



Does ESG Affect Fundamentals?

W h i t e p a p e r

WEB PAGE

지속가능발전소(Who's Good. PBC)
www.whosgood.org

ESG Incident Analysis
www.esgincident.com

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Good Company makes
Good Society

 **Who's Good**
지속가능발전소



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Key Findings

- ESG investing market has shown significant growth over the past decade, and it continues to grow rapidly.
- Systematic application of ESG incidents into traditional ESG scores improves portfolio's returns.
- High rated ESG companies have stronger fundamentals due to better operational performance and lower exposure to ESG incidents.
- High rated ESG companies have better stock performance compared to low rated ESG companies.



Why ESG?

Environmental, Social, and Governance (ESG) is the representative of corporate sustainability, and its importance has been increasing in the capital markets. BlackRock, the world's largest investor with \$7.4 trillion in assets, has repeatedly emphasized the importance of ESG.

What is ESG?

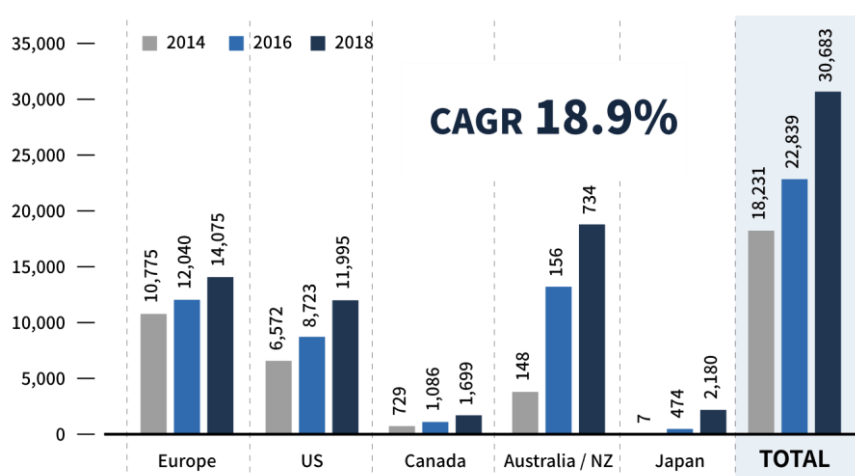
"ESG is often conflated or used interchangeably with the term 'sustainable investing'. We see sustainable investing as the umbrella and ESG as a data toolkit for identifying and informing our solutions." - BlackRock

BlackRock CEO Larry Fink's interest in ESG

- **2020 "Climate Risk Is Investment Risk"** - BlackRock announced many initiatives to place sustainability at the center of our investment approach.
- **Improved Disclosure for Shareholders**-"Questions around how each company serves its full set of stakeholders, such as the diversity of its workforce, the sustainability of its supply chain, or how well it protects its customers' data."
- **2019**, "As we enter 2019, commitment to a long-term approach is more important than ever...the world needs your leadership. ... companies must demonstrate their commitment to the countries, regions, and communities where they operate, ..."
- **2016**, "At companies where ESG issues are handled well, they are often a signal of operational excellence."

However, it is not only about institutional investors like BlackRock. Climate change and its related regulations have triggered ESG assets to grow to US\$30.7 trillion in 2018, an 18.9% average increase since 2014.

Global ESG Assets Under Management per Region, USD Billion



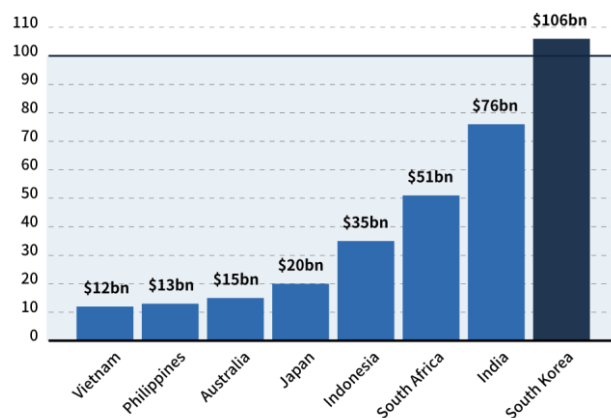
Source: Who's Good, GSI Review



Climate Risk Is Investment Risk

Climate Change is the main global issue that led to physical and economical changes. Companies get more exposed to 'stranded assets' and carbon risks. According to Carbon Tracker Initiative analysis, South Korea has the highest stranded asset risk due to coal power generators' high returns. The risk is amounting to about 120 trillion won (USD106bn) in a scenario below 2 degrees Celsius - the highest among 34 countries analyzed.

