Research on the Impact of Enterprise ESG Performance on Audit Opinions

Liying Zheng [1,a], Runhua Peng [2,b] and Linrong Wu [3,c,*]

{zhenglx@mailbox.gxnu.edu.cn[a], 2337464984@qq.com[b],wulinrong@gxljc.edu.cn[c]}

School of Management Engineering, Guilin University, Guilin, China[1,3];
School of Economics and Management, Guangxi Normal University, Guilin, China[2];

Abstract. ESG, as one of the important standards for measuring the sustainable development of enterprises, is an important indicator of corporate risk control and investor concern, and audit, as a third-party forensic institution, is also an important user of ESG ratings. The article takes A-share listed companies from 2009-2021 as the research object, and explores whether ESG ratings affect the decision of audit opinions and the investment of audit fees from the auditor's perspective. It is found that the higher the ESG rating, the higher the probability of the auditor issuing a standard unqualified audit opinion. The mechanism of action suggests that the higher the ESG rating, the lower the level of corporate risk, and the more likely the company is to issue a standard unqualified opinion, i.e., the ESG rating influences the issuance of an audit opinion by reducing the corporate risk factor. Further analysis shows that when the accounting firm is non-Big 4 accounting firm audit, the more significant ESG ratings on audit opinion, indicating that the non-Big 4 on ESG ratings to reduce corporate business risk and information asymmetry risk affects the effect of its premium assessment is obvious; when ESG ratings are higher, the company's management level and disclosure of information level is higher, the audit in the acquisition of information in the reduction of the cost of the input. The conclusion is that ESG ratings provide a reference basis for auditors to avoid risk, improve efficiency and reduce audit input.

Keywords: ESG Performance; Enterprise risk level; Audit opinion; Audit fees

1 Introduction

Environment (E), Social Responsibility (S), and Corporate Governance (G) are important tools to promote the concept of sustainable development in the world, and in order to implement this concept effectively, the United Nations Global Compact put forward the concept of ESG in 2004. The concept of ESG is to integrate the elements and resources of sustainable development, give full play to the synergistic role of governments, enterprises and financial institutions, rely on the capital market, enable enterprises to transform to sustainable development, and implement a series of operable systematic methods and evaluation standards for enterprises to achieve low carbon and environmental protection, fulfil their social responsibilities, and focus on corporate governance.

In view of this, this paper, based on the auditor's perspective, selects the data of A-share listed companies as samples, and conducts a study on the relationship between ESG ratings and audit opinions, and finds that ESG ratings are significantly positively correlated with audit

ICEMBDA 2023, October 27-29, Tianjin, People's Republic of China

DOI 10.4108/eai.27-10-2023.2342027

opinions, and the higher the ESG ratings are, the better the overall management of the company is, and the higher the probability that a standard unqualified opinion will be issued[1]. At the same time, on the basis of adding the company's business risk factors as intermediary factors, the results show that the company's business risk is significantly negatively correlated with the audit opinion and the impact of ESG ratings on the audit opinion after adding the business risk is still significant, which can be seen that ESG affects the audit opinion through the channel of reducing the business risk. Meanwhile, further analyses show that the impact of ESG ratings on audit opinions is not significant for companies audited by Big 4 firms compared to non-Big 4 audited companies, indicating that Big 4 accounting firms are more cautious about business risks in the auditing process in order to avoid issuing inappropriate audit reports, and therefore the impact of ESG performance in reducing business risks on the assessment of their risk premiums is not significant; ESG ratings are significantly negatively correlated with audit fees, indicating that ESG ratings and audit fees are significantly negatively correlated. ESG ratings are significantly negatively correlated with audit fees, indicating that the better the ESG ratings, the lower the information asymmetry risk and business risk, and the lower the input paid by audit firms in this regard.

2 Theoretical analysis and hypothesis development

2.1 Enterprise ESG Performance and audit opinions

Auditing is the act of issuing an audit report from the perspective of an independent third party to obtain reasonable assurance as to whether the financial statements of the audited entity are free from material misstatement due to error or fraud. The audited financial statements of an enterprise can be relied upon to a greater extent, and a high-quality audit report has a "credit-enhancing" effect. With the increasing pressure of audit litigation risk, auditors can only continue to improve the quality of the audit report to avoid litigation risk, ESG ratings provide an important non-financial information channel for auditors to avoid risk[2]. Then ESG ratings will affect the audit report decision-making behaviour from what perspective?

