

Credit Risk for Unsustainable versus Sustainable Businesses

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There is increasing evidence of higher credit risk for unsustainable/low-ESG/dirty/coal/fossil fuel businesses, as well as lower credit risk for sustainable/high-ESG/clean/regenerative/renewable businesses. The energy transition, Net Zero path and sustainable taxonomies will exacerbate the differential access to capital and the cost of capital dispersion, adding to this evidence over time. Incentivising capital towards sustainable businesses and disincentivising capital to unsustainable businesses should be treated separately, achieving both is an eventual end-game but achieving either is certainly worthwhile in the short to medium-term. Regulators will eventually incorporate some form of sustainable/unsustainable divergence explicitly into a wide range of banking measures, including Pillar 2 (regulatory/supervisory review) as well as possibly into Pillar 1 (capital requirements and risk weighting of assets).

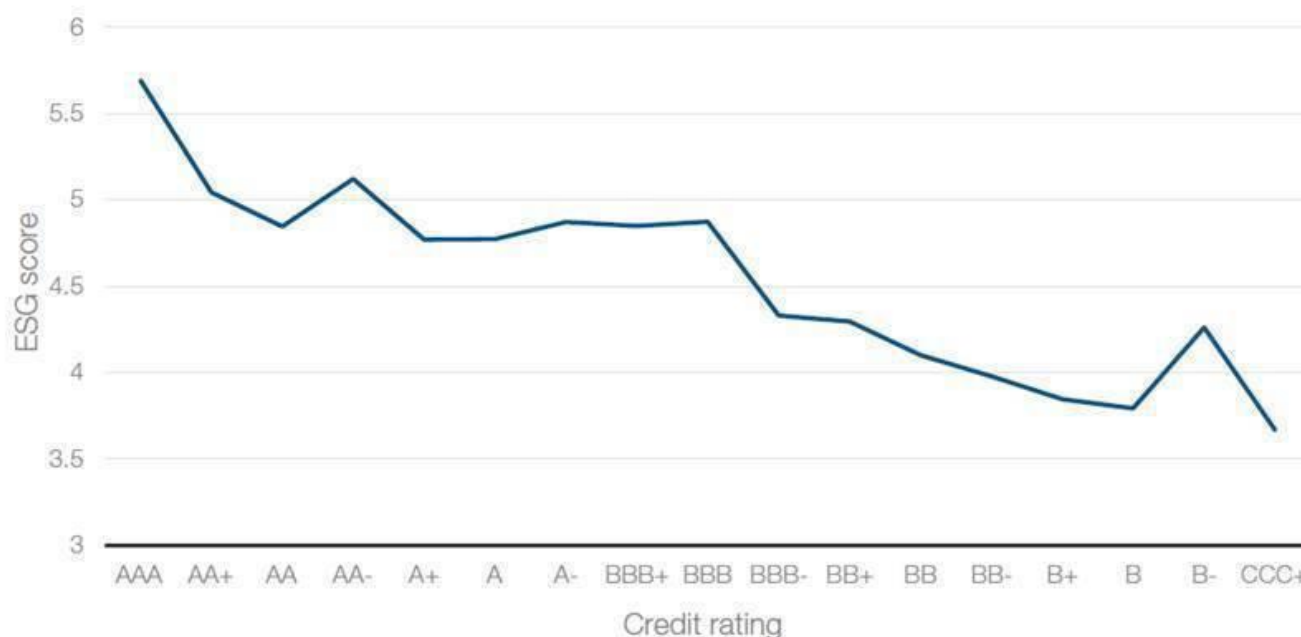
1. Sustainability and ESG ratings are already being implicitly incorporated into Pillar 1

The current capital requirements make use of credit ratings for calculating risk weights. Banks are required to use ratings from external credit rating agencies, for assessing the credit risk of some borrowers. There are vastly differing capital requirements for corporate debt, depending on the credit rating:

Credit Assessment	AAA to AA-	A+ to A-	BBB+ to BB-	Below BB-	unrated
Risk Weight	20%	50%	100%	150%	100%

Credit rating agencies have increasingly incorporated ESG issues (and sustainability) into their ratings. Sustainable businesses tend to have higher credit ratings than unsustainable businesses. There is a close relationship between average ESG scores and credit ratings, as you can see from this chart.

Chart 2: Average ESG score for each credit rating



Source: MSCI, Bloomberg Barclays, S&P, December 2016

Macquarie found in 2018 (“Understanding ESG in credit portfolios”) that ESG scores explain some of the yield spread that’s not due to credit ratings, especially for issuers with low ESG ratings. The Environment and Governance components were most important, with little explanatory power from Social scores. A model fitting credit spreads using credit ratings and ESG scores together produced a better fit than a model using credit ratings alone, with a statistically significant result. “weighted average ESG scores affect the price of credit... getting Governance right is important for credit, with bonds from the companies that have the best Governance performing the best. Even more powerfully, the bonds from companies with very poor Governance tend to perform the worst.” Securities with low ESG scores generally show greater subsequent return volatility, than securities with high ESG scores.

Rating Grade	Standard Deviation (bottom ESG scores)	Standard Deviation (top ESG scores)
AAA	17.5	13.2
AA	38.8	35.5
A	26.0	27.3
BBB	47.1	31.6
Average	32.4	26.9