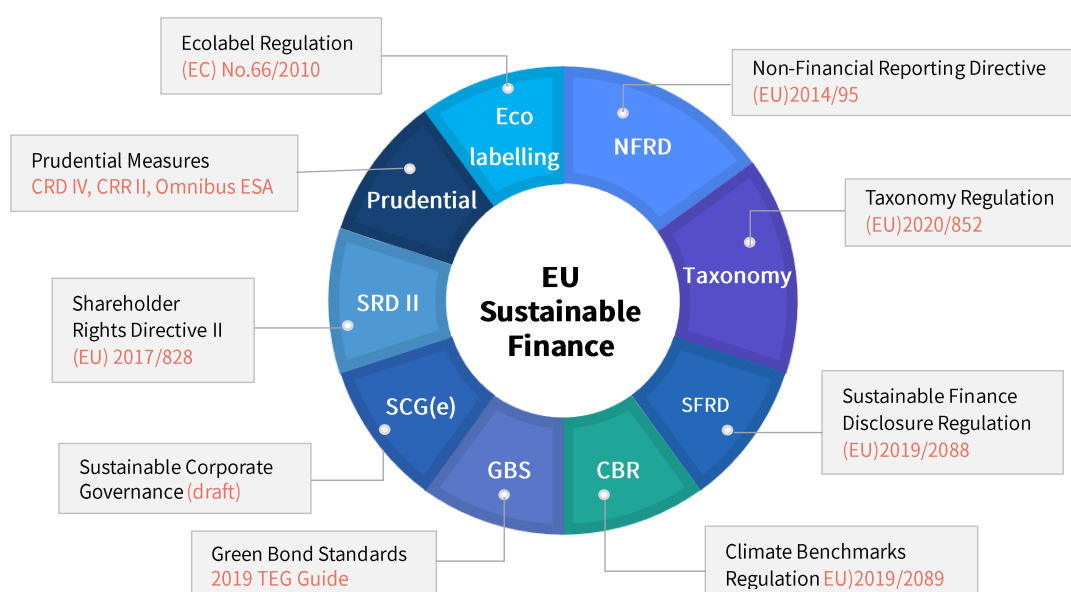
Stranded Assets Risk per Country, USD Billion



Source: Who's Good, Carbon Tracker Initiative

ESG as a New Protocol for Financial Markets in 2021

Increasing ESG regulations in the European Union, such as EU taxonomy and sustainable finance regulations, are set to achieve SDGs and the Paris Agreement, and have become the main market drivers. The world must pursue 'sustainable finance' to address the climate crisis. In 2021, ESG will become a new protocol for financial markets with the implementation of ESG regulations for stocks, bonds, banks, insurance, businesses, and governments.



