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Materiality of ESG factors in financial markets and financial statistics¹

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Materiality of ESG Factors in Financial Markets and Financial Statistics

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Abstract

The study assesses the materiality of Environmental, Social and Governance (ESG) factors in financial markets and financial statistics. The stocks of and flows in ESG financial assets have reached a systemically-relevant share in the overall financial system. The study explores the implications of materiality for ESG financial statistics while acknowledging that data gaps need to be addressed amid considerable uncertainty. It outlines the necessity to differentiate between single-materiality and double-materiality approaches and defines the concept of financial uncertainty in contrast to financial risk and its implications for materiality.

Keywords: Climate-related financial risks; Double materiality; Environmental, social and governance factors; ESG; Materiality; Sustainability; Sustainable finance; Uncertainty

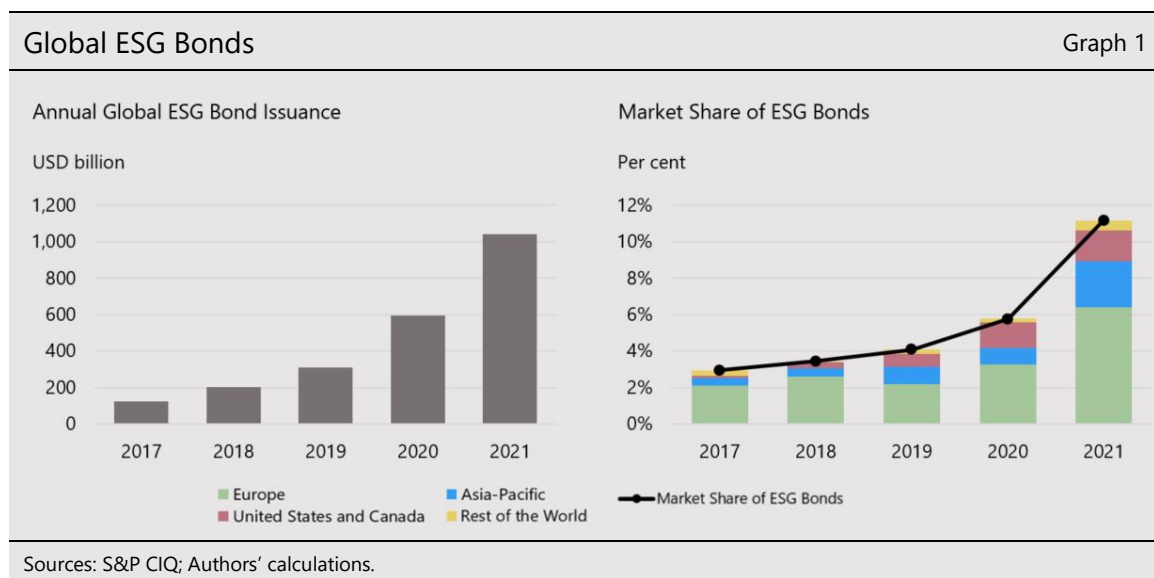
JEL Classification: G11, G14, G21, M14, Q56

ESG Factors in Financial Markets

Sustainable finance evolved rapidly, both in terms of asset size and diversity of financial products. Sustainable finance became increasingly linked with Environmental, Social and Governance (ESG) criteria. The stocks of and flows in ESG financial assets reached a systemically-relevant share across key markets and asset classes. Financial markets and institutions have a critical financial intermediation role in sustainable finance.

ESG Factors in Debt Securities Markets

The market for sustainable-finance debt securities expanded at a fast pace during the last five years. ESG debt securities issued during 2021 alone amounted to more than USD 1 trillion. The market share of sustainable-finance debt securities in the overall global bond market increased to 11%. In Europe, ESG bonds comprised 20% of all debt securities issued in the region in 2021, representing a fourfold increase from a 5% share in 2017.



Notwithstanding Europe's dominant position in sustainable finance, ESG debt securities issuance recorded strong growth across all other key global regions. Sustainable-finance debt securities issued in 2021 by European counterparties represented 55% of global ESG debt securities issued, followed by the Asia-Pacific region with a 22% share, the North American region with a 15% share, while the remaining regions collectively accounted for 8%.

