustments to turnover and operating costs[127] and 20% to the terminal value and/or net present value of an asset[128] . When managers make adjustments to the terminal value or net present value of an asset, it is often in relation to companies they expect to be worth little or nothing in the future. As a result, their terminal value or net present value will be greatly reduced. In the case of net present value this is done through provisions for impairment, as recommended by PRI. Overall, the subject of Capex and ROCE was not sufficiently discussed in the interviews for conclusions to be drawn from the exchanges with professional managers.

Unsurprisingly, the asset managers who make these adjustments told us they are easier to make in the short or medium term than in the very long term. It is difficult to correctly estimate the ESG risks that will impact the income statement in 10- or 15-years' time, and especially to quantify them. For example, one of the managers interviewed told us that he preferred to impact long-term growth when it became too intangible[129] .

[127] 5 out of 15 asset management companies surveyed
[128] 3 out of 15 asset management companies surveyed
[129] Investor 13, personal communication, 30 March 2022

For adjustments to turnover or costs, several examples were cited by the asset managers. Amongst the fairly classic elements: increase in the cost of materials or increase in salaries which are rationalised by certain practices or behaviours linked to ESG. For assets in the oil sector, one of the managers makes adjustments that anticipate a gradual decline in the price of oil, which reflects a gradual decline in the demand for oil in a context of ecological transition[130] . Several asset managers also told us that they integrate the price of carbon into their modelling.

For terminal value adjustments, this mainly concerns assets in coal or fossil fuels. This often concerns "*stranded* assets" which are subject to impairment tests. For example, some asset managers who have invested in coal mines in Europe are assigning them a terminal value of zero in 2030 because they anticipate a mandatory closure due to regulations[131] . This may affect part or all of the company. For example, Energias de Portugal still has one remaining coal-fired plant in Spain that is already valued at zero by one of the asset managers interviewed[132] . Another investor told us: "*We stress test coal companies by considering that if the mines were to close by 2030 or 2040, how many years of FCF would we lose and how much of a % of the total value of the company would that represent*.[133] " The underlying question in these types of adjustments is whether the assets will be scrapped. To return to the example of coal mines: will they close before the end of their maximum life? However, this approach is not shared by all. One of the managers said: "*In my view, this risk-based approach is reductive. Because the industries around us are part of a reality that we can't get away from. We can't live without coal, cars etc* [134]

We note that these adjustments are made largely on the environmental pillar and little on social or governance issues. This observation was corroborated by several asset managers: one of them told us that he was observing more and more portfolio managers practising a form of "*financiarisation of ESG, but rather on climate issues*[135] ". Investor 5, who has spoken extensively with brokers, said that most of the impacts presented in the valuation models fall under the environmental pillar[136] . Although Investor 8 is very cautious about integrating ESG

[130] Investor 7, personal communication, 15 March 2022
[131] *Ibid*.
[132] Investor 15, personal communication, 21 April 2022
[133] Investor 7, personal communication, 15 March 2022
[134] Investor 3, personal communication, 1er April 2022
[135] Investor 2, personal communication, 25 April 2022
[136] Investor 5, personal communication, 13 April 2022

into valuation models, he has worked on quantifying climate risk, "*which for us is the only quantifiable risk because it is very difficult to quantify governance and social issues*[137] ".

Furthermore, it is important to stress that for the adjustments on the numerator of the DCF (cash-flow and terminal value), the borderline between financial and non-financial becomes very delicate to draw. For most of the asset managers surveyed, everything that comes under the heading of simple materiality, as defined in the first part of this report, should be integrated into the financial model. This allows for reflection on the assumptions and is ultimately "*business as usual*", as one manager put it[138] . The managers in our sample are all ESG investors. Consequently, in their eyes, issues relating to ESG practices are an intrinsic part of business models, since good ESG practices are the source of a virtuous circle for the company. Implicitly, this must become the DNA of companies. Finally, certain issues must be integrated into the analysis of investors, whatever their investment strategy, given the materiality that these issues will have on all companies, such as the climate issue[139] .

Finally, we note that asset managers 9 and 15 told us that they were thinking about and/or trying to integrate the costs of negative externalities (beyond simply the price of carbon). This is part of a dual materiality approach. According to investor 9, as a long-term investor, it is becoming necessary to take an interest in issues such as the price of carbon or the price of water or any other ESG consideration relating to negative externalities. These concerns are either already contained in the price because there is some sort of requirement to take them into account; or it means that the issue is too remote and will only impact investors who plan to still hold the stock at that time horizon. However, these are companies whose operating result could fall to zero if all the externalities were internalised. Nevertheless, it is possible to identify signs that could validate the fact that the market is moving in this direction. For a long-term investor, it is necessary to be convinced of this issue because it could have very significant impacts. However, we did not have the opportunity to go into the details of these adjustments or to look at how the positive or negative externalities were measured.

[137] Investor 8, personal communication, 15 April 2022
[138] Investor 15, personal communication, 21 April 2022
[139] Investor 6, personal communication, 1 April 2022

- *DCF denominator: cost of capital*

The cost of capital adjustment remains the most structured methodology (assumption 9). 33% of the asset managers surveyed use it[140] . This is also the approach favoured by managers who wish to develop a model for integrating ESG data into the valuation of their companies, namely investors 5 and 14. In addition, managers talking to brokers also told us that this is the methodology most commonly used by them. Finally, it is also the method most frequently used by asset managers who do not make these adjustments but follow the work done by other colleagues. Investor 6 told us: *"I don't see how to do it apart from integrating it in the risk premiums. I think it is still the easiest way to do it*.

