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The impact of ESG ratings on corporate value during COVID-19 pandemic: evidence from China and South Korea

Donghoon Kim
College of Business, Korea Advanced Institute of Science and Technology, Seoul, South Korea, and
Sun-Joong Yoon
Dongguk Business School, Dongguk University, Seoul, South Korea

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Abstract

The COVID-19 pandemic has significantly disrupted global economies, posing unprecedented business challenges worldwide. This study examines the influence of Environmental, Social, and Governance (ESG) factors on corporate value in the context of the pandemic, focusing on China and South Korea. Using empirical analysis and data from Chinese A-share and South Korean KOSPI-listed companies, our research reveals complex dynamics. ESG had a negative impact on corporate value during the pandemic. However, firms with higher ESG scores demonstrated an insurance effect, mitigating risk. This effect held in both China and South Korea, highlighting the importance of ESG principles for resilience and sustainable growth in contemporary business practices. This research provides implications for ESG-focused businesses during crises.

Keywords ESG, Insurance effect, COVID-19, Pandemic, Emerging market

Paper type Research paper

1. Introduction

The COVID-19 pandemic, declared by the World Health Organization in March 2020, has had a profound global impact, leading to approximately 7.3 billion cases and 67 million deaths worldwide over the three years from 2020 to 2022 [1]. This crisis is one of the most indelible marks in the global economy since the Global Financial Crisis. Major economies like China and South Korea were not immune, facing disruptions due to measures like social distancing and border closures. China's GDP contracted by 6.8% in the first quarter of 2020 and its first negative growth since 1992, affecting various sectors and trade. South Korea, the second primary outbreak site [2], experienced consecutive quarters of negative growth and unprecedented stock market volatility.

Despite challenges, China and South Korea showed resilience, recovering quickly from the pandemic. This crisis heightened the focus on ESG (Environmental, Social, and Governance) investment as investors recognized the need to consider non-financial ESG risks. Policymakers and regulators responded by emphasizing consistent and reliable ESG information based on its sustainability. This encourages companies to fulfill social

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responsibilities and protect stakeholder interests. Institutional investors globally, managing trillions of dollars, accelerated their shift towards ESG investments, emphasizing the importance of a comprehensive ESG investment disclosure framework.

According to previous literature, contradicting views on ESG factors' impact on corporate performance persist, with some studies suggesting positive associations while others show nonlinear or negative relationships. Recent research or news noted that high ESG ratings negatively affected corporate value during COVID-19. In 2022, global ESG funds and stocks, particularly those related to electric vehicles and renewable energy, saw significant price declines due to rising renewable energy costs. Tesla's 2022 challenges exemplified the struggles tied to the ESG investment trend, as evidenced by the underperformance of popular ESG funds, which fell nearly 9% that year, possibly due to concerns about rising inflation affecting growth and ESG stocks [3].

This study distinguishes itself by highlighting the resilience and insurance effect, providing a unique perspective in contrast to prevailing negative research trends of ESG. It pioneers discussions about the influence of ESG factors on corporate value, encompassing each Environmental, Social, and Governance (E/S/G) aspect. Unlike prior research primarily focused on stable economic conditions, this study accounts for the disruptive influence of the COVID-19 pandemic. Moreover, while existing literature is often centered on individual countries, our research offers a comprehensive analysis, explicitly examining how ESG impacts corporate value, with a focus on emerging markets such as China and South Korea. Ultimately, our goal is to illuminate the diverse effects of ESG and its insurance effect on firm value during crises, enriching the understanding of its significance within the context of the COVID-19 pandemic.

The remainder of the paper is structured as follows: Section 2 delves into the related literature, Section 3 outlines the data and main variables, Section 4 presents the empirical results, and Section 5 concludes.

2. Literature review and hypothesis

2.1 ESG and firm value

Some previous research supports a positive link between ESG performance and financial outcomes. Friede *et al.* (2015) analyzed 2,200 papers, with about 90% showing this positive connection. Several studies, including McGuire *et al.* (1988), Cornett *et al.* (2016), Harjoto and Laksmana (2018), and Fatemi *et al.* (2018), reinforced this positive relationship across various stock markets. Kim and Koo (2023) found that while disagreement in ESG ratings negatively impacts returns, ESG ratings themselves positively affect returns in the South Korean stock market. Moreover, the COVID-19 pandemic highlighted ESG's significance, as companies with strong ESG scores performed better. Díaz *et al.* (2021) introduced a new ESG factor, discovering that high ESG scores outperformed the S&P 500, while low ESG scores underperformed during the pandemic. Similarly, Broadstock *et al.* (2021) found a positive correlation between ESG performance and short-term returns during COVID-19 in the Chinese stock market.