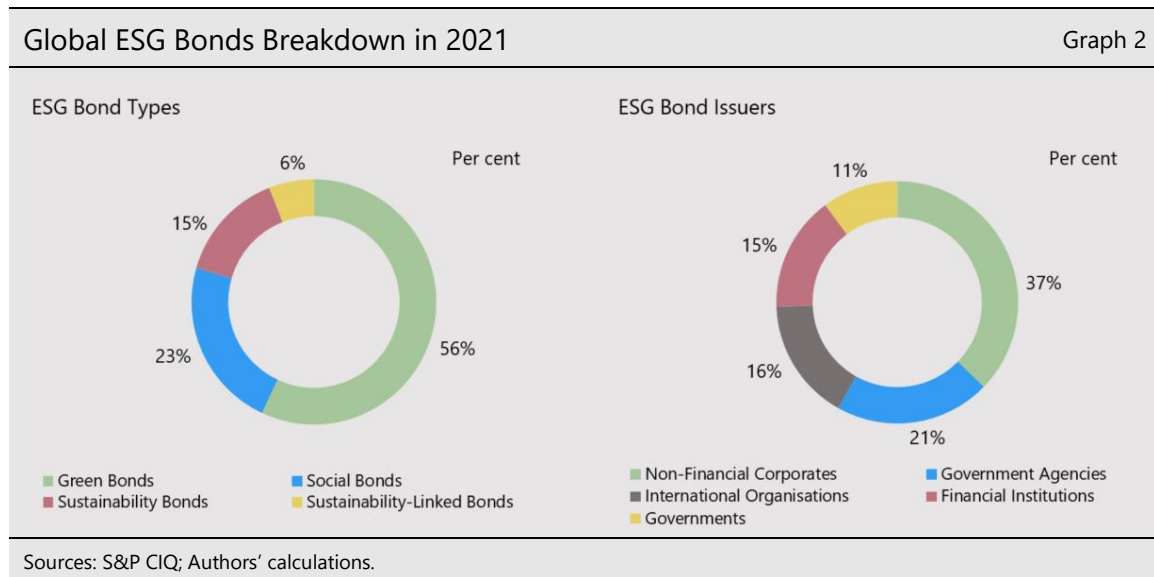
Types of ESG Financial Instruments

ESG financial instruments evolved into several key types, reflecting the growing diversity of sustainable-finance products. While the categories originally derive from the principles developed for sustainable-finance bond markets (ICMA, 2020, 2021a, 2021b, 2021c), such categorisation can

also be applied to a broader set of sustainable finance products, with environmentally beneficial or socially beneficial uses of proceeds.

Types of ESG Financial Instruments		Table 1
Green Financial Instruments	Financial instruments where the proceeds are used to fund environmentally beneficial projects. ¹	
Social Financial Instruments	Financial instruments where the proceeds are used to fund socially beneficial projects. ²	
Sustainability Financial Instruments	Financial instruments to fund both environmentally and socially beneficial projects.	
Sustainability-Linked Financial Instruments	Financial instruments linked to the issuer achieving predefined sustainability targets.	
Sources: Authors' review based on ICMA (2020, 2021a, 2021b, 2021c).		

Among ESG debt securities, green bonds had the largest market share of 56% in 2021. Social bonds surged to 23% during the pandemic due to an increase in projects with socially beneficial use of proceeds (Moody's, 2021). Sustainability bonds, which combine characteristics of green and social bonds, also gained market share, representing 15%. Sustainability-linked bonds, with returns linked to achievements of predefined ESG targets, had a 6% market share.