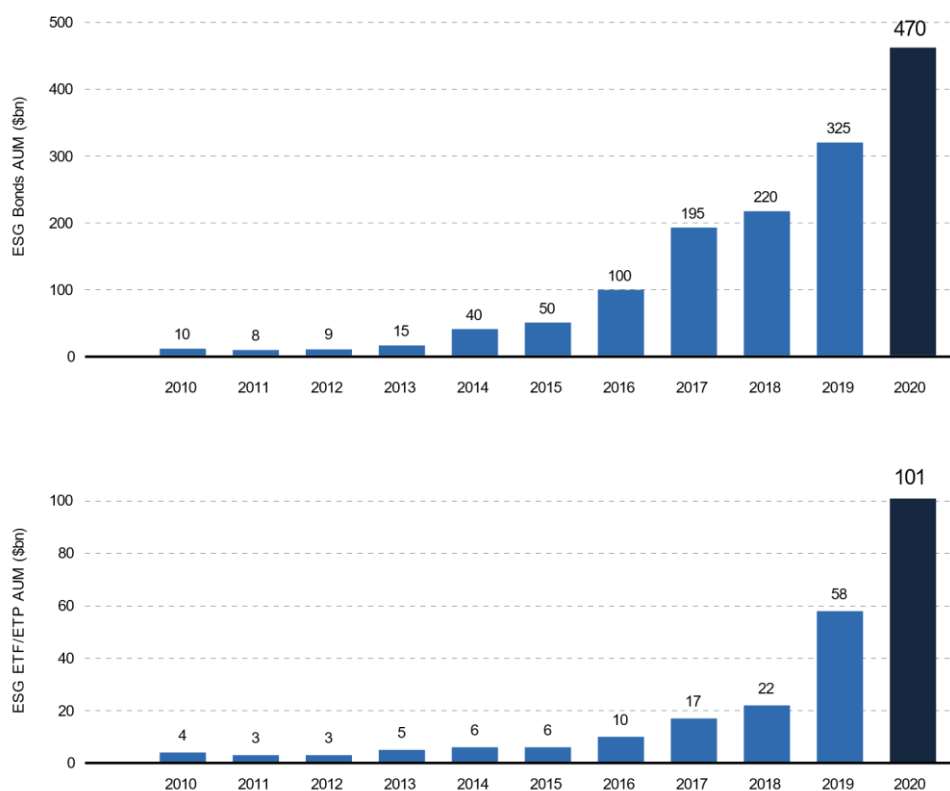
Source: Who's Good, EU commission



Acceleration of ESG Securities

Sustainable finance related regulations have stimulated global capital markets to provide more diverse ESG investing instruments, and we can observe a growing demand for them. ESG bonds and ETF/ETPs have shown 47% and 38% of Compound Annual Growth Rate (CAGR) respectively over the past decade.

ESG Bonds and ESG ETF/ETPs' Market Value Trends, USD Billion



Source: Who's Good, ETFGI, Bond data



Who's Good ESG Analysis Approach

In a time of such rapid ESG trends, asset managers have faced ESG integration challenges due to poor data quality and low update frequency. ESG service providers in Korea analyze ESG performance (PA) and ESG incident (IA) metrics to rate corporate sustainability level. Traditional ESG service providers are using manual methods for ESG data collection and news media monitoring. Such methods increase the possibility of data errors and have analysis limitations. Serious ESG incidents can be often overlooked.

	KCGS		Sustainvest		Daeshin		Who's Good	
Rating Name	ESG		ESGValue		ESG		Combined ESG Score	
Rating	S-D		AA-E		-		0-100 (score)	
Update	quarterly		semi-annually		-		daily	
Analysis	ESG (PA)	ESG (IA)	ESG (PA)	ESG (IA)	ESG (PA)	ESG (IA)	ESG (PA)	ESG (IA)
Universe	908	908	1000	1000	-	-	800	2300+ All listed companies
Method	manual	manual	manual	manual	manual	manual	automated	AI based

Source: Who's Good, KCGS, Sustainvest, Daeshin

Who's Good uses a more systematic approach to measuring corporate sustainability by leveraging Artificial Intelligence (AI) algorithms and automated frameworks. Technological progress lets us better manage data quality, make daily updates, and create different insights than other ESG rating firms.

The below table shows the differences between KCGS and Who's Good ratings, where Who's Good Combined ESG Score average equals to 50.

		KCGS Top ratings 2020, Q4				Who's Good 2020, October 26			
Company Name	Stock Code	ESG	E	S	G	Comb_ESG	Comb_E	Comb_S	Comb_G
KB Financial Group	105560-KR	A+	A+	A+	A+	63.85	66.62	57.16	57.67
SK Holdings	034730-KR	A+	A	A+	A+	56.66	62.55	61.44	48.28
S-Oil	010950-KR	A+	A	A+	A+	56.19	56.28	56.10	56.50
DGB Financial Group	139130-KR	A+	A	A+	A+	54.03	51.18	50.75	56.24
POSCO INTERNATIONAL	047050-KR	A+	A	A+	A+	62.74	50.81	60.76	61.57
Pulmuone	017810-KR	A+	A	A+	A+	53.67	47.05	61.67	56.09
Hyosung Advanced Material	298050-KR	A+	A+	A+	A	47.86	44.06	58.14	50.05
Hyosung TNC	298020-KR	A+	A+	A+	A	49.32	43.48	59.34	54.23
Hyosung Chemical	298000-KR	A+	A+	A+	A	50.66	43.67	56.75	58.96
Doosan	000150-KR	A+	A+	A+	A	58.65	63.01	63.53	53.20
Shinhan Financial Group	055550-KR	A+	A+	A	A+	56.00	68.65	47.53	54.00
SK Telecom	017670-KR	A+	A+	A	A+	60.56	63.51	58.40	55.16
SK Networks	001740-KR	A+	B+	A+	A+	60.83	63.88	62.50	49.69
KT	030200-KR	A+	A	A	A+	55.21	63.41	48.79	57.64
BNK Financial Group	138930-KR	A+	B+	A+	A+	54.23	47.90	49.86	57.12
JB Financial Group	175330-KR	A+	A	A	A+	61.66	47.90	60.57	64.61