Several approaches were presented to us:

- Adjustment of the overall cost of capital
    - The cost of capital can be impacted via a 10% increase or decrease in the target price. This adjustment is made according to the ESG rating that has been assigned to the company[141] . Most often these adjustments are downward[142] .
    - The cost of capital is determined by the level of profitability that the manager wishes to achieve. This required rate of return is determined by 4 factors, all of which are equally important: (i) risk (ii) future cash flows (iii) resilience and (iv) ESG quality. In this model, four categories have been defined corresponding to four impacts in terms of lowering or raising the discount rate for ESG reasons[143] .
- Adjustment on beta
    - Depending on the ESG rating, the beta can be increased or decreased by more or less 40%.[144]
    - Four criteria are used in the investment decision: (i) upside to price target, (ii) risk, (iii) liquidity and (iv) ESG rating. Companies evaluated by the DCF model have their beta compared to a low-risk beta. Consistency is thus verified between the company's beta and this reference beta and can be

[140] 5 out of 15 asset management companies surveyed: investors 2, 4, 9, 12, 13
[141] Investor 4, personal communication, 29 March 2022
[142] On average 2/3 of adjustments are downward and 1/3 of adjustments are upward
[143] Investor 9, personal communication, 7 April 2022
[144] Investor 13, personal communication, 30 March 2022.

adjusted in particular according to the ESG rating[145] . However, this approach is deliberately non-mechanical.

It should be noted that one of the managers mentioned the Fama French three-factor model[146] as a possible methodology to determine a possible adjustment to the cost of capital. This model is an extension of the CAPM model. The residual of the equation could correspond to the SRI alpha, i.e. the impact of ESG on the excess return of a portfolio over the market. However, neither the portfolio manager who spoke to us about this method nor the other asset managers we met said that they use this model.

The asset managers making these adjustments told us that two conditions were important for these adjustments to be relevant. Firstly, the impact is much more noticeable for "extreme values" i.e. companies with exceptional or catastrophic ESG practices. In the case of average values, the adjustments have little impact on the value of the company[147]. Furthermore, it is necessary to think in the long term. In the context of a beta adjustment, for example, it is necessary to understand that certain extra-financial risks materialise in the long term: while governance may have a very tangible short-term impact, via controversies for example, the impacts linked to the ecological transition are significantly more distant. However, this will necessarily be captured by the beta which, let us remember, includes systematic risk or market risk[148] .

Finally, let us look at the motivations that lead managers to favour this method. It is laborious to model clearly the impacts that long-term extra-financial risks could have on the company, in particular on the financial statements. Adjusting the beta or the cost of capital directly therefore makes it possible to include "widespread risks"[149] that are difficult to quantify. In the same way, and reasoning more from the point of view of value creation for the company, some exceptional companies in terms of ESG have a competitive advantage. For example, excellent relationships with customers and suppliers may give the company a better chance of finding new development paths. However, it is difficult to model this on the margin or cash flows as asset managers do not necessarily know what form this will take and when it

[145] Investor 12, personal communication, 11 April 2022

[146] The CAPM model says that a single beta factor determines the excess return of the portfolio over the market. The Fama and French model proposes 3 factors and adds two factors, the size and value risk factor, to the market risk of the CAPM model.

[147] Investor 4, personal communication, 29 March 2022

[148] Investor 6, personal communication, 30 March 2022.

[149] *Ibid.*

will happen[150] . Consequently, the adjustment to the discount rate rather than the numerator of the DCF is more used.

- *Time horizon considered*

We asked the managers whether integrating ESG data into their valuation model would lead them to reconsider the time horizon contemplated in their valuation model (hypothesis 10). All the managers surveyed consider themselves to be SRI investors and are committed to long-term management (often over a five-year time horizon). For this reason, it was difficult to establish a causal link in the survey, since fundamentally all the investment made by thpse asset managers are based on long-term management. On the other hand, it is interesting to note that it is investors who were used to this type of management who switched to ESG investment. "*I came to SRI because I already had long-term fundamental asset management. And I think it was rather natural. Especially because at the time when I started doing SRI, we were asking ourselves a lot of questions. Were we going to have to sacrifice performance? We had to give time for these themes to take shape in the market and be truly integrated. And it made more sense for asset managers who were already capable of long-term management to take up the subject.[151]* " Thus the integration of ESG data has not necessarily led managers to reconsider their time horizon. However, investing for the long term is a necessary condition for any ESG investment strategy. Moreover, one of the managers told us that he felt that ESG made it possible to avoid the temptation of short-termism in his management: "*In the asset management system, we are bombarded with information all the time. But in the end this leads to our attention being drawn to immediate things. Integrating ESG into our research takes our attention away from the present, which we are trying to immerse ourselves in[152]* ".

On the other hand, the inclusion of the subject of ecological transition in the thinking of asset managers tends to make them reconsider their time horizon. "*It's obvious that it can lengthen the time frame, but it wasn't that revealing because we already had this fundamental vision. On the other hand, for all the companies that have a long duration (e.g. transition energy), yes, there is an effect.[153]* " This subject goes far beyond the asset managers practising

[150] Investor 9, personal communication, 7 April 2022
[151] Investor 6, personal communication, 1 April 2022
[152] Investor 9, personal communication, 7 April 2022
[153] Investor 3, personal communication, 25 March 2022

ESG investment: "*Now it is becoming obvious that the climate transition is a very long-term issue and that any portfolio manager, even one that is not stamped SRI, must integrate it*[154] ".

Finally, it should be noted that the investment horizon of the managers can also impact the way they apprehend ESG data. "*ESG risk will not be appreciated in the same way if we are talking about 5-, 10- or 20-years bonds or if we are talking about equity. An investor in 3-year bonds will be more interested in the company's ability to repay him at the end of that period, whereas for the equity investor it is necessary to ensure that the company does not disappear. As a result, ESG data is analysed very differently by these two types of portfolio managers*[155] .

- *ESG Scenarii*

Overall, generalist fund managers do not incorporate different ESG scenarios into their valuation models (assumption 11) with different weightings per scenario as suggested by KPMG (see section 2.2.2.). On the other hand, the integration of climate and biodiversity issues is leading asset managers to increasingly incorporate the notion of scenarios based on climate trajectories. This can take several forms: climate resistance tests to verify the achievement of different temperature levels (1.5 or 2 degrees) or the integration of IPCC[156] or IPBES[157] scenarios into the company rating system. This often concerns climate funds.

- *ESG influence on other tools used by professional managers in their investment decision-making.*

We also asked investment managers about the possibility of integrating ESG data into tools other than the DCF. We received several responses.

