

# ***The Impact of ESG Disclosure Quality on Sustainable Growth and Asset Pricing Efficiency in China's Industrial Sector***

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**Abstract:** This research analyzes the impact of Environmental, Social, and Governance (ESG) disclosure quality on listed industrial companies in China's sustainable development potential, stock pricing efficiency, and the moderating effects of firm size and ownership structure. Panel regression and moderating effect models are applied in the research to investigate the links using data from Bloomberg's ESG Disclosure Score and China Stock Market & Accounting Research (CSMAR) from 2010 to 2020. The findings reveal that quality ESG disclosures significantly enhance both sustainable growth and stock pricing efficiency, with larger firms showing a more substantial impact. However, state-owned enterprises demonstrate a weaker impact compared to private firms. These findings suggest that ESG disclosure quality can boost investor confidence in a firm's long-term growth potential, thereby attracting capital and enhancing the accuracy of asset pricing. This work facilitates in the comprehension of the function of ESG disclosures in the monetary markets and offers guidance to Chinese businesses, investors, and regulatory agencies.

**Keywords:** ESG, sustainable growth, stock pricing efficiency, China's industrial sector

## **1. Introduction**

### **1.1. Background**

With the intensifying global focus on ESG factors, corporate ability for sustainable growth has emerged as a critical aspect of financial decision-making. A few research illustrated that access to credit facilities and a skilled labor force are pertinent indicators of economic growth, suggesting that sustainable growth is a key consideration in financial decisions [1]. More than ever, companies are now being evaluated not just on their financial performance, but also on their commitment to sustainability, making ESG disclosure a crucial element of contemporary business operations to create a competitive advantage for improving corporate performance [2]. Furthermore, ESG reporting quality is gradually playing a significant role in asset pricing efficiency because growing recognition that ESG components influence a company's risk profile, operational performance, and market reputation, all of which are integral to asset valuation, meaning that robust ESG disclosures provide investors with necessary insights, facilitating efficient capital allocation decisions. ESG

disclosure, therefore, performs a vital part in increasing the accuracy of asset pricing, contributing to the transparency and stability of financial markets.

China's expanding economy and the industrial sector offer a unique context for assessing the effects of ESG revealing on the sustainability of businesses and the effectiveness of asset pricing. The Chinese industrial sector, being a significant contributor to the country's GDP, holds considerable sway over the nation's economic, social, and environmental sustainability. However, the ESG disclosure practices within this sector and their implications for the capability of sustainable growth and asset pricing efficiency remain under-explored, signaling a critical research gap that this study aims to address.

## 1.2. Related Research

Extensive prior research revealed that the quality of disclosure regarding ESG has emerged as an increasingly prevalent subject in economics in recent years. ESG reporting serves as not only an indication of a company's commitment to ethical conduct but also a tool for fostering transparency, assisting stakeholders in better comprehending the operations of an organization and prospective growth [3]. It can also affect the financial performance and risk of businesses, as well as the pricing and valuation of their assets on the capital markets [4]. The Chinese capital market has also witnessed accelerated growth in ESG disclosure. For instance, China published environmental and social disclosure rules for listed companies, which are widely regarded as the first set of ESG disclosure guidelines. Adherence to these standards is anticipated to improve the quality of reporting by domestic companies and encourage sustainable investments in the country. Nevertheless, while the quantity of ESG disclosure has grown, its quality varies significantly. ESG reporting by Chinese companies is still in its infancy, alongside legal requirements across industries and government agencies being fragmented. Consequently, it is essential to investigate the impact of ESG reporting quality on Chinese companies, which can modify corporate transparency.

The capacity to sustain growth is crucial for businesses, as it ensures long-term operational success and financial vigor. In this paper, the Sustainable Growth Rate (SGR) proposed by Higgins is used to quantify the sustainable growth capability of enterprises, that is, the utmost rate of development that a company can sustain without the need for additional equity or debt financing [5]. The SGR has recently been revealed to be a vital tool for organizations in formulating, directing, and regulating their financial and operational strategies since it mediates the relationship between firm-specific characteristics and share price performance [6]. Concerning the connection involving the extent of ESG disclosure and sustainability, prior research has demonstrated that ESG reporting prioritizes sustainable sectors via means of market-oriented policies and regulatory tools, which implicitly match responsible growth [7]. However, the extent to which the quality of ESG disclosure influences a company's capacity for sustainable growth has been the subject of extensive debate. According to numerous studies, customers who value ESG disclosure can increase revenue and foster sustainable growth [8], but it can also trigger ESG rating disagreements.

