

ESG Investing in US IG Credit

The iBoxx MSCI ESG Advanced USD Liquid Investment Grade Index – a new measure of tradable US IG ESG Credit

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Assets tracking ESG-based investment strategies have been booming recently. While ESG demand has increased in recent years, there's been additional appetite in the wake of the coronavirus pandemic. ESG, or Environmental, Social and Governance, refers to three key aspects of sustainability and ethical business practices. When measured and filtered for, ESG-based investing provides a way for capital to flow to firms that engage in business lines and practices conducive to sustainability and high standards of ethics. Much in the way investors have long understood risk factors related to credit, interest rates and idiosyncrasies, ESG metrics are now understood to capture real risk factors facing investors.

With the launch of the iBoxx MSCI ESG Advanced USD Liquid Investment Grade Index, the US Investment Grade corporate bond market has a crucial measure for the tradable ESG Investment Grade credit market. The iBoxx MSCI ESG Advanced USD Liquid Investment Grade Index ("IBOXIG ESG") selects from the iBoxx USD Liquid Investment Grade Index ("IBOXIG") universe by applying climate and values-based screens to create an index composed of the IBOXIG entities with above average ESG scores relative to their industry peers. The ESG screens exclude specific flagged business lines as well as firms where the percent of revenue is linked to flagged business practices. For details of the flagged industries and thresholds, you view the index rules guide <u>here</u>.

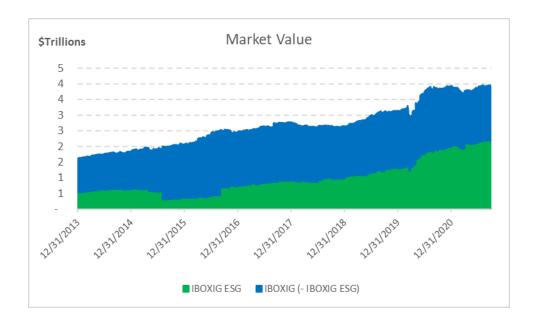
The climate-based screens remove issuers from the Oil & Gas sector, issuers with industry ties to fossil fuels, and issuers scoring below a defined threshold for environmental controversy.

The values-based screens remove a variety of controversial business activities including adult entertainment, alcohol, civilian firearms, controversial weapons, for profit prisons, gambling, genetically modified organisms, nuclear power, nuclear weapons, palm oil, predatory lending, and tobacco; and issuers violating the United Nations Global Compact. The index also removes issuers with MSCI ESG ratings of BB and below and issuers below a defined threshold for overall controversy.

Overview of the ESG Market

Of the current \$3.9 trillion of bond market value in IBOXIG, \$2.2 trillion are in debt issuers with above average ESG scores that are also included in IBOXIG ESG. High quality ESG entities have averaged 35.30% of the market value of the broader liquid IG market since December 31, 2013. Beginning mid-2018, the share of quality ESG entities began to rise, and now stands at 55.68% of the total market.

This may suggest the positive impact that ESG frameworks have had to incentivize company managers to establish practices in demand from their potential investors.



Risk/Return Profile

The total return performance is nearly identical between IBOXIG ESG and IBOXIG (annualized 5.42% versus 5.50% since December 31, 2013, respectively), with a correlation of daily returns between the two indices of 0.99. This enables investors to attain near-identical performance to the overall US IG credit market within an ESG framework.

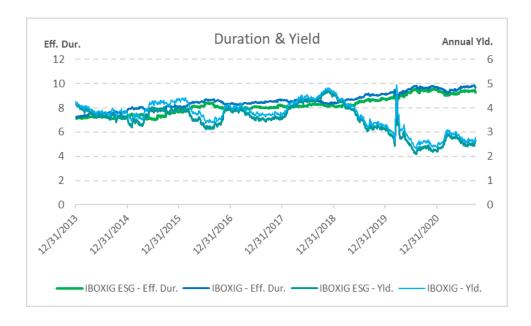


The IBOXIG ESG index performance suggests the utility of ESG screens for overall risk management. While the 5.42% annualized total returns for IBOXIG ESG are only 8 basis points less than IBOXIG, the 5.71% annualized volatility of IBOXIG ESG is 32 basis points less than IBOXIG's 6.03% annualized volatility. This results in IBOXIG ESG having a higher Sharpe ratio than IBOXIG. Additionally, the maximum drawdown for IBOXIG ESG is 1.92% less than IBOXIG.