Firstly, Investor 13 applies the same method as for beta to comparables. In their ESG integration policy document published in July 2021, the asset manager explains: "*companies adopting the best sustainability practices and therefore having the best ratings benefit from a premium over the average of comparable companies of up to +40%, while companies most exposed to sustainability risks are impacted by a discount on their valuation of up to -40%.*[158]"

[154] Investor 6, personal communication, 1 April 2022
[155] Investor 7, personal communication, 15 April 2022
[156] Intergovernmental Panel on Climate Change.
[157] Intergovernmental science-policy platform on biodiversity and ecosystem services.
[158] ESG integration policy and shareholderengagement, Sycomore asset Management, July 2021

Another possibility, mentioned by investor 14, would be to impact the cost of debt, which would be lightened for certain issuers by the publication of an EFR [Extra-Financial Performance Statement]. Today, according to this manager, some issuers manage to reduce their cost of debt by 15 to 20% when it is indexed on E or S criteria. However, as mentioned by investor 5, this scenario may be more difficult to integrate as credit managers are often less sensitive to the subject. This management company conducted an analysis of the Diesel Gate controversy from the angle of materiality and its impact on Volkswagen credit spreads[159]. Although one might initially think that the scandal had a very material impact, the analysis shows that the consequences of the controversy on interest rates faded after one year[160] . Thus, credit managers find it more difficult to appreciate the impact of ESG on interest rates in concrete terms. Equity managers, on the other hand, have more to lose if the value falls sharply, as was observed in the ORPEA case.

Investor 10 has developed a quantitative model to determine the weights of companies in his portfolio. For its impact funds, the asset manager uses a model based on the inverse of the variance to determine the theoretical weight of each company in the portfolio. Subsequently, a discretionary adjustment of plus or minus 1% can be made based on the ESG rating of the company. If the ESG rating is high, the asset manager's conviction is reinforced and the weight of the company in the portfolio may increase. Overall, the asset management company does not systematically include ESG data in its valuation models but makes discretionary adjustments to the portfolio weighting based on ESG.

Finally, investor 2 explained that managers with a systematic or smart beta approach regularly monitor the impact that ESG can have on risk and tracking error [161]

3.3.3. ESG integration in corporate valuation becoming widespread?

It is difficult to say whether this practice will become widespread among asset managers. It is likely that if the integration of ESG data into valuation models becomes widespread it will

[159] The *spread* can be defined as the difference between the interest rate of a given loan and a so-called reference rate over the same maturity. It compensates for the risk of default by the borrower, i.e. the risk that the loan will not be serviced in accordance with the terms of the contract (Source: Encylopédie Universalis)

[160] Investor 5, personal communication, 13 April 2022

[161] Tracking error is a risk measure used in active portfolio management by comparing to a benchmark. Value added by the Investor = return of the managed portfolio - return of the portfolio's benchmark. The replication error is the standard deviation of the series of differences between the portfolio returns and the benchmark returns. It represents the volatility of the Investor's alpha (source: PLANIDEX Glossary - https://bit.ly/3KXAwhl)

start as a risk management tool. Investor 8 worked with MSCI on climate risk. They realised that for some companies it is "*the entire valuation of the company that goes away if we assume a 2-degrees trajectory or a carbon neutrality assumption*[162] ". Thus, carrying out this exercise highlights the major risks for the portfolio and would encourage managers to support companies on these issues in order to minimise the risks.

However, although the subject of this thesis has piqued people's curiosity, opinions are quite divergent as to the generalisation of this practice. Indeed, several obstacles need to be overcome before it is adopted.

First of all, some managers consider that the subjective nature of ESG data is a major obstacle to its transposition into quantitative valuation models: "*Some analysts see some values as positive and others as negative. It will always be up to each individual and will really depend on the business model. This is why we prefer a qualitative model to a quantitative one*[163] . But this diagnosis is not shared by all. It is possible to admit the subjectivity of ESG data and integrate it into valuation models. However, as the asset manager points out, "*this also means it is difficult to arrive at something very mechanical*[164] ".

On the numerator of the DCF, the difficulty of quantifying the social pillar and the pillar of governance came up very regularly in our discussions. "*The social dimension or even anything to do with trust or reputation is very difficult to value*[165] . Similarly, it emerged from our discussions that the costs are easier to model than the benefits: "*The costs at the limit we can take into account. For example, we can estimate the costs for a company of tightening its environmental policies. But the benefits behind them are difficult to assess in a company's profit and loss account*[166] . This leads some asset managers to warn against certain uses: "*In practice, we can make a model say anything. You touch the cash flows, your risk premium and the WACC a bit and your valuation changes completely.* [167]

Concerning the method of adjustment on beta and WACC, opinions are quite divided. Many point to the complexity of justifying the determination of adjustments: "*We prefer not to address the issue of adjustments to the cost of capital because it means getting into*

[162] Investor 8, personal communication, 15 April 2022
[163] Investor 3, personal communication, 25 March 2022
[164] Investor 12, personal communication, 11 April 2022
[165] Investor 5, personal communication, 13 April 2022
[166] Investor 6 personal communication, 1 April 2022
[167] Investor 8, personal communication, 15 April 2022

intractable discussions about how the premium is set. Our belief is that in the medium term there is convergence in the cost of capital[168] .

In addition, some asset managers have drawn our attention to the risk of "creating ESG Darlings". Putting a premium on the best ones would lead to inflation around ESG practices, sometimes uncorrelated with the financial performance of companies. "*In recent years, we have seen the creation of a premium on the multiples of companies with the best ratings, probably due to the flow of investments into ESG funds and in particular ETFs that blindly rely on providers such as MSCI or Sustainalytics. In fact, we have seen the valuation of ESG leaders often inflate independently of their financial performance. Theoretical valuations are linked to future cash flows, at least to the sustainability of a very favourable current situation, not to the current ESG rating, or on the contrary to the restoration of a normal situation for a company in turnaround. We are seeing more and more brokers tracking the ESG positions of stocks and this is leading us to observe an increase in the valuation of the most widely held stocks. We talk about "ESG darling". We can look at the evolution of their PER and see the distortion of relative values. This is a self-reinforcing phenomenon that leads to an artificial increase in the value of these portfolios.*[169] " To guard against these phenomena, we must constantly return to fundamental financial analysis.

