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IMPACT OF ESG FACTORS ON FINANCIAL PERFORMANCE OF CHINESE LISTED COMPANIES

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J E L Classification: G3, M14, Q5.

Abstract: To achieve good long-term financial performance, a company needs to develop a Corporate Social Responsibility strategy that integrates Environmental, Social, and Governance (ESG) factors. This would enable it to meet the expectations of its stakeholders. This study investigates the impact of ESG practices on the financial per-

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formance of Chinese firms, addressing stakeholder expectations and strategic corporate outcomes. A two-step Generalized Method of Moment estimation model and penalized-spline estimation are used to test the relationship between financial performance and ESG factors on 772 Chinese companies from 2015 to 2019. This study's results reveal a significant impact of ESG factors on the financial performance of the companies in our sample, as measured by their Return On Equity and market-to-book ratio. This research makes a significant contribution to the existing literature by providing empirical evidence on the impact of ESG factors in the Chinese context, a developing market with unique characteristics. It highlights the importance of good governance practices and environmental investments in improving financial performance. This work offers valuable insights for policymakers, investors, and companies on the potential benefits of integrating ESG criteria into their corporate strategies.

■■■ INTRODUCTION

Research on CSR has grown considerably since the early 2000s (Huang, Karolyi & Kwan, 2021). CSR can refer to how a company conducts its business in an ethical, socially friendly, and beneficial manner (Salaheldin, 2009). It can also refer to how it aims to improve the well-being of society (Yoon, Lee & Byun, 2018). Considering the importance of CSR, the link between corporate social and ethical behavior and financial performance is a key issue (Arlow & Gannon, 1982; Ullmann, 1985). Indeed, CSR is used to strike a balance between profitability and ethics (Mozes, Josman & Yaniv, 2011).

CSR must be strategically oriented, focusing on creating shared value and providing interests for economic, social, and environmental issues. It involves going beyond regulatory compliance to invest in human and environmental capital in order to harmonize economic, social, and environmental interests (Dinu, 2011). Adopting responsible practices improves company performance and reputation and proactive CSR provides a positive effect in society (Šević & Bajalski, 2019). Moreover, CSR obligations impact companies in several ways, such as increasing the value of the company and influencing its financial performance (Wu, Lin, Wang & Chang, 2023), or reducing risks that could affect the company, such as bankruptcy and a bad reputation.

As regards the link between financial performance and sustainability practices, the findings remain inconclusive (Aifuwa, 2020). On the one hand, ESG practices lead to better risk management, easier access to capital, and an enhanced reputation (Yan, 2025). They also result in cost savings related to environmental and legal risks, increased operational efficiency and long-term resilience (Sousa, Viana, Neto, Castro, de Aguiar & da Silva, 2023). Further-

more, social enterprises benefit from a lower cost of capital due to their lower risk profile (Saini, Aggarwal, Dhingra, Kumar & Yadav, 2023).

Conversely, greenwashing, the cost-benefit dilemma of ESG investments, and the lack of standardized reporting metrics remain major challenges for ESG practices (Yan, 2025). Although ESG is associated with enhanced risk management and reduced capital costs for firms with robust sustainability practices, its ability to generate outperformance remains contested, particularly due to the risks of “greenwashing” and its strong sensitivity to policy and industry contexts (Qian, 2025).

Unlike Atan, Alam, Said and Zamri (2018) who find that there is no significant relationship between ESG factors and firm profitability as well as firm value, and Detthamrong, Klangbunrueang, Chansanam and Dasri (2026) who revealed a negative short-term association between ESG performance and return on assets (ROA) of listed companies, Dela, Ye and Berhe (2024) demonstrate that CSR dimensions positively and significantly affect financial performance of companies with a substantial mediating role of industry competitiveness. Bahadori, Kaymak and Seraj (2021) present a study applying linear regression analysis on panel data of more than 600 companies between the years 2014 and 2018, the empirical results indicate a positive relationship between ESG scores and company performance.

Several empirical studies, including the study by Chen, Song and Gao (2023), provide evidence that environmental investments, pollution mitigation, and innovation in sustainable technologies contribute positively to both short-term and long-term financial outcomes.

Furthermore, CSR can help increase corporate efficiency, enabling companies to better meet external requirements and gain more social capital and development opportunities (Hu, Zhu, Lin, Chen & Chin, 2021). Consequently, implementing corporate social responsibility activities can enhance companies’ external reputation, convey a positive message to the market, attract more investors and collaboration opportunities (Cui, Jo & Na, 2018), and attract more talent to business services.

Portfolio managers are increasingly developing strategies that consider additional financial factors, aligning corporate sustainability values with stakeholder expectations. Growing awareness of ESG issues, such as environmental scandals or social misconduct, has changed the sector by influencing investor behavior towards sustainable investing (Matallín-Sáez, Soler-Domínguez, Tortosa-Ausina & de Mingo-López, 2019). A social investment program can be

defined as an investor's strategy to integrate ESG dimensions to balance economic gain with ethical and sustainable goals (Sandberg, Juravle, Hedesstrom & Hamilton, 2009; Widyawati, 2020).

The integration of additional financial criteria in an investment fund responds to other frameworks, such as the legitimacy theory. The latter states that when managers perceive a lack of legitimacy, they develop strategies to correct their behavior and realign themselves with societal desires, and to reduce the risks associated with social and environmental constraints.

Other studies also support the position that ESG reporting will lead to better financial returns (e.g., Weber, Diaz & Schwegler, 2014; Fatemi, Glaum & Kaiser, 2018). Similarly, Zhao, Guo, Yuan, Wu, Li, Zhou and Kang (2018) find that more comprehensive ESG activities can improve financial performance, which is important for investors and company management.