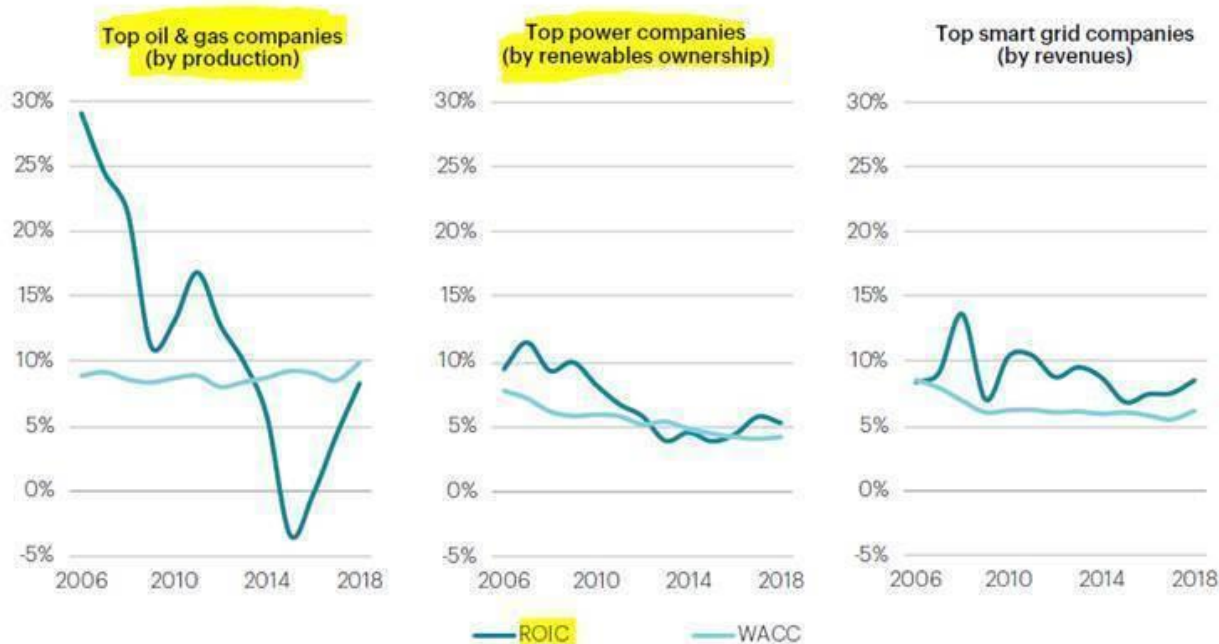
Source: MSCI, Bloomberg Barclays, S&P, December 2016

Attig and others in 2013 (“Corporate Social Responsibility and Credit Ratings”) find that the credit ratings of 1,585 US firms are related to primary stakeholder management (ie community relations, diversity, employee relations, environmental performance and product characteristics). Credit rating agencies tend to award relatively high ratings to firms with good social performance.

ESG Integration for corporate bond portfolios will reduce the incidence of corporate defaults and credit rating downgrades, over a long-term horizon (ie tail-risk mitigation).

Energy producers have extremely volatile earnings/cashflows/returns, when compared to renewable energy assets and sustainable businesses (World Energy Investments 2019 report, from the International Energy Agency):

Return on invested capital (ROIC) and after-tax weighted average cost of capital (WACC) for listed energy companies



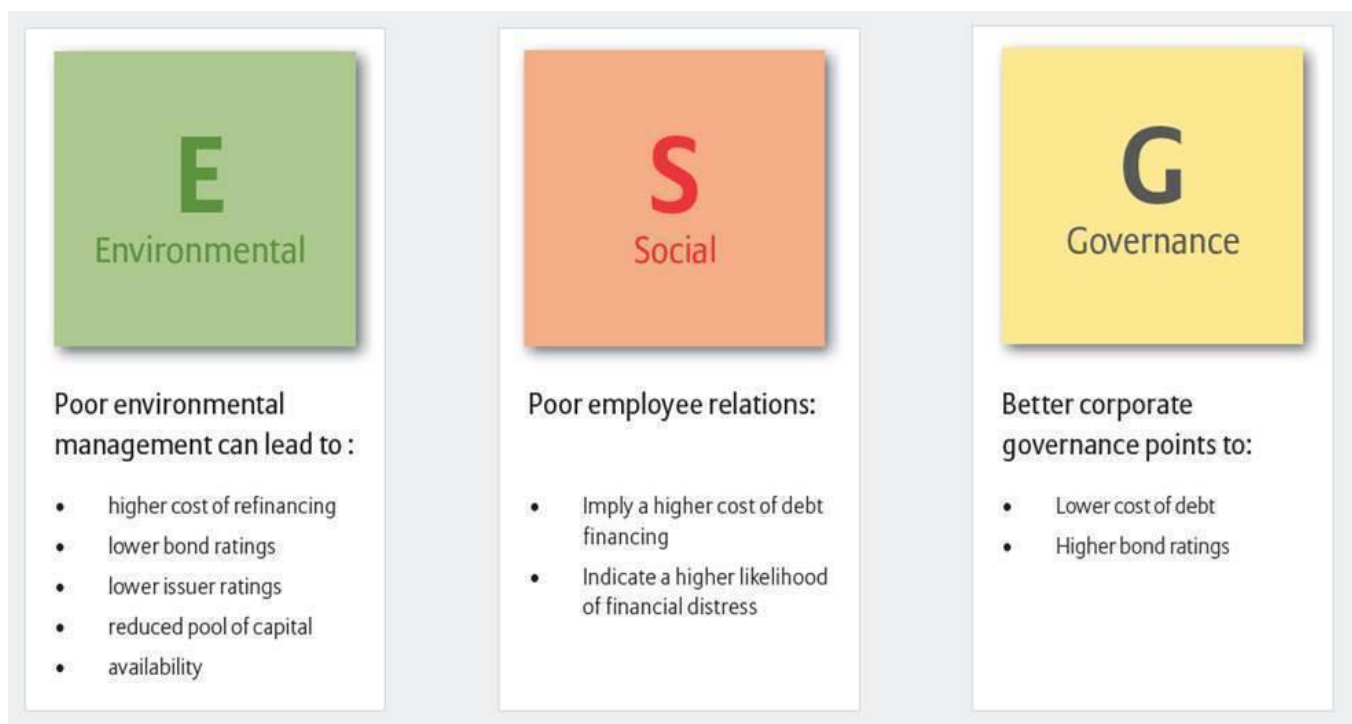
Note: The samples contain the top 25 listed energy companies (in 2018) by oil and gas production, power companies by ownership of solar and wind capacity and companies involved in investing and supplying smart grid assets, by total revenues. Companies based in China and Russia are excluded from the analysis. Industrial conglomerates, with large business lines outside of energy are also excluded. Return on invested capital measures the ability of a company’s core business investments to generate profits, expressed as operating income adjusted for taxes divided by invested capital. The weighted average cost of capital is expressed in nominal terms and measures the company’s required return on equity and the after-tax cost of debt issuance, weighted according to its capital structure. The tax rate is assumed at 35% for all companies.