	IBOXIG ESG	IBOXIG
Annualized Return	5.42%	5.50%
Vol	5.71%	6.03%
Sharpe (0 rates)	0.949	0.912
Max Drawdown	-16.96%	-18.88%
Max Drawdown Date	3/20/2020	3/20/2020

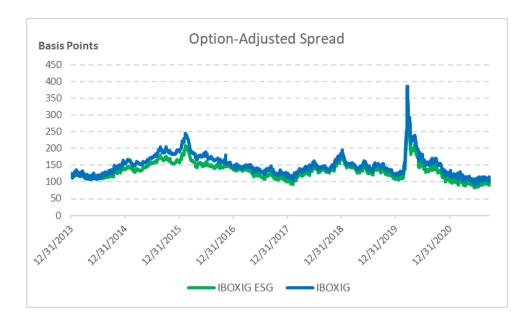
Duration, Yield and Spread

As of September 30, 2021, interest rate risk is slightly less for IBOXIG ESG; its effective duration of 9.28 being 0.38 years less than the 9.67 duration of IBOXIG. The IBOXIG ESG annual yield of 2.64% is 15bps less than the 2.80% yield of IBOXIG.



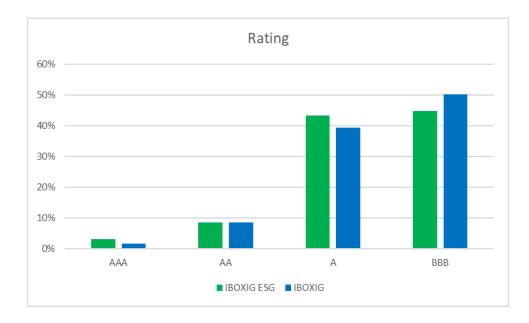
Overall credit risk is similar; however IBOXIG ESG skews towards higher rated bonds. The 95 basis point option-adjusted spread for IBOXIG ESG is 12bps lower than the 107bp OAS for IBOXIG.

Introducing the iBoxx USD Liquid Investment Grade BBB 0+ Index



Rating Distribution

The biggest rating differences are in the A and BBB-rated buckets (IBOXIG ESG +4.09% and -5.34% versus IBOXIG, respectively). IBOXIG ESG has 1.32% more exposure to AAA-rated bonds than IBOXIG (3.09% vs. 1.77%, respectively), while having 8 basis points less exposure to AA-rated bonds (8.60% vs. 8.68%, respectively).

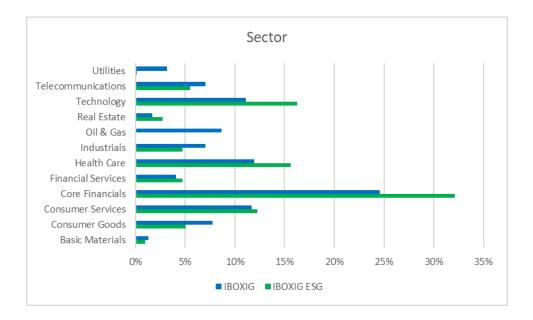


Sector Distribution

Unlike IBOXIG that has a 8.67% weight in Oil & Gas issuers, IBOXIG ESG has no exposure to the sector, since energy names are excluded by rule. This exclusion has an impact on spread – by

removing Oil & Gas issuers from IBOXIG, OAS is reduced by 2 basis points from 107 to 105. There's still an additional 10bps reduction in spread to get to the 95bp IBOXIG ESG OAS that isn't explained by energy names and is instead due to the broad application of ESG criteria across other industries.

The next two most underweight sectors in IBOXIG ESG versus IGOXIG are Utilities and Consumer Goods. IBOXIG ESG is most overweight versus IBOXIG in Core Financials, Technology and Health Care.