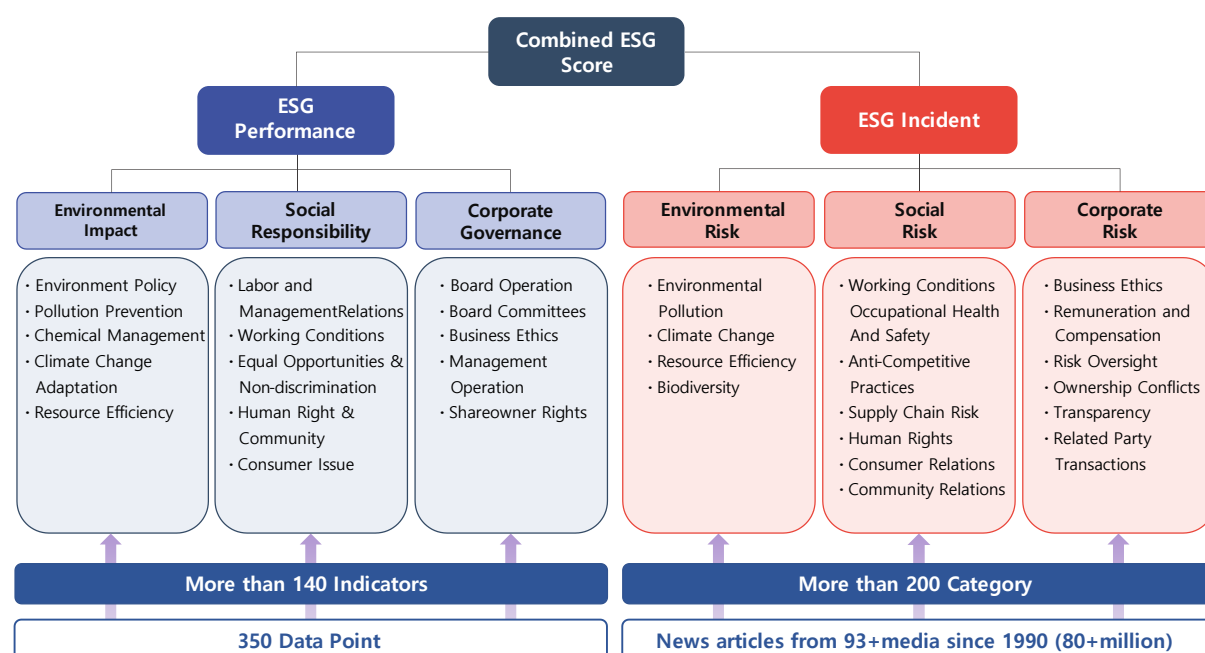
Source: Who's Good, KCGS



Who's Good Combined ESG Score is based on ESG Performance Analysis and ESG Incident Analysis scores. It is a combination of internal and external ESG metrics.

The ESG Performance Analysis (PA) shows companies' strategies and policies as well as important company statistics on ESG. This analysis is based on reliable public and open data sources and shows how well companies are prepared to prevent ESG risks.

The ESG Incident Analysis (IA) identifies corporate scandals and incidents from a large universe of news articles. The AI algorithms identify key risk signals based on the impact of incidents that occurred.



Who's Good Combined ESG Score is calculated by applying a discount to Performance Analysis scores based on the Incident Analysis risk levels with a maximum discount of 20%. The discounted scores are then normalized by every sector.

To identify the optimal number for maximum IA discount, we applied all possible discounts in the 0%-20% range to PA scores, and then constructed market capitalization-weighted portfolios of top 30% rated companies. The portfolios were backtested for the period of January 2018 to September 2020.

In fact, the bigger IA discount we apply, the better returns we get. We picked four portfolios to demonstrate how returns change after applying different IA discounts.



	No discount	Max 10% discount	Max 15% discount	Max 20% discount
Top 30% of PA universe	-3.80%	-3.63%	-3.34%	-2.88%
vs KOSPI	4.33%	4.49%	4.79%	5.24%
vs KOSPI 200	3.25%	3.42%	3.71%	4.17%
vs KRX 100	1.70%	1.87%	2.16%	2.62%
KOSPI	-8.12%	-8.12%	-8.12%	-8.12%
KOSPI 200	-7.05%	-7.05%	-7.05%	-7.05%
KRX 100	-5.50%	-5.50%	-5.50%	-5.50%

Source: Who's Good



How ESG Affects Fundamentals?

At Who's Good, we believe that maximizing profits in a sustainable way can help companies increase competitive advantage and mitigate serious business risks. Thus, companies with better ESG scores should have stronger fundamentals. There are hundreds of academic studies that have shown positive correlation between ESG and fundamentals, such as Eccles et al. (2014), El Ghoul et al. (2011) and Gregory et al. (2014). We have run an analysis to compare fundamentals of high scored ESG companies to the fundamentals of low scored ESG companies.