Asset pricing efficiency, the degree to which the prices of assets reflect all available information, plays an essential function in capital markets, aiding in the design of a robust asset demand system that influences asset prices and, in the meantime, the size, value, and momentum [9]. The increase in efficiency factors improves the predictability of stock returns, highlighting the significance of efficiency in investors' pricing considerations [10]. This paper employs stock price synchronicity, as an indicator of the correlation between individual stock price fluctuations and average market volatility, as a metric for pricing effectiveness [11]. Literature indicates that low synchronicity is related to a greater connection between current stock yields and future earnings, providing valuable information for potential profits [12]. In contrast, high synchronicity indicates inefficient information processing [13]. Moreover, synchronicity can foretell liquidity concerns; an increase in

return co-movement indicates an increase in systematic to total volatility, which contributes to improved liquidity [14]. Existing research suggests that ESG reporting can boost business value by lowering bond credit spreads, contributing to greater asset pricing efficiency [15]. Yet, sparse studies investigate how effective stock pricing and pertinent elements are affected by the quality of ESG disclosure.

### 1.3. Research Objectives

This paper will investigate the implications of ESG disclosure quality on sustainable growth and stock pricing efficiency of Chinese industrial sector enterprises. In addition, it analyzes the moderating effects of enterprise size and ownership nature in the above effects and provides valuable insights for policymakers, investors, and managers in China.

## 2. Methodology and Data

### 2.1. Model Setup and Assumptions

Examining ESG disclosure's role in China's industrial sector necessitates solid theoretical underpinnings. Our models hypothesize that ESG disclosure quality positively influences sustainable growth and stock pricing efficiency, moderated by firm size and ownership. Thus, it is proposed the ensuing hypotheses.

**Hypothesis 1:** The quality of ESG disclosures significantly positively impacts the ability for sustainable growth of enterprises within China's industrial sector.

To validate hypothesis 1, the panel data regression model was used to test it.

$$SGR_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 Lev_{it} + \beta_3 CashFlow_{it} + \beta_4 Sig_{it} + \beta_5 BM_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

The validity of hypothesis 1 can be proven if the estimated coefficient of  $\beta_1$  is positive and the null hypothesis can be denied at a significance level of 0.05.

**Hypothesis 2a:** The impact of the quality of ESG disclosures on the Chinese industrial firms' capacity for sustainable development is substantially moderated by the size of firms.

To validate the hypothesis 2a, the moderating effect model was used to test it.

$$SGR_{it} = \alpha + \beta_1 ESG_{it} + \gamma_1 Size_{it} + \delta_1 ESG_{it} Size_{it} + \beta_2 Lev_{it} + \beta_3 CashFlow_{it} + \beta_4 Sig_{it} + \beta_5 BM_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

If the estimated coefficient of  $\delta_1$  is positive and the null hypothesis can be rejected at the 0.05 significance level, it can be demonstrated that hypothesis 2a is true.

**Hypothesis 2b:** The ownership structure of industrial sector enterprises in China moderates considerably the positive correlation of ESG publication level with the potential for sustainable growth.

This model was used to examine hypothesis 2b as follows.

$$SGR_{it} = \alpha + \beta_1 ESG_{it} + \gamma_1 SOE_{it} + \delta_1 ESG_{it} SOE_{it} + \beta_2 Lev_{it} + \beta_3 CashFlow_{it} + \beta_4 Sig_{it} + \beta_5 BM_{it} + \mu_i + \varepsilon_{it} \quad (3)$$

Hypothesis 2b can be justified if the estimated coefficient of  $\delta_1$  is negative and the original hypothesis can be rejected at the significance level of 0.05.

**Hypothesis 3:** The quality of ESG disclosures enhances the stock pricing efficiency of the industrial sector in China.

In the case of hypothesis 3, the following model can verify it.

$$EFF_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 Lev_{it} + \beta_3 CashFlow_{it} + \beta_4 Sig_{it} + \beta_5 BM_{it} + \mu_i + \varepsilon_{it} \quad (4)$$

Hypothesis 3 holds when the projected coefficient of  $\beta_1$  is positive and the null hypothesis can be refuted at the 0.05 significance level.

**Hypothesis 4a:** The scale of firms notably moderates the positive implementation of ESG revealing as it relates to stock pricing efficiency of Chinese industrial sector businesses.