On the other hand, there is still a cognitive dissonance between markets that think in the short term and ESG issues whose very long-term risk horizon does not necessarily encourage asset managers to take them into account: "*Extra-financial risks materialise over the more or less long term. However, some clients still judge us by the performance of the index on a monthly basis. The markets are still short term. And this creates a tension in integrating ESG data into our valuation models*[170] .

Furthermore, pragmatically, this exercise is time consuming and does not necessarily seem necessary to all managers. Investor 5 explains that although he finds the *brokers*' approach interesting (on WACC adjustment), "*they can afford it because they do not follow many companies*[171] ". Thus, this approach seems more suitable for managers who follow few stocks.

[168] Investor 7, personal communication, 15 April 2022
[169] Investor 11, personal communication, 8 April 2022
[170] Investor 13, personal communication, 30 March 2022.
[171] Investor 5, personal communication, 13 April 2022

Finally, the asset management sector is experiencing many upheavals linked to the development of ESG data. However, this does not mean the priority for asset managers will be to develop methods for integrating ESG data into their valuation model. Two strategies came up a lot in our discussions.

- Shareholder engagement (or in some cases activism). Managers who are committed to shareholder engagement believe that poor governance and ESG practices "*destroy value.*[172] " It is therefore their duty as shareholders to encourage companies to change. For these shareholders, ESG finance does not "*move the lines enough*[173] ". It is necessary to go further and use the rights of minority shareholders to establish partnerships that are "*win-win*[174] " for companies.
- The development of impact investing and with it the issues around impact measurement: "*As SRI becomes mainstream, impact is the new investment material. We need to go further to differentiate ourselves*[175] . *"For our part, the future is to move towards companies that have "B corps" labels*[176] *and "mission company" status*[177] .[178] Asset managers consider that the Sustainable Development Goals (SDGs) represent financial opportunities while allowing the reduction of negative externalities whose cost to society is disproportionate. However, the development of this type of management implies a more binary approach to companies, making it less necessary to integrate ESG data into the evaluation models to help the manager make his investment decision: "*When you have a strong sustainability approach where you have 80% positive and committed values in your portfolio, you need to have a strong conviction. So, following an ESG analysis, the reasoning is: do I want this stock, or do I not want it? Consequently, adjusting my WACC will not lead me to change my investment decision*.[179] " On the other hand, talking about impact investment strategy goes hand in hand with discussions around impact measurement: "*I think the future*

[172] Investor 8, personal communication, 15 April 2022
[173] *Ibid.*
[174] Investor 15, personal communication, 21 April 2022
[175] Investor 10, personal communication, 29 March 2022
[176] The so-called "B Corp" certification is a certification granted to commercial companies that meet societal and environmental, governance and public transparency requirements (Wikipedia)
[177] In France, the term "entreprise à mission" refers to those forms of enterprise that have a social or environmental purpose in addition to a profit-making purpose. (Wikipedia)
[178] Investor 15, personal communication, 21 April 2022
[179] *Ibid.*

lies in impact. There is a need and even a demand to measure the impact of investments. So, I don't know if it's a question of integration into the valuation of companies. But I do believe that there will be more and more impact measurement linked to a particular objective, which will be used to manage (i.e. to select companies) and not only for reporting. [180]

3.3. Discussion of results and limits

3.3.1. Methodological limits

In view of the discussions, we have had with managers, we feel that the subject is still not very mature. It has been discussed for a long time in academic circles but has only recently entered the asset management sphere. This is probably due to the development of European regulations that will force both investors and companies to publish more information. Consequently, it is difficult to draw clear conclusions and to validate the hypotheses established in the second part of the report, since only a small number of managers are involved. Furthermore, we spoke with 17 people representing 15 asset managers, which does not constitute a sufficient sample to be able to generalise what we observed.

If the integration of ESG data into valuation models becomes widespread, it will probably be achieved in the wake of the implementation of reporting systems such as those presented by EFRAG, whose fundamental principle is dual materiality. Indeed, it regularly emerged from our discussions that access to quality and material data was the sine qua non condition for the development of this approach.

If we wanted to take this research further, there are several possibilities. To begin with, it would be appropriate to talk to more professional managers and perhaps extend the discussions to brokers who seem to do a lot of ESG integration in their valuation models. This could lead to an interesting comparative analysis between the uses of brokers and asset managers. We could also approach unlisted equity managers and compare them with the practices of listed equity managers. Finally, we did not have the opportunity to go into detail about the adjustments and methods developed by the managers. The interviews remained very general due to the limited time available. For example, it is impossible at this stage to comment on the impact of the data on ROCE. It could therefore be interesting to continue this

[180] Investor 6, personal communication, 1 April 2022

work by going back over the managers' adjustments in detail and then carrying out a modelling exercise to compare the different methods to enable us to measure their impact on value.

3.3.2. Discussion on asset managers' practices

Since the first version of this research, two articles have been published by Alex Edmans, providing a critical look at the observations we made in the previous section. The aim of this next section is therefore to discuss some of the practices or opinions heard during the interviews.

- *An ESG rating is not a fact, it is an opinion* [181]

Most managers told us that they have developed proprietary models or methodologies for analysing ESG data in order to compare the different ratings. Some managers are indeed critical of the significant disagreements between the agencies' ratings. However, Edmans (2023) points out that this criticism is only partially valid and that it stems from the way managers understand ESG data. If ESG data were considered to be a value-creating lever like any other, then the criticism no longer holds. No one criticises differences in recommendations in equity research reports because it is recognised that diversity of opinion is far more interesting than common opinion. The same applies to ESG.

