



ESG, E and climate change: mind the gap! Data and fixed income portfolio construction

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(Opinions expressed herein are on my own responsibility and do not involve in any case the Institution)



Outline

1. Climate change and credit risk - threats and management
2. ESG data materiality and suitability for sustainable investment
3. Managing fixed income portfolios with sustainability factors
4. Covid and its effects on sustainable bond market



Outline

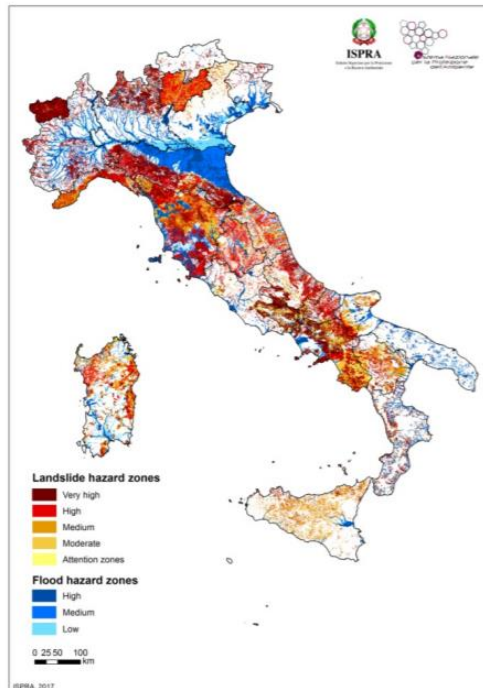
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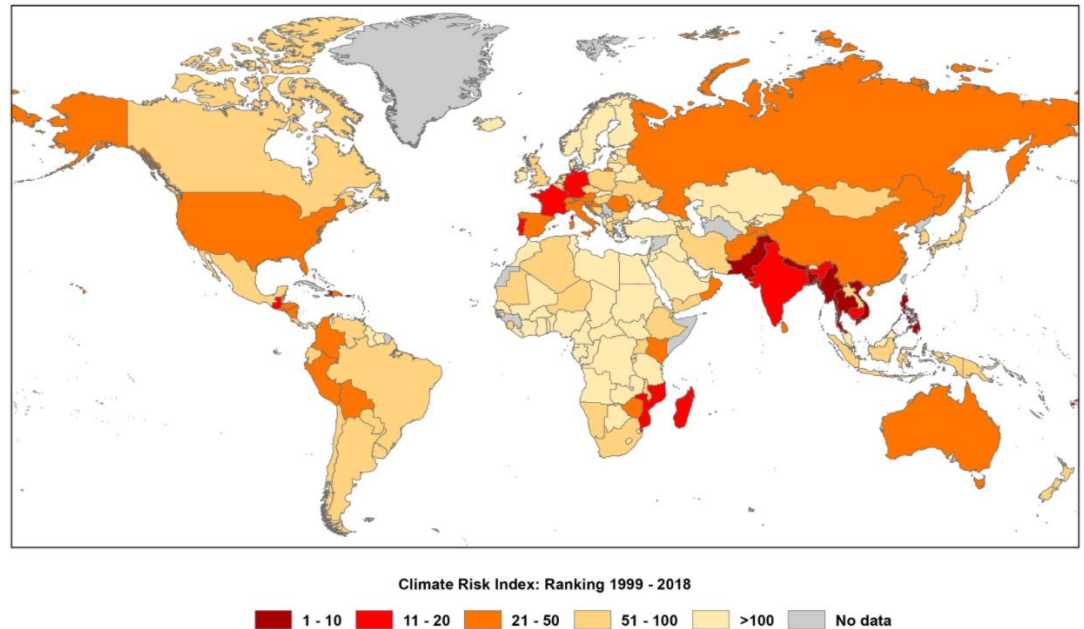
Climate change risk- physical risk

- Climate change is a threat to economic and financial system
- Main transmission channels are physical risk and transition risk

Flood and landslide risk in Italy (ISPRA 2018)