According to the World Bank, China's per capita greenhouse gas emissions (6.7 tonnes between 2011 and 2015) are lower than those in the USA (17 tonnes), but higher than in France (5.2 tonnes). This data motivated our choice of China as the case for our study, which aims to investigate the impact of ESG factors on the financial performance of Chinese companies listed on the Shanghai and Shenzhen stock exchanges.

The interest of this research lies in understanding the dynamics between ESG practices and corporate financial performance in a rapidly developing market like China. With increasing pressure to adopt sustainable practices, it is crucial to determine whether investments in ESG initiatives lead to improved financial performance, which could encourage more companies to adopt such practices. Aydoğmuş, Gülay and Ergun (2022) found that companies with strong ESG combined scores have a better financial performance measured by profitability. Colombelli, Ghisetti and Quatraro (2020) demonstrated that investments in environmental innovation are positively correlated with corporate financial performance measured by market value. Handoyo and Anas (2024) emphasized the importance of regulatory quality and government effectiveness in the strength of ESG practices, with a significant impact on firm performance. Tang (2023) demonstrated that pollution levies and eco-friendly investments have a positive effect on corporate financial performance.

Our study utilizes panel data on 772 Chinese companies, spanning the period from 2015 to 2020, to examine the impact of ESG scores on financial performance, as measured by Return on Equity (ROE) and Market-to-Book Ratio (MBR). This research contributes to the existing literature by providing empir-

ical evidence on the impact of ESG factors in the Chinese context, a developing market with unique characteristics. It emphasizes the importance of effective governance practices and responsible environmental investments in enhancing financial performance. Additionally, it provides policymakers, investors, and companies with valuable insights into the potential benefits of integrating ESG criteria into their corporate strategies.

The rest of the paper is organized as follows: first, we present the research methodology and the course of the research process; second, the outcome of the research process and the conclusions.

THE RESEARCH METHODOLOGY AND THE COURSE OF THE RESEARCH PROCESS

Hypotheses Formulation

Based on the literature review developed above, we formulate our three hypotheses as follows:

H1: The environmental factor has a statistically positive impact on the financial performance of Chinese companies on the Shenzhen and Shanghai markets.

H2: The social factor has a statistically positive impact on the financial performance of Chinese companies in the Shenzhen and Shanghai markets.

H3: The corporate governance factor has a statistically significant positive impact on the financial performance of Chinese companies in the Shenzhen and Shanghai markets.

Data Selection

Our sample includes 772 Chinese companies. Data covers the period between 2015–2019 and was collected from a Data-Stream called REFINITIV. A comparative study was carried out between two Chinese markets, including 362 companies operating on the Shenzhen stock exchanges and 410 companies operating on Shanghai stock exchange.

The selection of the study period aims to ensure a relatively stable economic environment for analyzing the relationship between ESG factors and financial performance under normal economic conditions, avoiding any significant exogenous shock that can affected firms' financial outcomes irrespective of their

ESG practices. Extending the analysis to include the period after 2019 would shift the focus toward firms' resilience during COVID crisis periods rather than the core relationship under investigation, and may bias the estimation results and make it difficult to isolate the true effect of ESG factors.

Dependent Variables

To assess the dependent variable, Corporate Financial Performance (CFP), we used two proxies:

- The Market-to-Book ratio (MBR) is a financial evaluation tool that measures the current market value of a company compared to its book value, which is a generally accepted indicator of the financial performance of market-related companies (Li, Ngniatedema & Chen, 2017).
- The ROE ratio as an accounting treatment, which is mainly used as an accounting metric for CFP (Duque-Grisales & Aguilera-Caracuel, 2021).

Control Variables

We included firm characteristics, board composition and ownership structure as control variables:

- Leverage is total debt as a percentage of common stock, and it is a measure of a company's ability to fund its operations through debt rather than its own resources. This parameter is a particular form of debt ratio.
- The company size is measured by the natural logarithm of total assets.
- The percentage of female executive directors "Gender Diversity Board" (for gender diversity).
- Percentage of government ownership "Government held shares" – this is the percentage of total outstanding shares held by the government or government agencies.
- "Company held shares" – this is the institutional ownership, the percentage held by institutions.
- "Foreign holdings" is the percentage of the total shares in circulation held by institutions established in countries other than that of the issuer.

Model Specification

To evaluate the impact of the ESG score on financial performance, we applied a two-step GMM estimation model (Blundell & Bond, 1998). It is a parameter estimation method that handles service heterogeneity and has low asymptotic variance (Hwang & Sun, 2018). The system GMM estimator is used to address potential endogeneity, unobserved heterogeneity, and dynamic panel bias.

Our model takes the following form:

$$CFP_{i,t} = \alpha + \gamma CFP_{i,t-1} + \beta ESG_{i,t} + \delta control_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where:

$CFP_{i,t}$: Corporate Financial Performance for firm i at time t and is measured using ROE and MBR.

$CFP_{i,t-1}$: The lagged value of $CFP_{i,t}$.

$ESG_{i,t}$: The environmental, social, and governance criteria for each firm i at time t .

$Control_{i,t}$: It refers to the list of control variables for firm i at time t .

α, γ, β and δ are the model parameters.

$\varepsilon_{i,t}$: The error term.

Our study is furthered by applying a semi-parametric estimation method to examine the possibility of a nonlinear relationship, given the controversial previous results.

We therefore use the following equation:

$$CFP_{i,t} = \alpha + f(ESG_{i,t}) + \delta control + \varepsilon_{i,t} \quad (2)$$

This model consists of two main parts. The first provides a parametric linear estimate. The second is $f(ESG_{i,t})$, which provides the semi-parametric estimate. Different smoothing methods can estimate this function. As Hlioui, Ben Flah and Lajmi (2025), we used “the penalized spline” with an optimal basis function. Penalized spline smoothing technique provides the best fit and are designed to avoid overfitting (Keele, 2008). Its objective function is as follows:

$$Min\{\frac{1}{n} \sum_{i=1}^n [CFP_{i,t} - (\alpha + f(ESG_{i,t}) + \delta control)]^2 + \lambda J\} \quad (3)$$

Where n is the number of observations and J refers to the roughness of the feature.