Test Methodology

1. *The Universe*

We use Who's Good PA universe for Who's Good Combined ESG Scores for September 2016 to September 2020 time period, which accounts for 3500 observations.

2. *Eliminating sector and size bias*

Some sectors can be exposed to higher ESG scores due to different weighting schemes. In our analysis, we calculate Z-scores in every sector, and then rescale the average to 50 points and the standard deviation to 5 points. Hence, we get sector-neutralized ESG scores.

We then create size-adjusted ESG scores as the residuals from regressing sector-neutralized ESG scores on the market capitalization exposure. The MSCI size adjustment methodology was used.¹⁾

3. *Dividing by quintiles and normalizing financial data*

Finally, using sector-size-adjusted ESG scores, we split companies into ESG quintiles, where Q1 consists of the companies with the highest ESG scores and Q5 with the lowest ESG scores. Financial data points are calculated in Z-score format and distributed across ESG quintiles.

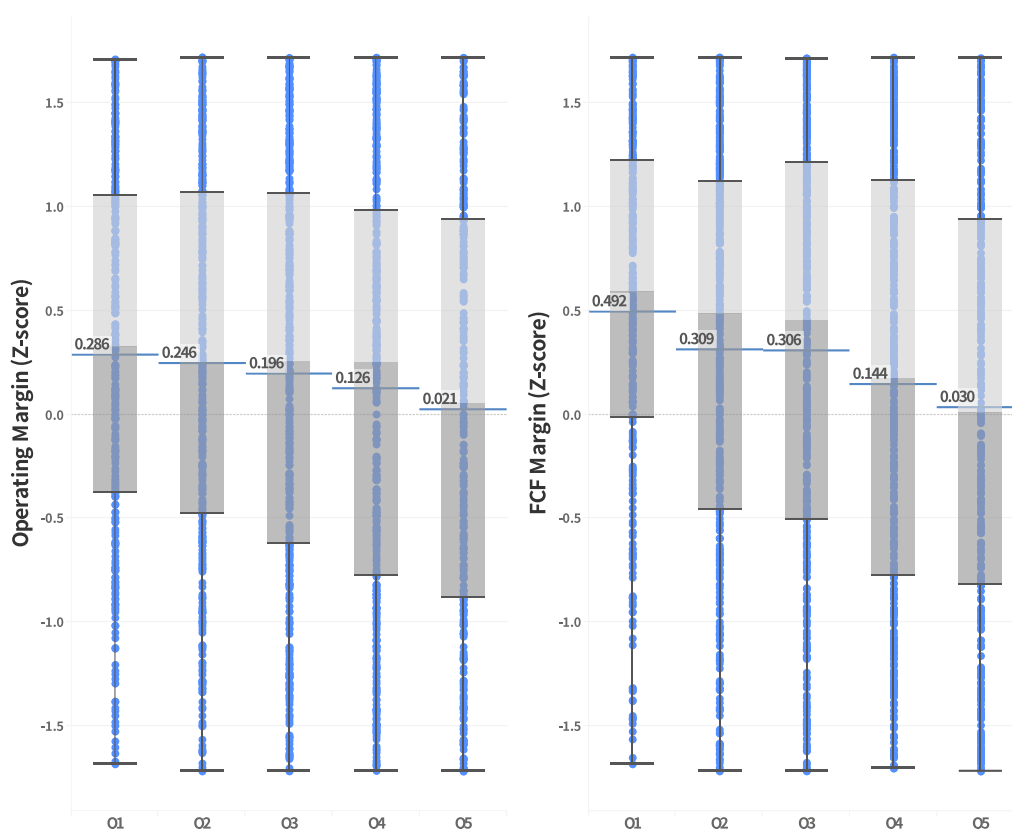
¹⁾ [MSCI size adjustment methodology, page 44](#)



Higher Efficiency and Profitability

The companies with higher ESG scores (Q1) are relatively higher in both operating margin and free cash flow margin than those with lower ESG scores (Q5). Sustainable companies tend to have better resource efficiency and human capital management. Also, companies with less exposure to ESG incidents have reduced non-operating costs, such as compliance. Ultimately, it leads to higher profitability and a competitive advantage over peers.

Operating Margin and Free Cash Flow Margin of ESG Quintiles



* Calculations:

- 1) Operating Margin (Z-score) of the sector-size normalized ESG quintiles is computed as the most recently reported annual Operating Income, divided by the most recently reported annual Sales.
- 2) FCF Margin (Z-score) of the sector-size normalized ESG quintiles is computed as the most recently reported annual Free Cash Flow, divided by the most recently reported annual Total Sales.
- 3) Data range: Year 2015 – 2019.
- 4) Blue line: Mean value.