Based on the theory of favourable stakeholders, when the ESG rating is high, it indicates that the enterprise has a better and positive interaction with stakeholders such as customers, employees, communities, suppliers, regulators, and the government, which also enhances the value of the enterprise to a certain extent[3]. Besides, it also means that the enterprise management has a certain degree of responsibility and social reputation, and the risk of financial statement fraud is lower, and it is more likely to issue a standard unqualified audit opinion [4]. (Menon and Kahn, 2003) argued that ESG performance can provide information and investment needs for different stakeholders and create a good corporate image in the minds of stakeholders, which can accumulate capital and bring excess profits for the company [5]. (Pavelin and Porter, 2008) found that the higher the corporate social responsibility score, the closer the relationship with stakeholders, the easier it is to obtain the resources needed for corporate innovation, to promote corporate innovation and enhance corporate competitiveness. In summary, enterprises that actively practice ESG concepts can obtain more stakeholder support, obtain healthier financing channels and long-term competitiveness, reduce enterprise systematic risk and flash crash risk, and the auditor's audit risk is lower, and it is easier for the auditor to issue a standard unqualified opinion.

Based on the information asymmetry theory, reputation theory, and stakeholder theory, all point to the higher ESG, the more inclined auditors are to issue standard unqualified opinions. Therefore, this paper proposes the following hypothesis:

Hypothesis1: The higher the ESG rating, the more inclined the auditor is to issue a standard unqualified opinion.

2.2 Corporate ESG performance, business risk and audit opinion

Operational risk is the risk of business failure due to poor performance or inability to continue in the course of ongoing operations. According to the theory of "audit insurance", the audit report is essentially an insurance policy on whether the financial statements of the enterprise are true and fair, and the beneficiaries are the users of the financial statements, and once the audited entity fails to operate, resulting in the loss of investor interests, based on the theory of "deep pockets", the auditor will be liable for the loss of investor interests. Based on the theory of "deep pockets", even if the auditor has properly implemented the audit procedures and issued an objective and fair audit opinion in accordance with the provisions of the auditing standards during the audit, the risk of investors claiming compensation from the accounting firm is still very high. Therefore, when the auditor realises that the audited entity has high business risks, the auditor will tend to issue a non-standard audit opinion to avoid their own risks [6] (Yong et al., 2021). From the auditor's point of view, the better the ESG performance of the enterprise, the lower the probability of the enterprise's risk of material misstatement and operational risk, and the more the auditor tends to issue a standard unqualified opinion.

Through the above analysis, it can be seen that the higher the ESG rating, the stronger the company's management ability and comprehensive ability, the lower the probability of the company's business risk and systematic risk, and therefore the probability of the auditor's non-standard opinion is also relatively low. Based on this, this paper proposes the following hypothesis.

Hypothesis 2: There is a mediating effect of listed companies' operational risk in the relationship between listed companies' ESG performance and audit opinion.

3 Research Design

3.1 Sample selection and data sources

This paper selects a sample of Chinese A-share listed companies in Shanghai and Shenzhen from 2009 to 2021 to study the relationship between corporate ESG performance and corporate audit opinion. In this paper, the sample data are screened as follows: (1) the data of financial industry are excluded; (2) the data of ST and *ST samples are excluded; (3) the missing data of the sample are excluded with a total of 27,238 data. And all continuous variables are subject to 1% and 99% Winsorize shrinkage to avoid the effect of extreme values. Its ESG rating index is from wind database and other financial data is from CSMAR database, see Table 1 for details on variables and variable definitions.

Table 1. Variable definitions

	variable symbol	Variable Description
Implicit Variable	AOP	Standard unqualified opinions are assigned a value of 1 and non-standard opinions are assigned a value of 0.
Independent Variable	ESG	According to the ESG rating of Huazheng, assign a value of 1-9 from low to high.
Intermediary Variable	Risk	Using Roa every three years (from year t to year t+2) as the observation period, the difference between the rolling maximum and minimum values is used as a measure of operational risk
Control variables	Size	Natural logarithm of total assets
	Lev	Total liabilities/ Total assets
	Roa	Net profit/ Total assets
	Rec	Accounts receivable/ Total assets
	Inv	Inventory/ Total assets
	Lip	Current assets/ Total assets
	Loss	Dummy variable, 1 if net profit is negative, 0 otherwise
	Complex	Inventory and accounts receivable as a percentage of total assets
	Big4	Accounting firms are the Big 4 take the value of 1, otherwise it is 0.
	Year	Annual fixed effects
	Industry	Industry fixed effect

3.2 Modelling

In order to test hypothesis 1, which is the study of the impact of ESG performance on audit opinion, this paper develops a Probit model as follows.

$$AOP_{i,t} = \alpha 0 + \alpha 1 ESG_{i,t} + \alpha 2\ Controls_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \tag{1}$$

If the α1 regression is significantly positive, the higher the ESG rating index, the more the AOP opinion favours the standard audit opinion.