Climate change risk index (Germanwatch 2020)

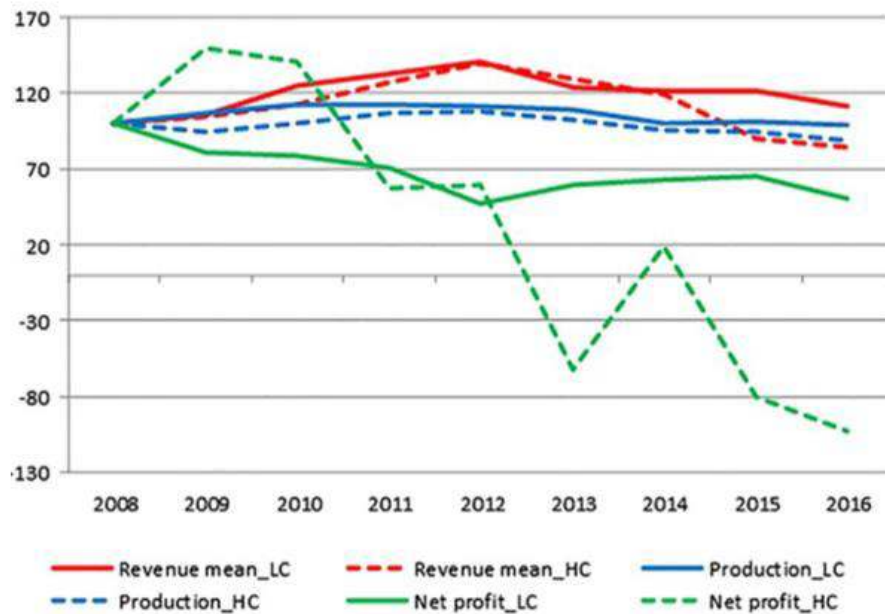




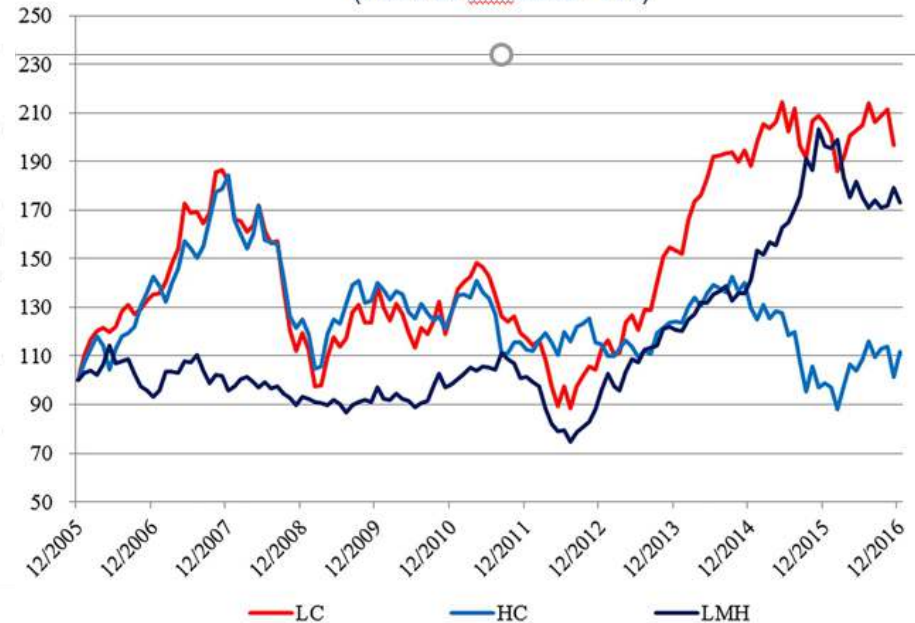
Climate change – transition risk

Carbon transition risk has affected EU electric utilities via profitability and market performance

Turnover, production and net profit (Index 2008 = 100)



