Business Management and Strategy
ISSN 2157-6068
2023, Vol. 14, No. 2

Environmental Social and Governance (ESG) Performance of Corporate Value in Different Periods

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Received: August 15, 2023 Accepted: September 28, 2023 Published: October 3, 2023

doi:10.5296/bms.v14i2.21233 URL: https://doi.org/10.5296/bms.v14i2.21233

Abstract

The prevalence of COVID-19 offers companies the opportunity to adopt a more realistic approach to corporate social responsibility. This study examines the performance of ESG and corporate value under the COVID-19 scenario using panel data from 2018 to 2021. After collecting data from the Wind database, regression analysis was used to analyses the total ESG score, specific indicator scores and companies with various ratings. This study showed that sustainability - whether environmental (E), social (S) or governance (G) - contributes to enterprise value. It contributed to an increase in enterprise value for companies with high ratings, but had little impact on the enterprise value of companies with low ratings. In addition, the study was divided into two groups based on the duration of the pandemic to determine whether sustainability and firm value behaved differently under the influence of COVID-19. Even in the presence of COVID-19, the study found that the impact of sustainability on firm value was still favorable and significant. This study provides a detailed breakdown of ESG scores and regression analysis of individual indicators. Secondly a more detailed classification of companies was also carried out, with the study looking at companies according to different ratings, including AAA, AA, A, BBB, BB, B, CCC, CC, C.

Keywords: sustainability, corporate value, ESG scores, corporate social responsibility

1. Introduction

Epidemic blockades have had catastrophic effects for economies (Shulla et al. 2021). Practically every SDG (Sustainable Development Goals) has been impacted by the pandemic

(Martín-Blanco et al., 2022). By 2030, the SDGs may see a big setback. (Nair et al., 2021). Sustainability is a vast topic that encompasses a variety of different issues. CSR (Corporate Social Responsibility) is viewed as a component of the greater problem of sustainable development (Tien et al., 2020). Governments must provide clear guidance on CSR's broad objectives, as it fills a void in the existing institutional framework (Nair et al., 2021). assist in resolving significant global social and environmental issues (He & Harris, 2020). According to a report published by the World Health Organization (https://www.who.int/zh/news), the first case of covid-19 was detected on 31 December 2019 in Wuhan, China. Depending on economic conditions and vaccine availability, the economic impact of COVID-19 varies from nation to nation (Primorac & Roberts, 2022). China was the first country to close the global hotspot, allowing the Chinese economy to recover rapidly from COVID-19 (Zhang et al., 2020). China's economy is increasingly influenced by sustainable development, and policymakers and scholars are debating it at length.

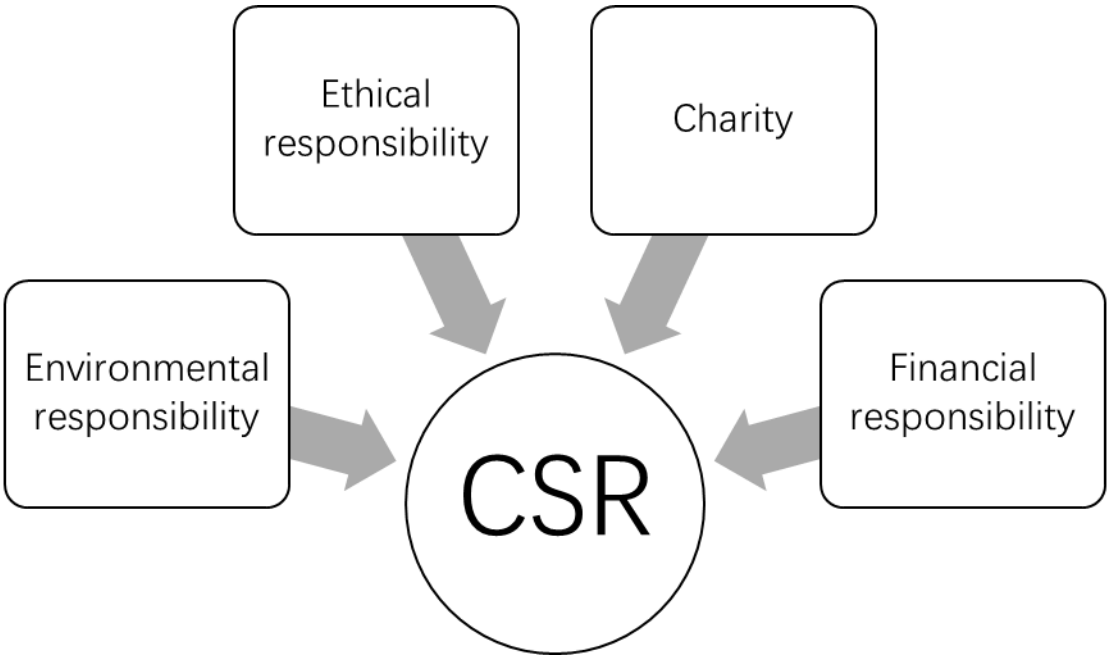


Figure 1.1. Corporate Social Responsibility

Source: Investopedia website (2022)

As can be seen in Figure 1.1, the objectives of CSR sustainability are consistent. More emphasis is placed on pursuing sustainable development (de Castro Sobrosa Neto et al., 2020). It is therefore important to link business value to the environmental, social and governance aspects of sustainable development. As can be seen from the comparison of Figure 1.1, sustainability encompasses corporate responsibility, and corporate sustainability is expressed to the outside world through corporate responsibility. the ESG score is used to assess corporate sustainability scores. Although there has been a great deal of research on the impact of ESG scores on corporate value. But can sustainability really help every business to develop better? This study will explore whether the impact of sustainability on firm value is the same for companies with different ratings.

In addition, research on sustainability has been mostly concentrated on wealthy nations such as Europe and the United States, whereas it has not progressed much in emerging nations, especially Asia. China has only recently begun to focus on sustainability (Jyoti & Khanna, 2021). This study seeks to assess the performance of sustainability and enterprise value in the context of COVID-19 in an effort to close this persistent gap. Importance-wise, this study provides a theoretical and empirical evaluation of the relationship between pandemic, sustainability, and business value, which will serve as a solid framework for future academics and researchers to investigate this topic in greater depth.