However, conflicting views exist. Some scholars argue that ESG factors could negatively affect financial performance (Vance, 1975; Alexander and Buchholz, 1978; Wright and Ferris, 1997). Others suggest that no clear linear relationship exists between ESG performance and corporate value (Filbeck and Gorman, 2004). Cho (2023) suggested that high-ESG stocks yield negative abnormal returns in economic downturns in the South Korean stock market. Harabida *et al.* (2022) and Asteriou *et al.* (2023) noted that highly-rated ESG firms posted more pronounced negative abnormal returns than lower-rated ESG firms during COVID-19 in European markets.

2.2 Insurance effect of ESG and hypothesis

Researchers have explored the insurance effect of ESG on shareholder wealth. Godfrey (2005) suggests that a company's social responsibility acts as insurance, reducing stock price declines during adverse events. During the 2008–2009 Global Financial Crisis (GFC), Cornett *et al.* (2016) found a positive correlation between U.S. banks' ESG scores and financial performance. Lins *et al.* (2017) observed that companies with strong CSR performance had about 4–7% higher stock prices during the crisis. Przychodzen *et al.* (2016) found that considering ESG factors reduces portfolio risk for fund managers. During the COVID-19 pandemic, Albuquerque *et al.* (2020) discovered that firms with higher ESG scores outperformed others, especially during market downturns, resulting in lower stock return volatility. Hwang *et al.* (2021) and Ji and Yoon (2022) observed milder declines in corporate earnings for firms with strong ESG performance in the South Korean market during the pandemic.

Building upon the preceding literature, we formulate the following hypotheses for empirical examination.

H1. During COVID-19, ESG has a reduced impact of the pandemic on corporate value.

H2. During COVID-19, ESG has a more substantial insurance effect on corporate value for companies with higher ESG scores than those with lower ESG scores.

H3. COVID-19 has a more substantial negative moderating effect on ESG and corporate value for South Korean companies than Chinese companies.

3. Data and variables

This study employs data from 1,305 Chinese A-share market companies and 259 South Korean KOSPI index-listed companies from 2018 to 2021. To ensure the data quality, we exclude financial industry firms, remove Special-Treatment (ST) and ST related companies from the Chinese dataset, and omit companies with less than a year of listing history. Data for Chinese companies come from the China Stock Market and Accounting Research (CSMAR) database and South Korean company data are obtained from DataGuide. ESG performance data are sourced from Bloomberg, which assigns higher scores to better performance. Despite localized ESG assessment agencies in both countries, our analysis primarily uses Bloomberg data for international fairness and data comparability [4].

Our study explores the relationship between a company's ESG performance and corporate value (TobinQ), considering the potential impact of COVID-19. We also control for company size, leverage, age, growth rate, cash holdings, and board size to analyze their interactions in our research context comprehensively. All control variables are winsorized at the 1% level. The detailed definition of these variables is presented in Appendix. Table 1 presents the summary statistics of the variables.

4. Empirical analysis

4.1 Impact of ESG on firm value during COVID-19

In this section, we analyze the impact of ESG performance on corporate value during the backdrop of the COVID-19 pandemic. We employ a two-way fixed effects model (Equation 1) to estimate these relationships as follows:

$$\mathrm{TobinQ}_{i,t} = \alpha_{i,t} + \beta_{i,t} \times \mathrm{ESG}_{i,t} + \gamma_{i,t} \times \mathrm{ESG}_{i,t} \times \mathit{Time} + \lambda_{i,t} \times \mathrm{X}_{i,t} + \sum \mathit{Year} + \sum \mathit{Firm} + \epsilon_{i,t} \quad (1)$$

Table 1.
Summary statistics

Panel A			South Korea						China			
Variable	# of firm	Sample size	Mean	Std	Min	Max	# of firm	Sample size	Mean	Std	Min	Max
TobinQ	250	1,000	1.0889	1.6694	0.0750	8.0051	1,305	3,676	1.7780	1.2953	0.6413	8.0051
ESG	250	1,000	38.7826	11.7789	18.7707	64.0881	1,305	3,676	24.5745	9.8798	11.5702	64.0881
E	250	1,000	22.1257	18.7817	0.0000	62.9115	1,305	3,676	14.4349	11.9050	0.0000	62.9115
S	250	1,000	22.2202	10.2326	7.0175	56.1404	1,305	3,676	23.7731	10.0576	7.0175	56.1404
G	250	1,000	71.9737	12.3482	50.5719	95.5449	1,305	3,676	49.7912	12.1475	33.9286	95.5449
Time	250	1,000	0.5110	0.5001	0.0000	1.0000	1,305	3,676	0.4200	0.4936	0.0000	1.0000
Size	250	1,000	23.3334	1.5540	20.5349	27.8488	1,305	3,676	23.4211	1.4170	20.5349	27.8488
Lev	250	1,000	0.4627	0.2021	0.0752	0.9203	1,305	3,676	0.4835	0.2028	0.0752	0.9203
Age	250	1,000	3.5457	0.6496	1.9459	4.2905	1,305	3,676	3.0982	0.2383	1.9459	4.1589
Growth	250	1,000	0.0609	0.1655	−0.2213	0.4825	1,305	3,676	0.0021	0.0184	−0.0100	0.4825
Cash	250	1,000	0.0801	0.0617	0.0070	0.4832	1,305	3,676	0.1388	0.0996	0.0070	0.4832
Board	250	1,000	1.1701	0.3215	0.6931	2.1972	1,305	3,676	2.1638	0.2076	1.3863	2.7081