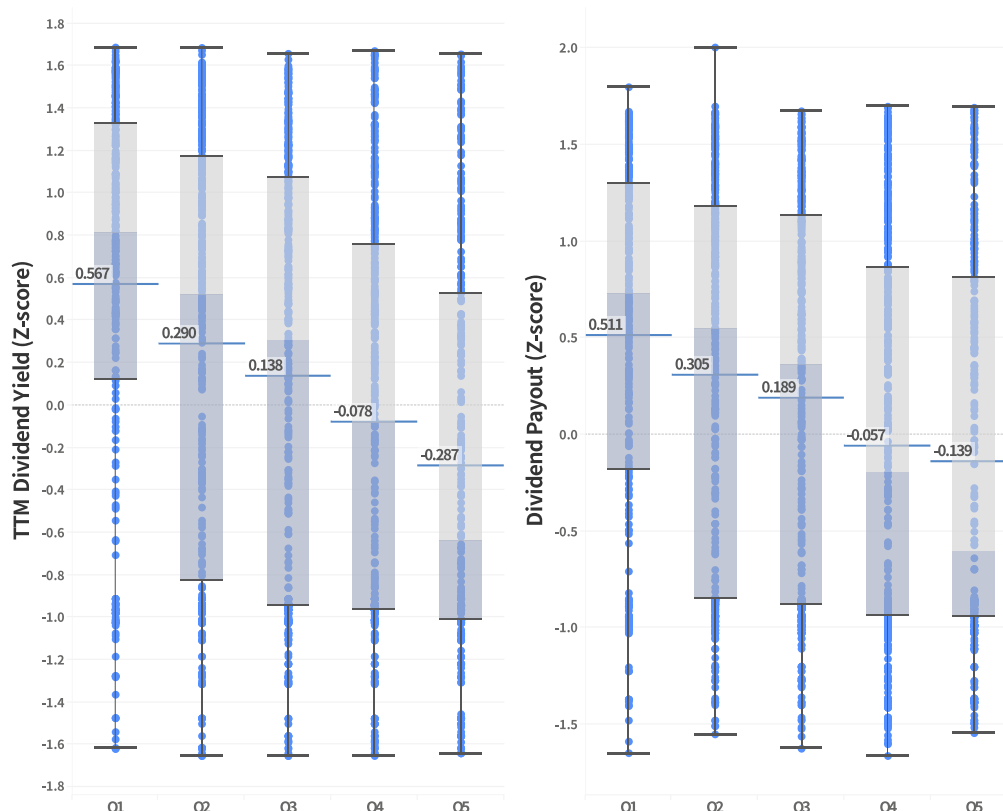
Source: Who's Good



Higher ROE and ROIC

Improved operating margins together with strong corporate governance can indeed improve Return on Invested Capital (ROIC). We found that companies with higher ESG scores have higher Return on Equity (ROE) and Return on Invested Capital (ROIC) than those with lower ESG scores.

ROE and ROIC of ESG Quintiles



* Calculations:

- 1) ROE (Z-score) of the sector-size normalized ESG quintiles is computed as the most recently reported annual Net Income, divided by the most recently reported annual Total Equity.
- 2) ROIC (Z-score) of the sector-size normalized ESG quintiles is computed as the most recently reported annual NOPAT, divided by the most recently reported annual Invested Capital.
- 3) Data range: Year 2015 – 2019.
Blue line: Mean value.