With regard to hypothesis 4a, which can be tested with the following model.

$$EFF_{it} = \alpha + \beta_1 ESG_{it} + \gamma_1 Size_{it} + \delta_1 ESG_{it} Size_{it} + \beta_2 Lev_{it} + \beta_3 CashFlow_{it} + \beta_4 Sig_{it} + \beta_5 BM_{it} + \mu_i + \varepsilon_{it} \quad (5)$$

The truthfulness of Hypothesis 4a can be demonstrated when the predicted coefficient of  $\delta_1$  is positive and the null assumption is untenable at a significance level of 0.05.

**Hypothesis 4b:** The structure of ownership of these organizations has a considerable moderating role in the beneficial effect that the ESG reporting quality has on the share pricing performance of industrial sector firms in China.

The following model was used to validate hypothesis 4b.

$$EFF_{it} = \alpha + \beta_1 ESG_{it} + \gamma_1 SOE_{it} + \delta_1 ESG_{it} SOE_{it} + \beta_2 Lev_{it} + \beta_3 CashFlow_{it} + \beta_4 Sig_{it} + \beta_5 BM_{it} + \mu_i + \varepsilon_{it} \quad (6)$$

Hypothesis 4b can be validated when the estimated coefficient of  $\delta_1$  is negative and the original hypothesis can be declined at the significance level of 0.05.

## 2.2. Data Description

To evaluate organizations' ESG performance, this research uses Bloomberg's ESG Disclosure Score (2010-2020), a methodology that has been approved by various ESG-related studies. It delivers quantifiable ESG data on more than 10,000 companies worldwide, and by 2018, it will also include 1,107 Chinese companies, for an aggregate of 10,808 firm-year observations. Over 120 data indicators that are weighted according to significance make up this comprehensive dataset, which was assembled through public sources and direct corporate interactions [16]. And The information on the green economy, stock prices, and ownership is also taken from CSMAR, the largest financial database in China created by the GTA, which contains extensive information on 18 different categories and is frequently utilized in empirical research [17]. According to the CSRC's Industry Classification Guidelines, 5887 samples from 732 industrial sector enterprises were gathered for the study. The initial A-share sample includes businesses that are sorted by industry (industrial sector only) and is traded on the Shanghai and Shenzhen Stock Exchanges, special cases (excluding ST, \*ST, and PT<sup>1</sup> companies due to their abnormal financial conditions) and data completeness (excluding firms with incomplete ESG and other variable indicators). After a 1% tail truncation to minimize extreme value impacts, the final sample includes 576 entities for empirical analysis.

## 3. Results

### 3.1. ESG Disclosure Quality and Sustainable Growth Capability

Multiple regression analysis is implemented to investigate the linkage between the effectiveness of ESG reporting and the capacity for sustainable development in the Chinese industrial sector. Mixed-effects, random-effects, and fixed-effects models are assessed using panel data. The random-effects model is preferable to the mixed-effects model, according to the Breusch-Pagan Lagrange test (Chi-square = 4803.57,  $p < 0.001$ ). Then, based on the results of the Hausman test (Chi-square = 69.17,  $p < 0.001$ ), it is apparent that the fixed-effects model is preferable to the

<sup>1</sup> ST (Special Treatment) refers to listed companies that have had negative net profits for two consecutive accounting years after auditing or whose net assets per share in the most recent year are below the nominal value of the stock, thus alerting investors to potential risks. \*ST denotes that the company has been in the red for three years, and investors in such securities must be extremely vigilant because they are likely to be delisted. PT (Particular Transfer) implies situations in which a traded business has sustained losses for three consecutive years and its stock is suspended from trading.

random-effects model. As a result, the study uses the fixed-effects regression model. Table 1 displays the relevant regression outcomes.

Table 1: Base-case regression results for sustainable growth in China's industrial sector.

	(1) SGR	(2) SGR
ESG	0.097*** (3.993)	0.165*** (6.865)
Lev		-0.069*** (-7.835)
Cashflow		0.164*** (13.261)
SIG		-0.651** (-2.549)
BM		-0.064*** (-8.857)
_cons	0.074*** (10.422)	0.142*** (12.906)
Firm&Year	Yes	Yes
<i>N</i>	5887	5887
<i>R</i> <sup>2</sup>	0.017	0.105

*t* statistics enclosed in brackets

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

According to the findings of the fixed-effect regression, the quality of ESG disclosure has a significant positive influence on China's industrial sector's sustainable growth at the 1% significance level; thus hypothesis 1 is significantly valid.