The term λ is the key to a trade-off between minimizing the squared residual and maximizing possible smoothing.

If $\lambda \rightarrow \infty$, the penalized spline assigned to the roughness function is high. The linear form is optimal, given that it has zero roughness for the financial performance of the company, the minimization process corresponds to the method of least squares.

If $\lambda \rightarrow 0$, the minimization equation provides a flexible functional form, which corresponds to each observation. The penalized spline uses fewer parameters, making the minimization equation take the following form:

$$\text{Min} \left\{ \frac{1}{n} \sum_{i=1}^n [CFP_{i,t} - (\alpha + f(ESG_{i,t}) + \delta control)]^2 + \lambda \int_1^n f''(ESG) d(ESG) \right\} \quad (4)$$

The term J in equation (3) becomes $\int_1^n f''(ESG) d(ESG)$. f'' is the second derivative of the function f . The new expression captures the roughness of the feature through a regression spline. Finally, we compare semi-parametric regression to linear regression f .

THE OUTCOME OF THE RESEARCH PROCESS AND CONCLUSIONS

Descriptive Statistics

Tables 1 and 2 present descriptive statistics for the two samples.

Table 1. Descriptive Statistics of Companies Listed in Shanghai

	Abbreviation	Mean	Std	Min	Max
RETURN ON EQUITY	ROE	9.648	9.692	-47.57	67.53
Market Value to Book Ratio	MBR	2.445	4.104	0	64.38
Social Pillar Score	Social Score	11.403	16.662	0	88.35
Governance Pillar score	Governance score	21.42	26.871	0	89.34
Environment Pillar score	Environment score	14.304	21.39	0	81.19

Table 1. Descriptive...

	Abbreviation	Mean	Std	Min	Max
ESG Score	ESG Score	15.052	19.2	0	83.27
Foreign Holdings	FOREIGN_OWN	0.00499	0.03134	0	0.53
Gender Diversity Board	Gender Diversity Board	0.04357	0.08404	0	0.5
Size	Size	17.362	1.504	12.869	21.72
Government held Shares	GOVER_OWN	0.01792	0.10854	0	0.81
Company held Shares	INVST_OWN	0.00188	0.0227	0	0.46
Total Debt Common Equity	LEV	0.969	2.217	0	44.039

Source : author's own elaboration.

Table 2. Descriptive Statistics of Companies Listed in Shenzhen

	Abbreviation	Mean	Std	Min	Max
RETURN ON EQUITY	ROE	10.914	9.98	-43.78	51.29
Market Value To Book Ratio	MBR	3.311	2.986	0.29	38.67
Social Pillar Score	Social Score	7.991	15.811	0	92.48
Governance Pillar score	Governance score	15.462	24.911	0	85.69
Environment Pillar score	Environment score	8.823	17.308	0	75.51
ESG Score	ESG Score	10.231	16.872	0	67.91
Foreign Holdings	FOREIGN_OWN	0.01014	0.04838	0	0.34
Gender Diversity Board	Gender Diversity Board	0.0435	0.08729	0	0.4286
Size	Size	16.572	1.137	13.984	19.953
Government held Shares	GOVER_OWN	0.00146	0.01026	0	0.09
Company held Shares	INVST_OWN	0.00303	0.01536	0	0.14
Total Debt Common Equity	LEV	0.66584	0.86336	0	7.7276

Source : author's own elaboration.

According to tables 1 and 2, among CFP indicators, the ROE of companies listed in Shanghai and Shenzhen have average values of 9.648% and 10.914%, respectively. Regarding the MBR in these two regions, it takes average values of 2.445% and 3.311%, respectively. The minimum and maximum ROE for Shanghai and Shenzhen are -47.57% and 67.53%, respectively; -43.78% and 51.29%. For the MBR, the values are, respectively, 0% and 64.38%; 0.29% and 38.67%.

The average ESG score for companies in Shanghai is 15.052, and for those listed on the Shenzhen Stock Exchange, it is 10.231.

Regarding the composition of the board of directors, companies in Shanghai and Shenzhen have almost the same proportion, with 4.35% of women serving as executive directors. Additionally, the average ownership ratios of the major shareholder for “Company held Shares”, “Government held Shares”, and “Foreign Holdings” are 0.188%, 1.792%, and 0.499% for Shanghai companies, respectively, and 0.003%, 0.00146%, and 0.01014% for those listed in Shenzhen, respectively. These ratios are therefore relatively low for companies in these two regions. In addition, there is a minimum ownership value of 0% for “Investment Co. held”, “Government held Shares”, and “Foreign Holdings”.

Finally, for the average leverage ratio “Total Debt Common Equity”, it is 0.699% in Shanghai and 0.665% in Shenzhen, for operations financed by debt. For the minimum and maximum values, they are 0% and 44.039% for Shanghai, and 0% and 7.727% for Shenzhen, indicating that Shanghai-listed companies rely more on debt than equity, which suggests they are highly dependent on debt.

Results Interpretation

Tables 3 to 6 provide results of the effect of ESG factors on firm performance of Chinese firms. As indicated in the Tables, four models have been tested, including simultaneously the impact of the global ESG score, the social factor, the governance factor, and the environment factor.