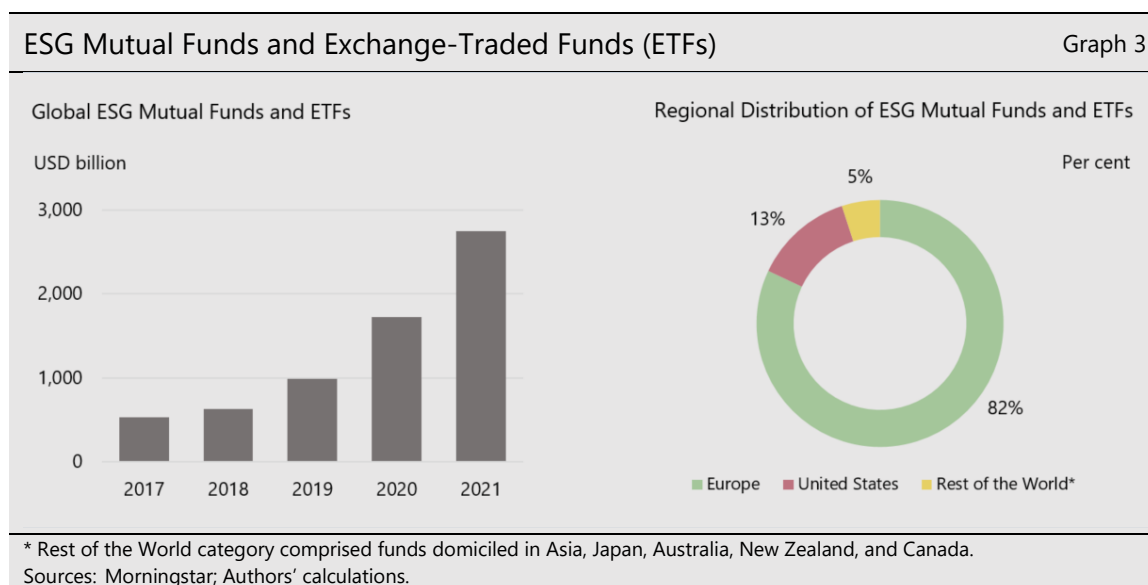


¹ Environmentally beneficial uses of proceeds cover areas such as renewable energy, energy efficiency, green buildings, pollution prevention, climate-change mitigation, biodiversity, clean transportation, or water management.

² Socially beneficial uses of proceeds cover areas such as basic infrastructure, essential services, employment generation, affordable housing, food security and sustainability, socioeconomic development, or inequality reduction.

ESG Factors in Mutual Funds and Exchange-Traded Funds

Sustainable-finance funds represent mutual funds and exchange-traded funds that integrated ESG criteria into their investment strategies and portfolio selection processes (although the ESG investment methodologies may vary among funds). Assets under management of global sustainable-finance funds increased to over USD 2.7 trillion in 2021, representing about 7% of the total global mutual fund and exchange-traded fund industry (Morningstar, 2022).



Europe has also been at the forefront of the ESG mutual fund and exchange-traded fund market. Based on assets under management, more than 82% of such funds were domiciled in Europe, followed by the United States at 13%, and the rest of the world at 5%. The number of ESG mutual funds and exchange-traded funds expanded to close to 6,000 in 2021, a fourfold increase in the total number of sustainable-finance funds during the last five years.

ESG Factors in Equity Markets and Investment Principles

Concerning ESG factors in equity markets, publicly listed companies have increasingly considered ESG criteria, as reflected in their sustainability reports and disclosures. Out of the 500 largest listed companies in the United States, represented in the S&P 500, more than 90% issued sustainability reports or disclosures (G&A Institute, 2021). Thus, the considerations for ESG factors among listed companies could also be viewed as systemically relevant.

The Principles for Responsible Investment, supported by the United Nations, with close to 4000 signatories, are a further illustration of the integration of ESG criteria into the investment process and financial markets. The signatories of the principles committed to incorporating ESG issues into investment analysis and decision-making. The assets under management of the signatories of the principles amounted to over USD 100 trillion (PRI, 2021).

Materiality of ESG Factors in Financial Institutions

The materiality of ESG factors arises from two distinct approaches. The first approach to materiality reflects the impact of ESG factors on the entities' financial performance and risk profile. The second approach to materiality reflects the impact of the entities' business activities on the environment and stakeholders. These two approaches were utilised in various ESG-related frameworks with varying terminologies. Double materiality refers to the blend of both approaches.

Different Terminologies of Materiality of ESG Factors		Table 2
Impact of ESG Factors on Entity	Impact of Entity on ESG Factors	
Financial Materiality	Non-Financial Materiality	
Business Materiality	Stakeholder Materiality	
Outside-in Materiality	Inside-out Materiality	
Impact on Business	Impact on Stakeholders	
Impact on Entity	Impact on Environment and Society	
Double Materiality		
Sources: Authors' review based on ESG frameworks and sustainability reports.		

