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Inside the ESG Ratings: (Dis)agreement and Performance

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Macroeconomic and Financial Implications of Climate Change, October 8th, 2021



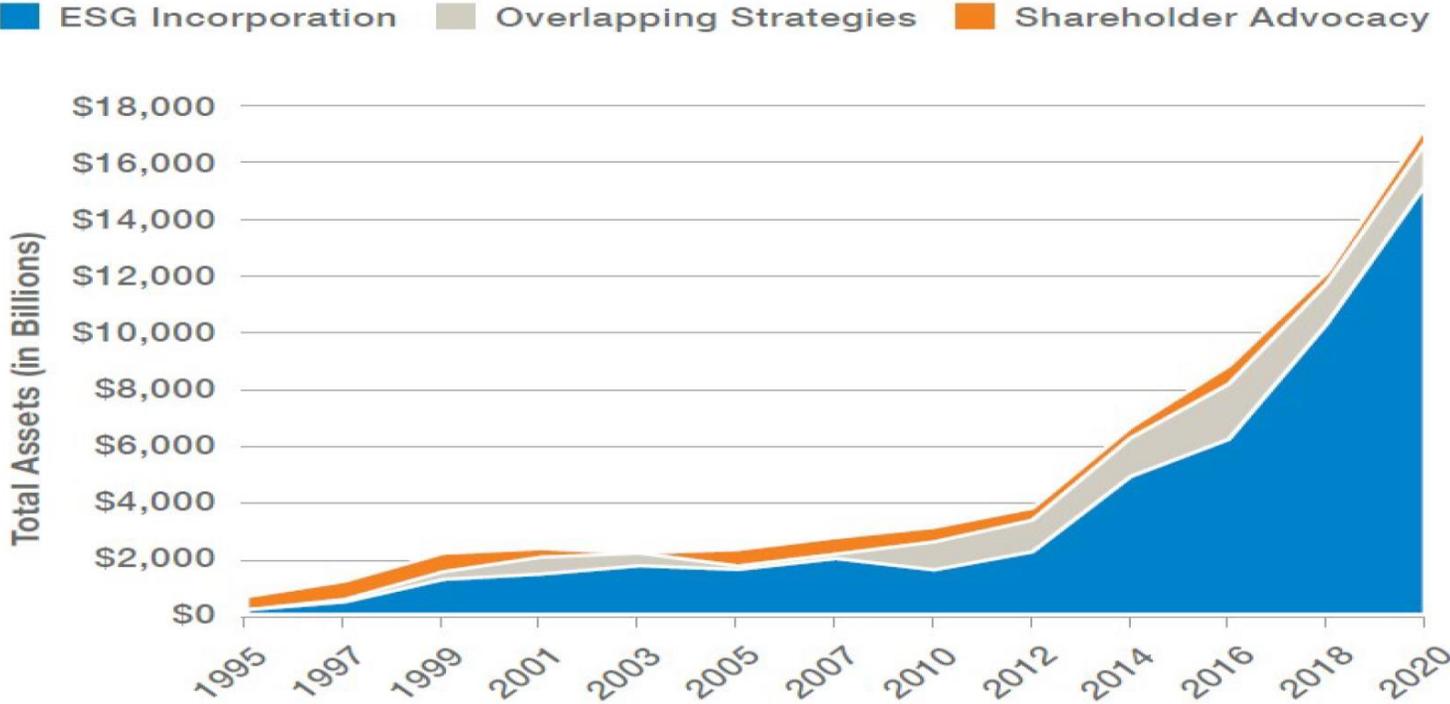
**banco
central**
Chile

Central Bank of Chile

Motivations

- In the U.S., the value of Socially Responsible Investments (SRI) assets has reached \$17.1 trillion at the start of 2020, which translates into a 42% increase since 2018

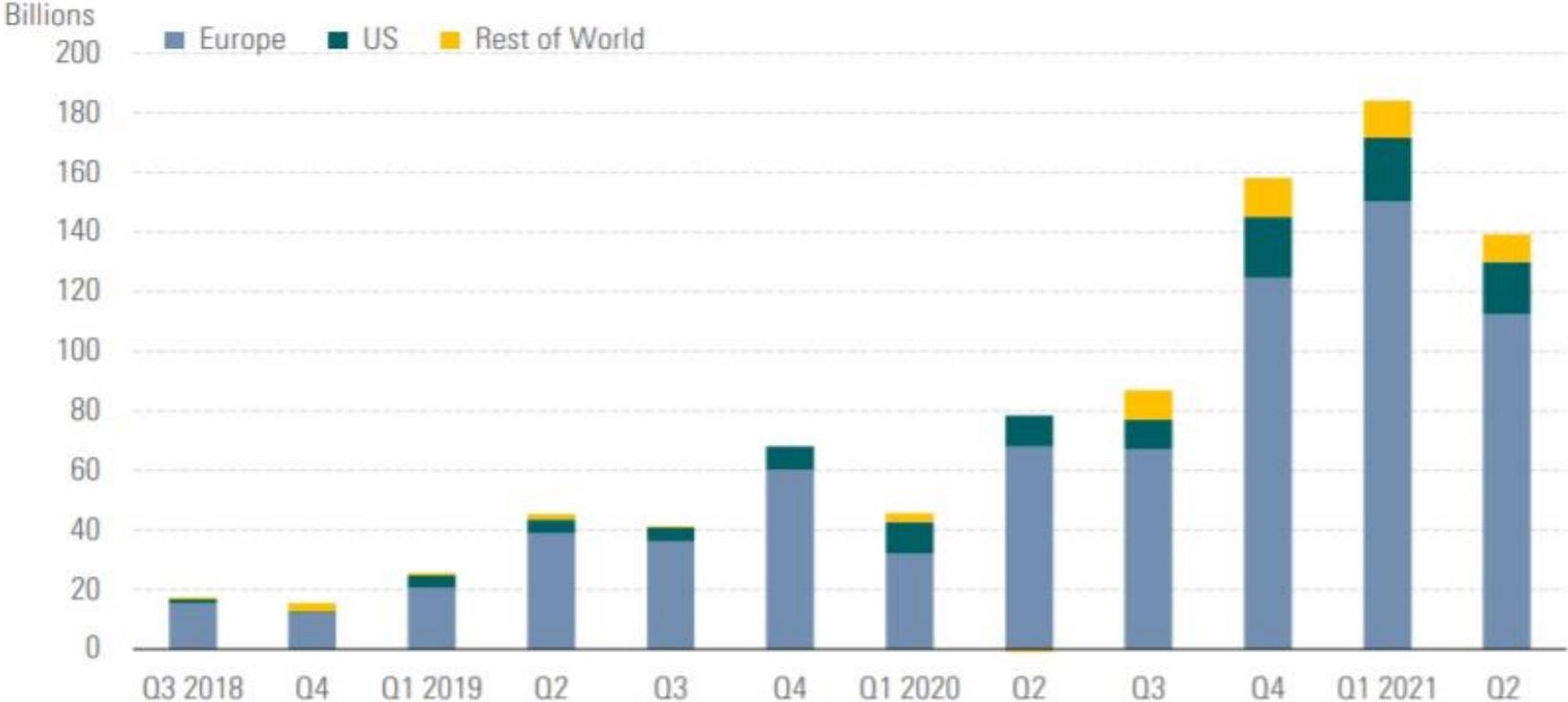
Sustainable Investing in the United States 1995–2020



SOURCE: US SIF Foundation.

Motivations

Exhibit 2 Quarterly Global Sustainable Fund Flows (USD Billion)



Source: Morningstar Direct, Manager Research. Data as of June 2021.

Motivations

- The increased demand for sustainable investing has generated the **rise of ESG rating agencies (ESGRAs) and their sustainability ratings**
- Corporate managers and policy makers need a deeper understanding of the ESG inherent particularities and a wider knowledge of the potential impacts of ESG on the real and financial sectors
- The involved stakeholders are facing a considerable need for precise information on companies' ESG merit
- The need of reliable and harmonized ESG data is crucial to avoid greenwashing and misallocations

Motivations and Research Questions

- How does the ESG rating assessment methodology differ among agencies?
- How do these differences affect the final ESG rating?
- What are the implications for ESG portfolios?
- What are the implications for the financial performances?

We investigate the implications that ESG rating disagreement might have on ESG portfolios performance.