For Shanghai Companies

Table 3 and 4 provide the results of the estimation of the impact of ESG factors on financial performance measured simultaneously by Market Value to Book (MBR) and Return on Equity (ROE). The results show that the models

are generally well-specified regardless of the performance measure used (MBR or ROE), as indicated by the highly significant F-tests (p -value = 0.000) across all columns, confirming the overall validity of the regressions. Autocorrelation tests reveal, in the model with MBR, significant AR(1) terms ($p < 0.05$), which is expected in GMM estimation, while AR(2) terms are not significant ($p > 0.05$), indicating the absence of second-order autocorrelation and thus the validity of the instruments; in the model with ROE, neither AR(1) nor AR(2) are significant, which remains acceptable and does not call the specification into question. Regarding over-identification tests, the results are more mixed for the MBR: the Sargan and Hansen tests suggest potential issues with instrument validity in certain specifications (notably columns (2) and (3) with low p -values), while others (columns (1) and (4)) exhibit high p -values, confirming the robustness of the instruments; in contrast, for the ROE, the Sargan and Hansen tests consistently show high p -values, indicating that the instruments are generally valid and that the models do not suffer from over-identification, which makes estimates based on the ROE more reliable from an econometric perspective than those based on the MBR.

Table 3. The Estimation of the Impact of ESG Factors on the FP Measured by MBR for Shanghai Companies

MARKET TO BOOK RATIO (MBR)				
	(1)	(2)	(3)	(4)
Lag (MBR)	.423*** (0.038)	.526 (0.098)	.499*** (0.034)	.603*** (0.05)
ESG Score	.008** (0.004)			
Social score		.032 (0.032)		
Governance score			.007* (0.004)	
Environmental score				.011*** (0.002)
FOREIGN_OWN	-.005 (0.039)	.01 (0.033)	.04* (0.023)	-.014 (0.046)
GOVER_OWN	.055 (0.181)	.074 (0.134)	.004 (0.008)	.05*** (0.008)
INVEST_OWN	.181 (0.196)	.234 (0.259)	.239*** (0.055)	-.503*** (0.114)
Gender Diversity Board	.035*** (0.005)	.05 (0.034)	.02* (0.01)	.14 (0.195)
Size	-.962*** (0.193)	-.855 (0.425)	-.565*** (0.087)	.156 (0.21)
LEV	.007*** (0.001)	.004 (0.002)	-.002 (0.001)	.006*** (0.001)

Table 3. The Estimation...

MARKET TO BOOK RATIO (MBR)				
	(1)	(2)	(3)	(4)
Constant	16.42*** (3.19)	14.647 (6.985)	10.646*** (1.564)	8.024*** (1.774)
Number of observations	410	410	410	410
F test	1862.64	40.23	477.97	79.98
P-value	(0.000)	(0.000)	(0.000)	(0.000)
Serial correlation				
AR (1)	-2.49	-2.54	-3.32	-2.36
P-value	(0.013)	(0.011)	(0.001)	(0.018)
AR (2)	-0.10	0.27	0.12	0.00
P-value	(0.924)	(0.790)	(0.906)	(0.997)
Override restrictions				
Sargan test	35.97	47.53	158.65	31.62
Prob > chi2	(0.092)	(0.000)	(0.000)	(0.246)
Hansen test	28.69	18.46	47.01	29.37
Prob > chi2	(0.325)	(0.492)	(0.010)	(0.343)
Difference-in-Hansen tests of exogeneity of instrument subsets, GMM instruments:				
Excluding group	20.99 (0.227)	7.32 (0.836)	38.94 (0.003)	21.53 (0.253)
(P-value)	7.70 (0.565)	11.14 (0.133)	8.07 (0.527)	7.84 (0.551)
Difference (P-value)				
IV:				
Excluding group	27.95 (0.310)	18.26 (0.439)	44.62 (0.009)	29.28(0.252)
(P-value)	0.74 (0.390)	0.20 (0.655)	2.39 (0.302)	0.09(0.956)
Difference (P-value)				
*** p<.01, ** p<.05, * p<.1 (i) parentheses below coefficients report robust standard errors; (ii) for serial correlation tests (AR(1) and AR(2)), the reported values are the Arellano-Bond z-statistics with their associated p-values; (iii) for overidentification tests (Sargan and Hansen), the reported values are chi-squared statistics with their associated Prob > chi2.				

Source: author's own elaboration.

Table 4. The Estimation of the Impact of ESG Factors on the FP Measured by ROE for Shanghai Companies

RETURN ON EQUITY (ROE)				
	(1)	(2)	(3)	(4)
Lag (ROE)	.475*** (0.016)	.306*** (0.085)	.464*** (0.01)	.505*** (0.013)
ESG Score	.046* (0.024)			
Social score		.182 (0.133)		
Governance score			.023** (0.009)	
Environmental score				.01 (0.017)
FOREIGN_OWN	.029 (0.116)	.016 (0.732)	.049 (0.118)	.018 (0.117)
Gender Diversity Board	-.099*** (0.034)	-.449** (0.218)	-.087** (0.034)	-.071** (0.033)
Size	-.359* (0.203)	-3.585 (3.011)	-.292 (0.241)	.275 (0.217)
GOVER_OWN	-.119 (0.081)	-.282 (0.357)	-.179** (0.08)	-.099** (0.047)
INVEST_OWN	-3.414* (1.971)	-1.269 (4.351)	-3.91** (1.845)	-3.602* (2.059)
LEV	-.012*** (0.004)	.009 (0.019)	-.007*** (0.001)	-.01** (0.004)
Constant	12.723*** (3.385)	69.268 (51.211)	11,678*** (4,145)	1.768 (3.618)
Number of observations	415	415	415	415
F test P-value	10035.88 (0.000)	42.52 (0.000)	5644.27 (0.000)	1301.70 0.000
Serial correlation				
AR (1) P-value	-1.10 (0.269)	-0.90 (0.370)	-1.14 (0.253)	-1.10 (0.271)
AR (2) P-value	0.64 (0.520)	0.29 (0.770)	0.66 (0.510)	0.66 (0.510)
Overid. Restrictions				
Sargan test Prob > chi2	8.31 (1.000)	2.31 (0.941)	8.35 (1.000)	8.90 (1.000)
Hansen test Prob > chi2	24.65 (0.539)	6.75 (0.455)	29.49 (0.338)	25.77 (0.531)

Table 4. The Estimation...