Source: IEA analysis with calculations based on company data from Thomson Reuters Eikon (2019) and Bloomberg (2019).

2. Risk Management is broader and deeper, when taking account of sustainability

Incorporating ESG into the investment process can both enhance returns and reduce risk. A wider range of risks and opportunities are considered, when applying Sustainable Finance compared to the traditional financial lens. Financial regulators already focus on harder Corporate Governance metrics, so it's natural to extend this to softer Governance measures as well as Social/Environment issues as well.

The 2013 Principles for Responsible Investment report ("Corporate bonds: Spotlight on ESG risks") concluded that poor governance can lead to spectacular corporate failures. "ESG can raise issues of risk that have not been raised by traditional analysis. It's a more comprehensive way of looking at risk." Firms with stronger engagement towards their workforce have a statistically significant lower Cost of Debt (benefiting from employee flexibility during periods of financial instability). Poor corporate governance exposes bondholders to legal, reputational and regulatory risks:

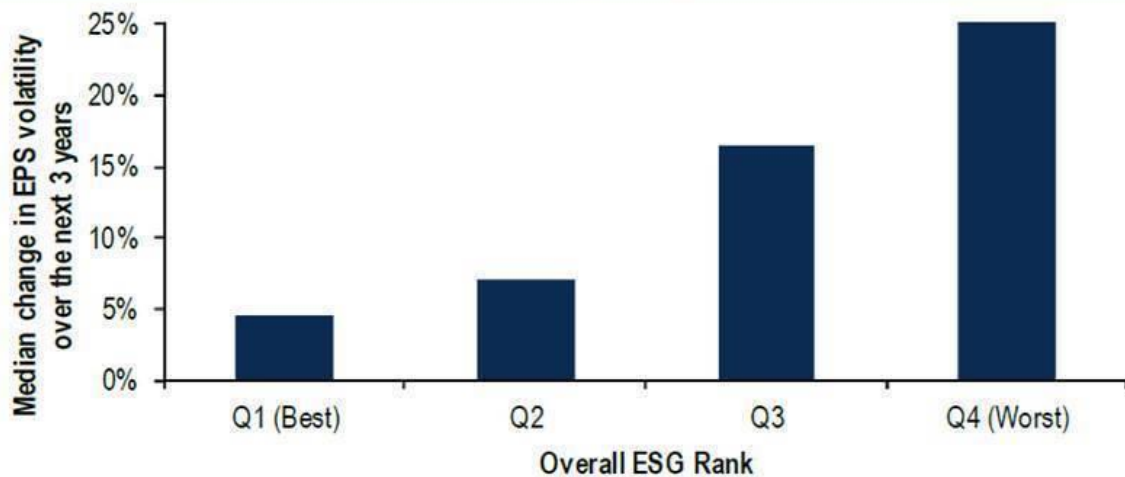


Oikonomou and others in 2012 ("The Impact of Corporate Social Performance on Financial Risk and Utility: A Longitudinal Analysis") analyse 9,000 observations for S&P 500 companies from 1992 to 2009. They find "corporate social irresponsibility is positively and strongly related to financial risk" and that "corporate social responsibility is negatively but weakly related to systematic firm risk".

Sustainable companies have fewer bankruptcies, better earnings revisions and less earnings volatility:

Chart 7: Best signal of future earnings risk: worse ESG ranks signaled more earnings deterioration (US)

Median change in 3-yr EPS volatility of S&P 500 companies over subsequent three years based on Refinitiv Overall ESG score from 12/2005-12/2015 (with volatility through 12/2018)



Source: Refinitiv, BofA Merrill Lynch US Equity & Quant Strategy
Based on the S&P 500 universe

90% of bankruptcies in the S&P 500 between 2005 and 2015 could have been avoided by screening out companies with below-average Environmental and Social scores five years prior.

Bank of America found that ESG controversies in the S&P 500 are hugely damaging for equity valuations, distracting the Executives and Board from their other responsibilities, and persisting for at least several months:

Chart 4: More than \$500bn of value has been lost due to ESG controversies*

Average peak-to-trough performance of ESG controversy stocks relative to the S&P 500 (market cap weighted, 30 days prior to through 360 days post controversy)



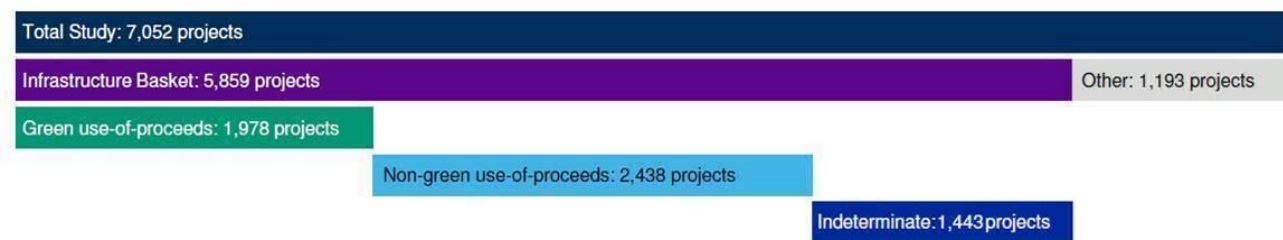
Source: BofA Merrill Lynch US Equity & Quant Strategy

*includes 24 major controversies related to data breaches, accounting scandals, sexual harassment and other ESG topics. See appendix for the list of stocks included in this analysis.

3. Project finance default rates are higher for non-green loans and lower for green loans

Moody's in 2018 ("Default and recovery rates for project finance bank loans, 1983-2016: Green projects demonstrate lower default risk") found that green use-of-proceeds project finance bank loans experienced a lower default rate than non-green use-of-proceeds project loans. The total data included an infrastructure basket with 5,859 projects. "The 10-year cumulative default rate (Basel II) for green projects within the total infrastructure basket is 5.7%, lower than that of 8.5% for non-green projects... Overall, green projects had lower default rates than non-green projects in both the power and infrastructure industry sectors, although findings vary significantly across regional subsets." 62% of the indeterminate projects were public services and social accommodation, with a default rate much lower than the total infrastructure basket.