Highlight the differences in the ESG rating methodologies

9 Big Players:

The ESG Rating Agencies

MSCI ESG

VigeoEiris

Refinitiv
(Thomson Reuters)

Sustainalytics

ISS-Oekom

RobecoSAM

ECPI

Bloomberg

FTSE Russel

Key differences among ESG rating agencies

	MSCI	VIGEO- EIRIS	REFINITIV	SUSTAINALYTICS	ISS OEKOM	ROBECOSAM	ECPI	BLOOMBERG	FTSE RUSSEL
RATING SCORE	CCC to AAA	-- to ++	D- to A+ and 0 to 100	0 to 100	D- to A+	0 to 100	F to EEE	0 to 100	0 to 5
HISTORY	1990	1983	2002	1992	1985	1995	1997	2008	2001
HEADQUARTER	New York, United States	Paris, France	Toronto, Canada	Amsterdam, Netherlands	Munich, Germany	Zurich, Switzerland	Milan, Italy	New York, United States	London, United Kingdom
SOURCES	Company disclosure, 1600+ Media sources, 100+ specialized dataset	Company disclosure, Recommendation, Conventions	Company websites, Company reports, NGO Websites, Media and news, Stock Exchange filings	Public disclosure, Media and news, NGO reports	Publicly available information, Interview with stakeholders, information on company policies and practices, company direct contact	Survey approach	Company reports, Media and news, Regulatory data, Bloomberg and Thomson Reuters, University networks	Company reports, Publicly available information, Company direct contact	Publicly available information, Company direct contact, Other sources (governments and NGOs)
N. CRITERIA	37	38	178	155	100	74	80/86	120	300
MAIN RISK FACTORS	<p>Environmental Climate Change, Natural Resources Pollution And Waste Management Environmental Opportunities Social Product Liability Human Capital Stakeholder Needs Social Opportunities Governance Corporate Behavior Corporate Governance</p>	<p>Human Resources, Human Rights Environment Business Behavior Community Involvement Corporate Governance</p>	<p>Environmental Resource Use, Emission, Innovation Social Workforce, Human Rights, Community, Product Responsibility Governance Management, Shareholders, CSR Strategy</p>	<p>Industry-Specific indicators. Factors Change According To The Industrial Group To Which A Company Belongs</p>	<p>Environment Climate Change Strategy, Ecoefficiency, Energy Mgmt, Env. Impact of Product, Env. Mgmt, Water Risk And Impact Social Equal Opportunities, Freedom of Association, Health And Safety, Human Rights, Product Responsibility, Social Impact of Product, Supply Chain Mgmt, Taxes Governance Business Ethics, Compliance, Independence of The Board, Remuneration, Shareholder Democracy and Structure</p>	<p>About 21 Industry-Specific Indicators. Three Main Dimensions: Economic (38/100) Environmental (27/100) Social (35/100)</p>	<p>Environmental Environmental Strategy Policy Environmental Mgmt Products Production Process Social & Governance Employees And Human Capital Community Relations Markets Corporate Governance & Shareholder</p>	<p>Environmental Carbon Emissions, Climate Change Effect, Pollution, Waste Disposal, Renewable Energy, Resource Depletion Social Supply Chain, Political Contributions, Discrimination, Diversity, Community Relations, Human Rights, Governance Cumulative Voting, Executive Compensation, Shareholders' Rights, Takeover Defense, Staggered Boards, Independent Directors</p>	<p>Environmental Biodiversity, Climate Change, Pollution & Resources, Water Security, Supply Chain Social Labor standards, Human Rights & Community, Health & Safety, Customer Responsibility, Supply Chain Governance Tax Transparency, Risk Management, Corporate Governance, Anti-Corruption</p>
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N. CRITERIA	37	38	<div style="border: 2px solid red; background-color: yellow; padding: 10px; text-align: center;"> <p>SOURCES: The principal sources for all agencies are publicly available information, such as companies' reports and websites. However, the sources of information might also change from one rating agency to another (see RobecoSAM / surveys)</p> </div>				80/86	120	300
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NUMBER OF ASSESSED CRITERIA:

The number of assessed indicators changes among the different raters. MSCI and FTSE Russel represent the extreme cases since they assess respectively 37 and 300 ESG criteria. Other agencies, instead assess different metrics in relation to the industry in which the company belongs to (see Sustainalytics and RebecoSAM)

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RATING SCORE	CCC to AAA	-- to ++	MAIN RISK FACTORS: The main risk factors summarize any single score from the indicators used in the previous step. ECPI considers two sustainable dimensions since it incorporates the social dimension in the governance sphere. RobecoSAM substitutes the governance dimension with an economic one.				F to EEE	0 to 100	0 to 5		
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MATERIALITY AND WEIGHTING

All the examined ESG rating agencies have developed a proprietary definition of materiality. Consequently, the weighting procedures vary considerably. Furthermore, we observe that almost all rating agencies adjust their final rating by integrating issues, specific to the considered industry, but very few of them publish the assigned weights transparently.

2

How do these differences
affect the final ratings?

Differences in ESG Ratings

We harmonize and convert the rating classes among the four considered rating providers by applying a common scale ranging from 1 to 7.

Score	MSCI	Sustainalytics	RobecoSAM	Refinitiv
1	CCC	0-14	0-14	0-14
2	B	15-28	15-28	15-28
3	BB	29-42	29-42	29-42
4	BBB	43-57	43-57	43-57
5	A	58-71	58-71	58-71
6	AA	72-85	72-85	72-85
7	AAA	86-100	86-100	86-100

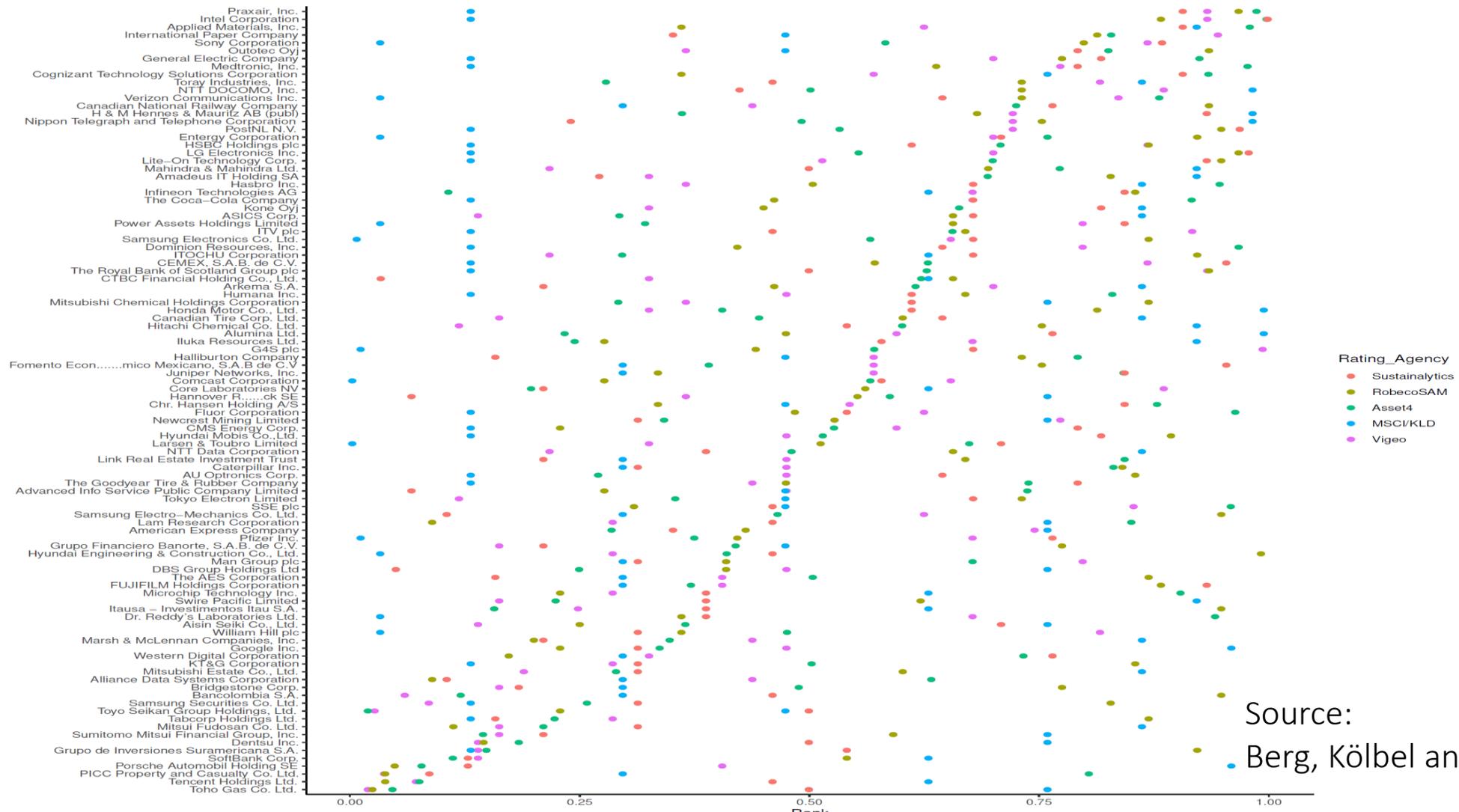
Sustainalytics, RobecoSAM and Refinitiv provide a percentile rating while the MSCI' rating scale ranges from CCC to AAA. The final score (first column) considers ranges from 1 (lowest rating) to 7 (highest rating).