RETURN ON EQUITY (ROE)				
	(1)	(2)	(3)	(4)
Difference-in-Hansen tests of exogeneity of instrument subsets, GMM instruments:				
Excluding group (P-value) Difference (P-value)	18.59 (0.352) 6.06 (0.734)	5.01 (0.171) 1.74 (0.783)	20.68 (0.296) 8.81 (0.455)	17.91 (0.462) 7.86 (0.548)
IV: Excluding group (P-value) Difference (P-value)	21.83 (0.646) 2.82 (0.093)	6.02 (0.421) 0.73 (0.392)	21.97 (0.637) 7.52 (0.023)	21.66 (0.655) 4.11 (0.128)
*** p<.01, ** p<.05, * p<.1 (i) parentheses below coefficients report robust standard errors; (ii) for serial correlation tests (AR(1) and AR(2)), the reported values are the Arellano-Bond z-statistics with their associated p-values; (iii) for overidentification tests (Sargan and Hansen), the reported values are chi-squared statistics with their associated Prob > chi2.				

Source: author's own elaboration.

The results obtained are generally consistent with the existing literature, which highlights a positive link between ESG factors and financial performance, although this depends on the measure used. In particular, the positive impact of the ESG score on profitability (ROE) is in line with the work of Friede, Busch and Bassen (2015), who show that a majority of empirical studies conclude that there is a positive relationship between ESG and financial performance. Similarly, the significant role of governance aligns with the conclusions of Gompers, Ishii and Metrick (2003), highlighting its importance in value creation. The more nuanced results observed with the Market-to-Book Ratio are also consistent with Eccles, Ioannou and Serafeim (2014), who show that the impact of ESG varies depending on performance indicators and the time horizon. Furthermore, the differences between accounting performance (ROE) and stock market performance (MBR) confirm that markets do not always immediately incorporate ESG information, as suggested by Fatemi, Fooladi and Tehranian (2015). These results are also supported by recent literature, notably Gillan, Koch and Starks (2021), who highlight the growing role of ESG factors in corporate finance, as well as Berg, Kölbel and Rigobon (2022), who point out that differences in ESG measurement may explain heterogeneous empirical results. Finally, in the Chinese context, the findings of Broadstock, Chan,

Cheng and Wang (2021) confirm that ESG performance can enhance corporate resilience and performance, which is consistent with the results of this study.

For Shenzhen Companies

Table 5 and 6 present the results of the estimation of the impact of ESG factors on financial performance (FP), measured by MBR and ROE. Results presented in table 5 show that all models yield very high F-statistics (ranging from 15.98 to 413.30), with p-values of 0.000, confirming the overall validity of each specification. The explanatory variables collectively account for a significant portion of the variation in MBR. AR(1) and AR(2) are Serial autocorrelation (Arellano-Bond test). In a GMM estimator on panel data, AR(1) is expected to be significant (first-order autocorrelation in the first-difference residuals). In our case, AR(1) is significant in all models ($p < 0.01$), which is normal and expected. AR(2) is not significant in any model (p-values between 0.21 and 0.51), which confirms the absence of second-order autocorrelation, a necessary condition for the validity of GMM instruments. The Sargan test checks for over-identification of the instruments (validity of GMM instruments). In model (1), the statistic is high (55.65, $p = 0.001$), indicating a possible weakness of the instruments in the aggregate specification. In contrast, models (2), (3), and (4) have non-significant p-values (0.136, 0.913, 0.183), suggesting that the instruments are valid for these specifications. Unlike the Sargan test, the Hansen test is robust to heteroscedasticity. The p-values are all non-significant: (1) $p = 0.231$, (2) $p = 0.092$, (3) $p = 0.436$, (4) $p = 0.069$. This generally confirms the validity of the instruments used in the GMM system.

According to table 6, all F-statistics are significant at the 0.000 level, with very high values (50.17 to 3312.06), validating each model. AR(1) is significant in all models (p between 0.003 and 0.016), which is normal and consistent with GMM expectations. AR(2) is not significant in all models (p between 0.706 and 0.819), validating the absence of second-order autocorrelation and confirming that the lagged instruments are appropriate. Sargan tests in Models (1), (2), and (3) exhibit high statistics with significant p-values (0.000), indicating potential overspecification of the instruments in these estimates. Model (4) is the only one for which the Sargan test is valid ($p = 0.209$). Results of the Hansen test show that all p-values are non-significant (0.125 to 0.197 for the first three; 0.181 for the fourth), indicating that the instruments are generally valid according to this more robust test.

Table 5. The Estimation of the Impact of ESG Factors on the FP Measured by MBR for Shenzhen Companies

MARKET TO BOOK RATIO (MBR)				
	(1)	(2)	(3)	(4)
Lag (MBR)	.434*** (0.064)	.138** (0.063)	.193* (0.105)	.117** (0.058)
ESG Score	.04*** (0.007)			
Social score		.168*** (0.058)		
Governance score			.162*** (0.05)	
Environmental score				.181*** (0.049)
FOREIGN_OWN	.127* (0.073)	.682 (0.914)	1.577 (1.426)	1.225* (0.731)
Gender Diversity Board	.007 (0.015)	-.084* (0.045)	-.263** (0.1010)	-.092** (0.037)
Size	-1.503*** (0.173)	-2.887*** (1.216)	-2.913*** (1.299)	-3.937*** (1.156)
GOVER_OWN	-1.452* (0.842)	-.724 (1.288)	-.862 (1.844)	-.756 (0.992)
INVST_OWN	.067* (0.039)	.186 (0.191)	.031 (0.311)	.176 (0.174)
LEV	.012*** (0.001)	.021* (0.011)	.03** (0.015)	.023** (0.01)
Constant	25,513*** (3,046)	47,915** (19,196)	46,791** (20.64)	64,542*** (18,246)
Number of observations	362	362	362	362
F test P-value	413.30 (0.000)	25.21 (0.000)	15.98 (0.000)	31.49 (0.000)
Serial correlation				
AR (1) P-value	-2.85 (0.004)	-1.56 (0.119)	-1.45 (0.147)	-1.48 (0.139)
AR (2) P-value	0.88 (0.380)	-0.66 (0.510)	-1.25 (0.210)	-1.19 (0.233)
Overid restrictions				
Sargan test Prob > chi2	55.65 (0.001)	12.35 (0.136)	3.32 (0.913)	11.34 (0.183)
Hansen test Prob > chi2	32.03 (0.231)	13.61 (0.092)	7.97 (0.436)	14.55 (0.069)

Table 5. The Estimation...