Two competing portfolios (High Carbon and Low Carbon) and their difference (LMH) (Index 31 dec 2005= 100)



Bernardini, Di Giampaolo, Faiella and Poli, The impact of carbon risk on stock returns: Evidence from the European electric utilities, *Journal of Sustainable Finance & Investment*, N.26, 2019



Climate change - authorities and practices

- TCFD recommendations (2017), ECB Guide for banks - in consultation (May 2020), NGFS Guide for Supervisors (May 2020):
 - governance,
 - strategy,
 - risk management
 - metrics and targets

-  Overview of Environmental (and Climate) Risk

Analysis:

- lack of awareness among financial intermediaries
- limited capacity and application of ERA methodologies
- gaps in data and methodologies
- low disclosure



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ESG, E and climate change data – mind the gap!



- ❑ ESG scores measure environmental, social and governance profiles for companies/States/funds
- ❑ **Materiality** of each ESG factors can refer to either **financial** or **sustainable** dimension
- ❑ More than 600 ESG ratings worldwide

Example of ESG topics

ENVIRONMENTAL	SOCIAL	GOVERNANCE
<ul style="list-style-type: none"> ▪ Climate change ▪ Natural resources use ▪ Pollution ▪ Opportunities in clean-tech ▪ Opportunities in renewable energy 	<ul style="list-style-type: none"> ▪ Human capital management ▪ Product safe&quality ▪ Supply chain labour standards ▪ Opportunities in health lifestyle 	<ul style="list-style-type: none"> ▪ Shareholders rights ▪ Board composition and compensation ▪ Internal codes of ethics ▪ Anti-corruption-ML ▪ Anti-competitive practices



ESG data and providers – challenges & improvements

ESG score challenges:

- data quality
- comparability
- coverage
- bias across size, sector and region
- low correlation of ESG scores from different providers

Improvements

- disclosure standards
- taxonomy
- mandatory regulation
- transparency in methodologies

	Sustainalytics	MSCI	RobecoSAM	Bloomberg ESG
Sustainalytics	1	0.53	0.76	0.66
MSCI		1	0.48	0.47
RobecoSAM			1	0.68
Bloomberg ESG				1

State Street - The ESG Data Challenge (2019) – MSCI World index, June 30, 2017



ESG and climate change data: financial materiality

- Machine learning application to ESG metrics and scores of 2 ESG providers⁽¹⁾ underscores the relevance of **forward-looking evaluation** for the environmental issues and climate-change risk
- the **transition risk** implies the assessment both of the exposure and the ability to manage risks (via **renewables and clean technologies**)

	Return	Variance	Sharpe	Total	Biv
Waste/Revenue	0.013808	-0.0072546	0.35684	3	0
CO2 Emissions/Revenue	0.013171	-0.0057402	0.35125	3	0
Hazardous Waste/Revenue	0.0051957	-0.0079682	0.16283	3	0
Climate Change Theme Score	0.00338	-0.0016526	0.11476	3	0
Waste Recycling Ratio	0.0080097	8.1759e-05	0.2737	2	0
Prod. Carbon Footprint Score	0.0041826	0.0002437	0.14035	2	0
Prod. Carbon Footprint Mgmt	0.0038396	0.00025081	0.14645	2	0
Emission Reduction Objectives	0.0038287	-0.00071986	0.071566	2	1
Water Use/Revenue	0.0018263	-0.00064089	0.1227	2	0
Eco-Design Products	0.0075791	0.0014373	0.10354	1	1
Environmental Score	0.0068444	0.00079796	0.083197	1	0
Energy Use/Revenue	0.0030538	-0.0021816	0.095028	1	0
Opportunities in Renewable Energy Score	0.0029098	7.8753e-05	0.11179	1	0
Nuclear	0.0025489	-0.0031798	0.068439	1	1
Opportunities in Clean Tech Score	0.0024122	0.00036662	0.11353	1	0
Opportunities in Renewable Energy Exp	-0.00052838	-0.00047105	-0.011381	1	0
Animal Testing	-0.0026548	-0.0018501	-0.077037	1	1

(1) Source of ESG scores: Reuters Asset4 and MSCI ESG Research

Return = ESG contribution to return difference BmW

Variance = ESG contribution to variance difference BmW

Sharpe = ESG contribution to Sharpe ration difference BmW

Lanza, Bernardini, Faiella (2020), Mind the gap!