Impact of ESG Factors on Financial Institutions

Outside-in materiality refers to the impact of external environmental and social factors on financial institutions. The materiality approach is also referred to as financial materiality as it relates to the impact on entities' financial performance and business value. Financially material ESG factors could have implications for investors, regulators, and shareholders concerned with financial institutions' performance, soundness, and enterprise valuation.

Impact of Financial Institutions on ESG Factors

Inside-out materiality refers to entities' impact through their business activities on sustainable development goals. It is also referred to as environmental and social materiality, as financial institutions' business affects environmental and socioeconomic factors. As business activities impact wider stakeholders, such as the environment, employees, customers, and communities, this approach is also known as stakeholder materiality.

Materiality of ESG Factors in Financial Statistics

Developing sustainable finance statistics requires distinguishing between the two approaches to materiality. The duality of the materiality of ESG factors necessitates separate sets of methodologies also for statistical purposes. The first set focuses on the impact of sustainability factors on financial institutions (outside-in materiality). The second set focuses on the impact of financial institutions on sustainability factors (inside-out materiality).

Measuring Sustainability Factors of Financial Exposures

The first set of statistical methods ascribes to measuring, modelling, or pricing sustainability risks of the financial institutions' exposures. It broadly relates to financial materiality and requires measuring and disclosing material information to assess the risk profile, financial performance, and valuation of financial institutions. Such approaches require granular and forward-looking statistics and assessments on the sustainability of financial institutions' exposures.³

Measuring Sustainability Factors of Business Transition

The second set of statistical approaches relates to the transition of business models of financial institutions towards sustainability. It broadly relates to stakeholder materiality and requires measuring and disclosing information relevant to a wider group of stakeholders on the external impact of business activities of financial institutions. Such approaches require measuring the transition of financial institutions and financial systems towards sustainability.

Materiality of ESG Factors in Financial Ratings

The dichotomy of materiality was also evident in the approaches of rating agencies. Credit ratings integrate material implications of ESG factors on the likelihood of default of borrowers on their financial obligations in given time horizons.⁴ Creditworthiness materiality is thus similar to financial materiality. In contrast, ESG ratings reflect wider spectrums of ESG factors addressing the impacts on broader groups of stakeholders, i.e. the environment and society.⁵

³ Along these lines, the International Conference on Statistics for Sustainable Finance identified pressing data gaps in the lack of granular firm-level data and the absence of forward-looking data on future sustainability paths of firm-level counterparties (IFC, 2022).

⁴ For instance, S&P Global Ratings reported 550 credit rating actions driven primarily by ESG factors during 2021 (S&P, 2022a). In addition to integrating ESG factors in credit ratings, S&P Global Ratings also conducts separate ESG evaluations. Most credit and ESG rating agencies practice the duality of approaches to materiality.

⁵ The dichotomy of materiality, when not properly recognised, may result in identifications of improper causal hypotheses in research studies. Such as testing causal relationships between inside-out ESG factors (particularly present in ESG ratings) and entities' financial performance (impacted particularly by outside-in ESG factors).

Uncertainty of ESG Factors

The manner in which environmental risks translate into financial risks over time remains an area of significant uncertainty (EBA, 2022). Subject to considerable uncertainty, climate-related financial risks cannot be accurately measured (Chenet et al., 2019). While there is high confidence in the severity of climate-related hazards, how they will interact with future socioeconomic developments that determine the scale of exposures and vulnerabilities remains uncertain (OECD, 2021).

Financial Risk and Financial Uncertainty

Financial risk relates to stochastic positive or negative outcomes with determinable likelihoods (Knight, 1921). In contrast, financial uncertainty corresponds to outcomes with indeterminate probabilities (Knight, 1921; Keynes, 1937; Lawson, 1985). While financial risks are determinable based on available information, knowledge, and experience, financial uncertainty occurs due to a lack of adequate information, knowledge, and experience at the time (Slovik, 2010).

