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The Verification and Application of the Research about How ESG Performance Influences the Corporate Value

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Abstract: The essay aims to verify the relationships between corporate performance and ESG investing so that the meaning of environmental, social, and governance (ESG) performance can be highlighted. And the conclusion can be applied to classical business theories and business analysis. The article uses regression and sensitivity analysis to research the problem. There will be three assumptions of the idea, the relationships with financing constraints and corporate efficiency. And the sensitivity of ESG performance. We will conclude that ESG investment positively correlates with corporate efficiency and negatively correlates with financing constraints. And the sensibility of ESG investment is higher in private enterprises than in state-owned enterprises.

Keywords: component, financing constraints, enterprise efficiency, enterprise ownership

1. Introduction

Recently, the demand from stakeholders has become increasingly sophisticated, and the corporate needs to consider wider stakeholders in its strategy. The Association of Chartered Certified Accountants (ACCA) believes that the stakeholder theory will replace the agency theory inch by inch, which means corporate will be forced to balance interests between stakeholders and communities [1]. Environmental, social, and governance (ESG) appear as a new concept that enables a more convenient, transparent, and objective way to exchange information between stakeholders and agents. ESG means environmental, social, and governance; these three non-financial dimensions give us a new way to see if a firm operates well and its potential.

The real meaning and efficiency of ESG investing should be digested. The positive influence of ESG investing should be verified. The result of financing constraints, enterprise efficiency, and enterprise ownership will be the main research objective with its symbolic meaning. The research method will refer to the article [2]. The data will be updated to 2021. Besides, the conclusion of the relationships will be used in updating some classical theories of strategy and corporate governance. These updated theories have perspective meanings.

2. Empirical Analysis

2.1. Assumptions

Assumption 1: ESF performance is negatively related to financing constraints

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Assumption 2: ESG performance is positively associated with Enterprise efficiency

Assumption 3: The relationship between ESG performance and Enterprise value is more robust in private and state-owned enterprises.

2.2. Research Design on the Influence of ESG Performance on Corporate Value

2.2.1. Explained Variable

Operating cash flow on assets is an indicator, the same as return on investment, to explain the enterprise's ability to conduct its business. To emphasize the actual cash flow instead of a fake account. Operating net cash flow with be used to replace the operating profit. The higher the operational cash flow on assets is, the more robust competence for managing a company may hold.

The asset-liability ratio is another explained variable describing these companies' financing bind. The higher the asset-liability percentage, the more a company may suffer from the financing bind.

2.2.2. Explaining Variable

The Huazheng ESG level is used to explain each corporate's ESG performance. Compared to other ESG level systems, Huazheng ESG level is more based on the actual and up-dated economic conditions and the ESG information publishing systems.

2.2.3. Moderating Variables

The ownership nature and industry characteristics are selected as the moderating variables to explain how the specific characteristics of corporates influence the relationship between ESG performance and corporate value.

Ownership: State-owned or private. The private enterprise may tend to invest more in ESG because what they do for the environmental condition and broad community will be cared more by more stakeholders. The state-owned enterprise will be set as 1, and the private enterprise is 0.

2.2.4. Industry

We assume that the difference between different industries will also cause heterogeneity. The high-pollution industries are seen more granted to invest more money in ESG by broad stakeholders, so the sensitivity tends to be lower. In the empirical analysis, the high pollution corporates are defined as 1, and common pollution industries are defined as o.

2.3. Empirical Analysis of the Impact of ESG Performance on Enterprise Value

2.3.1. Descriptive Statistics

We have done the analysis of descriptive with the updated data; the following table contains the descriptive statistical test of the primary variable

Table 1: Descriptive Statistics.

Variable	Mean	Population Standard Deviation	Min.	Max.
Total Asset	715.383	9726.008	0.581	351713.830
Asset-liability ratio	42.403	22.035	1.496	203.337
Net Cash flow from operating activities	15.828	203.341	-3897.710	8432.580

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Table 1: (continued).