Machine learning, ESG metrics and sustainable investing, Banca d'Italia Occasional Papers



Climate change – methodological issues

- Carbon intensity is backward looking measure
- Data gaps for carbon emissions (scope 3)
- Modelling challenges for forward looking data
 - Uncertainty, Endogeneity, Non linearity
 - No standards in estimation methodologies
 - Alignment/Physical risk estimation

For fixed income: top-down analysis

Scenario analysis
Stress testing



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ESG and fixed income

1. ESG data coverage is limited

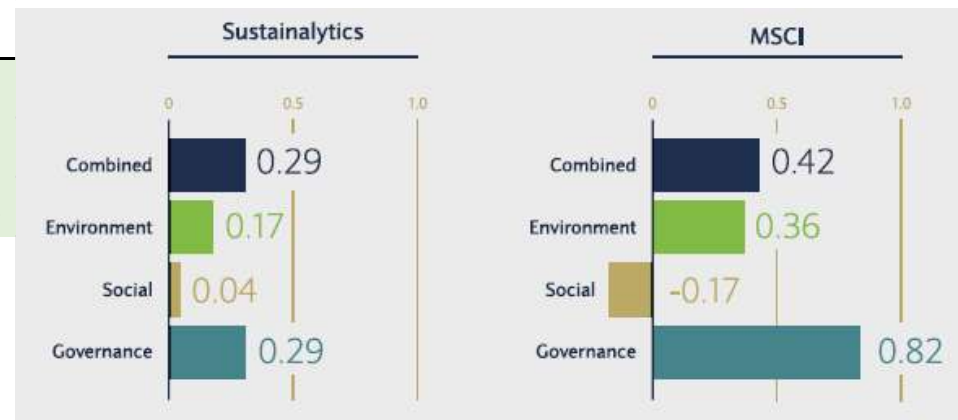
2. ESG factors:

- Negative correlation among ESG data and spread⁽¹⁾
- governance is more material for return differential⁽²⁾

Correlation between IG bond spreads and ESG factors in Euroarea

	ESG	E	S	G
Option Adjusted Swap	-0,09	-0,05	-0,02	-0,07
Asset Swap Spread	-0,11	-0,02	-0,02	-0,08
return_12m_fw	-0,03	-0,03	0,02	-0,04

Bloomberg Barclays US Corp IG portfolio return difference H-L score (2009-16)



(1) Our own calculations for a case study on Euro area corporate bonds 2014-2019.

(2) Barclays Research (2016). Sustainable investing and bond returns.