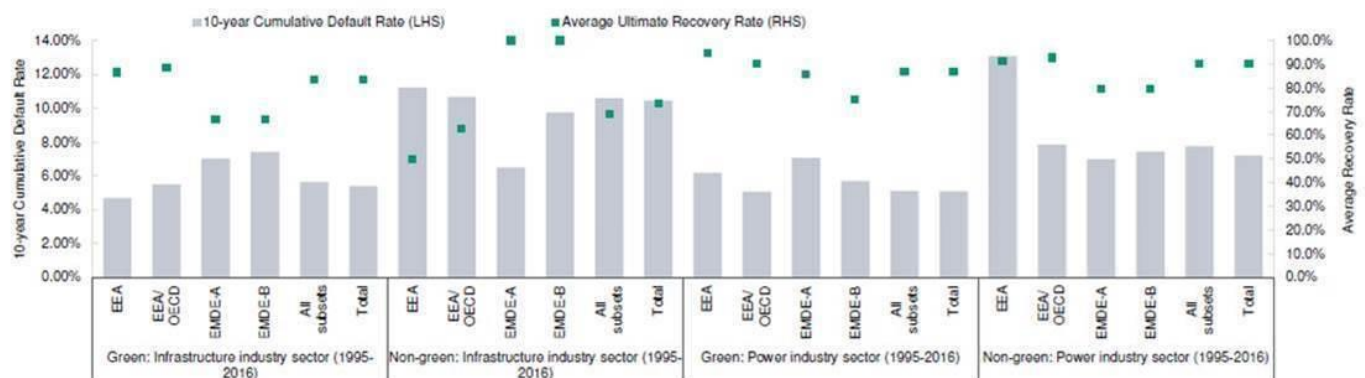
Overview of infrastructure basket by green and non-green use-of-proceeds subsets



Source: Data Alliance Project Finance Data Consortium

While green use-of-proceeds projects consistently have lower default risk than non-green use-of-proceeds projects in Advanced Economies, they exhibit similar to slightly lower default risk profiles in Emerging Market and Developing Economies (EMDEs). Ultimate recovery rates were better for green projects in the infrastructure industry and in the European Economic Area (EEA), but were slightly lower than non-green projects for the power sector:

Time horizon 1995-2016: Cumulative default rates and recovery rates: Green and non-green uses-of-proceeds subsets, by principal industry sector



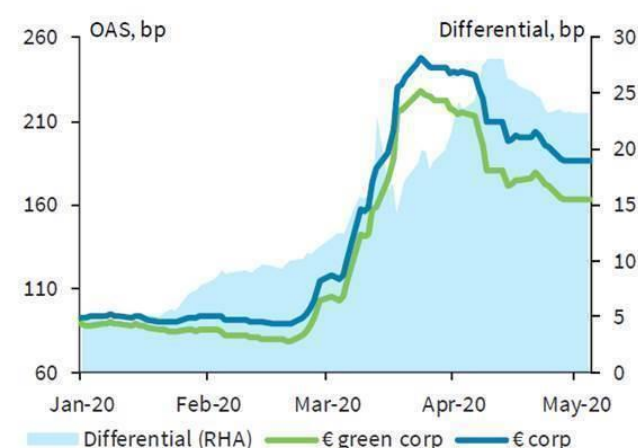
Source: Data Alliance Project Finance Data Consortium

4. Some fixed income markets exhibit a green bond premium (or “greenium”)

Barclays on 11 May 2020 concluded that there’s some evidence of corporate and EM green bonds outperforming during the late-February to late-March credit widening. There’s also good evidence of green bonds trading tighter than non-green bonds in euro-denominated Supranationals, Sub-sovereigns and Agencies (SSAs) as well as in Euro corporate bonds. They find that in most other markets green bonds trade in-line with non-green bonds (after taking account of tenor, rating and sector composition): “However, over time, we expect the green bond premium to increase in SSAs and corporates and to emerge in other markets. As more investors seek to integrate ESG values into their investment process, we expect to see greater demand for green securities as they can act as a quick way for investors to increase the ESG quality of their investments in a quantifiable way.”

FIGURE 3

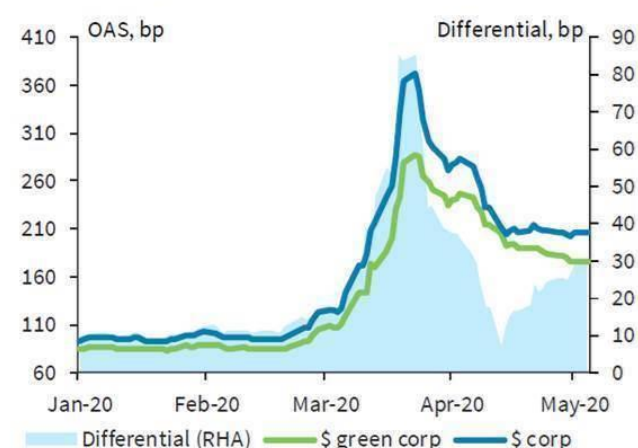
€-corporate green bonds have outperformed the wider index by 13bp since late-Feb



Bloomberg Barclays MSCI Euro Green Corporate index versus Bloomberg Barclays Euro Aggregate Corporate index. Source: Bloomberg, Barclays Research