The study next constructs interaction terms between the explanatory variable and the moderating variables, namely ESG\_SIZE and ESG\_SOE, and incorporates them into the model for regression analysis to evaluate the moderating impacts of company size and ownership structure. In Table 2, the results are displayed.

Table 2: Regression results on the moderating effect of sustainable growth in China's industrial sector(continue).

	(1)SGR	(2)SGR
ESG	-0.113*** (-3.666)	0.183*** (6.858)
ESG_SIZE	0.285*** (13.972)	
Lev	-0.103*** (-11.437)	-0.061*** (-6.777)
Cashflow	0.141*** (11.475)	0.164*** (13.080)
SIG	-0.130 (-0.511)	-0.734*** (-2.859)
BM	-0.082***	-0.063***

	(-11.347)	(-8.590)
Table 2: (continued).		
ESG_SOE		-0.047*** (-3.275)
_cons	0.168*** (15.318)	0.140*** (12.658)
Firm&Year	Yes	Yes
N	5887	5760
R <sup>2</sup>	0.134	0.106

*t* statistics in parentheses

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The ESG\_SIZE interaction term has a substantial positive effect on sustainable growth in China's industrial sector, based on regression outcomes from column (1), which supports claim 2a: ESG disclosure quality has a stronger impact on large-scale industrial enterprises than small-scale ones. On the other hand, data in column (2) at the 1% significance level reveal an enormous adverse effect of ESG\_SOE, confirming the hypothesis. 2b: The implications of ESG disclosure on sustainable growth are inferior in state-owned than in private industrial firms.

### 3.2. ESG Disclosure Quality and Stock Price Pricing Efficiency

Employing a multiple regression analysis of panel data, the association between ESG disclosure quality and stock price efficiency was evaluated. Mixed-effects, random-effects, and fixed-effects models were all used in the model estimate process. A Breusch-Pagan Lagrange multiplier test (chi-square = 4803.57, p-value = 0.000) clarified the superiority of the random-effects model over the mixed-effects model. A subsequent Hausman test (chi-square = 69.17, p-value = 0.000) corroborated the optimality of the fixed-effects model, which was therefore chosen for the regression in this investigation. Table 3 illustrates the results of the regression examination.

Table 3: Regression results for stock price pricing efficiency in China's industrial sector.

	(1) EFF	(2) EFF
ESG	0.021** (2.019)	0.022** (2.085)
Lev		-0.018*** (-4.649)
Cashflow		-0.004 (-0.721)
SIG		-0.568*** (-5.036)
BM		-0.001 (-0.283)
_cons	0.936*** (311.074)	0.959*** (198.172)
Firm&Year	Yes	Yes
N	5887	5887

$R^2$	0.254	0.262
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*t* statistics in parentheses  
\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Fixed-effects regression findings demonstrate, at the 1% level of significance, indicating the stock pricing efficiency of the industrial sector in the Chinese stock market is greatly improved by ESG disclosure quality, strongly verifying hypothesis 3.

To scrutinize firm size and ownership structure as moderating influences, interaction terms ESG\_SIZE and ESG\_SOE were integrated into the model for regression analysis, as illustrated in Table 4.

Table 4: Regression Results of the Moderating Effect of Stock Price Pricing Efficiency in China's Industrial Sector.

	(1) EFF	(2) EFF
ESG	0.012 (0.889)	0.041*** (3.465)
ESG_SIZE	0.010 (1.094)	
Lev	-0.019*** (-4.772)	-0.017*** (-4.148)
Cashflow	-0.005 (-0.862)	-0.005 (-0.857)
SIG	-0.550*** (-4.821)	-0.604*** (-5.294)
BM	-0.002 (-0.474)	0.001 (0.274)
ESG_SOE		-0.025*** (-3.910)
_cons	0.960*** (195.431)	0.957*** (194.673)
Firm&Year	Yes	Yes
<i>N</i>	5887	5760
$R^2$	0.262	0.262

The brackets indicate *t* statistics  
\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The interaction term ESG\_SIZE exhibits little influence on the stock price effectiveness in China's industrial sector at a 5% level, as evidenced by the regression outcomes in column (1), which disproves hypothesis 4a. Yet at a 1% level of significance, the interaction term ESG\_SOE harms stock pricing efficiency, demonstrating that state-owned businesses are less positively impacted by ESG disclosure quality than private businesses are. As a consequence, assumption 4b is supported.