Financial Risk and Financial Uncertainty		Table 3
Financial Risk	Financial Uncertainty	
Potential for adverse outcomes with determinate likelihoods of occurrence.	Potential for adverse outcomes with indeterminate likelihoods of occurrence.	
Determinate due to available information, knowledge, and experience at the time.	Indeterminate due to unavailable information, knowledge, and experience at the time.	
Predictable through conventional risk management approaches.	Not predictable through conventional risk management approaches.	

Sources: Author's review based on Knight (1921), Keynes (1937), Lawson (1985), and Slovik (2010).

Financial Uncertainty and Materiality

Financial risk and financial uncertainty represent two distinct concepts with different implications for the decision-making of financial institutions and financial authorities. In decision-making under risk, potential stochastic positive or negative outcomes and their probabilities are determinable. In decision-making under uncertainty, these probabilities are indeterminable with adequate precision, which often occurs due to structural shifts and a lack of historical precedence.

In view of climate-related financial uncertainty, conventional risk management approaches and estimation techniques might not be sufficient to determine the financial implications of climate-related hazards with satisfactory precision. As a result, reliance on financial materiality (outside-in materiality) alone might not be sufficient. In view of financial uncertainty, a double-materiality approach offers preferred policy options in lieu of a single-materiality approach.

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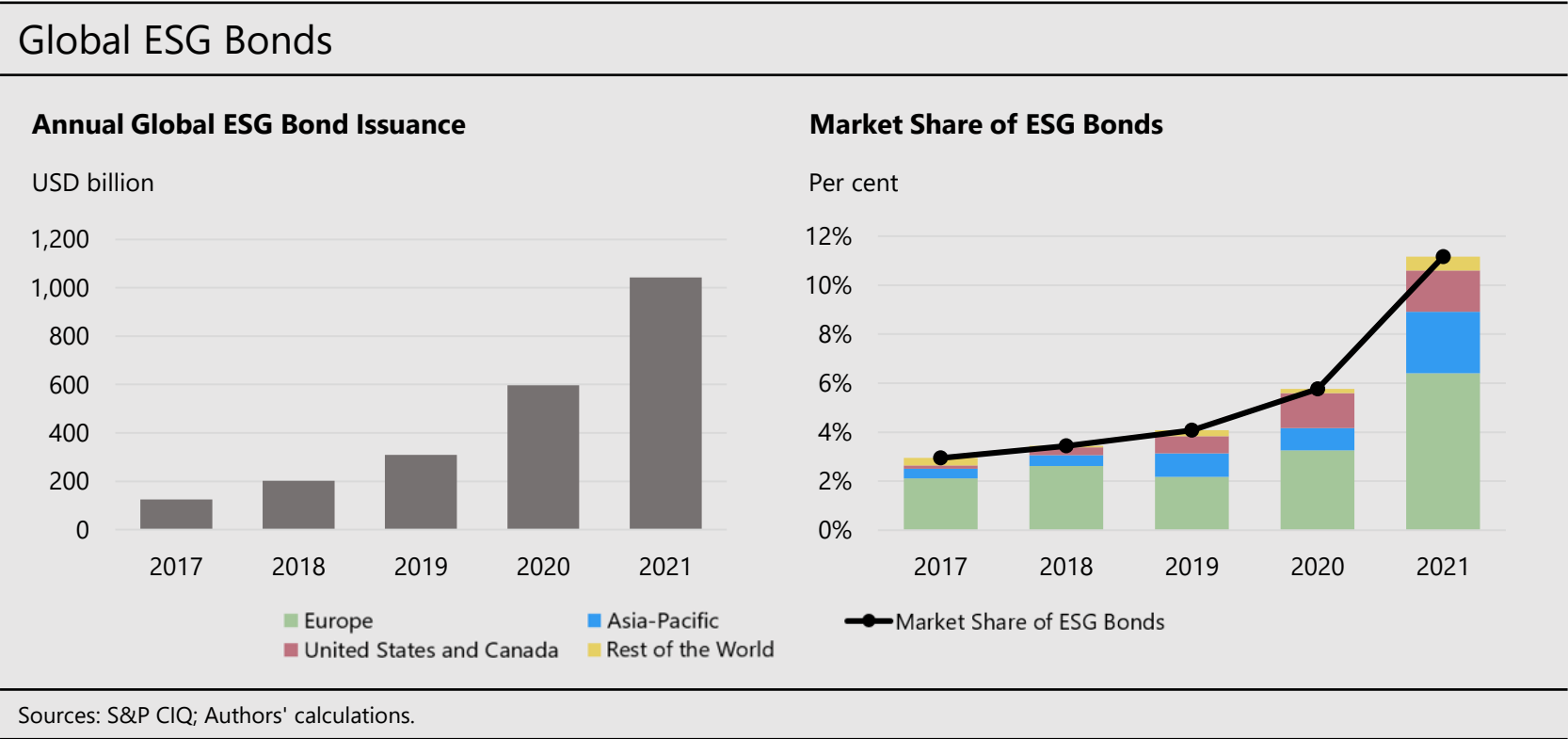
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Abstract