Panel B. correlations

	TobinQ	ESG	E	S	G	Time	Size	Lev	Age	Growth	Cash	Board
TobinQ	1.000											
ESG	−0.095	1.000										
E	−0.016	0.596	1.000									
S	−0.032	0.241	0.233	1.000								
G	−0.101	0.824	0.459	−0.017	1.000							
Time	0.058	0.266	0.146	−0.028	0.328	1.000						
Size	−0.317	0.295	0.173	0.189	0.192	0.037	1.000					
Lev	−0.320	0.075	0.048	0.047	0.063	−0.001	0.501	1.000				
Age	−0.130	0.252	0.097	−0.038	0.313	0.100	0.055	0.015	1.000			
Growth	−0.024	0.170	0.103	0.001	0.188	0.073	0.025	−0.014	0.102	1.000		
Cash	0.278	−0.124	−0.039	−0.019	−0.131	0.036	−0.117	−0.247	−0.122	−0.075	1.000	
Board	0.117	−0.392	−0.175	0.077	−0.506	−0.071	0.123	0.075	−0.343	−0.266	0.198	1.000

Note(s): This table presents descriptive statistics and correlations of variables across two countries, South Korea and China, concerning the relationship between Environmental, Social, and Governance (ESG) factors and corporate value. Panel A reports the descriptive statistics, including each variable's mean, standard deviation, minimum, and maximum values. Panel B presents correlation coefficients between variables. TobinQ represents corporate value, while E, S, and G represent Environmental, Social, and Governance factors. Time denotes the time dummy, Size indicates firm size, Lev represents leverage level, Age denotes firm age, Growth represents growth rate, Cash denotes cash holdings, and Board indicates board sizes. The sample period covers from 2018 to 2021

Source(s): Table by authors

where $TobinQ_{i,t}$ represents the corporate value measured as the ratio of market capitalization to total assets and $ESG_{i,t}$ denotes the ESG total score capturing the overall ESG performance for firm i in year t. *Time* is a dummy variable, with a value of 1 for years after 2019, accounting for the COVID-19 shock, and 0 for years before 2019 in this study. $X_{i,t}$ represents a set of control variables. We include the year fixed effect and individual fixed effects to mitigate endogeneity concerns related to omitted variables.

Our primary interest lies in the significance of $\beta_{i,t}$ and $\gamma_{i,t}$. If $\beta_{i,t}$ is significantly positive while $\gamma_{i,t}$ is significantly negative, it indicates that as ESG scores increase, corporate value tends to be higher, but the role of ESG in promoting corporate value weakened during the COVID-19 crisis.

Table 2 shows the results. According to Model (1), ESG has a significant positive impact on corporate value ($\beta_{i,t} = 0.0553$). However, this effect weakened considerably after the onset of COVID-19 ($\gamma_{i,t} = -0.0183$). In Model (2), (3), and (4), the individual Environmental (E), Social (S), and Governance (G) factor positively influences corporate value ($\beta_{i,t} = 0.0174, 0.0179, 0.0455$, respectively). However, its impact weakened post-COVID-19 ($\gamma_{i,t} = -0.0073, -0.0077, -0.0186$, respectively) [5]. Models (5) to (8) present the results when we employ Returns on Assets (ROA) as an alternative indicator for firm value based on the strong link between a company's value and operational performance. The results are qualitatively similar, and the persistence of these results, even with a different approach to gauging corporate value, affirms the reliability of our regression analysis.

In summary, the empirical analysis provides strong evidence of the impact of ESG factors, with each E, S, and G on corporate value. These findings indicate the positive influence of these factors on corporate value and their diminishing effect following the outbreak of the COVID-19 pandemic. This underscores the importance of considering ESG principles as a part of corporate strategies to navigate challenging times and enhance long-term value creation.