## 4. Discussion

Given the outcomes of the aforementioned regression analysis, it is clear to conclude that hypotheses 1, 2a, 2b, 3, and 4b have all been verified, while that hypothesis 4a has not been validated. Consequently, three significant conclusions have been derived from this study: (1) The effectiveness of stock pricing and an organization's capacity to sustain growth is significantly influenced positively by the quality of ESG disclosure in the Chinese industrial sector. (2) The size of the business greatly moderates the beneficial influence of ESG revealing the quality of a company's ability for sustainability. And the capacity of firms to expand sustainably is positively impacted by ESG disclosure quality to a greater extent the larger the firm scale. (3) The positive influence of ESG disclosure transparency on the sustainable growth potential and pricing efficiency of firms is drastically regulated by the form of enterprise ownership. Chinese state-owned industrial organizations experience a weaker positive effect of ESG publication performance on responsible expansion and share pricing effectiveness compared to private businesses (Figure 1).



Figure 1: Mechanisms linking the quality of ESG disclosure to sustainable growth potential and stock pricing performance.

On the other hand, it is apparent from the findings of the empirical study that the outcome of hypothesis 4a differs from the prediction. Specifically, the positive correlation between the effectiveness of ESG disclosure and stock pricing efficiency for Chinese industrial sector companies is not considerably moderated by the business size.

In short, combining the findings of the preceding study, it is easy to infer that the influence of ESG publication quality on the ability of listed industrial businesses to sustain growth and the effectiveness of share pricing can be elucidated through two main dimensions.

To start, ESG reporting quality could enhance the ability of a business for sustainable growth by boosting its ESG performance. This is attributed to the fact that quality ESG disclosures enable investors and stakeholders to better understand a company's ESG risks, leading to greater trust and support for the company's development, thereby bringing more business opportunities and competitive advantages. Specifically, excellent ESG disclosures can increase the transparency and credibility of listed firms, enhance their competitiveness and brand value, attract more investors and customers, and improve their market share and value. Additionally, good ESG disclosure can also promote the improvement of corporate governance structure, elevate the level of management, and enhance operational efficiency, thereby providing more impetus for sustainable growth.

In addition to assisting listed firms to grow, high-quality ESG disclosure could render stock pricing more efficient, which turn benefits investors and the economy as a whole. This is because superior ESG disclosure allows investors to better understand the company's ESG risks, enabling



them to make purchasing decisions based on the company's ESG performance. Specifically, if a listed company discloses high-quality ESG information, investors will pay more attention to the company's ESG risks and adjust their investment decisions accordingly. This could lead to increased demand for the company's shares, thus improving its stock pricing efficiency.

Lastly, quality ESG disclosure can enhance a company's credibility and reputation in the capital market, attracting more investors' attention and support for the company's stock, thereby providing the company with more financing channels and financial support, and promoting its rapid development.

## 5. Conclusion

The paper examines the implications of ESG reporting quality on the capability of sustainable growth and the effectiveness of stock pricing utilizing data for China's listed industrial enterprises from 2010 to 2020, implementing the panel regression and moderating effect models. The results indicate that ESG disclosure quality significantly enhances both sustainable growth and stock pricing efficiency. Quality ESG disclosures can boost investor confidence in a firm's long-term growth potential, vital for attracting capital. The push for carbon neutrality in China could lead to more comprehensive ESG reporting. Next, the positive influence of ESG publication quality on sustainable growth is moderated by business size; larger firms exhibit a higher effect, perhaps considering their businesses are available to allocate more resources in ESG disclosures and implementation. Finally, enterprise ownership significantly moderates ESG disclosure quality's positive effect. Compared to private firms, state-owned enterprises show a weaker impact on both sustainable growth and stock pricing efficiency. The rationale, potentially tied to their different operational models and goals, warrants further investigation.

The choice of single-indicator dependent variables means findings depend on the chosen measurement method. Varying measures may yield different results; future research could validate and supplement our findings. Additionally, while firm size and ownership are considered, other factors influencing these relationships may exist, calling for more comprehensive future exploration. Other potential moderating factors such as industry, geographical location, and management level could be considered in further investigations. The specific mechanisms and conditions that enhance ESG disclosure quality's impact on stock pricing efficiency also merit exploration. Finally, the findings could be validated in different countries or regions to understand the influence of diverse cultural, economic, and institutional environments on ESG disclosure quality.

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