The study assesses the materiality of Environmental, Social and Governance (ESG) factors in financial markets and financial statistics. The stocks of and flows in ESG financial assets have reached a systemically-relevant share in the overall financial system. The study explores the implications of materiality for ESG financial statistics while acknowledging that data gaps need to be addressed amid considerable uncertainty. It outlines the necessity to differentiate between single-materiality and double-materiality approaches and defines the concept of financial uncertainty in contrast to financial risk and its implications for materiality.

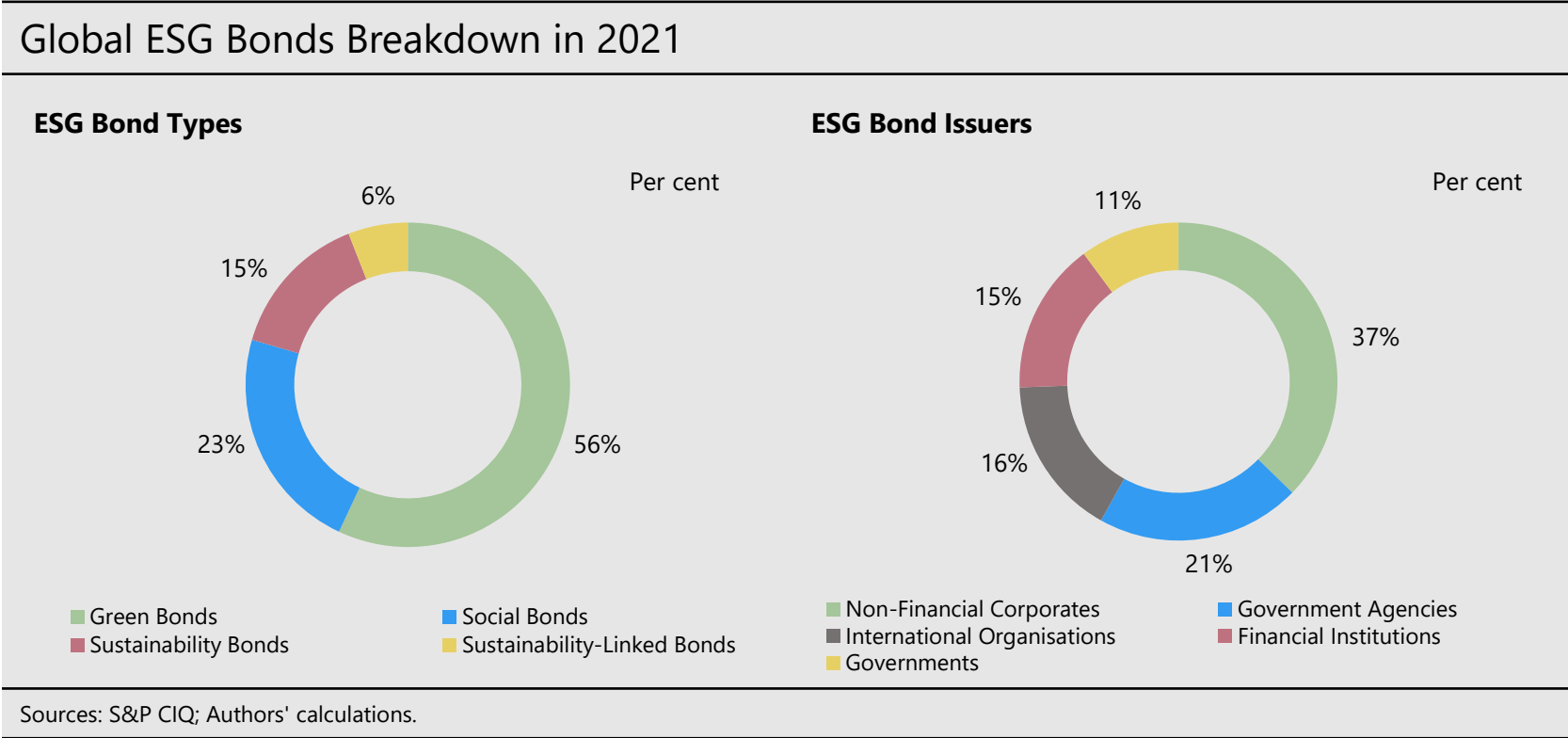
ESG Factors in Financial Markets: Debt Securities Market