To test hypothesis 2, the following model is developed in this paper:

$$Risk_{i,t} = \alpha_0 + \alpha 1 ESG_{i,t} + \alpha 2 Controls_{i,t} + \sum Year + \sum Ind + \varepsilon_{i,t} \tag{2}$$

$$AOP_{i,t} = \alpha_0 + \alpha 1 ESG_{i,t} + \alpha 2\ Risk_{i,t} + \alpha 3 Controlsi,t + \sum Year + \sum Ind + \varepsilon_{i,t} \tag{3}$$

Where Risk is used as a mediator variable to test the relationship between ESG ratings on audit opinions using the difference between the rolling maximum and minimum values of ROA every three years (year t to year t+2) as the observation period as a measure of business risk.

4 Empirical testing and analysis of results

4.1 Descriptive statistics

As can be derived from the descriptive statistics in Table 2, the mean value of the audit opinion is 0.972, indicating that the probability of issuing a standard unqualified opinion in the overall sample is 97.2% and the probability of a non-standard audit opinion is 2.8%. The mean value of Huazheng ESG Rating Index is 6.487, which lies between Huazheng rating BBB-A, and the overall ESG performance of the sample is high. However, the maximum ESG value is 9, the minimum value is 1, and the standard deviation is 1.131, implying that the variability of corporate ESG ratings is relatively high. Other descriptive statistical analyses of control data are basically consistent with existing studies.

Table 2. Descriptive Statistics

Variable	Numbers	Min	Max	Mean	Standard Deviation
AOP	27140	0	1	0.972	0.164
ESG	27140	1	9	6.487	1.131
Size	27140	15.577	28.636	22.19	1.328
Lev	27140	0.008	1.956	0.420	0.206
Roa	27140	-3.994	0.786	0.036	0.088
Rec	27140	0	0.813	0.124	0.106
Inv	27140	0	0.943	0.140	0.130
Liq	27140	0.014	1	0.571	0.201
Loss	27140	0	1	0.104	0.305
complex	27140	0	0.945	0.264	0.161
Big4	27140	0	1	0.056	0.230

4.2 Benchmark Regression

Since the explanatory variable Audit Opinion (AOP) is a dichotomous dummy variable, it is not suitable for the use of ordinary linear regression methods, so it is regressed using the Probit model (Zhang Yang,2021)[7] . The regression results are shown in Table 3, firstly in order to control the effect of year and industry on the data interferes with the data results, firstly the fixed effect control for industry and year. On this basis firstly only the relationship between ESG on audit opinion AOP was analysed (Column 1) and the results show that the regression coefficient is 0.3282 (t-value of 22.15), which is significant at the 1% level; secondly, the control variables were added to this (Column 2) and the regression coefficient was reduced to 0.2380 (t-value of 14.17), but it is still significant at the 1% level. It indicates that when ESG performance is better, the audit opinion is more inclined to the standard unqualified opinion, and research hypothesis 1 is verified.

Table 3. ESG performance and audit opinion

Variable	(1)AOP	(2)AOP
ESG	0.3282***（22.15）	0.2380***（14.17）
Size		0.1029***（5.65）
Lev		-1.1951***（-11.75）
Roa		3.8576***（12.11）
Rec		-0.3441（-0.18）
Inv		-0.4552（-0.24）
Liq		-0.2680***(-2.18)
Loss		-3.4391***(-5.63)
		1.2284(0.66)

Complex		
Big4		-0.1734**（-1.84）
Constant	-0.0880 (-1.0)	-1.2449（-3.21）
Year	YES	YES
Ind	YES	YES
N	27140	27140
Pseudo R2	0.0782	0.2447

Note: ***, ** and * represent significant at the 1%, 5% and 10% levels, respectively, t statistics in parentheses.