2. Literature Review

The prior literature on this phenomenon assists us in comprehending the context of sustainable development. This section is broken into the subsections described in the next section.

2.1 Sustainable Development Theory

The core idea of sustainable development theory is to closely integrate economic growth, social development, and environmental protection, and strive for balance and harmony. It emphasizes that human activities should respect the boundaries of ecosystems, adhere to the environmental carrying capacity, and promote social justice and economic prosperity. In actuality, nearly every nation is pursuing sustainable development. The formulation of the Sustainable Development Goals (SDGs) is a co-creative process that allows all voices to be heard. Hence, the SDGs are applicable to several developed and developing countries (Primorac & Roberts, 2022).

ESG is defined as the obligation of businesses to enhance the well-being of society and generate equitable and sustainable long-term wealth for its stakeholders. It has been discovered that ESG-compliant organizations have stronger governance and are more concerned with the environment and sustainability (Mohammad & Wasiuzzaman, 2021). For businesses, sustainability helps them build a long-term competitive advantage. By focusing on environmental and social issues, companies can reduce waste of resources, increase efficiency and reduce environmental and legal compliance risks. This helps to reduce costs, increase innovation and gain the favor of consumers and investors. And adopting sustainability measures can enhance a company's brand reputation and image. A good brand reputation can help companies increase their market share, attract new customers and build a loyal consumer base.

2.2 Environmental Social Governance (ESG)

In 2015, the member states of the United Nations established the 2030 Agenda for Sustainable Development in order to achieve global sustainable development within the following 15 years. 195 nations and the European Union backed this.

The environment encompasses a company's energy use and waste production, such as carbon emissions and climate change. Society refers to a company's interactions with community

members and institutions, as well as the reputation it cultivates, including labor relations, diversity, and inclusion. Governance refers to the decisions an organization makes in order to govern itself, adhere properly to the law, and satisfy the needs of external stakeholders. Every corporation, which is a legal entity, requires governance (Nuttall, 2019). The ESG performance of a corporation is frequently expressed in terms of ESG ratings (Berg & Rigobón, 2021). Traditionally, a company's commitment to sustainability is represented by its environmental, social, and governance (ESG) score (Jyoti & Khanna, 2021).

CSR and sustainable development are frequently viewed as synonymous (Zhang et al., 2021). It is a policy program that promotes sustainable business practices (Martín-Blanco et al., 2022). CSR is crucial for businesses in both highly developed and developing nations, and it is beginning to garner a great deal of attention, particularly from developing nations (Tien, 2020). This research aims to make significant contributions to the existing body of knowledge by studying the elements of sustainability, i.e., the ESG composite score and its sub-indicators.

2.3 ESG and Corporate Value

With the increased awareness of social issues, firms are expected to take on larger responsibilities, resulting in a growing body of research in this field. Businesses are held ever more accountable for their influence on society and the environment (Ait & Serra, 2018). In order to enable the rebuilding of confidence between firms and their stakeholders, it is vital for corporations to engage in sustainable development due to the wrongdoing of some companies (Phan et al., 2020). As such, the relationship between sustainability practices and business value has attracted extensive attention. ESG is described as a company's responsibility to improve the welfare of society and provide its stakeholders with equitable and sustainable long-term prosperity. Strong company governance and transparent organizational structures can boost investor confidence and facilitate access to crucial capital (Marsciano, 2020).

Sustainability strategies have become crucial for businesses because they extend beyond short-term profitability to attain long-term economic and social sustainability (Phan et al., 2020). The connection between socially responsible enterprises committed to wealth creation and long-term economic and social value provides organizations with high ESG ratings with a competitive edge (Lassala et al., 2021). Nonetheless, businesses encounter numerous obstacles when seeking strategies to reconcile economic, environmental, and social performance (Epstein & Roy, 2003). CSR is a relatively recent management idea (Tien et al., 2020). In order to integrate the notion of sustainability into the company's business plan, managers must quantify the relationship between ESG and corporate value, which clarifies resource allocation decisions. Some academics explicitly utilize stock prices or current market values to estimate corporate value (Wernerfelt & Montgomery, 1988). The measurement of firm size (SIZ) is the natural logarithm of total assets (ln) (Wang & Bansal, 2012).

2.4 Empirical Review

This study analyzed ESG and business value studies within the context of COVID-19. 78% of the 132 sustainability and financial performance research published in leading publications found a favorable correlation (Alshehhi, 2018). Corporate finance and ESG research are a subject of discussion (Gillan & Starks, 2021). The association between ESG features and corporate value has been contradictory in prior research.

Zhang (2022) asserts, via multiple linear regressions, that ESG performance has a favorable effect on the firm value of Chinese manufacturing enterprises but that this effect is diminished during COVID-19, in part because of firms' weakened cash flows. Aouadi and Marsat (2018) use a dataset of over 4,000 companies from 58 countries between 2002 and 2011 to determine that ESG conflicts have a positive effect on the market valuation of high concern companies. Ionescu et al. (2019) employ a worldwide distributed sample of 73 listed firms from 2010-2015 and discover that governance characteristics have the most impact on the selected companies with the most impact on their market value, independent of their country of origin. Socially responsible enterprises are more lucrative and show greater sensitivity to market shifts, leverage levels, and firm size (Charlo et al., 2015).

Zhou and Luo (2022) selected data on ESG ratings of newly developed Chinese listed companies from 2014–2019 from Xin Chao Green Finance for an empirical test, and the results demonstrated that ESG performance can boost the value of publicly traded corporations. Drempetic and Zwergel (2020) study the impact of company size on sustainability performance using Thomson Reuters ASSET4 ESG ratings. The findings indicate a correlation between the two variables. Based on data collected from 38 international airlines between 2009 and 2019, Abdi and Càmara-Turull (2021) demonstrate that sustainability disclosure moderates the link between firm value and firm size.