- Sustainable finance evolved rapidly in terms of asset size and diversity of financial products. ESG financial assets reached a systemically-relevant share across most key markets and asset classes.
- ESG debt securities issued during 2021 alone amounted to more than USD 1 trillion. The market share of sustainable-finance debt securities in the overall global bond market increased to 11%.



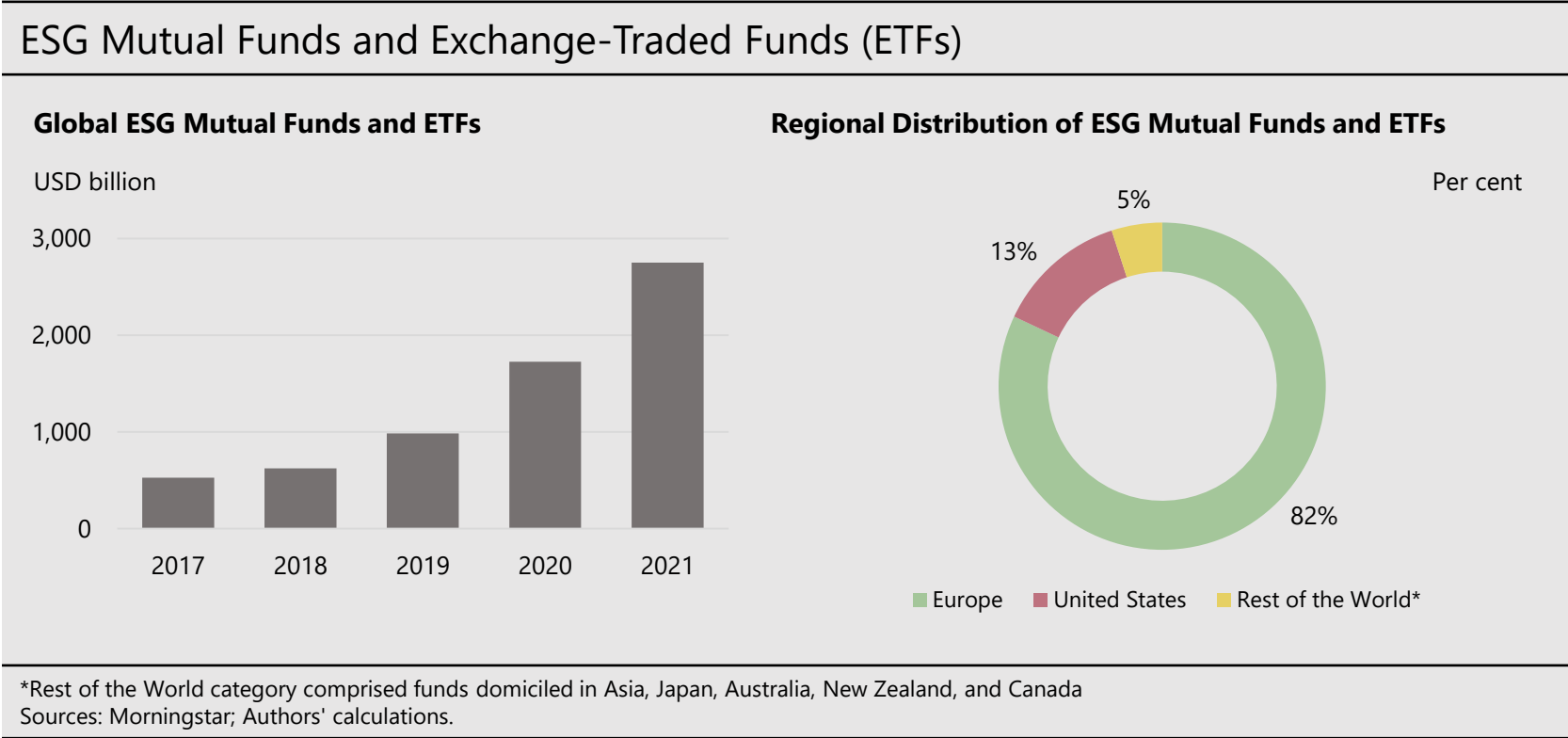
ESG Factors in Financial Markets: Types of Financial Instruments