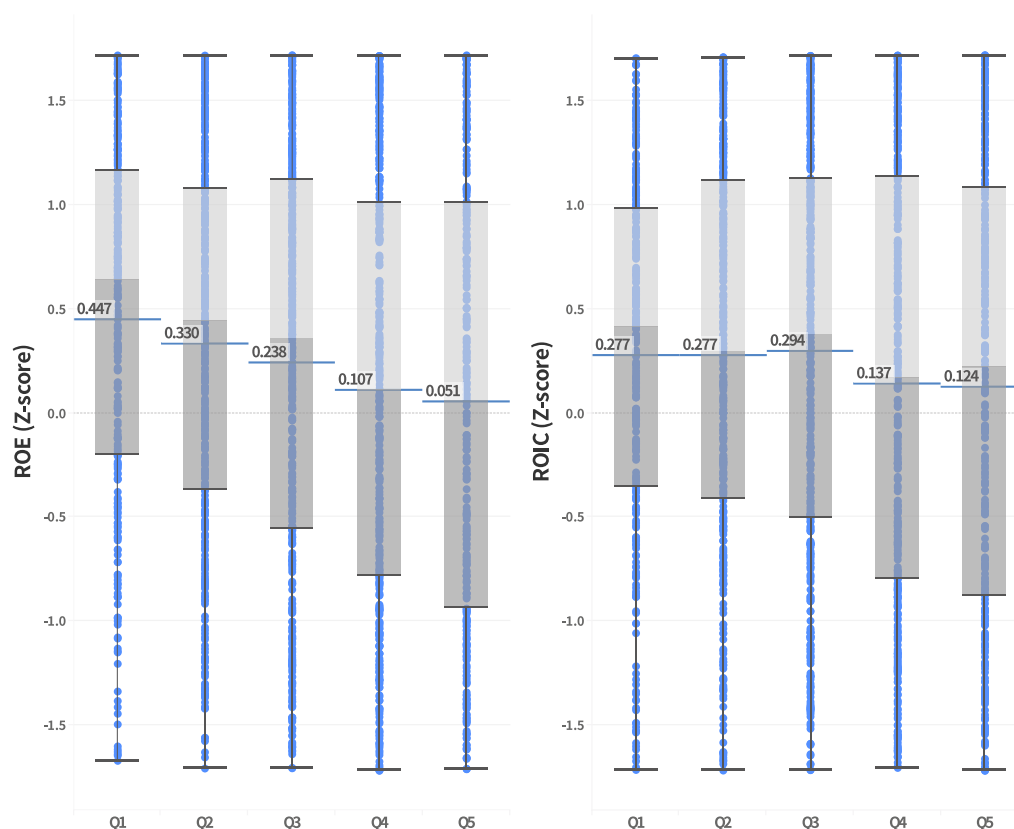
Source: Who's Good



Higher Dividend Yield and Payout Ratio

Higher profitability then results in higher dividends, which is crucial for long-term investment as reinvested dividends have great performance contribution to portfolio returns. In addition, we also found that companies with higher ESG scores have higher dividend payout ratios.

Dividend Yield and Dividend Payout Ratio of ESG Quintiles



* Calculations:

- 1) TTM Dividend Yield (Z-score) of the sector-size normalized ESG quintiles is computed by dividing the trailing 12-month dividend per share divided by the price at the last month.
 - 2) Dividend Payout (Z-score) of the sector-size normalized ESG quintiles is computed as the most recently reported Dividend Payout.
 - 3) Data range: Year 2015 – 2019.
- Blue line: Mean value.