Operating cash flow on asset	0.047	0.072	-1.455	0.854
Environmental, social, and governance (ESG) performance level	4.129	1.228	1.000	7.000

From the data in 2021, there are 4889 samples in the wind database. From the explained performance, we can see the mean ESG performance level is 4.129; around the story of B, the overall ESG performance needs more improvement. The standard deviation is 1.228, and the highest ESG level updated to 2021 Dec is A, which shows that the ESG level may be accumulated in a median level.

The average asset-liability ratio is 42.403%, and the standard deviation of the balance is 22.035. The overall financial infrastructure maintains at a reasonable level. The max and minimum normal deviation levels may imply the difference between different industries' characteristics.

The operating cash flow on assets is 0.047, and the overall ability of operation is relatively low; maybe the additional investment and expense on ESG and reduce the short-term cash flows.

2.3.2. Regression Analysis

The R-square value of the model is 0.018, which means that ESG levels explain 1.8% of the variation in the debt ratio. It is found that the model passes the F-test (F=83.605, p=0.000<0.05), which means that the ESG rating will have an impact on the debt ratio. The final specific analysis shows that:

Table 2: Verification of Assumption 1.

Source	Sum of Squares	Degree of Freedom	Mean Square	Number of Observations	=	4,485
				F (1, 4483)	=	83.61
Model	4.01755898	1	4.01755898	Prob > F	=	0.0000
Residual	215.42596	4,483	0.048053973	R-squared	=	0.0183
				Adj R-squared	=	0.0181
Total	219.443519	4,484	0.048939233	Root MSE	=	0.21921

Table 3: Debt Ratio.

Debt Ratio	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95%Conf.Interval]**	
Environmental, social, and governance (ESG) Level	0.0243736	0.0026656	-9.14	0	-0.0295995	-0.0191476
_cons	0.532778	0.011482	46.4	0	0.5102677	0.5552884

The regression coefficient value of the ESG rating is -0.024(t=-9.144, p=0.000<0.01), which means that the ESG rating will have a significant negative impact on the debt ratio.

The summary analysis shows that all ESG ratings will have a significant negative impact on the debt ratio.

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Table 4: Verification of Assumption 2.

Source	Sum of Squares	Degree of Freedom	Mean Square	Number of Observations	=	4,485
				F(1, 4483)	=	69.64
Model	0.423764036	1	0.423764036	Prob > F	=	0.0000
Residual	27.2776855	4,483	0.006084695	R-squared	=	0.0153
				Adj R-squared	=	0.0151
Total	27.7014495	4,484	0.006177843	Root MSE	=	0.078

Table 5: Corporate Efficiency.

Corporate Efficiency	**Coef.**	**Std.Err.**	**t**	**P>t**	**[95%Conf.Interval]**	
Environmental, social, and governance (ESG) Level	0.0079159	0.0009485	8.35	0	0.0060563	0.0097755
_cons	0.0102064	0.0040857	2.5	0.013	0.0021963	0.0182165

It can be seen from the above table that ESG level is taken as the independent variable, and corporate benefit is taken as the dependent variable for linear regression analysis. As seen from the above table, the model formula is corporate benefit =0.010 + 0.008*ESG rating, and the R-square value of the model is 0.015, meaning that ESG rating can explain 1.5% of the change in corporate benefit. When the F-test was conducted on the model, it was found that the model passed the F-test (F=69.644, p=0.000<0.05), which means that the ESG level will

impact the company's efficiency. The final specific analysis shows that:

The regression coefficient value of the ESG rating is 0.008(t=8.345, p=0.000<0.01), which means that the ESG level will have a significant positive impact on corporate efficiency.

It can be concluded that all ESG levels significantly positively impact corporate benefits.

Table 6: Verification of Assumption 3.

Source	Sum of Squares	Degree of Freedom	Mean Square	Number of Observations	=	4,485
				F(1, 4483)	=	177.06
Model	23.2563774	3	7.7521258	Prob > F	=	0.0000
Residual	196.187142	4,481	0.043782	R-squared	=	0.106
				Adj R-squared	=	0.1054
Total	219.443519	4,484	0.048939233	Root MSE	=	0.20924

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Table 6: (continued).