Differences in ESG Ratings

Example of divergence in ESG ratings

	SUSTAINALYTICS	ROBECOSAM	REFINITIV	MSCI
Verizon Communications Inc.	91	20	67	BB
Nissan Motor Co., Ltd	6	77	72	CCC
Oracle Corp. Jpn	78	8	63	BB
Goodman Group Unt	86	21	58	AA

Differences in ESG Ratings



Source:
Berg, Kölbel and Rigobon (2020)

Evidence on (Dis)agreement

From a set of 1049 companies listed in the MSCI World Index
Sustainalytics, RobecoSAM, Refinitiv and MSCI

	Sustainalytics	RobecoSAM	Refinitiv	MSCI
Sustainalytics	-			
RobecoSAM	1,28	-		
Refinitiv	1,18	1,39	-	
MSCI	1,32	1,58	1,11	-

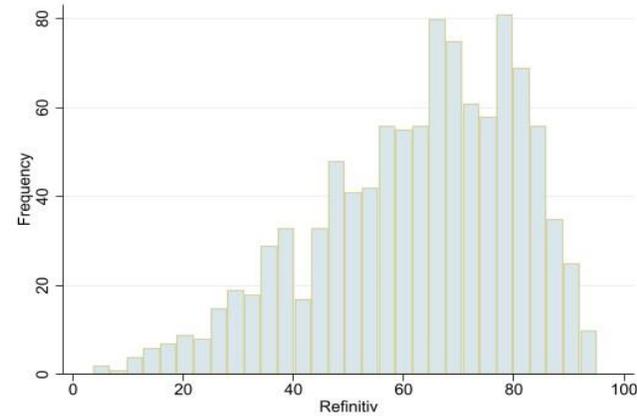
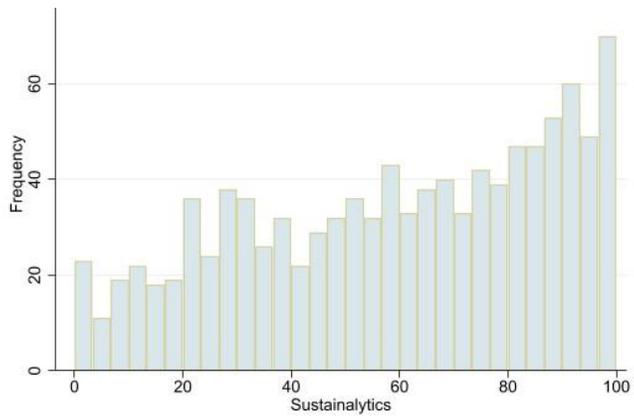
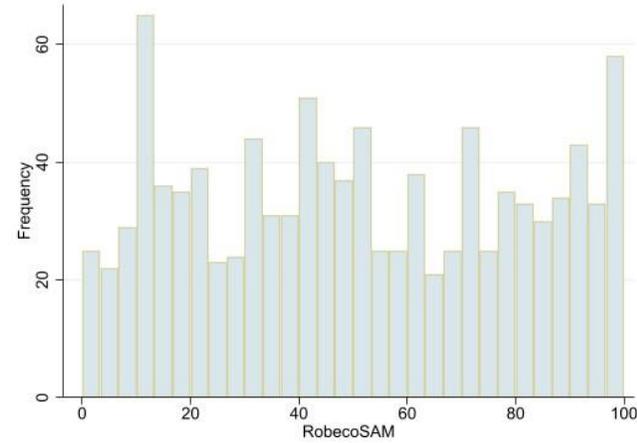
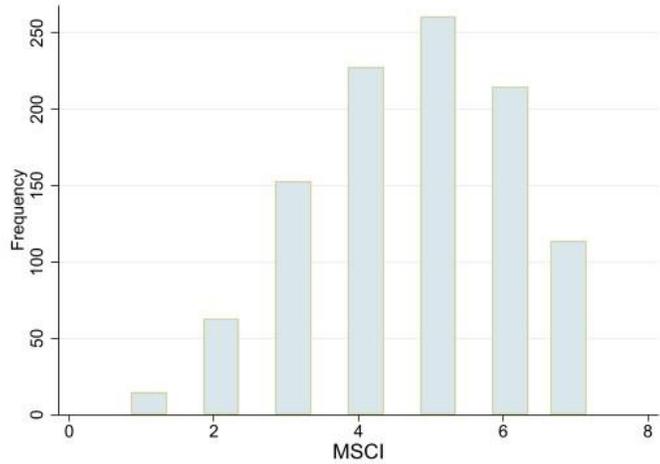
	Sustainalytics	RobecoSAM	Refinitiv	MSCI
Sustainalytics	-			
RobecoSAM	28,2%	-		
Refinitiv	23,7%	20,6%	-	
MSCI	25,3%	19,4%	27,9%	-

$$\text{MAE} = \frac{\sum_{i=1}^n |R_i^A - R_i^B|}{n}$$

R_i^A and R_i^B are the ratings on firm i by rating provider A and B, respectively, while n is the total number of the considered firms.

- The **percentage of agreement** among ESG ratings describes the proportion of firms in the sample for which the ESG rating agencies agree to provide the same ESG rating.

Evidence on (Dis)agreement also considering harmonization of ESG Ratings among the 4 agencies



MAE using our approach

	Sustainalytics	RobecoSAM	Refinitiv	MSCI
Sustainalytics	-			
RobecoSAM	1,28	-		
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MSCI	1,32	1,58	1,11	-

MAE using normalized ESG Ratings

	Sustainalytics	RobecoSAM	Refinitiv	MSCI
Sustainalytics	-			
RobecoSAM	1,18	-		
Refinitiv	1,29	1,18	-	
MSCI	1,52	1,64	1,65	-

3

Implications on ESG Benchmarks

The considered indexes are constructed using the **best in class approach**

LABEL	RATING PROVIDER	ESG INDEX	CONSTITUENTS
STOXX	Sustainalytics	STOXX Global ESG Leaders	431
Dow Jones	RobecoSAM	Dow Jones Sustainability World	317
Refinitiv	Refinitiv	Refinitiv Global ESG	404
MSCI	MSCI	MSCI World ESG Leaders	777

ESG indexes agreement

Overlap Analysis

The Szymkiewicz–Simpson coefficient corresponds to the **size of the intersection between two indexes divided by the size of the smallest one.**

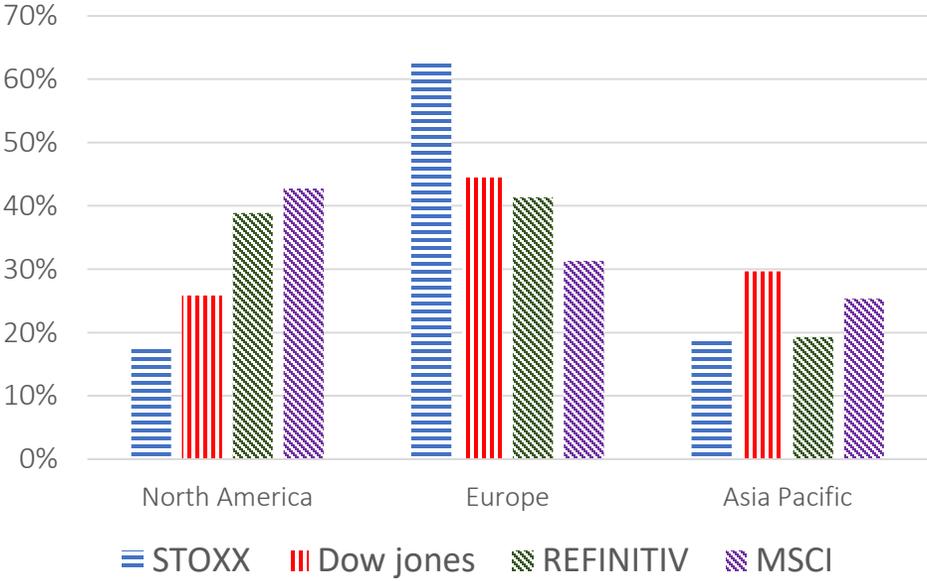
	STOXX	DOW JONES	REFINITIV	MSCI
STOXX	-			
Dow Jones	50%	-		
Refinitiv	43%	35%	-	
MSCI	59%	49%	50%	-

The overall overlap coefficient is 15% (48 constituents), which confirms that the divergence is greater when considering all the indexes together.