FIGURE 4

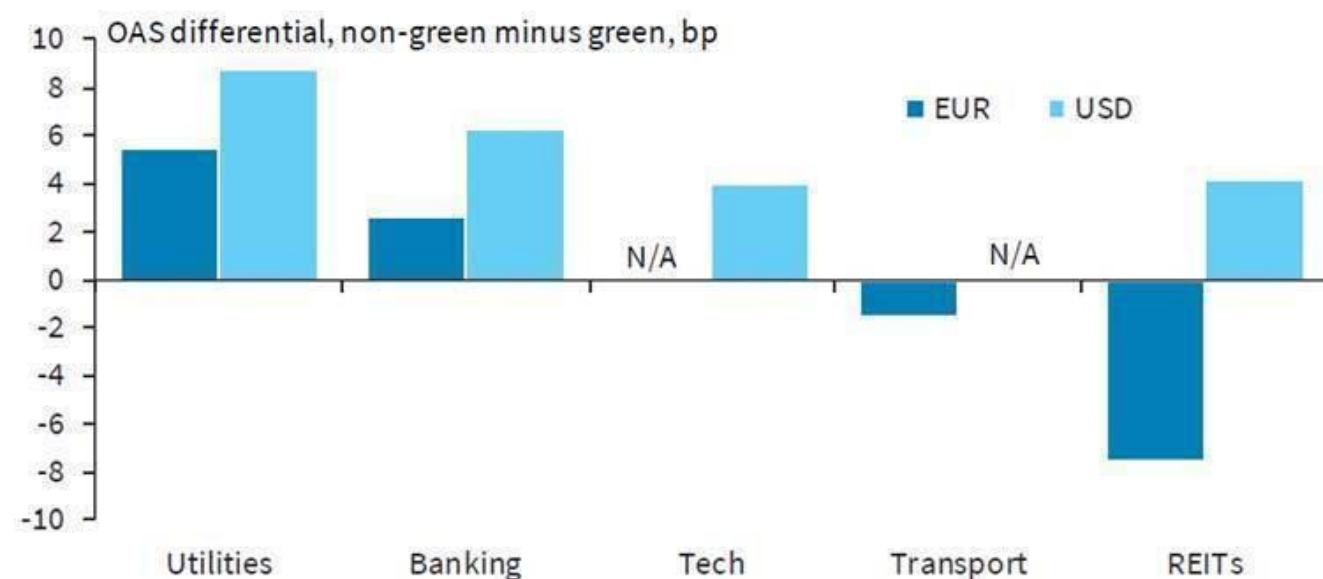
Similarly, \$-corporate green bonds have outperformed the wider index by 17bp



Bloomberg Barclays MSCI USD Green Corporate index versus Bloomberg Barclays USD Aggregate Corporate index. Source: Bloomberg, Barclays Research

Green premia vary across regions, time and sectors... Recently both US and Euro corporate bond markets have had the highest greeniums for Utilities and Banks:

A green premium is most evident for the Utilities and Banking sectors

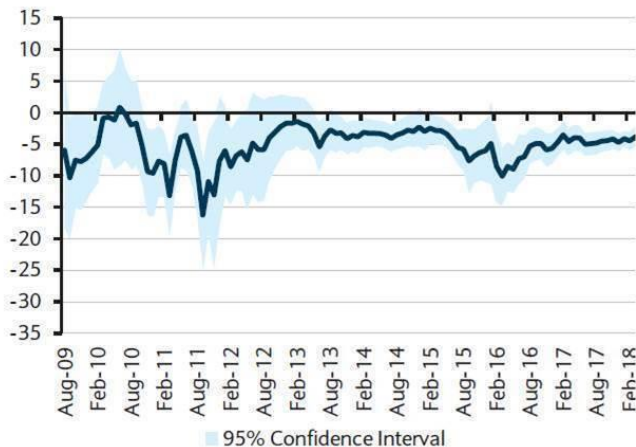


Based on matched universe of €-IG green and non-green bonds. We exclude sectors which have only one pair. Source: Bloomberg, Barclays Research

Henke in 2016 (“The effect of social screening on bond mutual fund performance”) finds that SRI corporate bond funds strongly outperform their peers during economic recessions and bear markets. US and Eurozone SRI funds outperformed against matched conventional product peers by 0.33-0.49% per annum from 2001-2014.

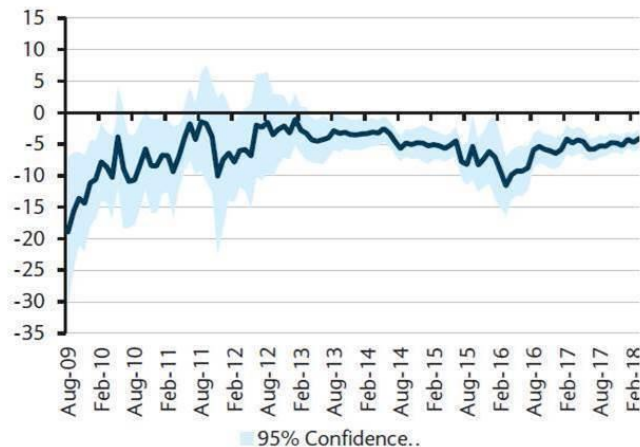
Two years ago Barclays also found tighter spreads for high ESG corporate bonds compared to low ESG bonds (after adjusting for duration, credit rating and sector), which was persistent in the Euro Investment Grade market from 2009 to 2018:

Historical ESG spread premium in the euro IG market (MSCI)
(bp per one standard deviation in ESG score)



Source: Bloomberg Barclays Indices, MSCI ESG Research, Barclays Research

Historical ESG spread premium in the euro IG market (Sustainalytics)
(bp per one standard deviation in ESG score)



Source: Bloomberg Barclays Indices, Sustainalytics, Barclays Research

5. The finance industry has significantly reduced access to debt (credit rationing) and insurance for the coal sector

117 banks, insurers and export credit agencies have restricted financing for fossil fuels, according to the Institute for Energy Economics & Financial Analysis (IEEFA). At the centre of this is coal mining and coal-fired power generation:

<https://ieefa.org/finance-exiting-coal/>

Access to capital is critical for energy investment, and the on-going operation of their assets... Westpac is the 30th major international financial institution this year to declare that it's abandoning coal. China's State Development & Investment Corporation, some Japanese trading companies, and QBE have announced the end of their exposure to the coal sector. Glencore (the world's largest coal exporter) declared a coal production cap, in response to investor pressure.