Furthermore, there are studies that have reached the exact opposite conclusion. Using a random effects model, Junius et al. (2020) examined 271 listed businesses from a five-year period (2013-2017) spanning four ASEAN nations (Indonesia, Malaysia, Singapore, and Thailand) and concluded that they had no meaningful impact on company performance or market value.

In addition to studies on ESG and corporate value, there has been a substantial amount of research on ESG and economic performance. ESG's effect on economic success is also a matter of contention. Yawika and Handayani (2019) conducted a multiple regression study on a sample of 387 firms (2015–2017) and discovered that ESG performance positively influences economic performance. Using Chinese listed power generation organizations, Zhao et al. (2018) evaluated the association between ESG performance and financial metrics using a panel regression model. The data indicate that ESG performance positively affects financial performance. Using structural equation modeling using partial least squares, Phan et al. (2020) discovered that, among 389 textile enterprises in Vietnam, sustainable development strategies had a positive influence on the financial performance of proactive and risk-taking

firms. Robaina and Madaleno (2020) find from research on individual cases of Portuguese enterprises from 2008 to 2016 that environmental performance positively affects financial performance. Environmental management practices and social management practices have a favorable effect on economic performance, according to Javed and Husain (2021). The Johnson & Johnson case study by Turksanyi and Sisaye (2013) demonstrates that sustainability contributes to a company's financial performance. Ameer and Othman (2012) concluded, based on the top 100 sustainable companies in developed countries and regions in 2008, that the higher financial performance of sustainable companies was maintained and improved across the sample, and that the evidence suggests a bidirectional relationship between CSR practices and corporate financial performance. Chang and Kuo (2008) studied the sustainability scores of 311 companies using secondary data, and their findings imply that there may be a positive causal association between sustainability and profitability in the group with the highest sustainability.

There are, of course, a variety of perspectives. The relationship between financial success and sustainability is neutral, as de Castro Sobrosa Neto et al. (2020) confirmed the higher economic and financial performance of Brazilian companies participating in the ISE portfolio between 2014 and 2018 compared to other companies that comprise the Ibovespa. Using generalized least squares (GLS), Khan et al. (2022) examined 67 companies in Europe, Australia and New Zealand, Asia, North America, and Africa and discovered that environmental and social sustainability objectives had a detrimental influence on the financial performance of the organizations. Jyoti and Khanna (2021) examined the effect of sustainability on the financial performance of companies listed on the Bombay Stock Exchange and discovered a significant negative association between environmental scores and return on assets and return on capital. Raimo et al. (2021) conducted a fixed effects analysis of 919 enterprises from 2010 to 2019 and determined that ESG disclosure negatively affected financing costs.

2.5 Hypothetical Development

The commercial perspective of corporate sustainability argues that a company's future value may grow if it pursues sustainability more successfully (de Castro Sobrosa Neto et al., 2020). This indicates that the connection between ESG and business value has significant scholarly and practical significance. An integrated approach that incorporates sustainability concerns into investors' and firms' analysis and decision-making can assist businesses in enhancing their management practices and increasing their corporate value (Tarmuji et al., 2016). According to Nuttall (2019), ESG can facilitate the development of markets, the reduction of costs, the reduction of regulatory and legal interventions, the enhancement of employee productivity, and the optimization of investments and assets. Businesses are beginning to prioritize ESG with the expectation that it will improve their financial performance. There is a considerable positive association between a company's market value and its financial performance across a variety of economies (Zhou & Luo, 2022). 96% of articles assert that there is a strong association between sustainable practices and the financial performance of a

company (Muhmad, 2021). Gómez-Bezares et al. (2017) argue that firms that prioritize sustainability issues in their business operations use resources more efficiently and generate higher financial performance and shareholder value compared to other organizations. From the above literature the hypothesis of this study is derived:

Hypotheses 1: Sustainable development increases the value of the company.

Hypotheses 1(a): Environmental performance (E) has a positive impact on firm value

Hypotheses 1(b): Social performance (S) has a positive impact on firm value

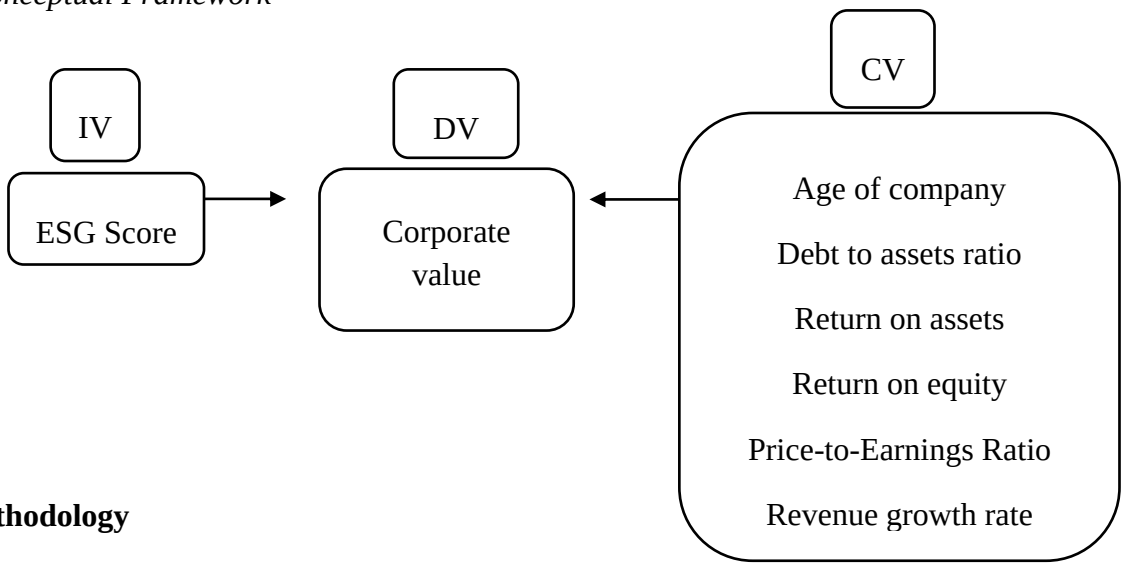
Hypotheses 1(c): Governance performance (G) has a positive impact on firm value.