- *Is ESG data nothing more than intangibles?*

To continue the debate on ESG data analysis and interpretation, we noted that some investors explained they use agency ratings to carry out a "*rough filter*" and then focus on *"high value-added*" analyses[182] . These analyses are of several kinds, but one of the asset managers described his approach as 'holistic', explaining that he '*gleans information from trade unions, NGOs, associations, former employees, suppliers or customers groups, and consumer associations. Then we carry out a synthesis and reconciliation exercise on what we have found out about the company. In the end, it is this type of information, much more than the number of tonnes of CO2 it has emitted, that will enable us to determine its ESG quality*"[183]. Another asset manager said: "*ESG data is integrated into our financial analysis. Sometimes*

[181] Edmans, A. (2023) The End of ESG. Financial Management, forthcoming.
[182] Investor 13, personal communication, 30 March 2022.
[183] Investor 9, personal communication, 7 April 2022.

certain companies do not have any ESG-related activities but develop internal practices that seem sound. The SEB group, for example, has worked a lot on circularity and long-term reparability. These ESG elements implemented by SEB, are integrated in the BP because in our opinion this allows them to gain significant market share"[184] . This illustrates another point made by Edmans (2023): asset managers do not evaluate companies simply on the basis of Quarterly Earnings but also analyse their intangible assets such as corporate culture, customer loyalty and capacity for innovation[185] . Carrying out these actions is time consuming and therefore costly, but it is worthwhile because managers are looking to beat the market and to do so they need to find information that is not already contained in the price. The market sometimes fails to incorporate the value of intangibles into the price because it is difficult to report these intangibles correctly. For example, Edmans showed in an article of 2011 that the 100 best companies to work for in the US delivered better returns to shareholders even though their share prices did not reflect this analysis[186]. ESG can therefore be seen as part of the intangibles that create value over the long term.

- *Materiality, the key to value creation*

In the interviews, asset managers discussed the quality of ESG data. While all recognised the value that recent regulations have had in increasing the amount of data available and forcing companies to be more transparent, some spoke of data inflation that does not necessarily lead to having relevant data to conduct analyses. This is in line with what Edmans (2023) writes: on the one hand, there is pressure on companies to report their ESG indicators, often by demanding a certain uniformity from one company to another; on the other hand, Edmans stresses the importance of measuring ESG data relating to the company's strategy[187] . This validates the importance of the materiality of ESG data and thus aligns with the analyses of Khan, Serfaeim and Yoon (2016)[188] . In particular, materiality makes it possible to identify the ESG data that are the levers of the company's future performance and therefore the determinants of its value. Edmans points out that a common set of ESG indicators can even

[184] Manager 3, personal communication, 25 March 2022
[185] Edmans, A. (2023) The End of ESG. Financial Management, forthcoming.
[186] Edmans, A. (2011). Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices. *Journal of Financial Economics*, 10(3), 621-40
[187] Edmans, A. (2023) The End of ESG. Financial Management, forthcoming.
[188] Khan, M., Serafeim, G., and Yoon, A. (2016, March). Corporate Sustainability: First Evidence on Materiality. *Accounting Review* 91(6), 1697-724

have a negative effect on the value of the company in the long term if it leads the company and its stakeholders to focus on these indicators to the detriment of indicators that actually create value. Thus, regardless of regulatory or governmental demands that may lead to the deferral of ESG data in order to address negative externalities, a manager should only be interested in ESG data that influences the performance of the company they are analysing.

- Is it more relevant to adjust the cost of capital or the cash flows?

Of the asset managers who integrate ESG into their valuation exercise, more of them adjust the cost of capital (or beta) than cash flows. This choice is mainly justified by a concern for simplicity: "*I don't see how to do it apart from integrating it at the level of risk premiums. I think this is still the simplest way to* do *it*"[189] . This allows for the inclusion of '*widespread risks*'[190] . But does this reflect reality? The answer is partly no. The cost of capital is normally affected by the market risk and not by the specific risk of the company (see part 2). Therefore, the cost of capital should only increase if risk is correlated to market conditions. However, most of the ESG controversies of recent years were specific to the companies that suffered from them and were not market risks. Logically, this should lead to an adjustment of cash flows. But this requires more work: estimation of different scenarios, sensitivity analysis, discussion of assumptions. According to Edmans (2023), the choice of adjusting the cost of capital is therefore only the result of simplification[191] . However, there are no methods that allow one to know by how much the rate should be raised or lowered. This observation is confirmed in some of our exchanges: "*we prefer not to address the issue of adjustments to the cost of capital because it means getting into intractable discussions about how the premium is set*"[192] . Edmans nuances this criticism by explaining that there are cases where adjustments to the cost of capital are justified. For example, ESG controversies are more likely to occur in an adverse market environment as companies are more likely to engage in fraudulent behaviour in a recession if they are desperate. Asset manager preferences can also play a role: if an asset manager prefers to hold a green asset[193] rather than a brown asset then they will charge a higher cost of capital to hold the brown asset.

[189] Investor 6, personal communication, 1 April 2022
[190] Investor 13, personal communication, 30 March 2022.
[191] Edmans, A. (2023), Applying Economics - Not Gut Feel - To ESG.
[192] Investor 7, personal communication, 15 March 2022
[193] In his article, Edmans refers to companies with good (bad) ESG practices as green (brown) assets.

- The risk of overstatement of ESG data

Some managers have also criticised the adjustments made to risk premiums for another reason, namely the risk of inflation around ESG practices to the detriment of the company's financial performance: "*we have seen the valuation of ESG leaders often inflate independently of their* financial *performance*"[194] . This criticism is part of a broader consideration of whether 'sustainable' stocks have better returns than less virtuous companies. Edmans discusses this hypothesis by saying that the ESG dimension is still often undervalued by the market, which leads one to believe that this statement is true. However, this needs to be qualified. As one of the managers interviewed put it, "*responsible business does not necessarily mean value creation*"[195] . A company delivers value to its shareholders if the shareholders' value it differently from the market, i.e. if the value creation was not initially contained in the price and therefore investors bought the shares for less than they were actually worth. This reasoning applies to ESG: ESG practices may lead to a higher return if they were not included in the price. But it is not impossible that they are also overvalued, as is the case for ESG Darlings. Edmans (2023) gives the example of electric car companies that were overvalued in 2021[196] . This preference for stocks in this sector could change, especially as more and more criticism of electric cars is being levelled at them, which could lead to a decrease in their price and thus a lower return. This is in line with the words of one of the managers interviewed: "*We do not work in a system where we weight ESG more. These analyses are put on the same level as the choice of business model or innovation capacity [...] It is therefore quite difficult to know by how much ESG determines the final position*"[197] .