Bond portfolio construction and ESG - a case study

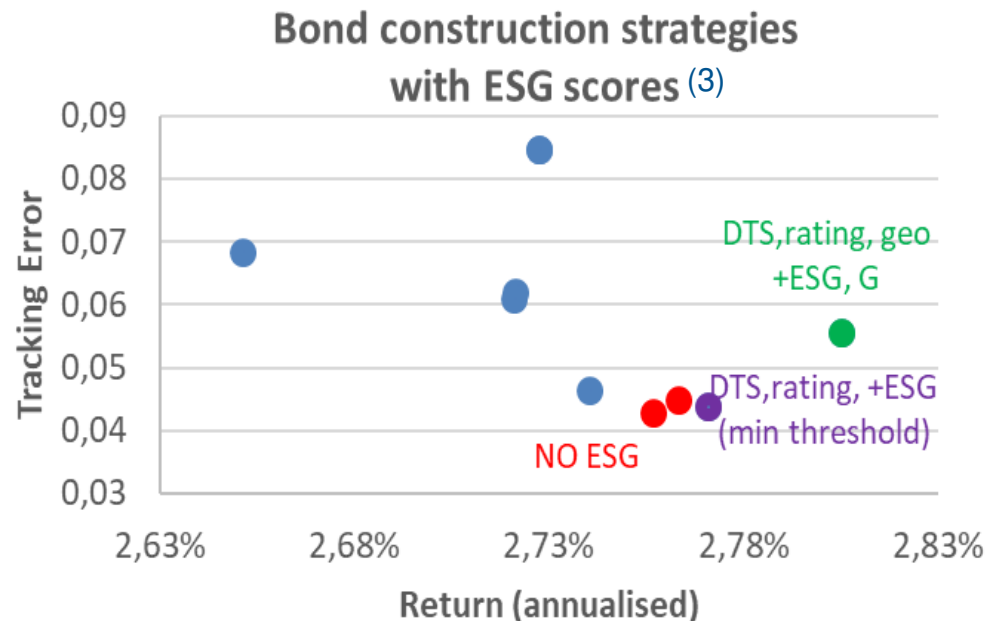
Combining standard financial factors with ESG tilt can enhance return while keeping low the tracking error

Case study: sample replication of Euro area IG non-financial corporate bond (case study 2014-2019)

1. Financial factors⁽¹⁾

- Duration
- Spread
- Sector
- Rating

2. ESG, E and G factors⁽²⁾



(1) Gouzilh et al. (2014), The Art of Tracking Corporate Bond Indices, Amundi Working Paper, n. 42.

(2) Source: ESG data from MSCI ESG Research

(3) DTS= duration times spread



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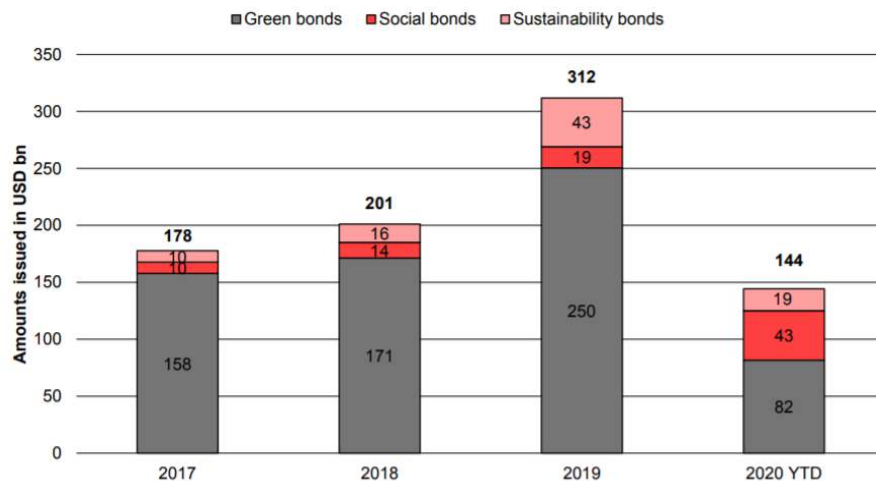
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Covid, fixed income and ESG bond market

1. Growing issuance of social and sustainability bonds
 - Investors' attitude and public pressure
 - Sustainability linked bond principles
2. Green government bond issuance (+9% y/y) is 21.9 bn as of 1H2020
3. Green bond slowed the long-term upward trend at 1H2020
4. Green bonds proved more resilient during Covid outbreak

Issuance



Yields





Thank you!

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Sustainable fixed income - trends

1. Greenium: mixed evidence among issuers ⁽¹⁾ (excess demand or risk perception or mispricing of standard bonds?)
2. Fragmentation in:
 - Taxonomy for green, climate and sustainable bonds
 - Second party review
3. Perspectives:
 - Challenges from sophistication in ESG data and instruments
 - Investors' appetite and greenwashing
 - Search for yield combined with societal objectives

transparency
and
comparability

(1) Gianfrate (2018) and Barclays (2015)