Hypotheses 2: ESG has the same positive impact on companies with different ratings.

The COVID-19 epidemic has caused economic disruption and a growing financial burden (Barbier & Burgess, 2020). COVID-19 impacts Chinese businesses in general (Zhang et al., 2021). This study evaluates the performance of ESG and business value in the context of COVID-19. This particular situation gives an unparalleled opportunity to investigate whether ESG and company value performance during a pandemic is consistent with what it was previously. By employing a new dataset encompassing the constituents of the Chinese CSI 300 index, Broadstock et al. (2020) discovers that ESG is shown to reduce risk during 'abnormal' periods. Proving its increasing significance during the crisis. Thus, this study reaches the conclusion that the effect of ESG on business value remains positive throughout the pandemic. On the basis of the preceding context, the following hypothesis was formulated to test the association between the variables:

Hypotheses 3: ESG has an unchanged impact on firm value under the influence of COVID-19

2.6 Conceptual Framework



3. Methodology

This study employs panel data acquired from the Wind database for 4381 firms (excluding ST and financial organizations) listed on A-shares between 2018 and 2021. Firm value is the

dependent variable in this study and is measured by firm market capitalization and firm assets respectively. The independent variable is the ESG score, which is comprised of three sustainability indices: environmental (E), social (S), and corporate governance (G). Separate regression analyses were undertaken for each of the three ESG measures to improve the precision of the results. In addition, a heterogeneity study was performed on companies with varying ratings to evaluate whether ESG had the same effect on companies with the three ABC ratings. In addition, to assess the influence of COVID-19 on the outcomes, the data was divided into two groups: before the pandemic (2018–2019) and during the pandemic (2020–2021), and separate regression models were run for these two time periods, yielding an objective and practicable conclusion.

Table 3.1. Description of Variables

Type	**Name**	**Symbol**	Description
DV	The market value	M	The total market value of the company at the end of a period
	Assets	A	The stock of assets owned by the company
IV	ESG	ESG	Environment, Social Responsibility, Corporate Governance
CV	Age of company	T	Year of Establishment
	Debt to assets ratio	D	Total liabilities / Total assets
	Return on assets	RA	Net income / Total assets
	Return on equity	RE	Net income / Total equity
	Price-to-Earnings Ratio	P	Price per share/earnings per share
	Revenue growth rate	R	the increase in operating income this year / total operating income last year

Source: wind database (2021)

For an empirical investigation of the impact of ESG on firm value in a COVID-9 environment. This study used a panel model to analyze the collected panel data. In general, the panel regression model employed in this investigation can be described as follows:

$$M_{it} = a_0 + a_1 ESG_{it} + x_2 T_{it} + x_3 D_{it} + x_4 RA_{it} + x_5 RE_{it} + x_6 P_{it} + x_7 R_{it} + d \quad (1)$$

Where

M_{it} represents the dependent variable, E_{it} represents the independent variable, and $T_{it}, D_{it}, RA_{it}, RE_{it}, P_{it}$ and R_{it} represents the control variables. d is the random disturbance term.

3.1 Sample Characteristics

Table 3.2. Industry Classification

Type of industry	Number
Semiconductors and semiconductor production equipment	114
Real Estate II	111
Software & Services	281
Retail	69
Capital goods	936
Material II	706
Consumer Durables & Clothing	238
Technical hardware and equipment	445
Utilities II	129
Healthcare equipment and services	99
Automotive and automotive parts	207
Telecommunication Services II	7
Home and personal equipment	20

Media II	93
Energy II	76
Business & Professional Services	146
Food & Beverage & Tobacco	197
Retail of Food and Major Supplies II	27
Consumer Services II	50
Shipping	115
Pharmaceuticals, Biotechnology & Life Sciences	315
Total	4381

*Source: Wind databases (2021)

Table 3.2 offers a classification of the sample for this study based on industry, revealing that there are 21 different industries. Material II has the biggest number, 706; Telecommunication Services II has the lowest, 7. This study's selection of research subjects is more exhaustive, both in terms of industry and number.

Table 3.3. Ratings Classification

Type of Ratings	**Number**
A	438
AA	117
AAA	14
B	277
BB	1672
BBB	1852
CCC	11

*Source: Wind databases (2021)

The classification of companies according to wind ESG ratings for 2021 is presented in Table 3.3. The Standard & Poor's rating system is used to assign letters as ESG ratings for wind. As seen in Table 3, the biggest number of BBB enterprises is 1852. There are only eleven companies graded CCC, the lowest rating. It is evident that the majority of organizations have a B grade.

4. Results

4.1 Descriptive Statistics

The market capitalization and assets of listed businesses in the A-share are very large, with a mean of $135,000,000 for market capitalization and $950,000,000,000 for assets, respectively, as shown in Table 4.1. Yet, the standard deviation is also quite high, indicating that market capitalization and assets vary widely among companies.

The range of ESG scores is from 0 to 10, with a maximum of 9.61, a minimum of 2.47, and a mean of approximately 5.956. The average individual scores for E, S, and G are 1.545, 3.997, and 6.322, respectively.

The company's period of operation was 24.99 years, its gearing ratio was 41.951, its return on capital was 3.872, its return on equity was 11.422, its P/E ratio was 38.479, and its operating income growth rate was 14.556. The standard deviation for the P/E ratio was the highest at 111.989, showing a wide range of P/E ratios among companies.

Table 4.1. Descriptive Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
M	14306	1.35e+10	2.57e+10	1.33e+09	1.82e+11
A	14306	9.50e+09	2.76e+10	0	2.19e+11
ESG	14306	5.956	0.812	2.47	9.61
E	14306	1.545	1.971	0	10
S	14306	3.997	1.872	0	10
G	14306	6.322	1.012	0.63	9.65
T	14306	24.99	2.248	22	28
D	14306	41.951	19.98	6.245	90.507
RA	14306	3.872	7.83	-31.943	23.951
RE	14306	11.422	50.02	-60.119	225.593
P	14306	38.479	111.989	-460.512	652.227
R	14306	14.556	32.772	-59.157	169.256

4.2 Pairwise Correlation

The pairwise correlation coefficients for the variables are shown in Table 4.2. All enterprise value factors are significantly associated with the SDGs, with coefficients not exceeding 0.60, indicating that there is no multicollinearity among the variables.