MARKET TO BOOK RATIO (MBR)				
	(1)	(2)	(3)	(4)
Difference-in-Hansen tests of exogeneity of instrument subsets, GMM instruments:				
Excluding group (P-value) Difference (P-value)	23.41 (0.175) 8.62 (0.473)	12.71 (0.013) 0.90 (0.925)	2.30 (0.681) 5.67 (0.225)	3.07 (0.546) 11.47 (0.022)
IV: Excluding group (P-value) Difference (P-value)	31.75 (0.165) 0.28 (0.870)	13.25 (0.039) 0.36 (0.834)	7.91 (0.245) 0.06 (0.972)	13.61 (0.034) 0.94 (0.626)
*** $p < .01$, ** $p < .05$, * $p < .1$ <i>(i) parentheses below coefficients report robust standard errors;</i> <i>(ii) for serial correlation tests (AR(1) and AR(2)), the reported values are the Arellano-Bond z-statistics with their associated p-values;</i> <i>(iii) for overidentification tests (Sargan and Hansen), the reported values are chi-squared statistics with their associated Prob > chi2.</i>				

S o u r c e : author's own elaboration.

Table 6. The Estimation of the Impact of ESG Factors on the FP Measured by ROE for Shenzhen Companies

RETURN ON EQUITY (ROE)				
	(1)	(2)	(3)	(4)
Lag (ROE)	.51*** (0.023)	.51*** (0.02)	.527*** (0.022)	706*** (0.073)
ESG Score	.148*** (0.034)			
Social score		.14*** (0.042)		
Governance score			.059*** (0.02)	
Environmental score				.007 (0.143)
FOREIGN_OW	-.206 (0.259)	.011 (0.246)	-.004 (0.091)	-.075 (0.162)
Gender Diversity Board	-.331*** (0.057)	-.27*** (0.055)	-.275*** (0.053)	-.09 (0.227)
Size	-1.342** (0.577)	-1.013* (0.575)	-.745 (0.584)	-7.735 (5.523)
GOVER_OW	.05 (0.262)	1.958 (3.337)	2.246 (3.566)	-5.765 (10.498)
INVEST_OW	2.865*** (0.3)	3.069*** (0.307)	2.845*** (0.287)	1.308 (1.34)

Table 6. The Estimation...

RETURN ON EQUITY (ROE)				
	(1)	(2)	(3)	(4)
LEV	.021*** (0.006)	.016*** (0.006)	.022*** (0.007)	.19 (0.129)
Constant	26.614***(8.953)	21.053**(9.385)	16.63* (9.427)	121.44 (84.349)
Number of observations	362	362	362	362
F test P-value	337.28 (0.000)	3312.06 (0.000)	397.43 (0.000)	50.17 (0.000)
Serial correlation				
AR (1) P-value	-2.85 (0.004)	-2.87 (0.004)	-3.00 (0.003)	-2.41 (0.016)
AR (2) P-value	-0.24 (0.809)	-0.23 (0.819)	-0.26 (0.794)	-0.38 (0.706)
Overid restrictions				
Sargan test Prob > chi2	78.93 (0.000)	80.25 (0.000)	77.85 (0.000)	10.87 (0.209)
Hansen test Prob > chi2	34.60 (0.149)	34.40 (0.125)	33.01 (0.197)	11.37 (0.181)
Difference-in-Hansen tests of exogeneity of instrument subsets, GMM instruments:				
Excluding group (P-value) Difference (P-value)	28.03(0.062) 6.57 (0.682)	28.60 (0.038) 5.80 (0.760)	27.55 (0.069) 5.45 (0.793)	6.96 (0.138) 4.42 (0.353)
IV: Excluding group (P-value) Difference (P-value)	32.93 (0.133) 1.67 (0.433)	33.44 (0.120) 0.95 (0.328)	32.20 (0.152) 0.81 (0.667)	8.56 (0.200) 2.81 (0.245)
*** $p < .01$, ** $p < .05$, * $p < .1$ <i>(i) parentheses below coefficients report robust standard errors;</i> <i>(ii) for serial correlation tests (AR(1) and AR(2)), the reported values are the Arellano-Bond z-statistics with their associated p-values;</i> <i>(iii) for overidentification tests (Sargan and Hansen), the reported values are chi-squared statistics with their associated Prob > chi2.</i>				

Source : author's own elaboration.

The results of the two financial performance metrics, the Market-to-Book Ratio (MBR) and Return on Equity (ROE), generally confirm the positive and significant impact of ESG factors on the performance of companies listed in Shanghai, although the strength and nature of this effect vary depending on the dimension considered and the metric used. For the MBR, the environmental dimension has the strongest effect ($\beta = 0.181$), followed by the social score ($\beta = 0.168$) and governance ($\beta = 0.162$), whereas for ROE, the social score ($\beta = 0.14$) and the aggregate score ($\beta = 0.148$) dominate, with the environmental dimension proving insignificant. This divergence between the two measures aligns with the findings of Eccles et al. (2014) and Broadstock et al. (2021), who show that financial markets incorporate environmental signals into stock valuations well before they translate into tangible accounting gains, particularly in the context of Asian emerging markets. Similarly, Shakil (2021) and Gillan et al. (2021) emphasize that the relationship between ESG performance and accounting profitability remains conditional on the institutional context and time horizon, which explains the non-significance of the environmental component on ROE.