4.3 Mechanical testing

Based on the previous analyses of ESG ratings, business risks and audit opinions, it can be seen that ESG performance can promote auditors to issue standard audit opinions through the channel of reducing business risks. From the perspective of business risk, the higher the ESG rating, the better the firm's performance in environmental protection (E), social responsibility (S), and corporate governance (G), and the significantly lower the firm's risk of environmental violations and business risk, and consequently the auditor faces lower audit risk and litigation risk, and is more inclined to issue a standard unqualified opinion. As shown in Table 4, in order to control for the effect of year and industry on the data, which interferes with the data results, fixed effect controls for industry and year were first applied. Firstly, the relationship between ESG rating and the mediating variable, business risk, was analysed and the regression coefficient was -0.0055 (t-value of -11.97) Column (2), which is significant at the 1% level, suggesting that, when the ESG rating is higher, the level of business risk is lower. Secondly, is a re-do regression of ESG and audit opinion with the inclusion of Risk indicator, the regression coefficient of column (3) is 0.2269 (t-value of 13.36), which is lower relative to the regression result of 0.2380 (t-value of 14.17) in column (1) without the inclusion of Risk indicator, but is still significantly correlated at the 1% level. It indicates that there is a mediating effect of business risk (Risk) between ESG rating and audit opinion. That is, when the ESG rating is higher, the audit risk is lower and the probability of the auditor issuing a standard audit opinion is higher, which verifies Hypothesis 2.

Table 4. Mechanism test results for operational risk

Variable	(1)AOP	(2)Risk	(3)AOP
ESG	0.2380***(14.17)	-0.0055***(-11.97)	0.2269***(13.36)
Risk			-1.9826***(-11.63)
Size	0.1029***(5.65)	-0.0013***(-2.69)	0.0895***(4.86)
Lev	-1.1951***(-11.75)	-0.2351***(-7.46)	-1.2214***(-11.90)
Roa	3.8576***(12.11)	-0.3153***(-29.15)	2.0246***(5.81)
Rec	-0.3441(-0.18)	0.0799**(1.58)	-0.0520(-0.03)
Inv	-0.4552(-0.24)	0.0272(0.55)	-0.3446(-0.18)
Liq	-0.2680***(-2.18)	-0.0029(-0.91)	-0.2720***(-2.19)
Loss	-3.4391***(-5.63)	0.0664***(31.86)	-0.3666***(-5.91)
Complex	1.2284(0.66)	-0.0776**(-1.57)	0.9792(0.52)
Big4	-0.1734**(-1.84)	-0.0026**(-1.20)	-0.1796**(-1.90)

Constant	-1.2449^{***}(-3.21)	0.1517^{***}(15.06)	-0.6452^{**}(-1.63)
Year	YES	YES	YES
Ind	YES	YES	YES
N	27140	27140	27140
Pseudo R2	0.2447	0.2008	0.2625

Note: ***, ** and * represent significant at the 1%, 5% and 10% levels, respectively, t statistics in parentheses.

5 Robustness test

5.1 Lagged core variable test

In order to verify the stability of the above analyses, this paper first lags the explanatory variable ESG by one period and then reruns the regression to alleviate the two-way causality problem of the model. The regression results are shown in column (1) of Table 5. The regression coefficient of ESG and Audit Opinion (AOP) after one period of lagging is 0.2815 (t-value is 17.41), which is significantly positive at 1% level, and the regression results are consistent with those of the regression results without one period of lagging.

5.2 Replacement of regression models

Both probit model and logit model are for regression analysis where the dependent variable is a categorical variable. The previous study mainly used the probit model for regression analysis, and in order to test its robustness, the logit model was used to re-regress the above data in order to test its robustness (Shou Yuntao et.al.,2022)[8]. The regression results are shown in column (2) of Table 5, the regression coefficient of ESG ratings and Audit Opinion is 0.5120 (t-value 14.16) and significantly positively correlated at 1% level, which is not significantly different from the above study, indicating that the conclusions of the previous study have a good reliability.

5.3 Replacing the metrics of explanatory variables

In the main regression analysis, this paper assigns the company's ESG rating according to 1-9 based on the Huazheng ESG rating index. In order to test the robustness of the main regression analysis, this paper replaces the measure of the explanatory variables to further validate the robustness of the main regression results, and re-constructs the explanatory variables based on the three major categories of Huazheng ESG ratings of A, B, and C(Shou Yuntao et.al.,2023)[9]. By redefining the explanatory variables in a probit regression with the audit opinion (AOP), the regression results, as shown in Column (3) of Table 5, show that the regression coefficient is 0.4054 (with a t-value of 9.98), which is significantly and positively correlated at the 1 per cent level , indicating that the conclusion remains the same after replacing the explanatory variables.