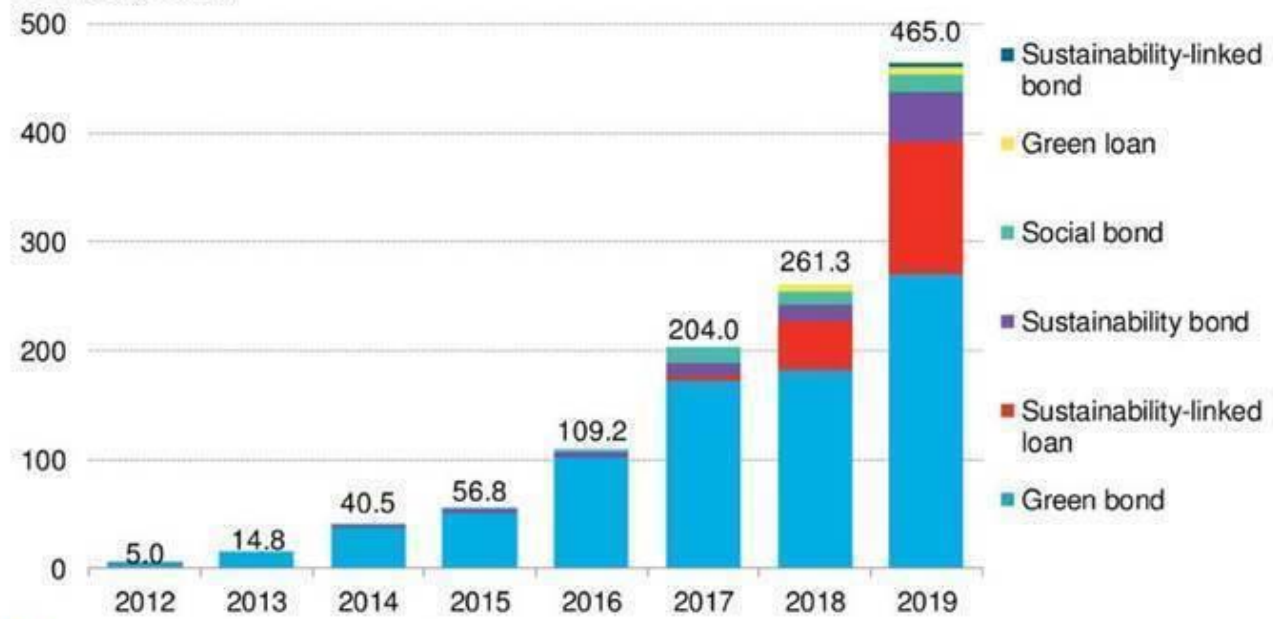
Fossil fuel divestment commitments have rapidly grown to US\$14.6 trillion, spanning 1,244 institutions. The trillion dollar Norwegian Sovereign Wealth Fund is actively implementing their divestment direction from parliament, selling fossil fuel investments and putting more money into renewables:

<https://gofossilfree.org/divestment/commitments/>

Fund flows have been supporting green/sustainable credit and equity, for the last several years:

Sustainable debt finance annual issuance

Issuance (\$ billion)



Source: BloombergNEF, Bloomberg LP

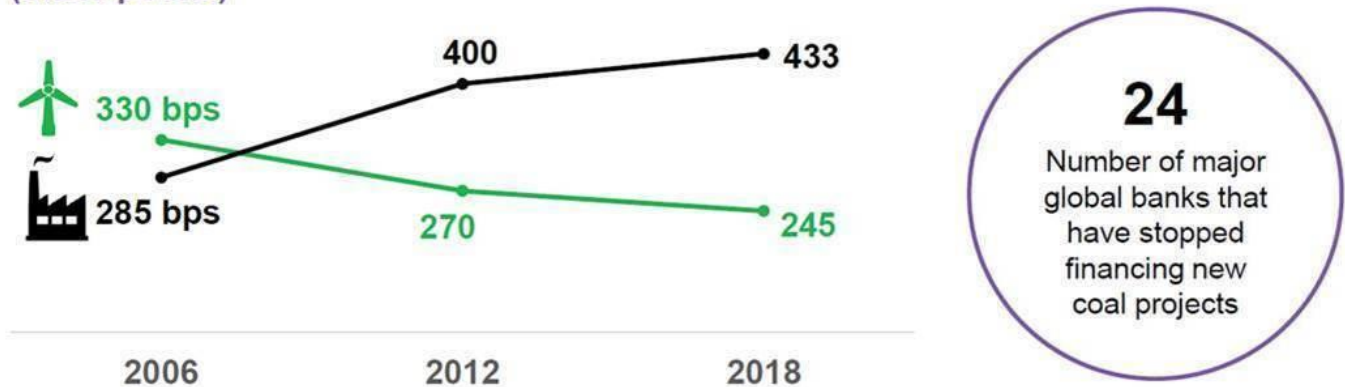
6. There is a differential cost of capital for sustainable versus unsustainable businesses

Corporate issuers with a higher ESG rating already have a significantly lower Cost of Debt (source: Bank of America and MSCI ESG Research):



And in particular, climate risk is being more commonly priced into asset financing according to Bloomberg NEF:

Weighted average margins above U.S. Libor for clean energy and coal term loans, (basis points)