Furthermore, firm size has a systematic negative effect on the MBR, consistent with the work of Fama and French (1992) and more recently confirmed by Refinitiv (2022) for Asian firms, while the dynamic persistence of ROE ($\beta \approx 0.51\text{--}0.71$) is consistent with the GMM models used in the literature from Waddock and Graves (1997) to the recent work by Fatemi et al. (2018). Finally, gender diversity on the board has a negative impact in several specifications, a result that contrasts with Post and Byron (2015) and Nadeem, Bahadar, Gull and Iqbal (2020), but concords with the findings of Chakraborty (2023) and which several studies on Chinese firms explain by the fact that the presence of women on boards is still too symbolic to generate a measurable effect on performance (Liu, Cai & Zhang, 2022; Khiari, Ballouk & Chiba, 2025).

Finally, whilst empirical findings do not always reveal a strong positive correlation between ESG indicators and financial performance metrics, this is since ESG practices within Chinese companies are optional and voluntary in nature and lacked a regulatory framework until 2024, when the Chinese Ministry of Finance issued the China Sustainability Disclosure Standards (CSDS). These guidelines are establishing a unified national framework for environmental, social, and governance (ESG) reporting, aiming for full implementation by 2030, and are designed for high interoperability with IFRS/ISSB standards starting with large, listed companies. The implementation of this regulatory framework could be explored in future research.

■■■ CONCLUSION

This paper aims to enhance our understanding of the dynamics between ESG practices and financial performance in the context of listed Chinese companies, providing valuable insights for practitioners and researchers in management and finance.

A positive and significant relationship between overall ESG score and financial performance (ROE and MBR) of companies listed in Shanghai and Shenzhen has been demonstrated. Governance and environmental factors have a more pronounced impact in Shanghai, while all ESG dimensions are significant in Shenzhen. Environmental impact is significant for MBR in Shanghai and for ROE in Shenzhen. Social impact is significant for ROE in Shenzhen. Environmental investments and good governance are crucial for improving the financial performance of listed companies in China.

The results highlight the significant and positive impact of the overall ESG score on both ROA and MBR performance measures, indicating that it allows companies to optimize resources and improve their profitability.

The Market-to-Book Value performance indicator shows that the impact of the social factor is not significant for companies listed in Shanghai, whereas for companies in Shenzhen, the impact is positive for all ESG factors.

This research makes a significant contribution to the existing literature by providing empirical evidence on the impact of ESG factors in the Chinese context, a developing market with unique characteristics. It emphasizes the importance of effective governance practices and responsible environmental investments in enhancing financial performance. It offers valuable insights for policymakers, investors, and companies on the potential benefits of integrating ESG criteria into their corporate strategies.

■■■ REFERENCES

- Aifuwa, H.O. (2020). Sustainability reporting and firm performance in developing climes: A review of literature. *Copernican Journal of Finance & Accounting*, 9(1). <https://doi.org/10.12775/CJFA.2020.001>.
- Arlow, P., & Gannon, M.J. (1982). Social responsiveness, corporate structure, and economic performance. *Academy of Management Review*, 7(2), 235–241. <https://doi.org/10.5465/amr.1982.4285580>.
- Atan, R., Alam, M.M., Said, J., & Zamri, M. (2018). The Impacts of Environmental, Social, and Governance Factors on Firm Performance: Panel Study on Malaysian Companies.

- Management of Environmental Quality*, 29(2), 182–194. <https://doi.org/10.1108/MEQ-03-2017-0033>.
- Aydogmus, M., Gulay, G., & Ergun, K. (2022). Impact of ESG performance on firm value and profitability. *Borsa Istanbul Review*, 22(2), S119–S127. <https://doi.org/10.1016/j.bir.2022.11.006>.
- Bahadori, N., Kaymak, T., & Seraj, M. (2021). Environmental, social, and governance factors in emerging markets: The impact on firm performance. *Business Strategy and Development*, 4(4), 411–422. <https://doi.org/10.1002/bsd2.167>.
- Berg, F., Kölbel, J.F., & Rigobon, R. (2022). Aggregate Confusion: The Divergence of ESG Ratings. *Review of Finance*, 26(6), 1315–1344. <https://doi.org/10.1093/rof/rfac033>.
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115–143. [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8).
- Broadstock, D.C., Chan, K., Cheng, L.T.W., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters*, 38, 101716. <https://doi.org/10.1016/j.frl.2020.101716>.
- Chakraborty, B. (2023). Does Board Structure and Ownership Structure Influence The Performance of Listed Companies: Evidence from Pharmaceuticals and Chemical Industry of Bangladesh? *Copernican Journal of Finance & Accounting*, 12(1), 29–45. <http://doi.org/10.12775/CJFA.2023.002>.
- Chen, S., Song, Y., & Gao, P. (2023). Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. *Journal of Environmental Management*, 345, 118829. <https://doi.org/10.1016/j.jenvman.2023.118829>.
- Colombelli, A., Ghisetti, C., & Quatraro, F. (2020). Green technologies and firms' market value: A micro-econometric analysis of European firms. *Industrial and Corporate Change*, 29(3), 855–875. <https://doi.org/10.1093/icc/dtaa003>.
- Cui, J., Jo, H., & Na, H. (2018). Does corporate social responsibility affect information asymmetry? *Journal of Business Ethics*, 148(3), 549–572. <https://doi.org/10.1007/s10551-015-3003-8>.
- Dela, E., Ye, J., & Berhe, H.M. (2024). The impact of corporate social responsibility on financial performance in Indonesian highly polluted industries: Mediating role of industry competitiveness. *SAGE Open*, 14(3), 1–25. <https://doi.org/10.1177/21582440241259479>.
- Detthamrong, U., Klangbunrueang, R., Chansanam, W., & Dasri, R. (2026). The Impact of ESG Performance on Financial Performance: Evidence from Listed Companies in Thailand. *Forecasting*, 8(1). <https://doi.org/10.3390/forecast8010014>.
- Dinu, V. (2011). Corporate social responsibility – Opportunity for reconciliation between economic interests and social and environmental interests. *Amfiteatru Economic*, 13(29), 143–156.
- Duque-Grisales, E., & Aguilera-Caracuel, J. (2021). Environmental, social and governance (ESG) scores and financial performance of multilatinas: Moderating effects of geographic international diversification and financial slack. *Journal of Business Ethics*, 168(2), 315–334. <https://doi.org/10.1007/s10551-019-04177-w>.