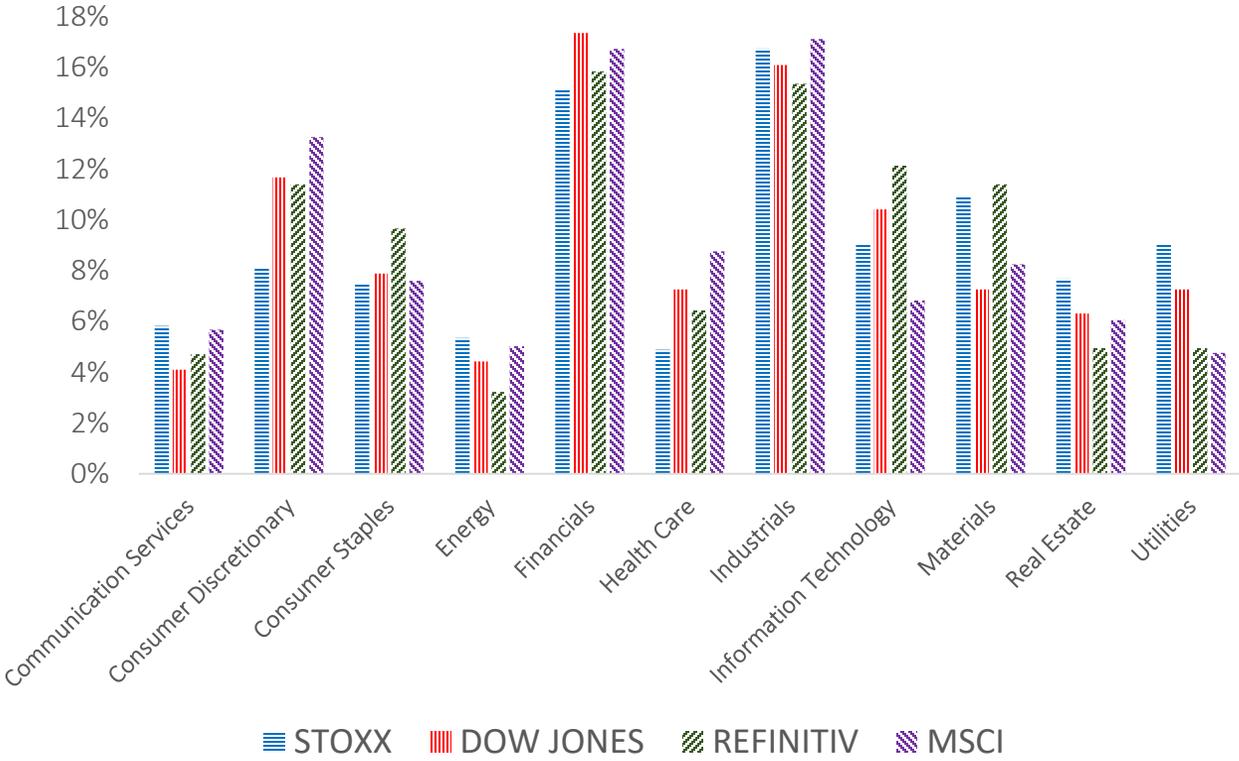
ESG indexes agreement

Is the observed low agreement rate in ESG indexes related to the differences in terms of geographical exposition rather than to ESG ratings?

1. Geographical composition for the four considered indices



2. Sectorial composition for the four considered indices



Robustness test

We computed the overlap measures across the different geographical areas

1. Overlap coefficients among four ESG indices for **North America**.

	STOXX	DOW JONES	REFINITIV	MSCI
STOXX				
DOW JONES	27%			
REFINITIV	50%	66%		
MSCI	71%	53%	47%	

2. Overlap coefficients among four ESG indices for **Europe**

	STOXX	DOW JONES	REFINITIV	MSCI
STOXX				
DOW JONES	77%			
REFINITIV	65%	56%		
MSCI	66%	43%	46%	

3. Overlap coefficients among four ESG indices for **Asia Pacific**

	STOXX	DOW JONES	REFINITIV	MSCI
STOXX				
DOW JONES	35%			
REFINITIV	36%	39%		
MSCI	60%	21%	60%	

The disagreement across ESG indexes persists even after controlling for the geographical area

4

Implications on Financial Performances

Objectives:

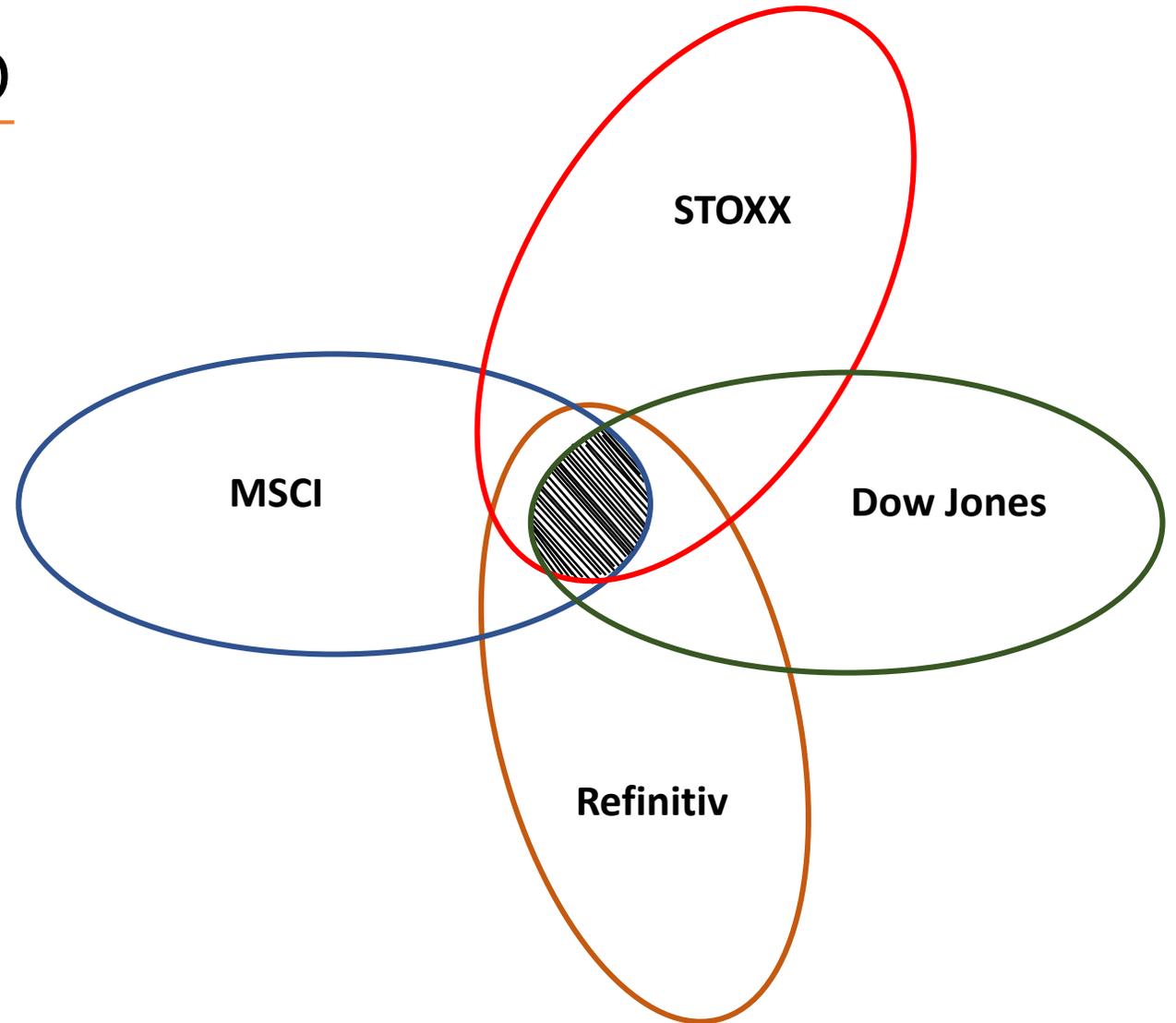
- Assessing whether the agreement on the inclusion of stocks in an ESG index by the four considered ESG rating agencies (**ESG agreement portfolio**) is generating an extra-performance, after controlling for the remuneration of financial risk factors.
- Checking whether the performance of the ESG agreement portfolio is better than a nonESG portfolio.