Debt Ratio	Coef.	Std.Err.	t	P>t	[95%Conf.Interval]	
Environmental, social, and governance (ESG) Level	0.045542	0.0092058	4.95	0.000	0.0274941	0.06359
Corporate	-0.124158	0.0066153	-18.77	0.000	-0.1371273	-0.1111887
Environmental, social, and governance (ESG)_TYPE	-0.0447233	0.0053563	-8.35	0.000	-0.0552243	-0.0342222
_cons	0.4478543	0.0406611	11.01	0.000	0.3681385	0.5275702

It can be seen from the above table that the interaction term between ESG rating and company type is significant (t=-8.350, p=0.000<0.05). It means that when the ESG level affects the proportion of debt, the moderating variable (company type) significantly differs in the impact amplitude at different levels.

Table 7: The Source.

Source	SS	df	MS	Number of obs	=	4,485
				F(1, 4483)	=	24.63
Model	0.44945121	3	0.14981707	Prob > F	=	0.0000
Residual	27.2519983	4,481	0.006081678	R-squared	=	0.0162
				Adj R-squared	=	0.0156
Total	27.7014495	4,484	0.006177843	Root MSE	=	0.07799

Table 8: Corporate Efficiency.

Corporate Efficiency	Coef.	Std.Err.	t	P>t	[95%Conf.Interval]	
Environmental, social, and governance (ESG) Level	0.0040248	0.003431	1.17	0.241	-0.0027017	0.0107513
Corporate Ownership	-0.0043551	0.0024656	-1.77	0.077	-0.0091888	0.0004786
Environmental, social, and governance (ESG)*TYPE	0.0022774	0.0019963	1.14	0.254	-0.0016364	0.0061912
_cons	0.0335975	0.0151546	2.22	0.027	0.0038871	0.0633079

It can be seen from the above table that the interaction term between ESG level and company type does not show a significant difference (t=1.141, p=0.254>0.05). It can be seen from a model that X

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impacts Y, which means that when the ESG level affects company efficiency, the impact range of the adjusting variable (company type) is consistent at different levels.

3. Applications

From the relationship analysis and regression, we can conclude and verify that ESG performance is genuinely related to corporate value. The financing bind and operating efficiency are the two main factors that influence the corporate value of ESG investment. The private and low-pollution corporates tend to be more vulnerable to ignoring the investment in ESG, or they will be pursued by the new entrants that enter the new zone-environmental investment.

There will be plenty of updates in the classical analysis model in the past. These models might be failed to consider the environmental issues, social responsibilities, and broader stakeholders. The non-financial problems and issues will be more and more significant in our analysis model.

3.1. Mendelow Model

3.1.1. Introduction

The most classical model is the Mendelow Matrix. The stakeholders are classified into four quadrants based on two measurement dimensions—the level of interest and power. Key players kept satisfied, kept informed and minimal effort are the four response enterprises held for stakeholders [3,4].

3.1.2. Improvement

Low power and low interest are disposed of as the response of minimal effort in the classical Mendelow Model. These stakeholders are also passive, meaning they cannot explain their needs and demands. These stakeholders were considered as not worthing attention and efforts in the past. However, companies are forced to think more about ESG now, which means that the consideration of stakeholders, such as awareness of environmental issues, will show a higher level of ESG performance. The increment of ESG performance will strengthen the public image, maybe the causation for improved financing bonds, and add corporate value.

The passive stakeholders, particularly the animals and town residents, will be the main proportion of these passive stakeholders. These passive stakeholders will no longer be ignored because they are strongly linked to other stakeholders. For example, animals may not express their interest in habitat projection. However, suppose a company violates the right and interests of the animals too much, for instance, by destroying the animals' primary habitat. In that case, some pressure groups who prevent reasonable rights will notice that. They are those stakeholders with low power but high interest in environmental issues. They will persuade or push the "Kept Satisfied" stakeholders to join the intervention of the enterprise by parade or lobbying. The "kept satisfies," such as the local government and regulation departments, with high power but original interest, will transfer their position to "key players" and begin to exert influence on the enterprise.