Table 4.2. Correlation Matrix

M	ESG	RA	RE	T	D	P	R
M	1						
ESG	0.249***	1					
RA	0.203***	0.166***	1				
RE	0.213***	0.065***	0.235***	1			
T	0.047***	0.102***	0.057***	-0.026***	1		
D	0.077***	-0.152***	-0.353***	-0.028***	-0.040***	1	
P	0.019**	0.035***	0.058***	0.076***	0.015*	-0.090***	1
R	0.106***	0.065***	0.318***	0.220***	0.196***	-0.00900	0.045***

4.3 Regression Analysis 1

The results of the regression analysis in Table 4.3 using data from A-share listed companies from 2018 to 2021 show that the impact of ESG on a company's market capitalization is favorable and significant. This means that a company's market capitalization will increase in direct proportion to its ESG score. In addition, the data indicate that return on assets, return on equity, period of business establishment, and gearing all have positive and significant effects on a company's market capitalization.

Table 4.3. Impact of ESG on corporate value

	(1)
VARIABLES	M
ESG	7.383e+09***
	(29.43)
roa	6.287e+08***
	(21.32)
roe	86129284.739***
	(18.37)
age	-1.099e+08
	(-0.54)
ba	2.392e+08***
	(22.17)

pr	886,383.310
	(0.50)
ra	-5611810.191
	(-0.84)
Constant	-4.048e+10***
	(-7.33)
Individual effect	Yes
Time effect	Yes
Observations	14,306
R-squared	0.147

Note: (1) is OLS

4.3.1 Robustness Test

This study examines the effect of ESG on corporate value by exchanging both the dependent variable and the models in order to demonstrate the reliability of the results. Table 4.4 demonstrates that both the dependent variable, firm market capitalization, and OLS have been substituted with FEM. ESG raises business value and is statistically significant, verifying assumptions 1 and 2 in addition.

Table 4.4. Impact of ESG on corporate value（OLS & FEM）

	(1)	(2)
VARIABLES	A	M
ESG	5.001e+09***	2.988e+09***
	(18.04)	(13.08)
roa	3.193e+08***	76243810.552***
	(9.79)	(4.19)
roe	-1.034e+07**	52838051.048***
	(-1.99)	(23.01)
age	-2.430e+08	1.453e+09***
	(-1.09)	(15.69)
ba	4.215e+08***	-6.645e+07***
	(35.34)	(-4.64)

pr	-5115789.323***	2257750.861***
	(-2.59)	(2.59)
ra	-9363122.253	11873667.988***
	(-1.27)	(3.52)
Constant	-3.288e+10***	-4.087e+10***
	(-5.39)	(-15.79)
Individual effect	Yes	Yes
Time effect	Yes	Yes
Observations	14,306	14,306
Number of id		4381
R-squared	0.095	0.178

Note: (1) is OLS and (2) is FEM

4.3.2 Regression Analysis 2

This study applies OLS regression analysis to the three indices E, S, and G to produce more precise and exhaustive results. Both environmental and social performance and corporate management performance have a favorable and considerable impact on enterprise value, as shown in Table 4.5. This adds support to the second idea.

Table 4.5. Impact of E S G on corporate value (A & M)

	(1)	(1)	(2)
VARIABLES	M	A	M
E	2.909e+09***	2.191e+09***	1.007e+09***
	(27.27)	(18.41)	(10.37)
S	5.464e+08***	2.852e+08**	8.086e+08***
	(4.77)	(2.23)	(6.83)
G	3.257e+09***	2.246e+09***	4.546e+08***
	(16.25)	(10.05)	(3.45)
roa	6.108e+08***	3.040e+08***	78409775.300***
	(21.08)	(9.41)	(4.32)
roe	85122801.595***	-1.110e+07**	53093129.349***
	(18.48)	(-2.16)	(23.19)

age	-4.948e+08**	-5.314e+08**	1.300e+09***
	(-2.48)	(-2.38)	(13.71)
ba	1.866e+08***	3.831e+08***	-6.860e+07***
	(17.41)	(32.04)	(-4.81)
pr	1751285.223	-4483894.242**	2243821.289***
	(1.00)	(-2.29)	(2.58)
ra	1417818.188	-3939570.059	12623887.668***
	(0.22)	(-0.54)	(3.75)
Constant	-1.138e+10**	-1.256e+10**	-2.655e+10***
	(-2.12)	(-2.09)	(-10.71)
Individual effect	Yes	Yes	Yes
Time effect	Yes	Yes	Yes
Observations	14,306	14,306	14,306
Number of id			4,381
R-squared	0.179	0.112	0.183

Note: (1) is OLS and (2) is FEM

4.3.3 Heterogeneity Test

This study also categorizes firms with different ratings in order to investigate whether the influence of ESG on corporate value is the same for firms with different ratings. As shown in Table 4.6, ESG has a considerable and favorable effect on the value of A- and B-rated enterprises. However, the results for rating C are slightly different and, although positive, are not statistically significant. This outcome is inconsistent with Hypothesis 3.

Table 4.6. Impact of ESG on corporate value (according to ESG rating)

	A	B	C
VARIABLES	M	M	M
ESG	2.415e+10***	2.142e+09***	2.993e+09
	(5.67)	(9.11)	(0.59)
roa	2.919e+09***	4.829e+08***	-1.412e+07
	(7.64)	(23.15)	(-0.91)
roe	1.310e+08***	77209198.352***	93355276.127***

	(2.74)	(22.69)	(3.60)
age	2.694e+09	-2.611e+08*	-3.013e+09
	(1.18)	(-1.81)	(-1.23)
ba	1.082e+09***	1.347e+08***	-575,445.835
	(8.79)	(17.34)	(-0.11)
pr	30935875.198	563,012.814	24278325.169
	(1.26)	(0.45)	(0.92)
ra	-6.537e+07	188,170.445	178,044.691
	(-0.73)	(0.04)	(0.26)
Constant	-2.720e+11***	-2.646e+09	7.340e+10
	(-4.05)	(-0.65)	(1.13)
Individual effect	Yes	Yes	Yes
Time effect	Yes	Yes	Yes
Observations	1,421	12,803	82
R-squared	0.120	0.125	0.192

Note: Rating A includes: AAA, AA, A. Rating B includes: BBB, BB, B. Rating C includes: CCC, CC, C.