Agreement portfolio

To build the ESG agreement portfolio we consider the common constituents of the four indexes.

If a firm is included as the constituent of an index, it is considered as an ESG leader according to the corresponding rating provider. Consequently, there is agreement when a stock is included in all the four indexes.

This portfolio is originated from the overall overlap and includes **48 constituents**.



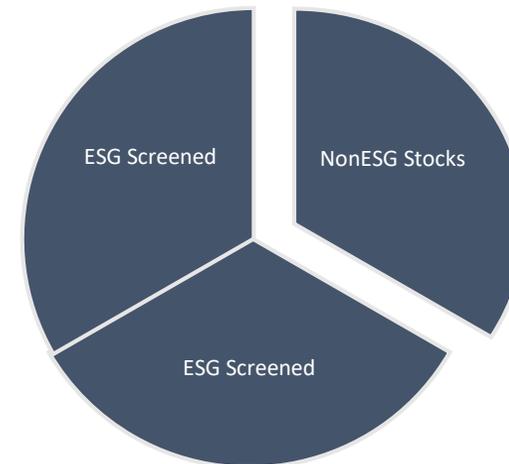
Overall overlap among the four indexes

How to create a nonESG Portfolio?

Negative screening approach

1. Take all the constituents of the MSCI World Index
2. Consider the constituents of the MSCI World ESG screened Index*.
3. The nonESG portfolio is obtained as the complement of the MSCI World ESG screened and includes 119 constituents.

***MSCI World ESG screened Index** excludes from the MSCI World Index all those firms that are not in compliance with the United Nations Global Compact (UNGC) principles and are involved in controversial or unacceptable activities which may hurt the environment or society as a whole.



Portfolio Analysis

Building the portfolios

Does the agreement of the inclusion of stocks in an ESG index by the four ESG rating agencies affects the financial performance?

ESG Agreement Portfolio

It comes from the overall overlap. It contains all the firms that have been included in all the four ESG indexes.

48 constituents

The nonESG portfolio

It includes all the stocks that are excluded through an ESG negative screening approach.

119 constituents

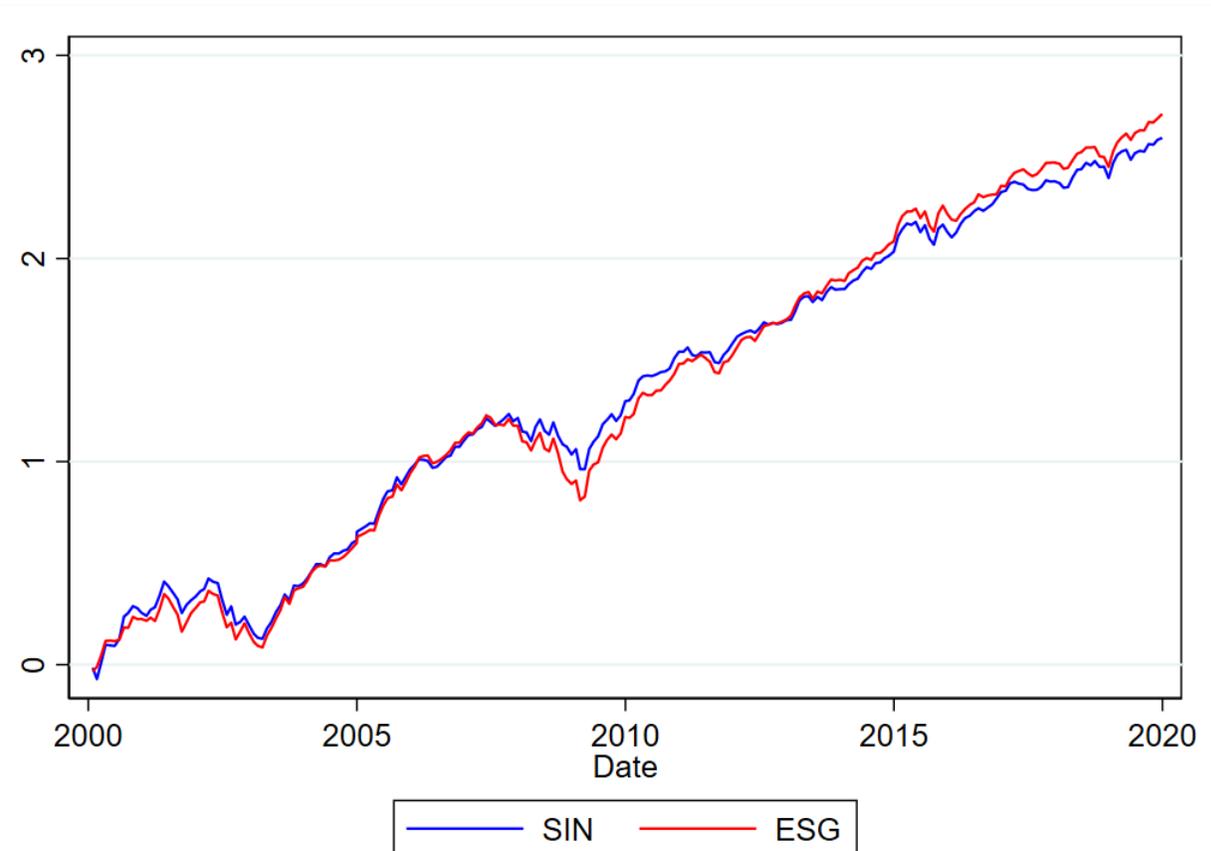
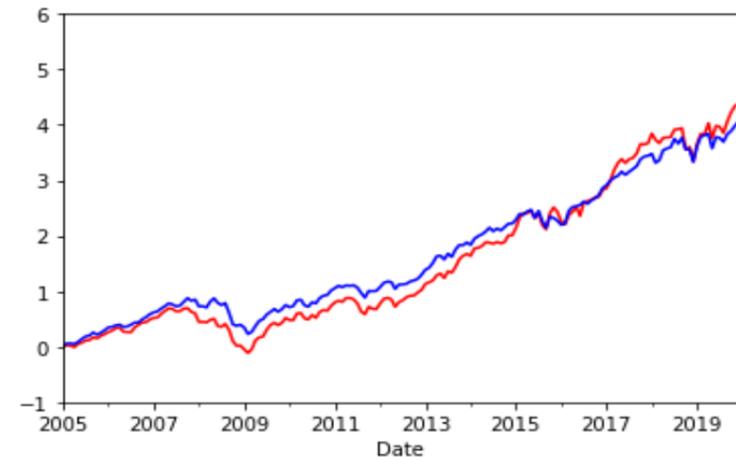
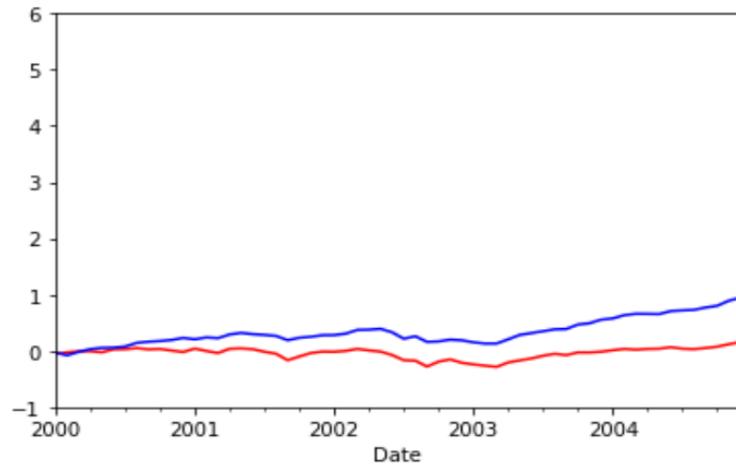
Total returns for the constituents have been downloaded from Eikon/Datastream at monthly frequency. The portfolios are equally weighted.