- ESG financial instruments evolved into several key categories, reflecting the growing diversity of sustainable-finance instruments.
- Green bonds had a market share of 56%, followed by social bonds at 23%, sustainability bonds at 15%, and sustainability-linked bonds at 6%.



ESG Factors in Financial Markets: Mutual Funds and Exchange-Traded Funds

- Sustainable-finance funds represent mutual funds and exchange-traded funds that integrated ESG criteria into their investment strategies and portfolio selection processes.
- Assets under management of global sustainable-finance funds increased to over USD 2.7 trillion, representing about 7% of the total global mutual funds and ETFs.



ESG Factors in Equity Markets

- Publicly listed companies have increasingly considered ESG criteria, as reflected in their sustainability reports and disclosures.
- Out of the 500 largest listed companies in the United States, represented in the S&P 500, more than 90% issued sustainability reports.

ESG Factors in Investment Principles

- The signatories of the Principles for Responsible Investment committed to incorporating ESG issues into investment analyses and decision-making.
- Assets under management of the signatories amounted to over USD 100 trillion, a further illustration of the ESG integration into financial markets.

Materiality of ESG Factors

- Materiality of ESG factors arises from two divergent approaches. The first approach to materiality reflects the impact of ESG factors on the entities' financial performance and risk profile.
- The second approach to materiality reflects the external impact of the entities' business activities on the ESG factors. The blend of both approaches is referred to as double materiality.

Different Terminologies of Materiality of ESG Factors	
Impact of ESG Factors on Entity	Impact of Entity on ESG Factors
Financial Materiality	Non-Financial Materiality
Business Materiality	Stakeholder Materiality
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Impact on Business	Impact on Stakeholders
Impact on Entity	Impact on Environment and Society
Double Materiality	

Sources: Authors' review based on ESG frameworks and sustainability reports.

Materiality of ESG Factors in Financial Statistics

- The duality of materiality of ESG factors necessitates separate sets of methodologies for developing sustainable-finance statistics, differentiating between single materiality and double materiality.

Measuring Sustainability Factors of Financial Exposures

- The first approach focuses on the impact of sustainability factors on financial institutions (outside-in approach), requiring data to evaluate financial risks and performance of financial institutions.

Measuring Sustainability Factors of Business Transition

- The second approach focuses on the impact of financial institutions on sustainability factors (inside-out approach), requiring data on sustainability transformation and impact of financial institutions.

Materiality of ESG Factors in Financial Ratings

- The dichotomy of materiality was also evident in the approaches of rating agencies. Credit ratings reflect material ESG factors on the default likelihood. ESG ratings reflect wider materiality spectrums.

Uncertainty of ESG Factors

- Estimating financial implications of sustainability vulnerabilities remains subject to considerable uncertainty. As a result, reliance on financial materiality alone might not be sufficient.
- In view of considerable financial uncertainty of sustainability vulnerabilities, a double-materiality approach might offer preferred policy options in lieu of a single-materiality approach.

Financial Risk and Financial Uncertainty	
Financial Risk	Financial Uncertainty
Potential for adverse outcomes with a determinate likelihoods of occurrence.	Potential for adverse outcomes with indeterminate likelihoods of occurrence.
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