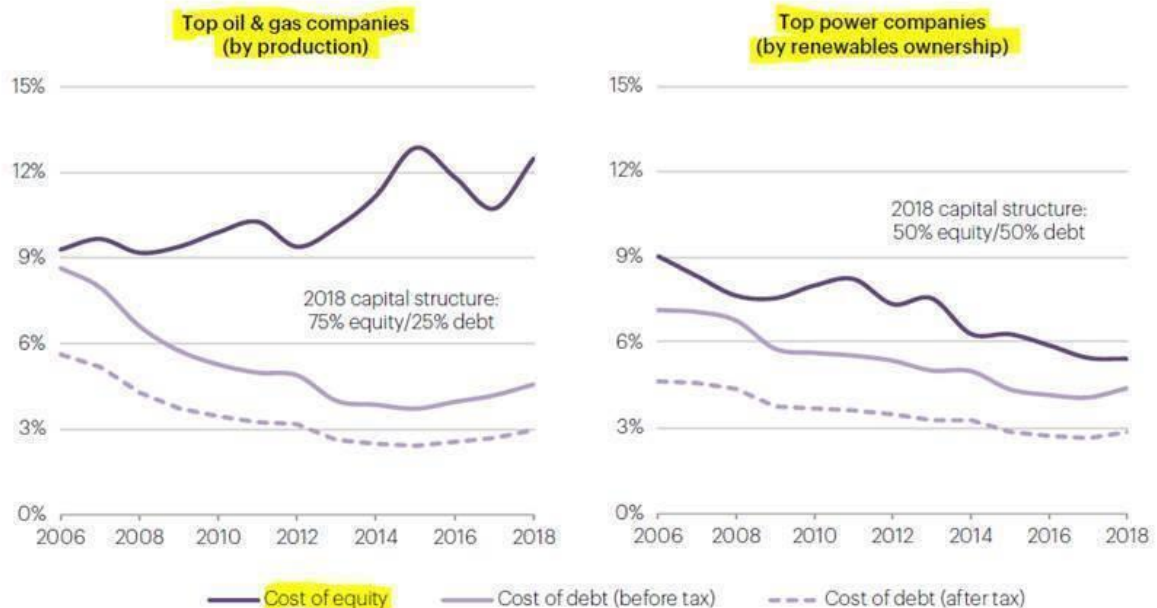


Source: Bloomberg LP, BloombergNEF, Bank Disclosures, BankTrack.org

The International Energy Agency (IEA) finds that the cost of equity has risen for energy producers, at the same time as interest rates have been plummeting and the cost of equity has been falling for large wind/solar owners. This is from their World Energy Investments 2019 report:

The cost of capital has trended downwards for the power companies, but has recently risen for the oil and gas companies

Drivers of weighted average cost of capital (WACC) for listed energy companies



Note: The samples contain the top 25 listed energy companies (in 2018) by oil and gas production and power companies by ownership of solar and wind capacity. Companies based in China and Russia are excluded from the analysis.
Source: IEA analysis with calculations based on company data from Thomson Reuters Eikon (2019) and Bloomberg (2019).

IEA analysis shows that WACCs have slightly risen for large energy producers, while WACCs have fallen by several percent for power companies with the largest exposure to renewables:

<https://www.iea.org/reports/world-energy-investment-2019>

7. Sustainable debt (and equity) has delivered superior returns

Bank of America research suggests that corporate responsibility drives operating results, and Macquarie finds that superior ESG ratings are related to higher returns/profitability.

Within USD Investment Grade corporate bonds, MSCI finds that higher ESG exposure has displayed more resilient returns (both during 1Q20 and over the last five years). This conclusion is robust within GICS sectors, with ESG leaders outperforming laggards (within Energy, IT, Health Care, etc). Excess returns are also higher for issuers who had an improvement in their ESG rating:

<https://www.msci.com/www/blog-posts/corporate-bond-performance-by/01771274418>

MSCI USD IG Corporate Bond index excess returns		Q1 2020	1 Year	3 Year	5 Year
Parent index	USD IG Corp Bond	-11.6%	-8.6%	-7.1%	-4.6%
	Low Risk	-8.4%	-6.3%	-4.6%	-2.3%
	Quality	-9.9%	-7.5%	-6.0%	-3.8%
	Factor indexes (tilt)				
	Carry	-16.6%	-12.7%	-11.0%	-8.2%
Factor indexes (tilt)	Low Size	-12.7%	-10.1%	-8.8%	-6.8%
	Value	-12.1%	-9.0%	-7.5%	-5.1%
ESG indexes	ESG Leader	-10.4%	-7.7%	-5.9%	-3.7%
	ESG Universal	-11.2%	-8.1%	-6.8%	-4.4%

All returns as of March 31, 2020.

Barclays in 2018 ("ESG Investing in Credit: A Broader and Deeper Look") found that tilting a credit portfolio in favour of high ESG bonds, while keeping all other risk characteristics unchanged, tends to lead to higher performance in all three markets that they considered (Euro and US Investment Grade plus US High Yield). While their previous study found that the Governance component was most closely associated with performance, Environment had the strongest effect during the past two years in the US, and Environment was strongest over the whole nine year period from 2009 to 2018 in Europe.

Cumulative performance (exc. ret., %) of a high ESG portfolio over a low ESG portfolio in the US IG and euro IG markets, using MSCI ESG data, 2009-18



Source: Bloomberg Barclays Indices, MSCI ESG Research, Barclays Research

Cumulative performance (exc. ret., %) of a high ESG portfolio over a low ESG one in the US IG and euro IG markets, using Sustainalytics ESG data, 2009-18



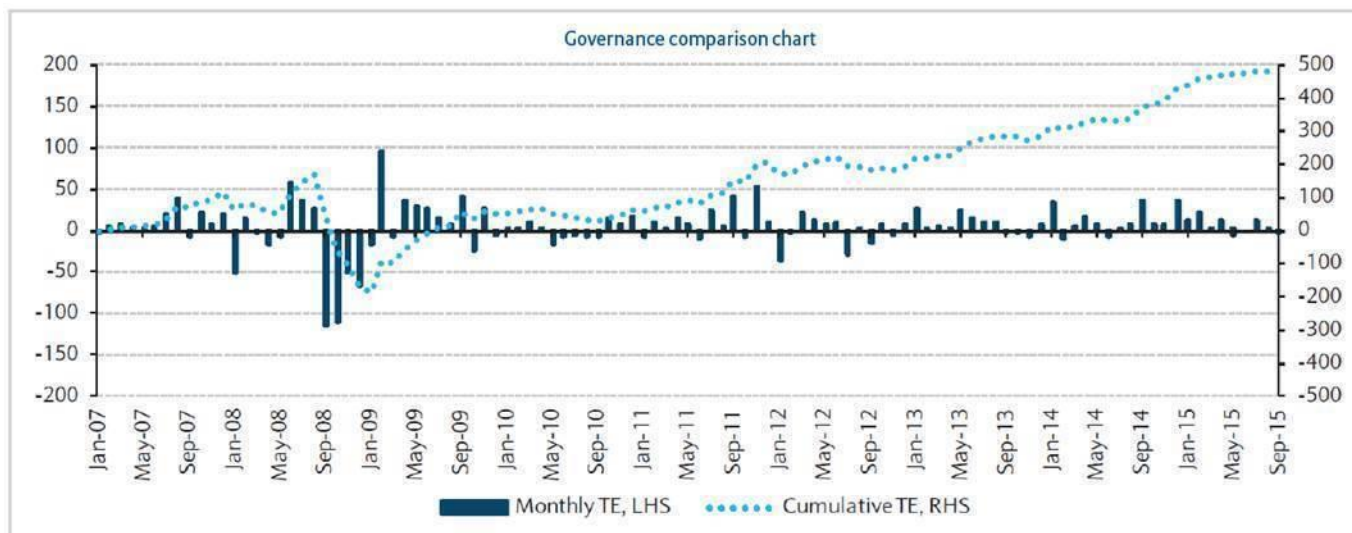
Source: Bloomberg Barclays Indices, Sustainalytics, Barclays Research

The link between ESG component scores and performance varies across sectors, according to Barclays. Governance was important in the banking sector, while Environment was significant in most other sectors. The Euro credit market is pricing ESG attributes differently than the US market: high ESG bonds trade at persistently tighter spreads than low ESG peers in Europe, but not in the US. European issuers also tend to have higher ESG ratings than US issuers.