3.3.1. Recommendations for Valuators

This research was initially intended to provide guidance for evaluators working with professional asset managers. It is unlikely that a single method will emerge for integrating ESG into valuation methods. However, it is no longer possible to do without ESG analysis as part of a valuation. Valuators must take advantage of the abundance of extra-financial data

[194] Investor 11, personal communication, 8 April 2022
[195] Investor 14, personal communication, 13 April 2022
[196] Edmans, A. (2023), Applying Economics - Not Gut Feel - To ESG.
[197] Investor 3, personal communication, 1er April 2022

available to enrich their practices and consider this profusion more as an opportunity than as an obstacle. Several principles can be deducted from our exchanges with asset managers and from the discussions that took place following the interviews:

- Include a strong material dimension i.e. tailor the evaluation of ESG data as much as possible to the company under analysis.
- Do not overestimate ESG and consider the interactions between ESG and other growth drivers of a company.
- Distinguish between regulatory ESG indicators, which essentially allow companies to tick boxes, and company specific ESG indicators.
- Accept the divergent views that go with any analysis of intangibles, especially as they are very difficult to report correctly.

Valuators are able to differentiate themselves and bring value to managers by demonstrating the ability to capture ESG practices in their models and thus give the latter a competitive advantage. They are also able to deal with complexity and therefore conduct real reflections on adjustments in order to be as close to reality as possible and take fewer shortcuts than managers who are constrained by time.

Conclusion

ESG investing has grown significantly in recent years. This has been made possible by the explosion in the publication of ESG data within a regulatory framework that gradually encourages companies to be more transparent about their ESG practices. As a result, professional managers have a wealth of information to analyse when making investment decisions. This information comes from multiple sources, can be collected directly from companies or indirectly from intermediaries, and can be audited or not. The credibility and relevance of this data, in particular its materiality, are at the heart of the asset managers' concerns. Indeed, asset managers integrate ESG data into their research and adopt different ESG investment strategies ranging from exclusion, positive screening, best-in-class, best-in-universe, thematic investment or the integration of ESG data into financial models. In particular, we focused on the latter strategy and how ESG data could be integrated into company valuation models. The literature has shown that companies' ESG practices can have a significant impact on value (lower risk, higher profitability, higher cash flows, significantly higher resilience to market fluctuations). Many adjustments are possible to integrate ESG data into company valuation models, in particular the DCF model. Based on a list of adjustments proposed by various studies, we asked asset managers what adjustments they made in their own valuation models. It emerged from our discussions that these adjustments fall into two categories: on the one hand, they can be made at the numerator of the DCF, in particular on cash flows (revenues, costs, Capex) and terminal value; on the other hand, they can be made at the denominator of the DCF by adjusting the cost of capital (in particular the beta). For many managers, the first adjustments are part of traditional financial analysis, as the materiality of ESG issues on companies is no longer in question. The second method often consists of analysing the company in order to give it an ESG rating and then adjusting the cost of capital or the beta, upwards if the company has exceptional qualities or downwards if its practices are deplorable. These methods are not yet unanimously accepted for a number of reasons: the subjective nature of ESG data, the difficulty of quantifying certain pillars such as social or governance, the difficulty of justifying the way in which adjustments are made to the cost of capital, and the fact that managers are focused on other priorities. It is therefore still delicate to announce a generalisation of this practice but it should continue to develop. It is interesting in the context of risk management because it allows us to highlight the influence

that a company's ESG practices can have on its value and, above all, the extent of this influence. In a context of ecological transition, it is not uncommon in some models to see the value of companies fall to zero if carbon neutrality scenarios are included. Without saying that these companies are really worth zero, this leads asset managers to become aware of the significant risks to which these companies are exposed, as they have not yet undertaken the necessary changes to meet the requirements of the climate transition. In addition, the arrival of new non-financial reporting standards in Europe, under the CSRD directive, should encourage the provision of more material and transparent information for asset managers, making it easier to practice. This should also allow the integration of dual materiality issues. Thus, for valuators wishing to assist managers in implementing this practice, it will be necessary to develop models that include a strong materiality dimension and are therefore adaptable to the company being valued (depending on its business model and sector of activity). Particular attention will have to be paid to the processing of ESG data and to the financialization of qualitative and subjective data. This remains the main challenge for methodologies. These methods will have to be integrated into classic financial evaluation models and allow managers to better understand companies and the risks and opportunities that ESG represents for them. This will ultimately help to link financial and extra-financial analysis and make ESG practices not only a means of guaranteeing and protecting the value of the company but also real drivers of the company's value creation.

Annexes

Annex 1 - ESG Investment styles

Table 4. ESG Investment Styles

	Response	All (N = 337) (1)	AUM Size (2) Large	(3) Small	(4) Diff.	Region (5) US	(6) Europe	(7) Diff.
1	Engagement/active ownership	37.1%	42.7%	34.4%		27.1%	48.1%	**
2	Full integration into individual stock valuation	34.4	37.3	33.0		27.1	35.9	
3	Negative screening	30.0	50.0	20.3	**	40.2	32.8	
4	Thematic investment	20.8	29.1	16.7	*	15.9	26.7	*
5	Overlay/portfolio tilt	14.2	20.0	11.5	*	13.1	19.1	
6	Positive screening	13.4	22.7	8.8	**	17.8	14.5	
7	Risk factor/risk premium investing	11.3	9.1	12.3		6.5	11.5	
8	Relative screening/best-in-class screening	9.2	10.9	8.4		11.2	9.9	
9	We do not use ESG information in our investment process	16.6	10.9	19.4	*	21.5	11.5	*

Notes: This table reports responses to the question, How do you integrate material ESG information in your investment process/ how do you use ESG information to define your investment universe? Columns 2 and 3 report the percentages for investors with, respectively, AUM > US$5 billion and AUM < US$5 billion. Column 4 reports the results of a test of the null hypothesis that the percentages in Columns 2 and 3 are equal to each other. Columns 5 and 6 report the percentages by geographical region, and Column 7 reports the results of a test of the null hypothesis that the percentages in Columns 5 and 6 are equal to each other.

