

# The Post-Covid Relationships between ESG and Corporate Profitability: Evidence from China

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**Abstract.** With the deterioration of the global environment and the depletion of natural resources, ESG has become a topic of increasing importance among nations. ESG is the core framework for the sustainable development of enterprises, and has become the mainstream evaluation system for enterprises' performance. This paper tries to examine the relationship between ESG and corporate profitability in China's A-share companies following the COVID-19 pandemic. In this work, a model is developed using current ESG data from Chinese publicly listed corporations. Based on the collecting data, this paper conducted correlation and regression analyses, and used a robustness test to determine the model's stability. This paper finds that in 2022, just after the COVID-19 pandemic, the ESG score has a significant positive correlation with enterprises' revenue and net income. Improving an enterprise's ESG score is an effective way to increase its profitability. This paper concludes with suggestions for companies seeking to improve their ESG score.

**Keywords:** ESG; Corporate Profitability; Chinese listed company; post-Covid.

## 1. Introduction

Since the beginning of the 21st century, the development of the global economy has been riddled with twists and turns, and humanity is confronted with numerous difficulties such as global warming, resource scarcity, and natural disasters. The 2019 arrival of COVID-19 has severely impacted the world economy. In the process of continual economic progress, a considerable number of corporations have resorted to unethical means to pursue profit. In response to the escalating severity of environmental and economic issues, numerous nations have promoted ESG as a means of promoting sustainable economic development.

ESG is a benchmark that focuses on the environmental(E), social(S), and governance(G) performance of corporations and gauges their level of social responsibility. The ESG concept emerged in the 1970s, was formally proposed in 2004, and evolved into an enterprise evaluation system. It debuted on the European and American markets before progressively expanding to other nations [1]. Mark Mobius, the guru of emerging market investments, believes that ESG may help companies develop healthily, enhance corporate profitability, and give investors with better investment advice; ESG is also helpful to resolving the escalating global environmental issues [2]. China's ESG growth is somewhat late for an emerging country, yet it is developing extremely quickly. The Chinese government suggested a national policy for sustainable development in 2011, which is quite close to the ESG idea. After 2019, China was impacted by the COVID-19 pandemic, and the economic downturn was severe, affecting a variety of Chinese industries to varied degrees[3]. The purpose of this essay is to investigate the correlation between China's domestic ESG evaluation and corporate profitability after the pandemic, and to offer business recommendations to companies based on this correlation. This research focuses specifically on ESG evaluation, operating income, and enterprise profit. Notably, the evaluation of ESG relies on numerous evaluation agencies and data providers. China has developed its own local evaluation method in accordance with its own national circumstances and certain worldwide ESG evaluation requirements. China-based local evaluation agency Wind will serve as the data source for this piece.

This article constructs a model that influences business performance using the financial indicators and ESG scores of all Chinese A-share listed companies in 2022. The model is then validated by conducting a correlation analysis between corporate ESG scores and corporate revenue and profits. Next, we tested the robustness of the model. We found that in 2022, when the epidemic is nearly over,

there is a significant positive correlation between ESG scores and corporate profitability, and that increasing ESG scores is an effective strategy for increasing corporate profits. Finally, we discuss ways in which companies can improve ESG measures. This article's first section will describe existing ESG research and explain how this article fits within the field of ESG research. The second section of this paper will present the paper's data, describe the primary research methods, and describe the data output. This paper's third section will elaborate on the findings of the research and draw conclusions.

## 2. Literature review

My research compiles the most recent information regarding the correlation between China's ESG rating and business performance. (Perhaps you could elaborate).

ESG research encompasses numerous topics, yet there are few in-depth ESG studies for China. Gunnar Fried examined the relationship between ESG and corporate financial performance (CFP) using 2,000 empirical research, although few of these studies featured China [4]. Amir Amel-Zadeh investigates how investors might utilize ESG when making financial decisions [5]. Elroy Dimson concludes that ESG ratings are fragmented and that utilizing ESG ratings in isolation is unlikely to positively impact portfolio outcomes [6]. These papers all address important problems, but just a handful of them focus on China.

In China ESG research, few studies focus on the profit performance of firms, while many studies focus on the investment level and the impact on the wider macro economy. David C. Broadstock examined China's macro investment market during the Covid-19 pandemic and discovered that ESG mitigated financial risks during China's financial crisis [7]. Ge Ge determined that ESG in China is conducive to the high-quality and sustainable development of businesses, and that innovation investment is a significant factor in ESG's influence [8]. Feng discovered that ESG is useful in preventing company managers in China from engaging in unethical behavior, but rarely discusses corporate profitability [9]. Xiao ke Zhang drew the conclusion that the rate of return on investments with a high ESG score increased dramatically after 2016 and that policy is the primary driver of this shift [10]. My research contributes to the literature by examining the relationship between ESG evaluation and corporate profitability and by offering business recommendations to corporations.