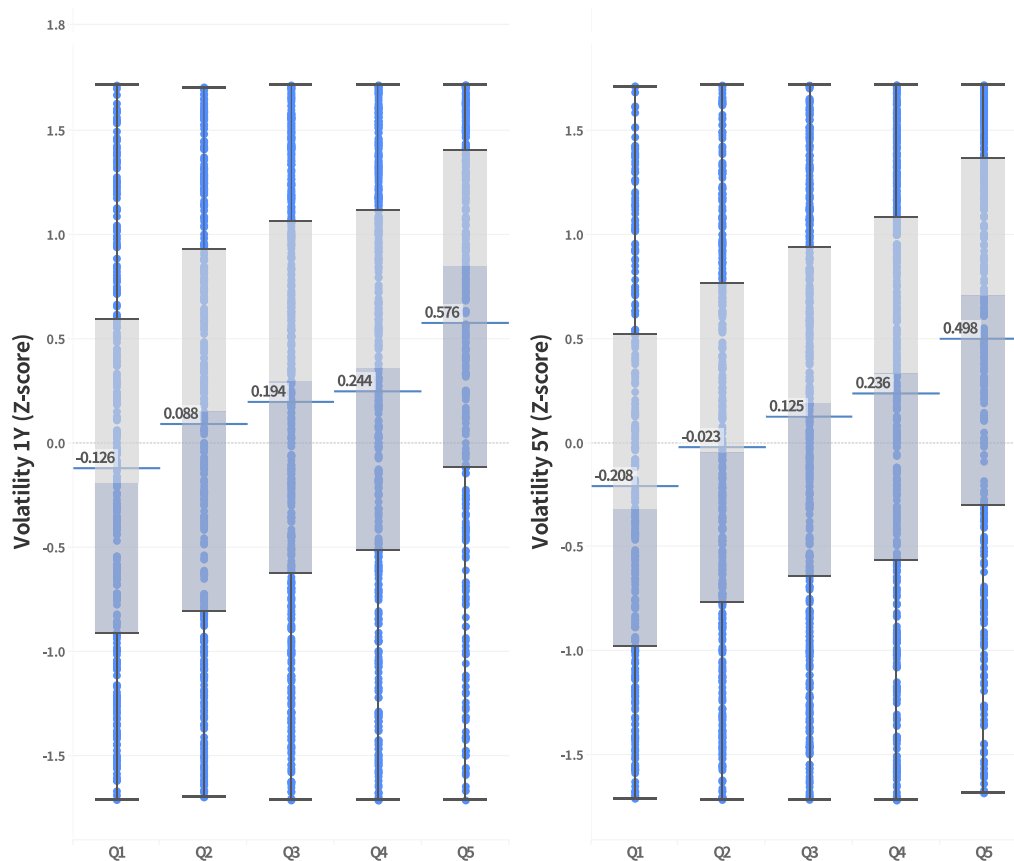
Source: Who's Good



Lower Volatility

Not all ESG incidents have an impact on stock returns, but without proper management, they eventually will impact returns. This is one of the common issues we see in the Korean market ²⁾. The companies in the first ESG quintile (Q1) have relatively stronger ESG management and smaller exposure to ESG Incidents. We found that they tend to have smaller short and long-term volatility.

Volatility of ESG Quintiles



* Calculations:

- 1) 1Y Price Volatility (Z-score) of the sector- size normalized ESG quintiles is 1-year daily volatility.
 - 2) 5Y Price Return (Z-score) of the sector- size normalized ESG quintiles is 5-year daily volatility.
 - 3) Data range: Year 2015 – 2019.
- Blue line: Mean value.

Source: Who's Good

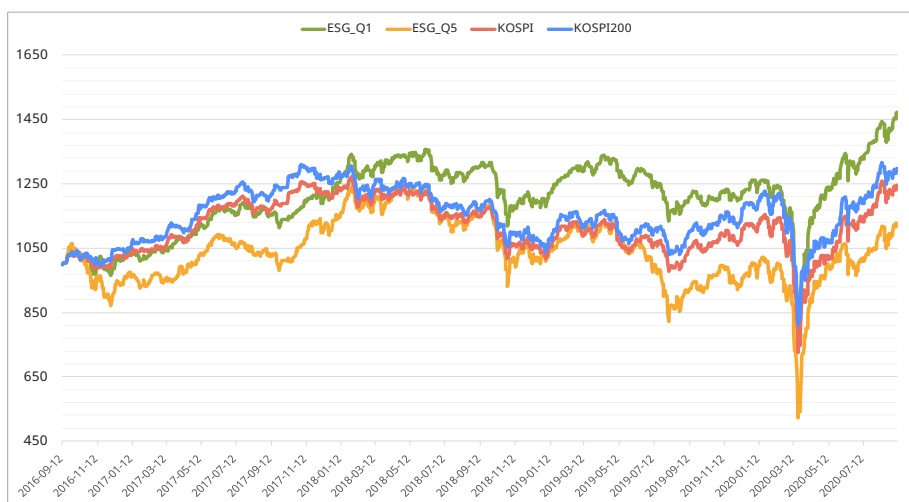
²⁾ [Who's Good 2019 ESG Incident Report](#)



Q1 and Q5 Backtest

We run a simple backtest with annual rebalancing and equal weights to demonstrate the difference in performance between the top quintile (Q1) and bottom quintile (Q5). This test also shows possible practical examples of positive screening, which has become one of the most common ESG investing strategies. The results of the backtest show significant outperformance of the top quintile over the bottom quintile.

ESG Quintiles Backtest



Cumulative Return (Q1-Q5)



Results	ESG_Q1	ESG_Q5	KOSPI	KOSPI 200
Total Return	47.21%	12.52%	24.60%	29.95%
Daily Volatility	0.99%	1.12%	0.90%	0.93%
Annualized Return	6.92%	2.06%	3.88%	4.63%
Annualized Volatility	15.77%	17.75%	14.26%	14.80%
Sharpe Ratio	0.344	0.032	0.167	0.212
MDD	-43.81	-57.89%	-43.05%	-38.03%

Source: Who's Good



Conclusion

While we only use ESG scores for the stock selection process in the backtest, more sophisticated methods can be applied by portfolio managers. For instance, our scores can be compared to investing factors and applied in the smart beta products.

The results of the analysis are encouraging as they show that high ESG rated companies have better operational performance that results in higher returns and lower risks. Therefore, ESG investing is not about giving up on financial returns if corporate sustainability is measured properly.

Our study suggests that daily systematic integrations of overlooked ESG Incidents into traditional ESG scores help mitigate serious risks and create better returns. It also allows investors to react faster when ESG risks occur. Ultimately, the development of Artificial Intelligence data analytics technology will solve the challenge of correlating ESG with financial performance.

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