*Significant at the 5% level.

**Significant at the 1% level.

Source: Amir Amel-Zadeh & George Serafeim (2018) Why and How Investors Use ESG Information: Evidence from a Global Survey, Financial Analysts Journal, 74:3, 87-103

Annex 2 - ESG investment style & investment returns

Table 5. ESG Investment Styles and Investment Returns

	Response	All (N = 295) (1) % Moderately or Significantly Positive (Ranks 5 and 4)	(2) % Moderately or Significantly Negative (Ranks 1 and 2)	AUM Size (3) Large	(4) Small	(5) Diff.	Region (6) US	(7) Europe	(8) Diff.
1	Full integration into individual stock valuation	61.2%	5.8%	3.70	3.71		3.54	3.81	*
2	Engagement/active ownership	52.7	6.5	3.47	3.70	*	3.46	3.80	**
3	Positive screening	59.6	10.5	3.64	3.51		3.60	3.56	
4	Risk factor/risk premium investing	42.4	8.4	3.43	3.52		3.26	3.52	*
5	Relative screen-ing/best-in-class screening	49.7	11.0	3.34	3.52		3.38	3.49	
6	Thematic investment	42.4	10.4	3.35	3.38		3.34	3.36	
7	Overlay/portfolio tilt	37.4	11.0	3.24	3.35		3.17	3.31	*
8	Negative screening	39.1	28.2	3.07	3.09		3.07	3.12	

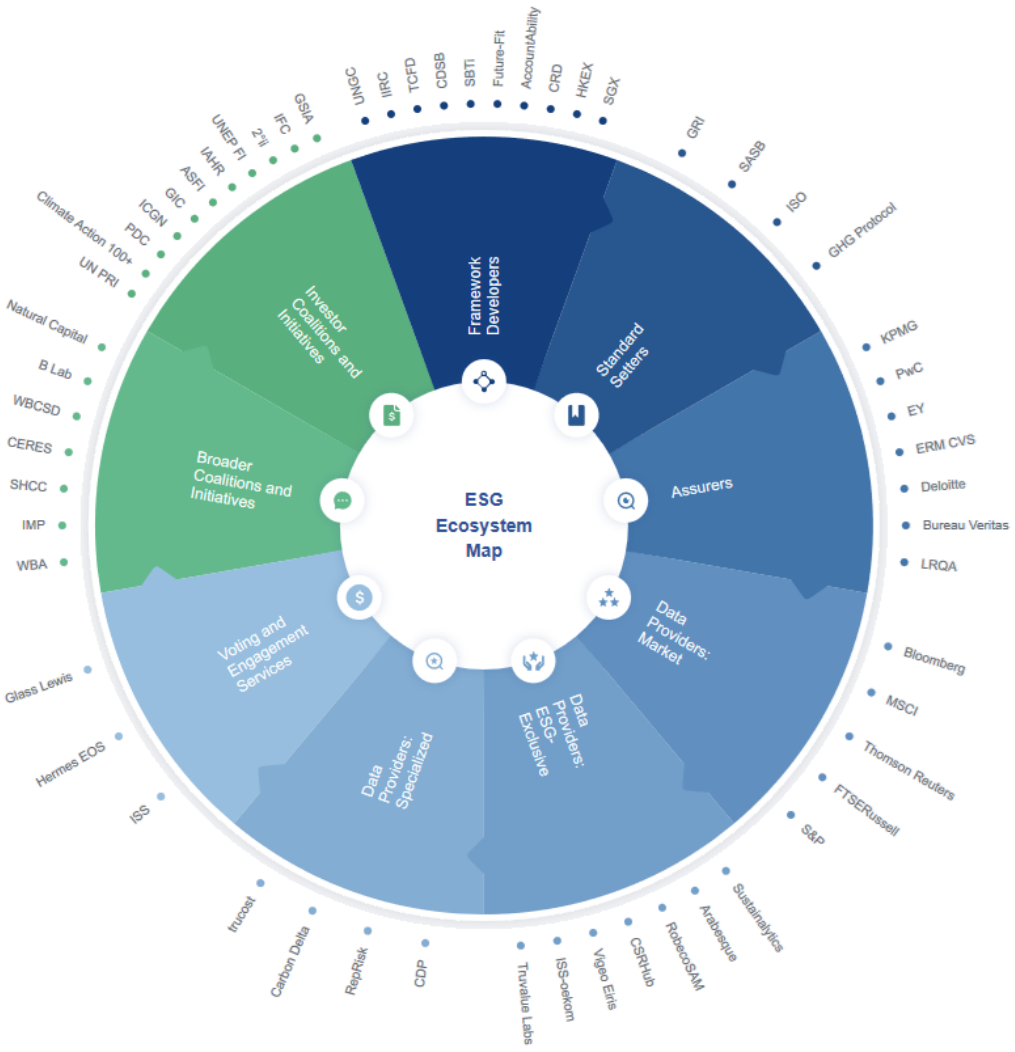
Notes: This table reports survey responses to the question, Which of the following ESG strategies do you believe improve or reduce investment returns compared to a market benchmark? Columns 3 and 4 report the average ratings on a scale of 1 to 5 for investors with, respectively, AUM > US$5 billion and AUM < US$5 billion. Column 5 reports the results of a test of the null hypothesis that the ratings in Columns 3 and 4 are equal to each other. Columns 6 and 7 report the ratings by geographical region, and Column 8 reports the results of a test of the null hypothesis that the ratings in Columns 6 and 7 are equal to each other.

*Significant at the 5% level.