In terms of ESG and business interactions in China, very few corporate studies on ESG have been undertaken since the covid-19 outbreak, but several research were conducted prior to the outbreak. The relationship between ESG evaluation and the stock market performance of Chinese companies as of 2019 was the subject of Xiang Deng's research. They discovered that an increase in ESG measures can greatly boost a company's stock market performance [11]. Changhong Zhao discovered that high ESG performance can boost the financial performance of Chinese power generation firms [12]. Between 2005 and 2012, Olaf Weber examined the connection between ESG and businesses [13]. The aforementioned studies are based on data from years before to 2019, so they do not account for the impact of the present epidemic on corporate operations and evaluation systems. This post will examine the newest ESG scenario in China in 2022, when the epidemic will have nearly ended.

## 3. Methodology

This paper will first construct a model that affects the enterprise's net profit and an additional model that affects the enterprise's operating income, and then conduct descriptive statistics to demonstrate the statistics of the variables. Correlation analysis and regression analysis were used to determine a significant relationship between ESG score and net profit and operating income based on a preliminary estimation of the relationship between variables. This paper will also evaluate the model's robustness and offer a research conclusion.

### 3.1 Data

This article makes use of the most recent ESG evaluation data published by Wind, a leading provider of financial data terminals in China. Wind has developed a unique ESG rating system for Chinese companies based on international standards such as ISO 26000, SDGs, GRI Standard, etc. and combining China's ESG information disclosure policies. Its ESG evaluation encompasses 3 dimensions, 25 topics, and over 2,000 data points. This article uses data through October 2022, which includes ESG ratings (from 0 to 10) of all A-share companies in mainland China, third-quarter 2022 net profit and operating income, accounts receivable, assets and liabilities, current ratio, quick ratio, cash ratio, and total enterprise assets. The initial data set consists of 4814 observers, and 4802 observations are obtained by removing the data of enterprises experiencing a financial crisis.

### 3.2 Model building

This paper selects control variables from the natural logarithm (lnAR) of the enterprise's accounts receivable, the natural logarithm (lnSIZE) of the enterprise's total assets, the asset-liability ratio (LEV), the current ratio (LR), the quick ratio (QR), and the cash ratio (CASH) in order to reduce the interference of these variables with the research objective. The natural logarithms of operating income (lnINC) and net profit (lnNP) are explanatory variables, while the ESG score (ESG) is an explained variable.

The following setting model is used to examine the impact of ESG scores on operating income lnINC and net profit lnNP:

$$\ln INC_{it} = \alpha_0 + \alpha_1 ESG_{it} + \alpha_2 \ln AR_{it} + \alpha_3 \ln SIZE_{it} + \alpha_4 LEV_{it} + \alpha_5 LR_{it} + \alpha_6 QR_{it} + \alpha_7 CASH_{it} + \varepsilon_{it} \quad (1)$$

$$\ln NP_{it} = \alpha_0 + \alpha_1 ESG_{it} + \alpha_2 \ln AR_{it} + \alpha_3 \ln SIZE_{it} + \alpha_4 LEV_{it} + \alpha_5 LR_{it} + \alpha_6 QR_{it} + \alpha_7 CASH_{it} + \varepsilon_{it} \quad (2)$$

Among them,  $\alpha_0$  is a constant item, and  $\alpha_i$  is the coefficient of influence, which can determine the positive and negative direction of variable influence.  $i$  represents the  $i$ -th enterprise data,  $t$  represents the  $t$ -th year, and  $\varepsilon_{it}$  represents the random error item, which means the difference between the predicted values and actually values.

### 3.3 Descriptive statistics

Table 1 displays descriptive statistics for each variable in the data, including the number of data samples, the mean, standard deviation, minimum, and maximum values for each variable. The tailing procedure is carried out because there may be outliers influencing the model results, and the tailing parameter is set to 1% so that the lowest and maximum values are tailed to a suitable range and the model results are neither inflated or negatively influenced by outliers.