Allianz Global Investors in 2017 (“ESG in Investment Grade Corporate Bonds”) concluded that an optimal Investment Grade corporate bond portfolio aims to avoid issuers with material ESG risks and persistently low ESG ratings. Allianz overweights securities that are expected to improve their ESG ratings in future, and vice versa. An exclusion filter had no significant performance impairment. Markets are in the process of rewarding higher ESG performing corporates with higher credit contingency, lower cost of refinancing and higher credit ratings.

	Study	Time period	Region	Data	Methodology	ESG dimension	Level	Result
A	Attig et al., (2014)	1991-2010	US	1,585 publicly listed US firms	Credit ratings: Regression of credit ratings on composite and individual CSR scores while controlling for size, EBIT, leverage and market beta	ESG	Firm	Positive
B	Barclays, (2015)	2006-2015	US	4,366 US corporate bonds	Bond Performance: Comparison of sustainable vs. traditional benchmark corporate bond indices; Performance attribution analysis; Historical correlation between ESG and credit ratings	ESG	Portfolio	Mixed
C	Bauer & Hann, (2010)	1995-2006	US	2,242 corporate bonds	Cost of Debt: Regression of CoD on measures of environmental management and control variables	E	Bond	Positive
D	Cheng et al., (2014)	2002-2009	World	2,439 publicly listed firms	Capital Constraint Index: Panel data regression; two-stage efficient Generalized Method of Moments (GMM) estimation; three-stage least squares simultaneous equations	ESG	Firm	Positive
E	Derwall & Koedijk, (2009)	1987 – 2003	US	15 SRI bond & 9 SRI balanced funds	Performance: Four-factor model/ Fama-Macbeth regressions	SRI	Portfolio	Neutral
F	Deutsche Bank, (2012)	Various	Various	Various	Cost of Debt: Meta-Study	ESG	Bond	Positive
G	Flammer, (2013)	1997-2012	US	2,793 CSR proposals	Shareholder Proposals: Regression Discontinuity framework	ESG	Firm	Positive
H	Henke, (2016)	2001-2014	US & EU	412 funds (thereof 103 SRI)	Performance: Five-factor-regression model with an ESG screening-related return factor during distinct market regimes; Multi-univariate time-series regression performance attribution	ESG	Portfolio	Positive
I	Leite & Ceu Cortez, (2016)	2002 - 2014	France, German, UK	63 SRI funds	Performance: Four-Factor performance attribution analysis	E	Portfolio	Positive
J	Merz, (2010)	2004-2007	EU	498 bonds	Bond Yield: Pooled Ordinary least squares, fixed-effects and random effects model regression of the yield spread on CSR measures	E	Bond	Negative
K	Newton Investment Management, (2016)	2004-2015	US	1,283 bonds	Performance: Comparison of constructed SRI vs. non-SRI portfolios	SRI	Portfolio	Neutral
L	Oikonomou et al., (2012)	1992-2009	US	S&P 500 companies; 9,000 observations	Market risk: Fixed-effects regression of alternative risk/ investor utility on individual/ aggregate CSP components and control variables; distinct analyses for low and high volatility periods	E&S	Firm	Positive
M	Oikonomou et al., (2014)	1992-2008	US	3,240 bond issues by 742 firms	Spread & Issuer rating: Clustered panel data regression analysis: Three factor model (credit spread, issuer rating and speculative credit rating) on CSR-score, firm and bond characteristics	E&S	Bond	Positive
N	Stellner et al., (2015)	2006-2012	EU	872 corporate bonds	Spread & Issuer rating: Ordered logistic panel regression analysis: Z-spread/credit ratings on ESG rating, company and industry-level specific control variables and sovereign ESG performance	ESG	Bond	Positive
O	Switzer & Wang, (2013)	2001-2010	US	228 banks	Governance: OLS Regression of default probability on firm level controls and various governance proxy variables	G	Firm (Banks)	Positive
P	UN PRI, (2012)	1990-2007	Various	15 academic studies	Cost of debt: Academic literature review by the UN PRI FI working group	ESG	Firm	Positive
Q	UN PRI, (2013)	1990-2013	Various	UN PRI academic literature review; expert opinions	Materiality: Meta-study of fifteen studies	ESG	Firm	Positive

Barclays in a 2015 study (“ESG ratings and performance of corporate bonds”) found that higher Investment Grade scoring on Governance outperformed a lower scoring portfolio by 500 basis points for the period from 2007 to 2015. Credit spreads for higher ESG issuers are slightly tighter, with all three of the Environment, Social and Governance components contributing. And they find a positive return premium for ESG scores. Higher ESG scores in general delivered 30 bp per annum, compared to conventional corporate bonds. Governance and Environment components were the most important. But Governance was the strongest and most consistent component, in terms of contributing to returns for the whole period:



Newton Investment Management in 2016 (“The impact of ethical investing on returns, volatility, and income”) found minimal impact from excluding fossil fuels (or sin securities) from US Investment Grade corporate bonds.

Listed companies in the S&P 500 with top quintile ESG ranks have outperformed their counterparts with bottom quintile ESG ranks by at least 3% per annum during the last five years. This estimate comes from Bank of America, across MSCI/Sustainalytics/Refinitiv scores. Looking at Europe, BoA analysis of MSCI scores found 4% annualised outperformance from 2007 through to 2019.