4.2 Insurance effect of ESG

In this section, we further investigate the insurance effect of ESG factors. We categorize firms into two groups (high and low ESG) based on ESG median scores. Table 3 shows the regression results. The model (1) and (2) results show that the coefficient of ESG × Time ($\gamma_{i,t}$) is not significant for high ESG firms but significantly negative at the 5% level for low ESG companies. This suggests that COVID-19 does not weaken high ESG companies but mitigates ESG's role in enhancing firm value for low ESG companies. Similarly, firms are divided into high and low E, S, and G groups based on median scores. Models (3) and (4) indicate that $\gamma_{i,t}$ is not significantly related to firm value for high E firms but has a significantly negative coefficient at the 5% level for low E companies. COVID-19 does not significantly affect the influence of E on firm value for high E companies but weakens its impact for low E companies. In addition, Models (5) and (6) demonstrate that $\gamma_{i,t}$ is not significant for the S group, suggesting that COVID-19 does not affect the promotional role of Social factor in firm value. Finally, results in models (7) and (8) reveal that $\gamma_{i,t}$ is −0.0107 for the high G group, significant at the 10% level, while the coefficient for low G firms is −0.0213, significant at the 1% level. This implies that COVID-19 negatively impacts the promotional effect of G on firm value for low G firms.

Regarding the insurance effect of ESG, we can infer that companies with high ESG scores did not experience a significant impact of ESG × Time during the COVID-19 period, indicating that COVID-19 did not have a negative effect on these companies due to their high ESG scores. In other words, the COVID-19 event significantly reduced the positive impact of ESG on companies, but this effect was primarily observed among firms with low ESG scores.

Table 2.
Regression results of ESG on firm value

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	TobinQ	TobinQ	TobinQ	TobinQ	ROA	ROA	ROA	ROA
ESG × Time	−0.0183***				−0.0006***			
	(−5.42)				(−4.00)			
ESG	0.0553***				0.0006***			
	(7.36)				(2.98)			
E × Time		−0.0073***				−0.0004***		
		(−2.99)				(−3.39)		
E		0.0174***				0.0003**		
		(4.85)				(2.49)		
S × Time			−0.0077**				−0.0006***	
			(−2.54)				(−3.93)	
S			0.0179***				0.0004**	
			(3.15)				(2.34)	
G × Time				−0.0186***				−0.0003**
				(−5.63)				(−2.52)
G				0.0455***				0.0003**
				(7.57)				(2.06)
Size	−0.0665	−0.0035	0.0236	−0.0636	0.0563***	0.0565***	0.0569***	0.0555***
	(−0.53)	(−0.03)	(0.18)	(−0.51)	(10.94)	(11.00)	(11.09)	(10.80)
Lev	−1.1758***	−1.1836***	−1.1433***	−1.0710***	−0.3451***	−0.3464***	−0.3462***	−0.3429***
	(−3.06)	(−3.02)	(−2.84)	(−2.82)	(−20.90)	(−20.94)	(−20.95)	(−20.74)
Age	5.0498***	7.2041***	7.7706***	3.9894***	0.0332	0.0655	0.0781*	0.0399
	(3.80)	(4.91)	(4.96)	(2.95)	(0.72)	(1.45)	(1.74)	(0.84)
Growth	0.5098*	0.1777	0.0294	0.6775**	0.0900***	0.0891***	0.0915***	0.0899***
	(1.79)	(0.65)	(0.11)	(2.23)	(7.67)	(7.69)	(7.91)	(7.47)
Cash	0.1725	0.0218	0.0354	0.2167	0.0269	0.0257	0.0241	0.0265
	(0.39)	(0.05)	(0.08)	(0.49)	(1.29)	(1.23)	(1.15)	(1.27)
Board	0.109	0.077	0.101	0.1368	−0.0058	−0.0066	−0.005	−0.0061
	(0.48)	(0.32)	(0.42)	(0.59)	(−0.65)	(−0.74)	(−0.55)	(−0.68)
Constant	−13.8236***	−20.8174***	−23.4546***	−11.6034**	−1.2200***	−1.3133***	−1.3714***	−1.2257***
	(−2.85)	(−3.95)	(−4.18)	(−2.34)	(−6.75)	(−7.37)	(−7.71)	(−6.68)
Firm fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,676	4,676	4,676	4,676	4,676	4,676	4,676	4,676
R-squared	0.2324	0.1776	0.261	0.2334	0.2658	0.2642	0.2652	0.263

Note(s): This table presents regression results examining the impact of Environmental, Social, and Governance (ESG) factors on firm value and performance, as measured by TobinQ and Return on Assets (ROA), respectively. Models (1) through (4) analyze TobinQ, while Models (5) through (8) analyze ROA as the dependent variable. The interaction term ESG × Time captures the time-varying effect of ESG factors. Control variables include firm size, leverage, firm age, growth rate, cash holdings, and board sizes. See Appendix for the definitions of the variable. Firm and year-fixed effects are included in all models. All t-statistics (in parentheses) are based on the standard errors clustered by firm level. *, **, and *** denote significance at the 10, 5, and 1% levels. The sample includes the China A-Shares and KOSPI-listed companies. The sample period covers from 2018 to 2021