The main change in the Mendelow matrix is the position of passive stakeholders with both low power and interest. The awareness of environmental issues, social responsibilities, and corporate reputation will contribute to the more dynamic matrix. Any unfair treatment of those passive stakeholders will drive the matrix transformation. Those with high power and low interest will increase their interest and intervene in the company.

So there will be much fewer stakeholders being treated with minimal effort. There will be almost all of the stakeholders treated reasonably well. The broader awareness of ESG increases the overall level of interest so that the passive stakeholders' attention could be less easily ignored.

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3.2. SAF Model

SAF Model is designed to evaluate whether to accept or refuse a strategy. The SAF model can be split into suitability, acceptability, and feasibility [5,6].

Suitability means the strategic position, including the internal environment and external environment.

Acceptability implies the possible outcomes and whether the outputs are acceptable to stakeholders.

The feasibility means resources and requires competencies we can use to support our new strategy.

There will be two main dimensions we should consider with ESG performance.

3.2.1. Suitability

"Suitability" is the primary dimension we need to consider.

As we know, the model evaluates the external environments and includes the PESTEL model. The PESTEL model is the six abbreviations of political, economic, social, technological, environmental, and legal. And most of the abbreviations we consider can be integrated with ESG.

3.2.2. Political and Legal

Government support includes the two parts of the model. The policy published to support the object of carbon neutrality, such as the regulatory credit in 2018 [7]—for every sale of one new-energy car, some of the tradable credit can be accumulated. This regulatory credit can be used to get a permit to sell some high pollution to offset the pollution and mission of carbon so that carbon neutrality will be achieved. In 2019, the selling price of each regulatory credit from Tesla peaked at 3000 yuan. In 2020, the FAW-Volkswagen reached an unbelievably adverse regulatory credit—negative 1300,000 credits, which put FAW-Volkswagen in a financially dangerous position as a large amount of penalty and loss of reputation and goodwill.

The new government policies and legal should comply with no reason so that the corporates can survive. For the example above, to comply with the policies of regulatory credit, a new production and sales combination should be designed, including several new-energy and traditional energy vehicles. The combination ensures that overall regulatory credits are positive or zero so that the company will not pay the penalties for its excess pollution.

However, the new sales combination compels a fixed number of new-energy vehicles. The success of selling these vehicles requires some core competencies of the company. The core competencies include the technologies and the levels of marketing. High technologies, such as the Internet of things, will add more value to the product as well as effectively improve the competencies of the product. Marketing is also a core competency of a new-energy company. The higher level of marketing, the higher the conversion rate of potential customers who buy new-energy vehicles.

3.2.3. Social

The social demands tell about the possible assumptions that explain the heterogeneity between different industries and ownerships.

The heterogeneity of different industries includes several assumptions of causation. The most critical assumpted causation is the common social understanding that the broad communities care more about the ESG performance of low pollution industries rather than the high pollution industries. Because the high-pollution initiatives are taken for granted that their sound and satisfying performance and social reputation are the compensation for all of the pollution and footprint the company generated. Of course, improving ESG performance will also inspire communities'

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acceptance, either in high-pollution or low-pollution industries, especially when some activities are out of control. Then, practical control activities and caring about social responsibility will prevent the enterprise from rumors and bad publicity.

Besides, the influence of pressure groups is also a part of common social understandings. Unlike the single person, the pressure groups tend to care more about high-pollution corporates rather than taking the responsibilities for granted [2]. The fast fashion industry has been a specific industry that is under fire and highly exposed to these groups. Pressure groups and media are trying hard to push these companies to decrease their footprint and complete the realignment [6].

However, in China, the role of these pressure groups, or we can call them NGOs, is weakened. More duties of governance and regulation are accumulated in governments. So that may be why the influence of pressure groups in China is much weaker than a single person, which will cause heterogeneity; the low-pollution industries are more ESG performance sensitive than those high-pollution industries.

3.2.4. Environmental

Environmental issues are the core of ESG performance. Companies should care more about the local environments around them. As part of the Mendelow Matrix above, the analysis and prediction for these passive stakeholders need to be considered.