5.4 PSM propensity score matching method

In order to combat the impact of the great differences between the sample companies on the results of the study, the ESG average of all the sample companies as a criterion is divided into the treatment group and the control group, and the closest neighbour matching method is used to match the control variables of the sample in a 1:1 manner, and the regression is re-run through the balancing check, and the regression results do not differ significantly from the previous regression results, which is in line with the robustness test (Shou Yuntao et.al.,2023)[10].

Table 5. Robustness Tests

Variable	(1)AOP	(2)AOP	(3)AOP
ESG	0.2815***(17.41)	0.5120***(14.16)	0.4054***(9.98)
Size	0.1142***(6.28)	0.2426***(6.02)	0.1181***(6.53)
Lev	-1.2796***(-12.50)	-2.7280**(-12.57)	-1.2359***(-12.25)
Roa	3.6840***(11.49)	7.0676***(11.60)	3.9823***(12.60)
Rec	0.0715(0.04)	-0.2427(-0.06)	-0.2788(-0.15)
Inv	-0.0550(-0.03)	-0.4979(-0.13)	-0.2874(-0.16)
Liq	-0.2838***(-2.29)	-0.4957***(-1.83)	-0.2479***(-2.04)
Loss	-0.3538***(-5.76)	-0.8045***(-6.27)	-0.3616***(-5.97)
Complex	0.9242(0.49)	2.1013(0.55)	1.0952(0.59)
Big4	-0.2003***(-2.10)	-0.3855***(-1.78)	-0.1223**(-1.31)
Constant	-1.7126(-4.34)	-3.5305(-4.07)	-1.0381(-2.72)
Year	YES	YES	YES
Ind	YES	YES	YES
N	27140	27140	27140
Pseudo R2	0.2605	0.2460	0.2302

Note: ***, ** and * represent significant at the 1%, 5% and 10% levels, respectively, t statistics in parentheses.

6 Conclusions

This paper examines the impact of ESG performance on audit opinion and its mechanism from the auditor's point of view by selecting a sample of A-share companies listed on the Shanghai and Shenzhen stock exchanges from 2009 to 2021. The results of the study show that: first, the higher the ESG rating, the higher the probability of the auditor issuing a standard unqualified audit opinion; second, the mechanism of the study shows that the higher the ESG rating, the lower the level of corporate risk, and the company is more inclined to issue a standard unqualified opinion, i.e., the ESG rating affects the issuance of an audit opinion by lowering the risk factors of the company; third, further analyses show that the ESG rating affects the audit opinion of the auditor's firms when the firm is a non-Big Four audit firm. accounting firm audit, the more significant the ESG rating is on the audit opinion, indicating that the non-Big 4 has a significant effect on the ESG rating to reduce the business risk and information asymmetry risk of the enterprise to affect its premium assessment. When ESG ratings are higher, the level of corporate management and information disclosure is higher, and the cost of audit input in obtaining information is reduced. In addition, we conducted a series of robustness tests by replacing the explanatory variables, replacing the regression model, lagging one period, and PSM propensity score matching method, and the results still hold.

According to the above research, this paper will have the following insights for audit institutions, enterprises and the government: firstly, for audit institutions, based on the premise of the risk-oriented audit model, auditors should obtain information about the ESG ratings of enterprises from multiple channels, and the level of ESG ratings of enterprises can effectively assess the high-risk areas of the enterprise's operations, and reasonably allocate auditing resources according to the size of the risk, and at the same time, according to the characteristics of the enterprise attributes and the enterprise's performance in the PSM tendency score matching method, the results still hold. Secondly, for enterprises, in the context of the 14th Five-Year Plan's comprehensive green development and transformation, enterprises should establish a correct concept of ESG, and actively practice ESG responsibility. Secondly, for enterprises, under the background of comprehensive green development and transformation of the 14th Five-Year Plan, enterprises should establish correct ESG concepts, actively practise ESG responsibilities, abandon traditional business concepts, increase investment in green innovation and transformation, social responsibility and corporate governance, and strive to improve their ESG ratings, so as to better respond to the national policies, enhance their resource support and competitiveness, and achieve their sustainable development; finally, for the government, it should strengthen the active guidance of the government and regulatory bodies, promote and improve the overall institutional framework of ESG in China, and develop an applicable ESG system. Finally, for the government, it should strengthen the active guidance of the government and regulatory agencies, promote and improve the overall institutional framework of ESG in China, and develop a system of applicable ESG indicators and evaluation standards.

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