Portfolio Analysis

Cumulative Returns

Since the term ESG was first coined in 2005, we divide the analysis into two periods in order to detect the presence of a structural change in the financial performance of ESG and nonESG portfolios.

Cumulative returns for the ESG agreement (red line) and nonESG (blue line) portfolios



Portfolio Analysis

Performance measures

Comparing the performances of the ESG Agreement and nonESG Portfolios

Performance measures for the ESG agreement and the nonESG portfolios for the considered periods. The first three columns provide the annualized Sharpe Ratio, Sortino Ratio and Omega Ratio respectively. The fourth column provides the Max Drawdown (MaxDD) and the last provides the Value at Risk at 5%.

	<i>Sharpe ratio</i>		<i>Sortino ratio</i>		<i>Omega ratio</i>		<i>MaxDD</i>		<i>VaR 5%</i>	
	ESG	nonESG	ESG	nonESG	ESG	nonESG	ESG	nonESG	ESG	nonESG
2000-2004	0.254	1.224	0.377	1.535	1.209	2.441	-31.9%	-18.9%	-7.3%	-5.0%
2005-2019	0.870	1.044	1.153	1.287	1.953	2.144	-47.7%	-34.5%	-6.7%	-4.7%
2000-2019	0.691	1.092	0.945	1.361	1.694	2.217	-47.7%	-34.5%	-6.9%	-4.9%

Results - Jensen Alphas

Estimates of the Carhart four-factor model for the ESG agreement and the nonESG portfolios for the two periods. The last column (ESG-nonESG) includes the estimate on the long (ESG) – short (nonESG) portfolio.

	2000-2004			2005-2019		
	ESG	nonESG	ESG-nonESG	ESG	nonESG	ESG-nonESG
Alpha	0.0049 (0.004)	0.0037 (0.003)	0.0012 (0.005)	0.0059*** (0.001)	0.0053*** (0.001)	0.0006 (0.001)
Mkt-Rf	0.808*** (0.093)	0.6669*** (0.074)	0.1415 (0.087)	0.8552*** (0.035)	0.6838*** (0.027)	0.1713*** (0.038)
SMB	0.1888 (0.182)	0.0353 (0.077)	0.1536 (0.454)	-0.1364* (0.075)	-0.0714 (0.070)	-0.065 (0.088)
HML	-0.0177 (0.133)	0.5479*** (0.088)	-0.5655*** (0.126)	0.0352 (0.080)	0.1326** (0.067)	-0.0975 (0.092)
WML	-0.241*** (0.062)	-0.0811 (0.056)	-0.1599** (0.079)	-0.1187* (0.067)	0.0721** (0.034)	-0.1908*** (0.055)
F-Statistic	45.63	59.04	18.97	202.5	203.5	11.37
Adj R ²	0.77	0.752	0.54	0.821	0.831	0.252
Obs.	60	60	60	180	180	180

Robust Standard errors (HAC) are reported within brackets.
Statistical significance is denoted by ***, **, and * at the 1%, 5%, and 10% level, respectively.

There are no significant portfolio performance differences after controlling for the four risk factors

Robustness 1/4

The sectorial analysis. Does the ESG Portfolio outperform the nonESG in certain sectors?

Estimates of the Jensen's alphas of the long-short ESG agreement portfolios for each sector and the nonESG portfolio for the considered periods.

	2000-2004	2005-2019
Financials	0.0024	0.0038
Industrials	0.0038	0.0004
Consumer discretionary	-0.0057	0.0032
Communication Services	0.0157	0.0061*
Information Technology	-	0.0052
Consumer staples	0.012	-0.0017
Utilities	0.0007	-0.0022
Health Care	0.0142	0.0017
Materials	0.0049	0.0017

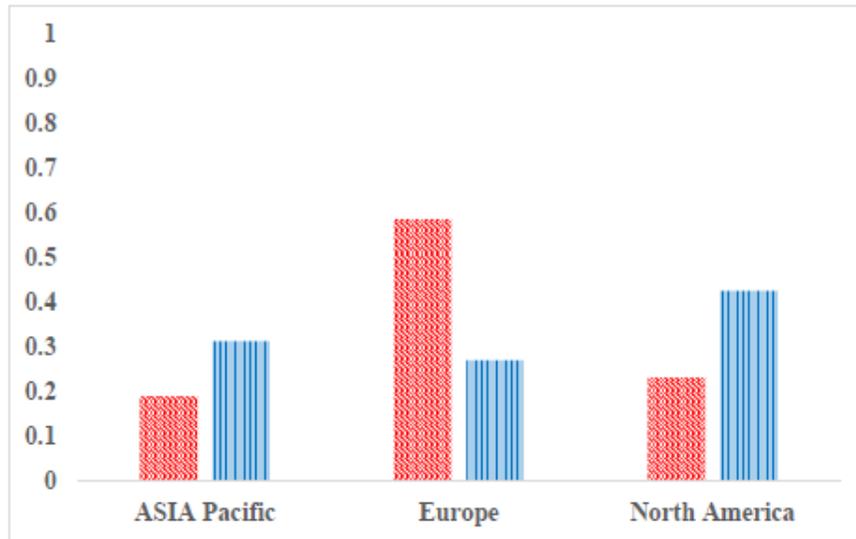
Statistical significance is denoted by ***, **, and * at the 1%, 5%, and 10% level, respectively.
Robust Standard errors (HAC) have been implemented.

Except for the communication services sector in 2005-2019, the alphas are not statistically significant.

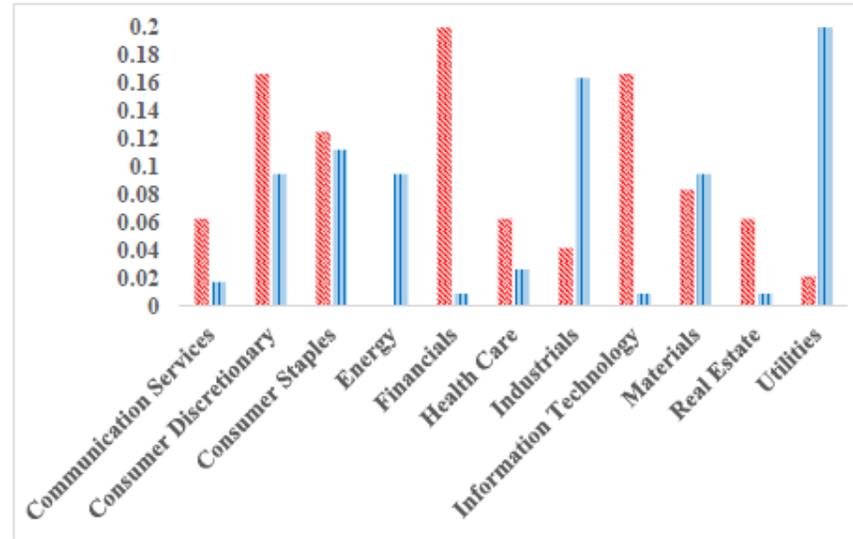
Robustness 2/4

The ESG matched portfolio. Does differences in sectorial and geographical composition affect the results?

Geographical (a) and Sectorial (b) composition of the ESG (red bars) and nonESG (blue bar) portfolios