**Table 1.** Descriptive Statistics

Variable	Obs	mean	Std. Dev.	Min	Max
lnINC	4802	21.2415	1.5842	18.0152	25.8858
lnNP	4802	12.1064	14.4024	-20.8700	23.5676
ESG	4802	6.0755	0.7838	4.3700	8.2500
lnAR	4802	19.3251	3.4359	0.0000	23.8232
lnSIZE	4802	22.3872	1.4676	19.8306	27.3884
LEV	4802	42.0406	21.9704	4.6493	95.9433
LQ	4802	2.8495	3.1485	0.0000	19.8831
QR	4802	2.1641	2.7324	0.0000	17.0044
CASH	4802	142.7460	239.1436	0.0000	1502.3610

### 3.4 Correlation analysis

We then obtain a fundamental grasp of the relationship between variable data using correlation analysis. The correlation between two variables in the absence of additional variables is the subject of correlation analysis. We may thus only perform a preliminary evaluation of the association between variables, which cannot be utilized as the final outcome of the regression. Table 2 displays the correlation analysis results.

**Table 2.** Correlation Analysis

Variable s	IINC	nP	ESG	lm w	lnSIZE	LEV	Q	QR	CAS H
IINC	1								
nP	0.2828***	1							
ESG	0.1902***	0.1676***	1						
lm w	0.1659***	-0.0013	0.0568***	1					
lnSIZE	0.8610***	0.1715***	0.1741***	-0.0385***	1				
LEV	0.4479***	-0.1754***	-0.1340***	-0.0441***	0.5008***	1			
LQ	-0.3877***	0.0579***	0.0746***	-0.0506***	-0.3363***	-0.6550***	1		
QR	-0.3774***	0.0604***	0.0768***	-0.0545***	-0.3228***	-0.6313***	0.9725**	1	
CASH	-0.3331***	0.0610***	0.0737***	-0.1077***	-0.2627***	-0.5796***	0.9445**	0.9721**	1

Note: \*\*\*, \*\*, \* indicate that there is a significant correlation at the significance level of 0.01, 0.05, and 0.1, respectively.

At the 1% significance level, the correlation coefficient between ESG and lnINC was 0.2828, which passed the correlation test, and the correlation coefficient between ESG and lnNP was 0.1676, which was significant. The enterprise's operating income and net profit have a promoting effect. Since other variables are not controlled, it cannot be used as the final regression result, and the correlation coefficient is merely a preliminary examination of the relationship between variables and cannot represent the final conclusion. Consequently, which must be confirmed in subsequent regressions.

### 3.5 Regression Analysis

Next, by adding the standard error of the robust form of heteroscedasticity to reduce the possible impact of heteroscedasticity, the research results of this paper are obtained.

**Table 3.** Regression analysis

VARIABLES	(1)	(2)
	IINC	nP
ESG	0.0756*** (5.0129)	1.2172*** (4.5238)
lnAR	0.0877*** (19.4629)	-0.0672 (-1.5370)
lnSIZE	0.9050*** (89.5693)	3.1875*** (19.1388)
LEV	-0.0031*** (-3.8330)	-0.2566*** (-17.8660)
LQ	-0.0383** (-2.0468)	-0.8082*** (-2.6541)
QR	-0.0590** (-2.1584)	0.6188 (1.2828)
CASH	0.0003 (1.6276)	-0.0021 (-0.5195)
Constant	-0.8514*** (-3.9034)	-53.3020*** (-14.4987)
Observations	4,802	4,802
R-squared	0.7921	0.1302
r2_a	0.7918	0.1290
f	1986.9080 ***	95.9555 ***

Note: \*\*\* indicates that the impact is significant at the 1% significance level, \*\* at the 5% significance level, and \* at the 10% significance level. The t-values are enclosed in brackets.

According to the estimated outcome of Model 1, the model's R-square is 0.7921, the adjusted R-square is 0.7918, and the goodness of fit is 79.18%. Due to large fluctuations in the enterprise data's explanatory variables, the degree of fitting is generally not excessive, and the article's goodness of fit is acceptable. Furthermore, the F test value of 1986.9080 indicates that there is a high probability that the entire model has passed the significance test. Currently, the ESG influence coefficient is 0.0756 in The coefficient has passed the significance test at a significance level of 1%. Every one unit increase in ESG will result in an average increase of 7.56 % in operating income. lnAR and lnSIZE have significant positive effects, whereas LEV, LQ, and QR have significant negative effects on lnINC (see Table 3).

The estimation results for model 2 indicate that the model's goodness of fit is 12.90%, with a F test value of 95.9555. At the 1% level of significance, the entire model passes the significance test. The coefficient of ESG influence is 1.2172. Significantly below the significance threshold, ESG has a substantial positive effect on net profit. When ESG increases by one point, the explained variable grows by an average of 121.72 %. All three of the control variables lnSIZE, LEV, and LQ have a significant effect. Significant positive impact, significant negative impact for LEV and LQ.