4.3.4 Regression Analysis 3

The economic and social effects of the COVID-19 epidemic on several economies are considerable (Arora & Sarker, 2022). This study separates the years 2018-2021 into two groups: prior to the pandemic (2018-2019) and during the pandemic (2020-2021) in order to determine the impact of COVID-19 on ESG and company value (2020-2021). As seen in Table 4.7, the impact of ESG on firm value is positive and statistically significant both before and after the implementation of COVID-19. This implies that the value of sustainability has not diminished as a result of the economic crisis, and that research on sustainability is essential and beneficial.

Table 4.7. Impact of ESG on corporate value (covid-19)

	(1)	(2)
VARIABLES	M	M
ESG	4.220e+09***	9.913e+09***
	(14.15)	(25.18)

roa	4.166e+08***	8.573e+08***
	(13.35)	(16.84)
roe	1.041e+08***	80237490.385***
	(13.78)	(12.60)
age	1.251e+09***	-2.922e+08*
	(5.91)	(-1.75)
ba	1.974e+08***	2.852e+08***
	(16.28)	(16.11)
pr	-3795335.151	2861358.383
	(-1.59)	(1.10)
ra	-1.707e+07*	-4167216.985
	(-1.95)	(-0.42)
Constant	-5.286e+10***	-5.339e+10***
	(-10.00)	(-10.83)
Individual effect	Yes	Yes
Time effect	Yes	Yes
Observations	6,429	7,877
R-squared	0.124	0.157

Note: Sample period (1) is 2018-2019, sample period (2) is 2020-2021

4.3.5 Robustness Test

COVID-19 has a substantial impact on the economy's sustainability component (Ranjbari et al., 2021). To acquire more reliable results, this study conducted separate stability tests for several pandemic time periods. As indicated in Table 4.8, the effect of ESG on company value remained positive and statistically significant when variables were substituted and the model was revised. Now, the fourth hypothesis has been demonstrated.

Table 4.8. The impact of ESG on corporate value

	（1）		（2）	
	OLS	FEM	OLS	FEM
VARIABLES	A	M	A	M
ESG	4.001e+09***	1.206e+09***	5.962e+09***	1.728e+09***
	(9.42)	(4.51)	(15.34)	(5.82)
roa	2.890e+08***	-7293775.583	3.438e+08***	1.632e+08***
	(6.50)	(-0.48)	(6.84)	(5.84)
roe	3609450.382	67944175.473***	-1.459e+07**	37168110.358***
	(0.34)	(23.98)	(-2.32)	(15.28)
age	10560171.592	5.016e+08***	-4.821e+08***	4.764e+08***
	(0.03)	(7.24)	(-2.92)	(9.71)
ba	4.255e+08***	-2.168e+07	4.339e+08***	-3.782e+07*
	(24.63)	(-1.33)	(24.83)	(-1.67)
pr	-7470534.075**	2655200.086***	-4220771.616	-1140995.133
	(-2.20)	(2.85)	(-1.64)	(-1.13)
ra	-5771358.486	1055578.395	-1.297e+07	10264815.857**
	(-0.46)	(0.30)	(-1.34)	(2.46)
Constant	-3.300e+10***	-7.326e+09***	-3.232e+10***	-6.947e+09***
	(-4.38)	(-2.99)	(-6.64)	(-3.20)
Individual effect	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes
Observations	6,429	6,429	7,877	7,877
Number of id		3262		4,381
R-squared	0.094	0.256	0.094	0.147

Note: Sample period (1) is 2018-2019, sample period (2) is 2020-2021

5. Discussion and Conclusion

Utilizing panel data and OLS and FEM models, this study empirically investigates the effect of ESG on the corporate value of A-share listed corporations. The findings indicate that (1) ESG has a positive impact on corporate value; (2) Environment (E), society (S), and governance (G) all have a positive influence on the value of a company; (3) ESG performance has a beneficial impact on the value of A- and B-rated companies, but has a negligible impact on C-rated enterprises; (4) The positive impact of ESG performance on the market valuation of A-listed companies was unaffected by COVID-19.

Firstly, this study confirms the positive contribution of sustainability to enterprise value. A regression analysis was also carried out on separate indicators of ESG scores and the same

positive impact was obtained.

Secondly it also confirms that ESG has a different impact on the enterprise value of companies with different ratings. For both A and B rated companies, the results are favorable. However, the impact of sustainability was not significant for companies with a C rating. For organizations ranked A and B, sustainability was a favorable strategy, while for companies rated C, the impact was minimal.

Finally, this study also examines the impact of COVID-19. By specifying the time period in which the outbreak occurred, the study determined that the impact of ESG on company value was positive despite the impact of COVID-19. This study demonstrates the significance of sustainability, in line with previous studies. It is therefore clear that sustainability is the best course of action, as it increases company value while preserving the quality of natural resources. In this case, a sustainable approach is the best course of action. Furthermore, since the inclusion of sustainability, China's financial system has improved, adding business value.

6. Implication and Future Research

This study demonstrates the importance and significance of the quantitative relationship between ESG ratings and corporate value. Thus, the Chinese government should adopt various measures and policymakers should draft legislation to promote the straightforward and cost-effective implementation of sustainable development initiatives. Second, authorities and regulators should pay greater attention to ESG performance ratings to encourage enterprises to adopt sustainable development plans actively. Second, organizations should modify their business strategy to actively maintain and enhance their ESG performance. Institutional investors, particularly asset managers, should continue to study the viability of ESG performance-based investing strategies and improve their research and analysis from an investor's perspective. Individual investors can use ESG ratings to identify excellent firms and enhance the risk resistance and consistent returns of their own assets, according to China's capital market's enhanced information disclosure framework.