Source(s): Table by authors

Table 3. Insurance effect of ESG

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Group	High ESG	Low ESG	High E	Low E	High S	Low S	High G	Low G
Variables	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ
ESG × Time	−0.0143	−0.0125**						
	(−1.64)	(−2.08)						
ESG	0.0568***	0.0512***						
	(3.66)	(3.83)						
E × Time			0.0163	−0.0087**				
			(1.42)	(−2.39)				
E			0.0342**	0.0183***				
			(2.47)	(2.80)				
S × Time					−0.0031	−0.0017		
					(−0.70)	(−0.22)		
S					0.0078**	0.0071*		
					(2.32)	(1.80)		
G × Time							−0.0107*	−0.0213***
							(−1.71)	(−4.68)
G							0.0224**	0.0642***
							(2.18)	(14.29)
Size	−0.1791	−0.0339	0.0015	0.0395	0.0658	−0.0048	−0.0224	0.0245
	(−0.76)	(−0.24)	(0.01)	(0.25)	(0.44)	(−0.04)	(−0.29)	(0.11)
Lev	−0.059	−0.9635**	−0.4182	−1.4752**	−1.5963***	−1.0085***	−0.9514***	−0.9226
	(−0.07)	(−2.32)	(−0.90)	(−2.28)	(−3.56)	(−2.87)	(−3.65)	(−1.49)
Age	5.1571**	4.6829***	5.8595***	6.8459***	10.5156***	5.3460***	4.5095***	2.2612*
	(2.38)	(3.82)	(3.47)	(3.66)	(7.44)	(5.29)	(3.75)	(1.88)
Growth	0.6624**	0.2638	−0.5216	0.3564	0.4277	0.168	−1.1284	0.3646
	(2.02)	(0.80)	(−1.11)	(1.00)	(1.32)	(0.64)	(−1.64)	(1.40)
Cash	0.1087	0.3323	0.1542	−0.1134	−0.8008	0.8201*	0.7697**	−1.1501
	(0.08)	(0.73)	(0.26)	(−0.13)	(−1.44)	(1.81)	(2.47)	(−1.28)
Board	0.2198	−0.0865	−0.1696	0.5424	−0.162	0.1235	−0.2752	0.2328
	(0.52)	(−0.44)	(−1.15)	(1.52)	(−0.71)	(0.61)	(−1.41)	(0.99)
Constant	−13.3982	−12.7578***	−16.4502**	−21.7668***	−31.8700***	−14.9337***	−11.6641***	−10.152
	(−1.45)	(−2.61)	(−2.32)	(−3.02)	(−5.72)	(−3.73)	(−2.90)	(−1.58)
Firm fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,337	2,339	2,337	2,339	1,693	2,983	2,709	1,967
R-squared	0.155	0.106	0.105	0.073	0.09	0.046	0.159	0.222

Note(s): This table presents regression results examining the differential impact of Environmental, Social, and Governance (ESG) factors on firm value (TobinQ) across high and low E, S, and G groups. Models (1) through (8) represent different combinations of E, S, and G groups. The interaction term ESG × Time captures the time-varying effect of ESG factors. Control variables include firm size, leverage, firm age, growth opportunities, cash holdings, and board sizes. See Appendix for the definitions of the variable. Firm and year-fixed effects are included in all models. All t-statistics (in parentheses) are based on the standard errors clustered by firm level. *, **, and *** denote significance at the 10, 5, and 1 % levels. The sample includes the China A-Shares and KOSPI-listed companies. The sample period covers from 2018 to 2021

Source(s): Table by authors

On the other hand, companies with high ESG scores do not exhibit a significant coefficient for ESG × Time, which could be explained as an indirect insurance effect.

4.3 Comparison between China and South Korea

To analyze the varying impact of the COVID-19 pandemic on different countries, we divide the total sample into two subsets, consisting of South Korean and Chinese companies. Regression analyses are conducted for each subset, as the results are presented in Table 4.

Models (1) and (2) in Table 4 indicate that the influence of ESG on corporate value in South Korean firms has been further weakened due to the impact of the COVID-19 pandemic. Furthermore, Models (3) and (4) show that the regression coefficient for $\gamma_{i,t}$, representing the effect of E on corporate value, is −0.0076 for South Korean firms, whereas it is not statistically significant for Chinese firms. This suggests that E has a limited impact on enhancing corporate value, especially in the case of Chinese firms where E did not significantly affect corporate value. Models (5) and (6) reveal that the promotional effect of S on corporate value is relatively weak, and S in Chinese firms does not significantly influence corporate value. Finally, Models (7) and (8) demonstrate that, due to the impact of the COVID-19 pandemic, the influence of G on corporate value in South Korean firms further weakened.

When comparing China and South Korea, the negative impact of the pandemic is more pronounced in South Korea than in China. Surprisingly, the pandemic has not had a significant negative impact on China's Environmental and Social factors. This discrepancy can be attributed to two key factors. Firstly, we can interpret that the pandemic poses a greater risk to South Korean companies than Chinese companies. Secondly, in South Korea, both Environmental and Social factors show more significant improvements than in China, resulting in differences in their impact on corporate value during the pandemic.