(a) Geographic Area

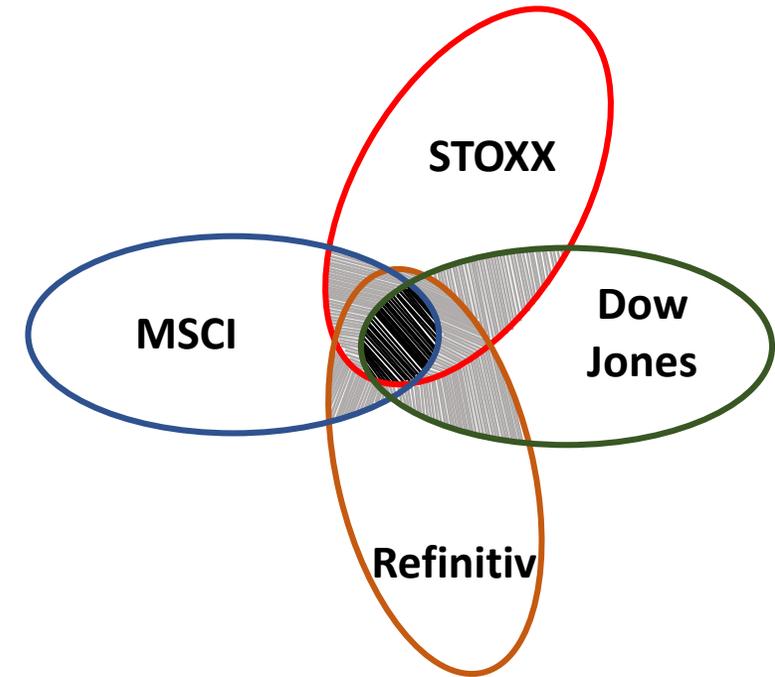


(b) Sectorial

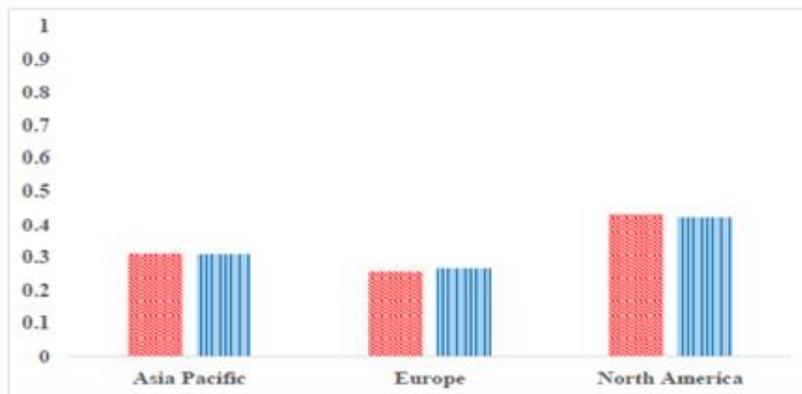
We implement the *propensity score approach* using the nearest neighbor algorithm (see e.g., Heckman et al., 1998) to match the two portfolios

Robustness 2/4

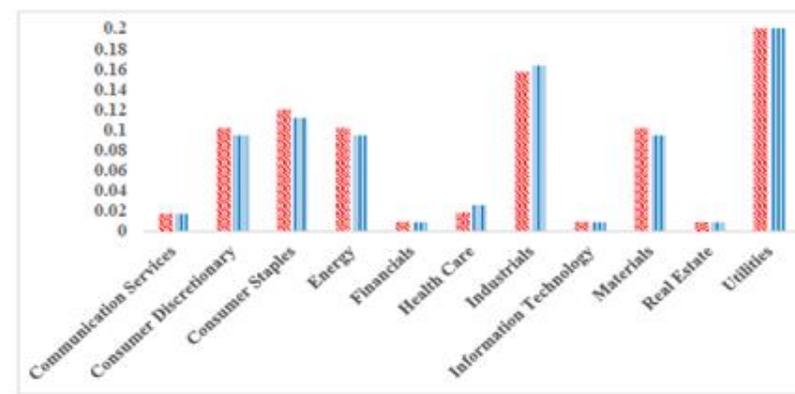
To perform the propensity score match, given the different dimension of the two portfolios (48 for the ESG and 119 for nonESG), we extend the agreement to the stocks that are included at least by two rating agencies in their index.



Geographical (a) and Sectorial (b) composition of the matched ESG (red bars) and nonESG (blue bar) portfolios



(a) Geographic Area



(b) Sectorial

Robustness 2/4

Estimates of the Carhart four-factor Model for the matched ESG agreement (MESG) with the nonESG portfolio, and the nonESG portfolio for the two periods, using monthly returns. The third and sixth columns (MESG-nonESG) include the estimate on the long (MESG) – short (nonESG) portfolio. **The two portfolios have the same number of constituent (119)**

	2000-2004			2005-2019		
	MESG	nonESG	MESG-nonESG	MESG	nonESG	MESG-nonESG
Alpha	0.0041 (0.004)	0.0037 (0.003)	0.0010 (0.004)	0.0054*** (0.001)	0.0053*** (0.001)	0.0005 (0.001)
Mkt-Rf	0.4972*** (0.130)	0.6669*** (0.074)	-0.0721 (0.084)	0.7152*** (0.041)	0.6838*** (0.027)	0.0749*** (0.027)
SMB	0.2523* (0.151)	0.0353 (0.077)	0.2131 (0.140)	-0.1086 (0.081)	-0.0714 (0.070)	-0.0304 (0.060)
HML	0.4331*** (0.133)	0.5479*** (0.088)	-0.0308 (0.086)	0.0688 (0.078)	0.1326** (0.067)	-0.0491 (0.052)
WML	-0.1405* (0.082)	-0.0811 (0.056)	-0.0741 (0.056)	0.0716 (0.045)	0.0721** (0.034)	0.0082 (0.031)
F-Statistic	9.252	59.04	0.7485	88.99	203.5	2.092
Adj R ²	0.406	0.752	-0.006	0.779	0.831	0.046
Obs.	60	60	60	180	180	180

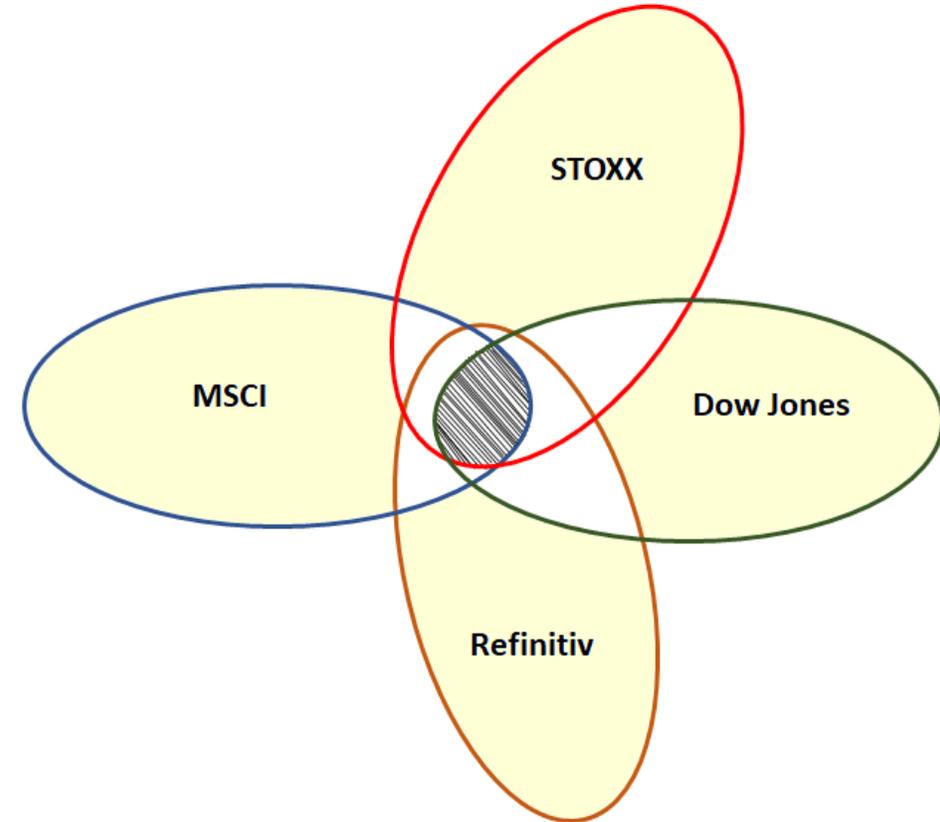
Robust Standard errors (HAC) are reported within brackets.
Statistical significance is denoted by ***, **, and * at the 1%, 5%, and 10% level, respectively.

Robustness 3/4

The ESG disagreement portfolio. Does the disagreement among the rating providers have an impact on financial performances?

We build the ESG disagreement portfolio (i.e., the one where the stocks considered have only one rating agency that included them in its index) and compare it with the performance of the ESG agreement portfolio.

The figure illustrates the selection of the ESG agreement portfolio (black area) and the ESG Disagreement portfolio (yellow area)



Robustness 3/4

The ESG disagreement portfolio. Does the disagreement among the rating providers have an impact on financial performance?

ESG Agreement Portfolio

It comes from the overall overlap. It contains all the firms that have been included in all the four ESG indexes.