### 3.6 Robustness check

In order to check whether the model results are stable, set the ESG higher than the median to 1, and the ESG lower than the median to 0, and name it ESG1. If the model results are still consistent, it means that the results of this paper are also relatively stable. The next part is robustness test analysis (see Table 4).

**Table 4. Robustness check**

VARIABLES	(1)	(2)
	lnINC	lnP
ESG1	0.0436** (2.0450)	1.3809*** (3.5074)
lnAR	0.0884*** (19.5474)	-0.0575 (-1.3072)
lnSIZE	0.9154*** (92.4292)	3.3136*** (20.9661)
LEV	-0.0037*** (-4.5296)	-0.2625*** (-18.3733)
LQ	-0.0395** (-2.0952)	-0.8170*** (-2.6941)
QR	-0.0572** (-2.0868)	0.6151 (1.2788)
CASH	0.0003 (1.6011)	-0.0020 (-0.4948)
Constant	-0.6375*** (-2.9498)	-49.3417*** (-13.2148)
Observations	4,802	4,802
R-squared	0.7910	0.1285
r <sup>2</sup> <sub>a</sub>	0.7907	0.1272
F	1962.5396***	92.1093***

Note: \*\*\* means the impact is significant at the 1% significance level, \*\* means the impact is significant at the 5% significance level, \* means the impact is significant at the 10% significance level. The t-values are in parentheses.

Consistent with the preceding findings, the coefficient of ESG1 on lnINC is 0.0436, which is statistically significant at the 5% level, and the influence coefficient of ESG1 on lnNP is 1.3809, which is statistically significant at the 1% level. The significance remains, and the results of the model are stable.

#### 4. Results and suggestions

The results of our model indicate that ESG ratings have a significant positive impact on corporate net income and operating income in particular. Every increase in ESG will result in a 7.56 percent increase in the average net profit and a 121.72 percent increase in the average operating income. We conclude that ESG evaluation can improve corporate performance, and despite the massive economic crisis caused by Covid-19, ESG continues to have a significant bearing on corporate profitability. Companies with high ESG scores are more likely to obtain higher income and profit, indicating that enhancing ESG ratings is a crucial method for enhancing profitability. ESG improvements can be used as a guide to improve corporate performance.

The ESG score of a company can be improved in a number of ways. For example, industrial enterprises can improve their ESG score for E (environment) by reducing emissions, increasing energy efficiency, and accelerating waste utilization. For S(social), businesses can implement brand strategy, create high-quality products, thereby establishing a brand with a positive image, and generate brand effects in order to earn a positive social reputation. Companies can improve their ESG scores by optimizing their corporate management structure, actively mediating conflicts between employees, increasing employee satisfaction, and effectively supervising company managers and combating corruption. It is important to note that the aforementioned methods are not immediately effective, and that many methods may increase the enterprise's costs in the short term, negatively impacting the enterprise's business performance. There may be a lag time for the company's actions

to reflect the improvement of the ESG score, so the improvement of the ESG score may be the result of long-term efforts. Therefore, corporate decision makers should take a longer-term perspective on ESG and consider the company's long-term interests. ESG will have a greater impact on enterprise development in China due to the government's increased emphasis on sustainable development and the continuous improvement of the ESG evaluation system. Prioritizing ESG may provide companies with a competitive advantage in the subsequent market.

## 5. Conclusion

This article examines the situation of ESG in post-epidemic China, which is rarely discussed in the literature. This article examines the relationship between ESG scores and corporate net profit and operating income by utilizing all A-share company data from 2022, constructing a model, and employing control variables and regression analysis. The focus is on Chinese companies following the COVID-19 epidemic. This paper finds that after experiencing the effects of the epidemic, there is a significant positive correlation between ESG and a company's operating performance, and that the improvement of ESG score can promote the growth of corporate net profit and operating income. On the basis of the research findings, this paper also provides suggestions for the development of Chinese companies. To occupy a favorable competitive position, Chinese companies should pay close attention to ESG evaluation, view improving ESG evaluation as an important means of enhancing business performance and take various steps to improve their ESG evaluation. In addition, the Chinese government should continue to promote the sustainable development strategy, continue to enhance the ESG evaluation system, and actively encourage companies and investors to pay attention to ESG in order to mitigate the growing environmental, resource, and corporate ethics problems. On the basis of this article, the direction of future research could be to use data to identify the factors that affect the enterprise's ESG score and to accurately explore effective methods for improving the enterprise's ESG score, or to investigate how the ESG score affects the enterprise's profit performance.

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