Additionally, to examine the insurance effect of ESG on corporate value, the sample is further divided into Chinese and South Korean groups based on median ESG values. Panel A (B) of Table 5 presents the analysis results on South Korean (Chinese) companies. These findings highlight the insurance effects of ESG factors on firm value in both South Korea and China. However, there are variations in the strength of insurance effects across different ESG dimensions within each country. In South Korea, all three ESG factors exhibit some insurance effect, while in China, the Environmental and Governance factors play a more prominent role in the insurance effect. This difference can be attributed to the stakeholder-oriented environment in South Korea, which fosters a more comprehensive application of the insurance effect of ESG, particularly in the Social factor.

5. Conclusion

Amongst growing interest in ESG investments, especially in light of the COVID-19 pandemic, our study sheds light on the intricate dynamics between ESG factors and corporate value, particularly amid the disruptive COVID-19 pandemic. We establish a robust link between Environmental (E), Social (S), and Governance (G) factors and corporate value, emphasizing their insurance effect, albeit with a diminishing effect after the COVID-19 onset. This underscores the strategic importance of integrating ESG principles for enduring value creation. Notably, companies with high ESG scores displayed resilience during the pandemic, while the positive impact of ESG waned in low-scoring firms. South Korea exhibited an insurance effect across all three ESG factors, whereas in China, Environmental and Governance factors played a more pronounced role, highlighting stakeholder orientation variations.

In summary, this paper contributes valuable insights into the complex relationship between ESG and corporate value, particularly in the context of the disruptive COVID-19

Table 4. Analysis of South Korea and China

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Country	South Korea	China	South Korea	China	South Korea	China	South Korea	China
Variable	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ
ESG × Time	−0.0127*	−0.0047*						
	(−1.96)	(−1.75)						
ESG	0.0798***	0.0124***						
	(7.86)	(2.63)						
E × Time			−0.0076**	0.0008				
			(−1.99)	(0.39)				
E			0.0402***	0.0012**				
			(6.65)	(2.00)				
S × Time					−0.0172*	−0.0038		
					(−1.82)	(−1.60)		
S					0.0594***	0.0039		
					(5.02)	(1.40)		
G × Time							−0.0127**	−0.0098**
							(−2.27)	(−2.32)
G							0.0773***	0.0158**
							(7.81)	(2.46)
Size	0.1062	−0.0378	0.093	−0.025	0.1746	−0.0267	0.0536	−0.021
	(0.35)	(−0.30)	(0.30)	(−0.20)	(0.53)	(−0.21)	(0.17)	(−0.17)
Lev	−1.0487	−0.9222**	−1.1421	−0.9246**	−0.6779	−0.9337**	−0.6728	−0.9372**
	(−1.14)	(−2.38)	(−1.18)	(−2.38)	(−0.69)	(−2.42)	(−0.77)	(−2.43)
Age	1.3247	4.6878***	2.0244	5.1419***	1.9015	5.0471***	1.2002	4.4947***
	(0.67)	(4.06)	(1.00)	(4.41)	(0.88)	(4.33)	(0.59)	(3.74)
Growth	0.0124	−0.7829	−0.0282	−0.8068	0.0093	−0.8327	−0.0693	−0.8023
	(0.04)	(−0.68)	(−0.09)	(−0.70)	(0.03)	(−0.72)	(−0.23)	(−0.69)
Cash	−1.3654	0.5963	−1.4556	0.5951	−1.3852	0.5838	−1.5512	0.5782
	(−0.94)	(1.42)	(−0.96)	(1.42)	(−0.89)	(1.39)	(−1.10)	(1.39)
Board	0.1796	−0.1388	0.2163	−0.1526	0.1706	−0.1365	0.2486	−0.1396
	(0.48)	(−0.94)	(0.55)	(−1.04)	(0.45)	(−0.92)	(0.67)	(−0.95)
Constant	−7.8168	−11.4693***	−7.8253	−12.8277***	−9.9189	−12.6382***	−8.8812	−11.7119***
	(−0.74)	(−2.69)	(−0.73)	(−2.93)	(−0.85)	(−2.89)	(−0.80)	(−2.66)
Firm fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,000	3,676	1,000	3,676	1,000	3,676	1,000	3,676
R-squared	0.2891	0.1515	0.2314	0.1489	0.1831	0.15	0.3007	0.1517

Note(s): This table presents regression results examining the impact of Environmental, Social, and Governance (ESG) factors on firm value in South Korea and China. Models (1) through (8) represent different combinations of E, S, and G variables. The interaction term ESG × Time captures the time-varying effect of ESG factors. Control variables include firm size, leverage, age, growth opportunities, cash holdings, and board characteristics. See Appendix for the definitions of the variable. Firm and year-fixed effects are included in all models. All t-statistics (in parentheses) are based on the standard errors clustered by firm level. *, **, and *** denote significance at the 10, 5, and 1% levels. The sample includes the China A-Shares and KOSPI-listed companies. The sample period covers from 2018 to 2021