Top Issuers Comparison

7 names overlap as the top 10 largest issuers by market capitalization within IBOXIG ESG and IBOXIG. Notably, AT&T, Wells Fargo and Comcast are IBOXIG top 10 names that are excluded from IBOXIG ESG due to failing the ESG criteria.

IBOXIG Top 10 Issuers

lssuer	% Weight	Market Value (\$mn)	Par Amount (\$mn)
Bank of America Corp	3.00%	130,737	128,593
JPMorgan Chase & Co	3.00%	118,304	108,600
AT&T Inc*	2.42%	93,452	88,158
Verizon Communications Inc	2.28%	88,181	80,977
Wells Fargo & Co*	2.17%	83,861	72,816

Introducing the iBoxx USD Liquid Investment Grade BBB 0+ Index

Morgan Stanley	2.15%	83,321	75,235
Goldman Sachs Group Inc/The	2.14%	82,831	72,891
Citigroup Inc	2.14%	82,779	72,236
Apple Inc	2.02%	78,093	73,000
Comcast Corp*	1.99%	76,841	70,940

*entities that do not qualify for IBOXIG ESG

The 3 additional names in the IBOXIG ESG top 10 are Oracle, Abbvie and HSBC. Both IBOXIG ESG and IBOXIG use a 3% issuer cap to ensure diversification of idiosyncratic risk. IBOXIG has two entities that require capping the issuer weight, while the 8 largest issuers in IBOXIG ESG have their weight constrained to 3%.

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Apple Inc	3.00%	78,093	73,000
Oracle Corp*	3.00%	70,875	65,490
AbbVie Inc*	2.63%	57,061	49,456
HSBC Holdings PLC*	2.51%	54,545	48,250

*entities not in IBOXIG Top 10

The following table shows the 10 largest firms that are part of IBOXIG, however are not in IBOXIG ESG due to failing the ESG screens. There are several reasons why an entity can be excluded and can in fact fail more than one of the ESG screens, as is the case with Wells Fargo, Boeing and General Electric.

Top 10 Missing from IBOXIG ESG

Ticker	Issuer	Mkt Val. (\$mn)	Par At (\$mn)	Reason for Exclusion
Т	AT&T Inc	93,452	88,158	ESG Rating < BBB
WFC	Wells Fargo & Co	83,861	72,816	ESG Rating < BBB; overall controversy score
CMCS A	Comcast Corp	76,841	70,940	ESG Rating < BBB
ABIBB	Anheuser-Busch Cos LLC	68,318	55,585	alcohol producer
BA	The Boeing Co	45,237	38,800	ESG Rating < BBB; controversial & conventional weapons; overall controversy score
AVGO	Broadcom Inc	41,129	38,078	ESG Rating < BBB
CHTR	Charter Communications Operating LLC	40,264	35,100	ESG Rating < BBB
UNH	UnitedHealth Group Inc	36,445	31,800	ESG Rating < BBB
TMUS	T-Mobile USA Inc	35,406	33,050	ESG Rating < BBB
GE	General Electric Company	35,075	28,668	ESG Rating < BBB; nuclear power; nuclear weapons

Conclusion

The iBoxx MSCI ESG Advanced USD Liquid Investment Grade Index provides investors with a measure of the most liquid high quality ESG issuers within the USD investment grade corporate bond market, which accounts for the majority of the overall IG credit space. By maintaining the same ruleset as the iBoxx USD Liquid Investment Grade Index with the additional overlay of ESG screens, the index delivers a broad, diversified investment set for investors with stringent ESG selection criteria. IBOXIG ESG has outperformed IBOXIG on a risk-adjusted basis, while also experiencing more tempered drawdowns in times of stress. The ESG index has near identical total returns with a 0.99 correlation of daily returns, while having a slight tilt towards higher rated entities. An important

additional distinction is the blanket exclusion of energy firms from the ESG index, leading to greater exposure to core financials, technology and health care. With iBoxx the MSCI ESG Advanced USD Liquid Investment Grade Index, investors can align their credit exposure with their ESG needs without sacrificing performance, diversification or underlying market liquidity.

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