**Significant at the 1% level.

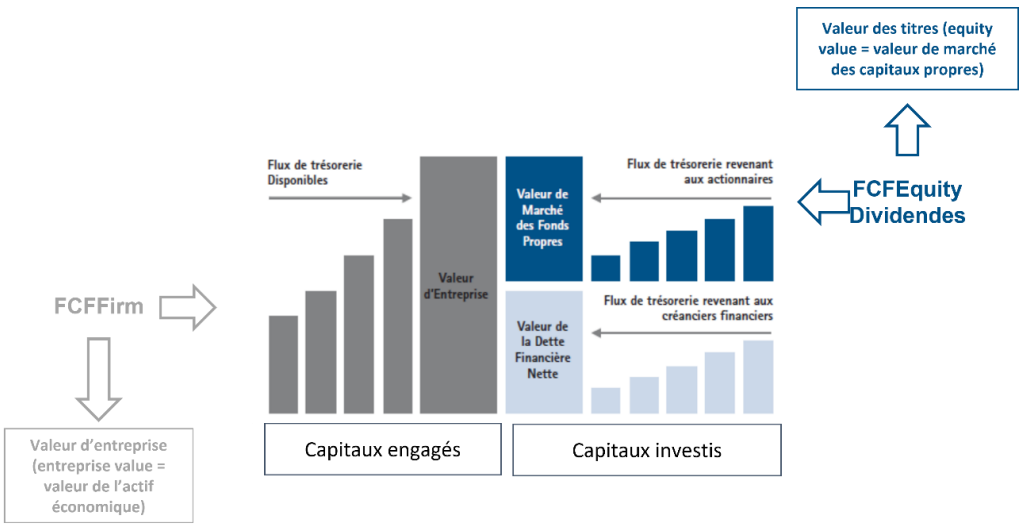
Source: Amir Amel-Zadeh & George Serafeim (2018) Why and How Investors Use ESG Information: Evidence from a Global Survey, Financial Analysts Journal, 74:3, 87-103

Annex 3 - ESG ecosystem map



Source: world economic forum ESG ecosystem map

Annex 4 - The different types of flows and their beneficiaries.



Annex 5 - Calculation of terminal value by value creation levers

Koller, Goedhart and Wessels (2020) recommend using a formula approach based on value driver.

$$Terminal\ Value\ (continuing\ value) = \frac{NOPAT_{t+1}(1 - \frac{g}{RONIC})}{WACC - g}\ where$$

- $NOPAT_{t+1}$ net operating profit after taxes in the first year after
- the explicit forecast period
- g the expected growth rate in NOPAT in perpetuity
- $RONIC$ expected rate of return on new invested capital
- $WACC$ the weighted average cost of capital

This formula is derived from the previous one but has the advantage, according to the authors, of showing the main factors that generate value (growth, return on capital employed and WACC). According to Koller, Goedhart and Wessels (2020), the perpetual annuity formula is often misused: the most common error is to erroneously estimate the level of free cash flow, which should be consistent with the envisaged growth rate[198] .

[198] Koller, T., Goedhart, M., Wessels, D. (2020). *op.cit*, chapter 10

Annex 6 - Interview guide sent to professional managers

DURÉE : 1h

ENTRETIEN - QUESTIONS

QUESTION 01
Tenez-vous compte des données ESG dans vos prises de décision d'investissement ? Et si oui, accordez-vous une place plus importante à l'un des volets E, S ou G ?

QUESTION 02
Intégrez-vous des données ESG dans vos modèles d'évaluations ? Et si oui sont-elles exploitées statistiquement et globalement dans vos choix d'investissement ou sélectionnez-vous certaines données spécifiques et pertinentes pour chaque actif ?

QUESTION 03
Procédez-vous à des ajustements, en intégrant des données ESG dans les flux de trésorerie dans vos modèles DCF ?

QUESTION 04
Dans quelles circonstances les données ESG vont-elles vous amener à reconsidérer la valeur d'un actif dans votre portefeuille ?

QUESTION 05
Ajustez-vous la valeur terminale de vos actifs en fonction des données ESG disponibles et comment ?

QUESTION 06
Ajustez-vous le coût capital d'un actif en fonction des données ESG ?

QUESTION 07
L'intégration des données ESG dans vos modèles vous conduit-elle à modifier l'horizon de temps de votre modélisation ?

QUESTION 08
Procédez-vous à une analyse de scenarii ESG pour identifier les facteurs les plus susceptibles d'affecter la valeur de votre actif ?

QUESTION 09
Utilisez-vous d'autres méthodes que le DCF pour évaluer les entreprises ? Comment intégrez-vous l'ESG dans ces autres méthodes ?

2

Annex 7 - Detailed interview guide

Presentation

- Presentation of the project
- Could you present your background?
    - *Assets under management ?*
    - *Internal ESG team ?*

Nature and origin of the data

1. Do you integrate ESG data into your investment decisions? And if so, do you place more emphasis on any of the E, S or G dimensions?
    - *Does the data come from the company itself or do you get it from independent bodies?*
    - *Do you remove data provided by rating agencies? Do you carry out your own weightings on the retrieved data?*

Valuation methods

2. Do you integrate ESG data into your valuation models? And if so, is it used statistically and globally in your investment choices or do you select specific and relevant data for each asset?

DCF model

Potentially explain the PRI typology on DCF model adjustments

3. Do you make adjustments, by incorporating ESG data, to the cash flows in your DCF models?
    a. *If so, could you give us concrete examples of adjustments you make? Do they focus more on revenues? Operational costs? Capex?*
    b. *By adjusting the CAPEX, how do you see the ROCE evolving?*
4. When will ESG data cause you to reconsider the value of an asset in your portfolio?
    a. *How do you model this depreciation?*
5. Do you adjust the terminal value of your assets according to available ESG data and how?
    a. *If so, how do you proceed?*
    b. *Do you proceed by using the fading growth method to model a transition period?*
6. Do you adjust the cost of capital of an asset based on ESG data?
    a. *If so, how do you go about it? Do you do this in absolute terms by ranking the asset against its peers and taking into account the ESG rankings of each?*

Time horizon & scenarios

7. Would you say that incorporating ESG data into your models leads you to change the time horizon you consider for modelling?
    a. *Does this time horizon tend to be longer in a context where the reflections on the ecological transition are increasingly pressing?*
8. Do you carry out ESG scenario analysis to identify the factors most likely to affect the value of your asset?

a. *Do you weigh these different scenarios?*

Additional methods

9. Do you use other methods than DCF to value companies? How do you integrate ESG into these other methods?
    a. *Analogical methods: how do you integrate the GSS into your multiples?*
    b. *Are you using ESG data to stress your models without integrating the data directly into your flows?*

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