Source(s): Table by authors

Table 5.
Insurance effect of ESG in South Korea and China

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Group	High ESG	Low ESG	High E	Low E	High S	Low S	High G	Low G
Variable	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ
Panel A. South Korea								
ESG × Time	−0.0086	−0.0301**						
	(−0.73)	(−1.99)						
ESG	0.0698***	0.1698***						
	(3.49)	(3.70)						
E × Time			0.0155	−0.0073**				
			(0.81)	(−2.49)				
E			0.0573***	0.0366***				
			(2.62)	(3.69)				
S × Time					0.0188	−0.0266**		
					(0.46)	(−2.23)		
S					0.0720**	0.0453***		
					(2.32)	(3.60)		
G × Time							−0.0355	−0.0247**
							(−1.42)	(−2.03)
G							0.0876***	0.0990***
							(4.42)	(8.72)
Size	−0.31	0.5861	0.134	−0.2382	−0.0266	0.397	0.7873*	−0.3086
	(−0.67)	(1.14)	(0.31)	(−0.53)	(−0.05)	(0.91)	(1.96)	(−0.96)
Lev	0.4168	−1.7498	−1.5439	0.4433	−0.8818	0.3202	−1.4102	0.5753
	(0.40)	(−1.08)	(−0.92)	(0.41)	(−0.75)	(0.26)	(−1.37)	(0.67)
Age	2.8018	−1.107	−2.9555	4.4773**	−1.3753	5.0224**	1.0403	3.0328*
	(1.17)	(−0.38)	(−0.87)	(2.30)	(−0.62)	(2.02)	(0.47)	(1.83)
Growth	0.484	0.0473	0.1586	0.5105	0.201	0.5611	0.0271	0.5791*
	(1.08)	(0.14)	(0.34)	(1.34)	(0.41)	(1.29)	(0.06)	(1.92)
Cash	−0.194	−0.4934	−1.1809	−3.2189	−0.8219	−3.4985*	−0.0938	−0.1759
	(−0.08)	(−0.28)	(−0.69)	(−1.33)	(−0.44)	(−1.75)	(−0.06)	(−0.12)
Board	0.0321	0.2802	0.8225	−0.3957	−0.1589	0.8176**	0.3688	0.3149
	(0.06)	(0.76)	(1.47)	(−0.89)	(−0.33)	(2.00)	(0.90)	(1.09)

(*continued*)

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Group	High ESG	Low ESG	High E	Low E	High S	Low S	High G	Low G
Variable	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ
Constant	−3.7691	−11.964	8.4528	−8.5945	6.6746	−26.9226*	−24.9045**	−10.0575
	(−0.25)	(−0.74)	(0.51)	(−0.59)	(0.44)	(−1.93)	(−1.97)	(−1.09)
Firm fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	500	500	508	492	494	506	495	505
R-squared	0.2427	0.2319	0.1421	0.263	0.1345	0.2361	0.152	0.286
Panel B. China								
ESG × Time	−0.0011	−0.0085**						
	(−0.18)	(−1.99)						
ESG	−0.0033	0.0068						
	(−0.42)	(0.53)						
E × Time			0.0056	−0.0111**				
			(0.68)	(−2.35)				
E			0.0137*	0.0023				
			(1.90)	(0.66)				
S × Time					−0.0024	0.0007		
					(−0.70)	(0.10)		
S					0.0012	0.0129		
					(0.23)	(1.36)		
G × Time							−0.0095	−0.0107**
							(−0.86)	(−1.99)
G							0.0106	0.0224
							(0.82)	(1.18)
Size	−0.2211	−0.0118	0.0428	0.0261	0.1309	−0.0817	0.1545	−0.0224
	(−1.25)	(−0.15)	(0.26)	(0.12)	(1.09)	(−0.90)	(0.92)	(−0.29)
Lev	−0.7682	−0.8759***	−0.4535	−1.1521	−1.1419***	−0.7646**	−0.6045	−0.9514***
	(−0.92)	(−3.41)	(−1.05)	(−1.57)	(−3.12)	(−2.57)	(−1.03)	(−3.65)

(*continued*)

Table 5.

Table 5.