There are a number of limitations to this paper's empirical findings. Initially, the time series data have a restricted scope. China only recently established the ESG, so only a four-year data sample from 2018 to 2021 was available. And this study only considered the ESG ratings of wind and did not consider the ESG scores of other rating agencies. To provide a more precise examination of the mandate, future research could use more time series data. Small and medium-sized businesses that contribute considerably to China's economic market may have been neglected because the sample consists of A-share listed corporations with large market capitalization. In addition, future research could widen the scope of the link between sustainability and business value across regulatory regimes and economic volumes by applying the model of this study to diverse contexts and conducting cross-country comparisons across enterprises in developing and mature economies. In order to measure the genuine sustainability practices of enterprises in a developing country like China, more work remains to be done on sustainability reporting. Finally, regarding this study can also include a

comparison of different ESG rating agencies, by analyzing whether there is a difference in the impact of different ESG rating agencies on firm value.

References

Abdi, Y., Li, X., & Càmara-Turull, X. (2021). Exploring the impact of sustainability (ESG) disclosure on firm value and financial performance (FP) in airline industry: the moderating role of size and age. *Environment, Development and Sustainability, 24*, 5052-5079.

Ait Sidhoum, A., & Serra, T. (2018). Corporate sustainable development. Revisiting the relationship between corporate social responsibility dimensions. *Sustainable Development*, *26*(4), 365-378. https://doi.org/10.1002/sd.1711

Alshehhi, A., Nobanee, H., & Khare, N. (2018). The impact of sustainability practices on corporate financial performance: Literature trends and future research potential. *Sustainability*, *10*(2), 494. https://doi.org/10.3390/su10020494

Ameer, R., & Othman, R. (2012). Sustainability practices and corporate financial performance: A study based on the top global corporations. *Journal of business ethics*, *108*, 61-79.

Aouadi, A., & Marsat, S. (2018). Do ESG Controversies Matter for Firm Value? Evidence from International Data. *Journal of Business Ethics, 151,* 1027-1047. https://doi.org/10.1007/S10551-016-3213-8

Arora, R. U., & Sarker, T. (2022). Financing for Sustainable Development Goals (SDGs) in the Era of COVID-19 and Beyond. *The European Journal of Development Research, 35,* 1-19. https://doi.org/10.1057/s41287-022-00571-9

Barbier, E. B., & Burgess, J. C. (2020). Sustainability and development after COVID-19. *World Development, 135,* 105082-105082. https://doi.org/10.1016/j.worlddev.2020.105082

Berg, F., Kölbel, J. F., & Rigobón, R. (2022). Aggregate Confusion: The Divergence of ESG Rating. *Review of Finance*. https://doi.org/10.1093/rof/rfac033

Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X. (2020). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters, 38,* 101716-101716.

Chang, D. S., & Kuo, L. C. R. (2008). The effects of sustainable development on firms' financial performance–an empirical approach. *Sustainable Development, 16*(6), 365-380. https://doi.org/10.1002/sd.351

Charlo, M. J., Moya, I., & Muñoz, A. M. (2015). Sustainable development and corporate financial performance: A study based on the FTSE4Good IBEX Index. *Business Strategy and the Environment, 24*(4), 277-288. https://doi.org/10.1002/bse.1824

de Castro Sobrosa Neto, R., de Lima, C. R. M., Bazil, D. G., de Oliveira Veras, M., & de Andrade Guerra, J. B. S. O. (2020). Sustainable development and corporate financial performance: A study based on the Brazilian Corporate Sustainability Index (ISE). *Sustainable Development, 28*(4), 960-977. https://doi.org/10.1002/sd.2049

Drempetic, S., Klein, C., & Zwergel, B. (2020). The Influence of Firm Size on the ESG Score: Corporate Sustainability Ratings Under Review. *Journal of Business Ethics*, 1-28.

Epstein, M. J., & Roy, M.-J. (2003). Making the Business Case for Sustainability: Linking Social and Environmental Actions to Financial Performance. *The Journal of Corporate Citizenship, 9,* 79-96. http://www.jstor.org/stable/jcorpciti.9.79

Gillan, S.L., Koch, A., & Starks, L.T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*. https://doi.org/10.1016/j.jcorpfin.2021.101889

Gómez-Bezares, F., Przychodzen, W., & Przychodzen, J. (2017). Bridging the gap: How sustainable development can help companies create shareholder value and improve financial performance. *Business Ethics: A European Review*, *26*(1), 1-17. https://doi.org/10.1111/beer.12135

He, H., & Harris, L. C. (2020). The impact of Covid-19 pandemic on corporate social responsibility and marketing philosophy. *Journal of Business Research, 116,* 176 - 182.

Ionescu, G. H., Firoiu, D., Pîrvu, R., & Vilag, R. D. (2019). The impact of esg factors on market value of companies from travel and tourism industry. *Technological and Economic Development of Economy*. https://doi.org/10.3846/tede.2019.10294

Javed, S., & Husain, U. (2021). Corporate CSR practices and corporate performance: managerial implications for sustainable development. *Decision, 48*(2), 153-164.