48 constituents

Average MAE = 0.73
ranging from 0.46 to 0.90

Average percentage of observed
agreement = 46%
ranging from 33% to 68%

Disagreement Portfolio

It includes all the firms that have been considered only by one rating agency in its index

694 constituents

Average MAE = 1.44
ranging from 1.18 to 1.79

Average percentage of observed
agreement = 22%
ranging from 17% to 27%

Robustness 3/4

Estimates of the Carhart four-factor Model for the long-short portfolio between the ESG agreement and the ESG disagreement portfolios. The first column refers the long-short portfolio in the period 2000-2004 while the second refers to the portfolio in the period 2005-2019.

	2000-2004	2005-2019
Alpha	-0.0052 (0.003)	-0.002 (0.002)
Mkt-Rf	-0.0095 (0.100)	-0.0423 (0.029)
SMB	-0.1575 (0.415)	-0.1949 (0.148)
HML	-0.3258*** (0.117)	-0.0655 (0.069)
WML	-0.0675 (0.061)	0.0191 (0.049)
$\overline{F-S}$ Adj R ²	3.578	2.691
\bar{R}^2	0.188	0.017
Obs.	60	180

Robust Standard errors (HAC) are reported within brackets.

Statistical significance is denoted by ***, **, and * at the 1%, 5%, and 10% level, respectively.

There is no statistical difference in terms of alphas between the ESG agreement and the ESG disagreement portfolios

Robustness 4/4

The rebalanced portfolio. Does non synchronised data availability (i.e the indexes and their constituents' data start at different points) affects the results?

Estimates of the Carhart four-factor Model for the rebalanced ESG agreement (ESG AGR), the rebalanced ESG disagreement (ESG DIS) and the nonESG portfolios in the period 2012-2019. The last two columns (ESG AGR-nonESG and ESG AGR-ESG DIS) include the estimate on the long – short portfolios. The commonly available period for the four indexes starts from January 2012

	ESG AGR	ESG DIS	nonESG	ESG AGR-nonESG	ESG AGR-ESG DIS
Alpha	0.0045*** (0.001)	0.0042*** (0.001)	0.034** (0.001)	0.001 (0.002)	0.0003 (0.001)
Mkt-Rf	0.7816*** (0.045)	0.9040*** (0.027)	0.7037*** (0.042)	0.0826* (0.043)	-0.1177*** (0.035)
SMB	-0.3756*** (0.098)	-0.0145 (0.052)	-0.2145* (0.104)	-0.1621 (0.104)	-0.3621*** (0.088)
HML	-0.0361 (0.080)	0.0705 (0.058)	0.1299 (0.080)	-0.1597** (0.080)	-0.1003 (0.066)
WML	-0.0263 (0.062)	-0.0619 (0.041)	0.0420 (0.063)	-0.0656 (0.081)	0.0383 (0.047)
F-Statistic	104.4	395.5	97.9	5.166	16.1
\bar{R}^2	0.773	0.931	0.773	0.047	0.255
Obs.	96	96	96	96	96

Robust Standard errors (HAC) are reported within brackets.
Statistical significance is denoted by ***, **, and * at the 1%, 5%, and 10% level, respectively.

Impact of changes in ESG Ratings

- ESG rating agencies find themselves forced to change frequently their methodology
- Changes in ESG ratings induced by changes in methodology (and not related to potential fundamental changes in the sustainability of the firm) exert a transitory pressure on stock prices
- Retail investors being particularly sensitive to changes in ESG ratings divest from stocks they believe to be downgraded, moving to stocks with increased ratings
- Short sellers act as arbitrageurs or informed investors and literally gain from the "confusion" that ESG rating agencies create on the stock market

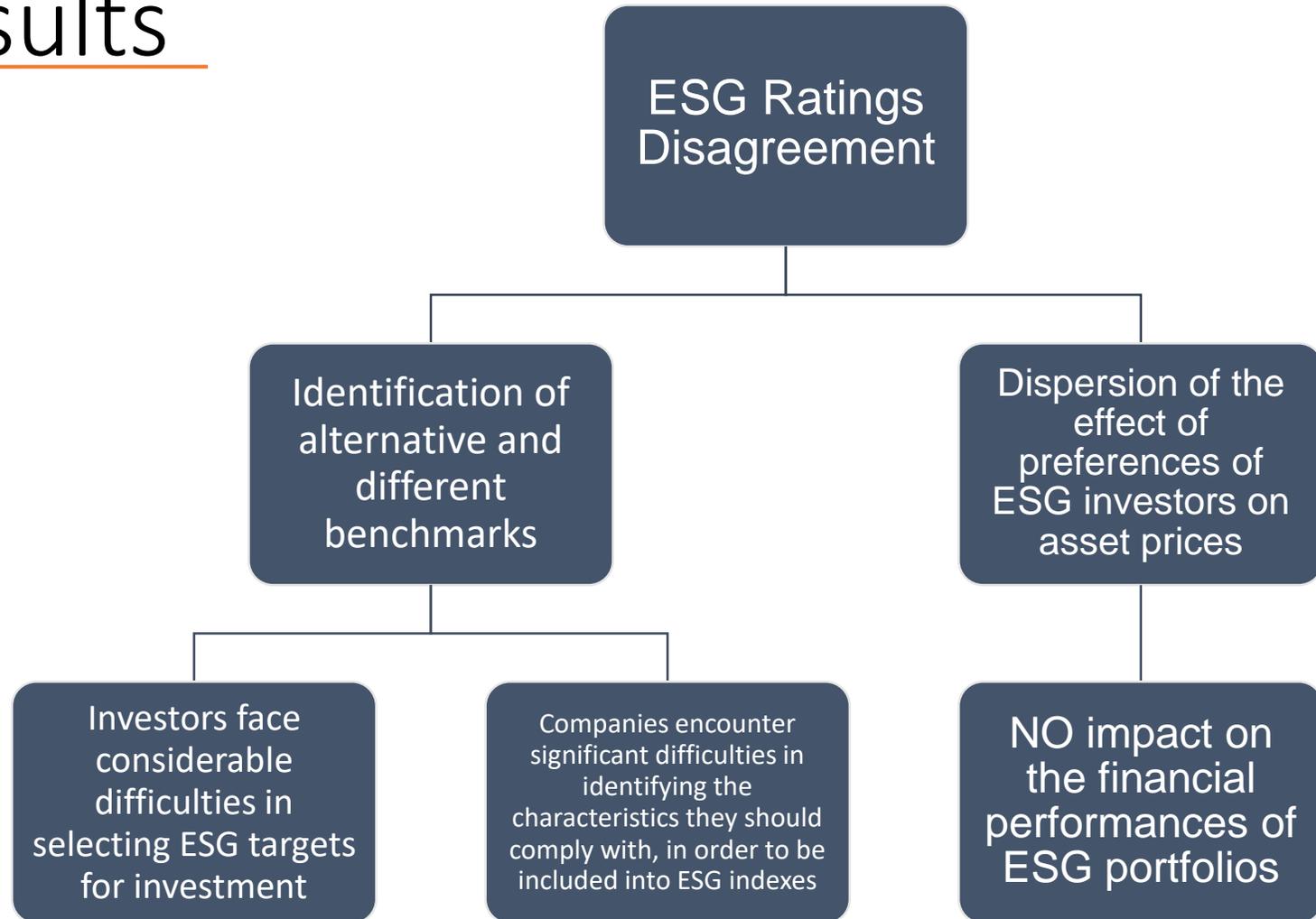
Implications

- Observed ESG **disagreement**, among rating agencies, **dispersed the effect of preferences of ESG investors on asset prices** to the point that even when there is agreement, the latter is so weak that has no impact on the financial performances of ESG portfolios.
- **Disagreement and confusion** imply the risk of misleading investors to an inefficient allocation of their resources and could make **greenwashing** more difficult to detect and thus more tempting.
- The greenwashing risk is particularly relevant when assessing the efforts that firms make or claim to make to be aligned with climate targets. It is really difficult for investors to assess how much real effort in climate-aligned capital expenditures and strategy there is behind firms' marketing campaigns about climate mitigation.

Conclusions

- ESG investor preferences are important and their shifts can alter capital allocation in the markets but disagreement disperses the impact on performances.
- If all major ESG rating agencies agree on the definition of a set of common metrics, this would lead to more homogeneous stock selections, concentration of investments on the same stocks by generating a significant impact on asset prices and thus on achievement of sustainability goals.
- Blind reliance on ratings without independent information production might lead investors to make sub-optimal choices and have negative effects on firms cost of capital.
- There is need:
 - for a proper ESG information framework that does not leave retail investors disadvantaged;
 - for independent and scientific information to support a better understanding and thus avoid greenwashing;
 - for competent managers.

Summary Results



Thank you

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