3.2.5. Technology

The new technologies should be integrated into the ESG systems.

These technologies can be used to process improvement, especially recycling at the end of the supply chain. For example, the implementing end-of-life vehicle (ELV) process recycles or dismantles, and depollutes these end-of-life vehicles [1].

3.2.6. Acceptability

The acceptability part mainly includes the financial issues, such as the indicators measuring investment, such as payback period, net present value, and rate of return on investment (ROI). The strategy will be accepted rather than refused if these indicators are considerable enough.

However, nowadays, acceptability will contain much more than just financial indicators. The acceptability will not be only shareholders' acceptability but the broader stakeholders.

There will be more stakeholders we should consider: the employees, customers, governments, media, and broader communities.

For example, the media. Due to the increased sensitivity of social responsibilities needs, positive publicity could attract more customers and better social images.

For the employees, a better position to retain and attract high-quality staff to join the team to gain the core competencies should be included. The update in change management can be integrated into publishing new strategies. Whether the new system is acceptable to employees could be a concern. Maybe the customers will resist the new design because the new process will increase the working pressure or the risk of losing their job. The Lewis change management model can be used to analyze the possible solutions the company can take to help the new strategy be successfully implemented.

The changes of stakeholders should also consider the customers, the information and signal which show the advantages of the new strategy, and consideration of social responsibilities of the new system should be spread so that more customers or potential customers will transfer to accept the companies. Customer loyalty can equate to better customer retention and be a kind of core competence.

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3.3. Structure of Board

3.3.1. Introduction

Two main kinds of board structures exist. The unitary boards and two-tier boards [7-10].

The most significant difference between the two kinds of board infrastructure is the clear separation of duties. The two-tier board structure split the supervision group and executive group. Those who supervise the company are the NEDs, and those executives are EDs. The supervision group can oversee and regulate the other group with low restrictions. But in unitary boards, the position is equated between the NEDs and EDs.

3.3.2. Improvement

The two-tier boards should be chosen to replace the unitary board structure.

The split of separation of duties usually means that the power of EDs has been weakened, and the supervision system will be more transparent because the power of NEDs, who is responsible for wider communities, will be strengthened.

As more and more people care about the reputation of enterprises, and the influence and duties of an enterprise stronger, the two-tier boards can be adapted to corporate governance. The change will be beneficial to prevent the rights and wellbeings of wider communities.

3.4. Stakeholder Theory

3.4.1. Introduction

Despite the environmental and social dimensions, governance is also a key element of ESG. Responsible leadership is a new concept to describe and explain the level of governance, and the relationships between governance and corporate value, operating efficiency, financing bond, and so on [9].

3.4.2. Improvement

Responsible leadership is an extension of stakeholder theory [10]. Responsible leadership adheres to 3 behaviors, that is:

Firstly, Focus on the broader needs of others rather than on personal interests. Secondly, consider the societal and moral implications of decisions. Lastly, ensure that decision-making is based on the long-term rather than satisfying immediate priorities at the potential expense of future success.

These descriptions all ask for a demand that the company should consider more rather than the short-term, self-interest, and myopia things. Good and satisfied governance recommends responsible leadership to help with more sophisticated and multiple demands.

Above all, the satisfaction of stakeholders requires us to perform ESG well. The procedures and activities could include E, undertaking the duties of environmental governance, S, considering more about the wellbeing of employees and more social responsibilities; and G, increased responsible leadership is needed.

4. Conclusion

In conclusion, the relationships between ESG performance and corporate value has been verified by the regression method and the data of A-share in 2021. And the relationship can be applied and integrated into many classical business models and theories. Such as the Mendelow Model, SAF model, PESTEL Model, board structure, and stakeholder theory.

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There are two appropriate directions for the research outcome. The updated theories can be applied in some companies' qualitative analysis and desk research. Another is verifying the results of relationships between ESG and corporate by researching a single company with an ESG investment. We can determine if the ESG makes sense in financing constraints and corporate efficiency. If it does not make sense, we can find the reasons. For example, if the sensitivity of ESG investing is low because of corporate ownership.

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