Junius, D., Adisurjo, A., Rijanto, Y. A., & Adelina, Y. E. (2020). The impact of esg performance to firm performance and market value. https://doi.org/10.29303/jaa.v5i1.84

Jyoti, G., & Khanna, A. (2021). Does sustainability performance impact financial performance? Evidence from Indian service sector firms. *Sustainable Development*, *29*(6), 1086-1095. https://doi.org/10.1002/sd.2204

Khan, P. A., Johl, S. K., & Akhtar, S. (2022). Vinculum of sustainable development goal practices and firms' financial performance: a moderation role of green innovation. *Journal of Risk and Financial Management, 15*(3), 96. https://doi.org/10.3390/jrfm15030096

Lassala, C., Orero-Blat, M., & Ribeiro-Navarrete, S. (2021). The financial performance of listed companies in pursuit of the Sustainable Development Goals (SDG). *Economic Research-Ekonomska Istraživanja*, *34*(1), 427-449. https://doi.org/10.1080/1331677X.2021.1877167

Marsciano, L. D. (2020). The impact of ESG on corporate financial performance a study on Italian utilities: Telecom S.p.a. and Enel S.p.a. https://tesi.luiss.it/id/eprint/26984

Martín-Blanco, C., Zamorano, M., Lizárraga, C., & Molina-Moreno, V. (2022). The Impact of COVID-19 on the Sustainable Development Goals: Achievements and Expectations. *International Journal of Environmental Research and Public Health, 19*. https://doi.org/10.3390/ijerph192316266

Mohammad, W.M., & Wasiuzzaman, S. (2021). Environmental, Social and Governance (ESG) disclosure, competitive advantage and performance of firms in Malaysia. https://doi.org/10.1016/j.cesys.2021.100015

Muhmad, S. N., & Muhamad, R. (2021). Sustainable business practices and financial performance during pre-and post-SDG adoption periods: A systematic review. *Journal of Sustainable Finance & Investment*, *11*(4), 291-309. https://doi.org/10.1080/20430795.2020.1727724

Nair, R., Viswanathan, P.K., & Bastian, B.L. (2021). Reprioritising Sustainable Development Goals in the Post-COVID-19 Global Context: Will a Mandatory Corporate Social Responsibility Regime Help? *Administrative Sciences*. https://doi.org/10.3390/admsci11040150

Nuttall, R. (2019). Five ways that ESG creates value.

Phan, H. T. P., De Luca, F., & Iaia, L. (2020). The "Walk" towards the UN Sustainable Development Goals: Does Mandated "Talk" through Non-Financial Disclosure Affect Companies' Financial Performance? *Sustainability*, *12*(6), 2324. https://doi.org/10.3390/su12062324

Phan, T. T. H., Tran, H. X., Le, T. T., Nguyen, N., Pervan, S., & Tran, M. D. (2020). The relationship between sustainable development practices and financial performance: A case study of textile firms in Vietnam. *Sustainability*, *12*(15), 5930. https://doi.org/10.3390/su12155930

Primorac, D., & Roberts, R. J. (2022). The impact of COVID-19 on sustainable development. *Croatian medical journal, 63*(3), 213-220. https://doi.org/10.3325/cmj.2022.63.213

Raimo, N., Caragnano, A., Zito, M., Vitolla, F., & Mariani, M. (2021). Extending the benefits of ESG disclosure: The effect on the cost of debt financing. *Corporate Social Responsibility and Environmental Management*. https://doi.org/10.1002/csr.2134

Ranjbari, M., Shams Esfandabadi, Z., Zanetti, M., Scagnelli, S.D., Siebers, P., Aghbashlo, M., … & Tabatabaei, M. (2021). Three pillars of sustainability in the wake of COVID-19: A systematic review and future research agenda for sustainable development. *Journal of Cleaner Production, 297*, 126660-126660. https://doi.org/10.1016/j.jclepro.2021.126660

Robaina, M., & Madaleno, M. (2020). The relationship between emissions reduction and financial performance: Are Portuguese companies in a sustainable development path? *Corporate Social Responsibility and Environmental Management, 27*(3), 1213-1226. https://doi.org/10.1002/csr.1876

Shulla, K., Voigt, B., Cibian, S., Scandone, G., Martinez, E., Nelkovski, F., & Salehi, P. (2021). Effects of COVID-19 on the Sustainable Development Goals (SDGs). *Discover Sustainability, 2*. https://doi.org/10.1007/s43621-021-00026-x

Tarmuji, I., Maelah, R., & Tarmuji, N. H. (2016). The Impact of Environmental, Social and Governance Practices (ESG) on Economic Performance: Evidence from ESG Score. *International Journal of Trade, Economics and Finance, 7*(3). https://doi.org/10.18178/ijtef.2016.7.3.501

Tien, N. H., Anh, D. B. H., & Ngoc, N. M. (2020). Corporate financial performance due to sustainable development in Vietnam. *Corporate Social Responsibility and Environmental Management, 27*(2), 694-705. https://doi.org/10.1002/csr.1836

Turcsanyi, J., & Sisaye, S. (2013). Corporate social responsibility and its link to financial performance: Application to Johnson & Johnson, a pharmaceutical company. *World Journal of Science, Technology and Sustainable Development, 10*(1), 4-18.

Wang, T., & Bansal, P. (2012). Social responsibility in new ventures: profiting from a long-term orientation. *Strategic Management Journal, 33*(10), 1135-1153. https://doi.org/10.1002/ smj.1962

Wernerfelt, B., & Montgomery, C. A. (1988). Tobins Q and the importance of focus in firm performance. *The American Economic Review, 78*(1), 246-250.

Yawika, M.K., & Handayani, S. (2019). The Effect of ESG Performance on Economic Performance in the High-Profile Industry in Indonesia. *Journal of International Business and Economics*. https://doi.org/10.15640/jibe.v7n2a12

Zhang, D., Hao, M., & Morse, S. (2020). Is Environmental Sustainability Taking a Backseat in China after COVID-19? *The Perspective of Business Managers. Sustainability.* https://doi.org/10.3390/su122410369

Zhang, D., Lu, S., Morse, S., & Liu, L. (2021). The impact of COVID-19 on business perspectives of sustainable development and corporate social responsibility in China. *Environment, Development and Sustainability, 24,* 8521-8544. https://doi.org/10.1007/s10668-021-01798-y

Zhang, S. (2022). Firm Value and ESG Performance During the Covid-19 Pandemic. *Proceedings of the 2022 2nd International Conference on Enterprise Management and Economic Development (ICEMED 2022)*. https://doi.org/10.2991/aebmr.k.220603.035

Zhao, C., Guo, Y., Yuan, J., Wu, M., Li, D., Zhou, Y., & Kang, J. (2018). ESG and Corporate Financial Performance: Empirical Evidence from China's Listed Power Generation Companies. *Sustainability*. https://doi.org/10.3390/su10082607

Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment*, *31*(7), 3371-3387. https://doi.org/10.1002/bse.3089