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Group	High ESG	Low ESG	High E	Low E	High S	Low S	High G	Low G
Variable	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ	TobinQ
Age	5.2620**	4.0536***	3.8887***	11.0841***	3.1972**	5.3159***	7.2785***	4.5095***
	(2.08)	(3.48)	(2.87)	(3.35)	(2.05)	(4.01)	(3.16)	(3.75)
Growth	2.6987	−1.0557	−2.0356	0.7910*	0.7814	−1.6990*	0.7894	−1.1284
	(1.27)	(−1.58)	(−1.06)	(1.69)	(0.86)	(−1.87)	(0.32)	(−1.64)
Cash	−0.0509	0.7292**	0.2612	0.668	−0.6135	1.1201***	0.2007	0.7697**
	(−0.06)	(2.39)	(0.50)	(0.74)	(−1.44)	(3.10)	(0.35)	(2.47)
Board	−0.0458	−0.2443	−0.1527	−0.2571	−0.3926	−0.0308	−0.0909	−0.2752
	(−0.18)	(−1.31)	(−0.89)	(−0.72)	(−1.64)	(−0.14)	(−0.35)	(−1.41)
Constant	−8.5283	−9.8064**	−10.8850**	−31.9306***	−9.8748*	−12.6876***	−24.5588***	−11.6641***
	(−0.95)	(−2.52)	(−2.01)	(−2.81)	(−1.80)	(−2.86)	(−3.22)	(−2.90)
Firm fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,919	1,757	1,727	1,949	1,862	1,814	1,967	1,709
R-squared	0.1086	0.151	0.1259	0.2211	0.1353	0.1628	0.1247	0.1589

Note(s): This table presents regression results examining the insurance effect of Environmental, Social, and Governance (ESG) factors on firm value in South Korea (China) in Panel A (B). In each panel, models (1) through (8) represent different combinations of E, S, and G variables, corresponding groups based on ESG scores. The interaction term ESG × Time captures the time-varying effect of ESG factors. Control variables include firm size, leverage, age, growth opportunities, cash holdings, and board characteristics. See Appendix for the definitions of the variable. Firm and year-fixed effects are included in all models. All t-statistics (in parentheses) are based on the standard errors clustered by firm level. *, **, and *** denote significance at the 10, 5, and 1% levels. The sample includes the China A-Shares and KOSPI-listed companies. The sample period covers from 2018 to 2021

Source(s): Table by authors

pandemic. It underscores the relevance of ESG principles for businesses, highlighting the need to integrate them into strategies to enhance resilience and value creation.

Notes

1. https://covid19.who.int/data
2. It took one week for South Korea to go from 31 cases to over 1,000. See https://coronavirus.jhu.edu/data
3. https://www.forbes.com/advisor/investing/why-is-esg-underperforming/
4. With the increasing internationalization of capital markets in South Korea and China, global ESG assessment agencies have gradually expanded their coverage of listed companies in both countries. Additionally, domestic institutions in China and South Korea have begun establishing their own ESG evaluation systems. In China, the Sino-securities index information service SynTao Green Finance and Wind have emerged as relatively prominent ESG assessment agencies within the domestic market. Similarly, South Korea is home to institutions like the Korea Corporate Governance Service (KCGS) and the Sustainable Development Center, actively engaged in ESG evaluations.
5. Our results are qualitatively similar when we use the shortened sample period 2019~2021.

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Appendix

Variable definition

ESG Variables:

(1) Corporate ESG performance: ESG represents Environmental, Social, and Governance factors, focusing on non-financial aspects. It is a crucial metric for evaluating a company's financial value based on its sustainability and commitment to responsible business practices.

(2) Corporate environmental performance (E): E emphasizes a company's environmental impact, including resource usage, energy consumption, waste generation, and the environmental consequences of its business and investment activities.

(3) Corporate social performance (S): S focuses on a company's ability to manage internal and external relationships with stakeholders and balance these relationships.

(4) Corporate governance performance (G): G emphasizes standardizing internal mechanisms, such as corporate structure, management compensation, and business ethics.

Dummy variable:

(1) *Time:* This variable accounts for the temporal effect. It is a dummy variable that takes the 0 (1) value if the year is before 2019 (2020 or later).

Dependent variable:

(1) Corporate value (TobinQ): Corporate value is measured by the ratio of the market value of corporate assets to the book value of corporate assets.

(2) Return on Assets (ROA): The net profit ratio to total assets.

Control Variables:

(1) Firm Size (Size): Firm size is measured by converting the total assets of South Korean companies, as reported by the World Bank, into billions of local currency units (won) and taking the logarithm (log) of this value.

(2) Leverage Level (Lev): Leverage level is calculated as the total debt ratio to total assets.

(3) Firm Age (Age): Firm age is calculated by taking the logarithm (log) of the company's establishment year plus 1.

(4) Growth Rate (Growth): Growth rate is measured by taking the logarithm (log) of the company's sales growth rate.

(5) Cash Holdings Level (Cash): Cash holdings level is calculated as the ratio of corporate cash assets to total assets.

(6) Board Size (Board): Board size is measured by taking the logarithm (log) of the number of board members in the company.

Corresponding author
Sun-Joong Yoon can be contacted at: sunyoon@dongguk.edu