- Eccles, R.G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60(11), 2835–2857. <http://www.jstor.org/stable/24550546>.
- Fama, E.F., & French, K.R. (1992). The cross-section of expected stock returns. *Journal of Finance*, 47(2), 427–465. <https://doi.org/10.1111/j.1540-6261.1992.tb04398.x>.
- Fatemi, A., Fooladi, I., & Tehranian, H. (2015). Valuation effects of corporate social responsibility. *Journal of Banking & Finance*, 59, 182–192. <https://doi.org/10.1016/j.jbankfin.2015.04.028>.
- Fatemi, A., Glaum, M., & Kaiser, S. (2018). ESG performance and firm value: The moderating role of disclosure. *Global Finance Journal*, 38, 45–64. <https://doi.org/10.1016/j.gfj.2017.03.001>.
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), 210–233. <http://dx.doi.org/10.1080/20430795.2015.1118917>.
- Gillan, S.L., Koch, A., & Starks, L.T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, 66, 101889. <https://doi.org/10.1016/j.jcorpfin.2021.101889>.
- Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate Governance and Equity Prices. *The Quarterly Journal of Economics*, 118(1), 107–156. <https://doi.org/10.1162/00335530360535162>.
- Handoyo, S., & Anas, S. (2024). The effect of environmental, social, and governance (ESG) on firm performance: The moderating role of country regulatory quality and government effectiveness in ASEAN. *Cogent Business & Management*, 11(1), 2371071. <https://doi.org/10.1080/23311975.2024.2371071>.
- Hlioui, Z., Ben Flah, I., & Lajmi, A. (2026). Environmental taxation perception: Catalyst for small and medium-sized enterprises' innovation and eco-engagement in the Middle East and North Africa region. *International Journal of Law and Management*, ahead-of-print. <https://doi.org/10.1108/IJLMA-06-2025-0245>.
- Hu, Q., Zhu, T., Lin, C.-L., Chen, T., & Chin, T. (2021). Corporate social responsibility and firm performance in China's manufacturing: A global perspective of business models. *Sustainability*, 13(4), 2388. <https://doi.org/10.3390/su13042388>.
- Huang, W., Karolyi, G.A., & Kwan, A. (2021). Paying attention to ESG matters: Evidence from big data analytics. *SSRN Working Paper*.
- Hwang, J., & Sun, Y. (2018). Should we go one step further? An accurate comparison of one-step and two-step procedures in a generalized method of moments framework. *Journal of Econometrics*, 207(2), 381–405. <https://doi.org/10.1016/j.jeconom.2018.07.006>.
- Keele, L.J. (2008). *Semiparametric Regression for the Social Sciences*. John Wiley & Sons. <https://doi.org/10.1002/9780470998137>.
- Khiari, W., Ballouk, H., & Chiba, W. (2025). CSR Committee, Women on the Board, and Green Bond Issuance: Evidence from France. *Journal of Risk and Financial Management*, 18(4), 180. <https://doi.org/10.3390/jrfm18040180>.
- Li, S., Ngñiatedema, T., & Chen, F. (2017). Understanding the impact of green initiatives and green performance on financial performance in the US. *Business Strategy and the Environment*, 26(6), 776–790. <https://doi.org/10.1002/bse.1948>.

- Liu, Z., Cai, L., & Zhang, Y. (2022). Gender Diversity and Environmental Performance: New Evidence from China. *Sustainability*, 14(21), 13775. <https://doi.org/10.3390/su142113775>.
- Matallín-Sáez, J.C., Soler-Domínguez, A., Tortosa-Ausina, E., & de Mingo-López, D.V. (2019). Ethical strategy focus and mutual fund management: Performance and persistence. *Journal of Cleaner Production*, 213, 618–633. <https://doi.org/10.1016/j.jclepro.2018.12.130>.
- Mozes, M., Josman, Z., & Yaniv, E. (2011). Corporate social responsibility, organizational identification and motivation. *Social Responsibility Journal*, 7(2), 310–325. <https://doi.org/10.1108/174711111111141558>.
- Nadeem, M., Bahadar, S., Gull, A.A., & Iqbal, U. (2020). Are women eco-friendly? Board gender diversity and environmental innovation. *Business Strategy and the Environment*, 29(8), 3146–3161. <https://doi.org/10.1002/bse.2563>.
- Post, C., & Byron, K. (2015). Women on boards and firm financial performance: A meta-analysis. *Academy of Management Journal*, 58(5), 1546–1571. <https://doi.org/10.5465/amj.2013.0319>.
- Qian, T. (2025). The ESG validity controversy. *Advances in Economics, Management and Political Sciences*. <https://doi.org/10.54254/2754-1169/2025.bj28037>.
- Refinitiv. (2022). Environmental, Social and Governance Scores from Refinitiv. https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scoresmethodology.pdf.
- Saini, M., Aggarwal, V., Dhingra, B., Kumar, P., & Yadav, M. (2023). ESG and financial variables: A systematic review. *International Journal of Law and Management*. <https://doi.org/10.1108/ijlma-02-2023-0033>.
- Salaheldin, S.I. (2009). Critical success factors for TQM implementation and their impact on performance of SMEs. *International Journal of Productivity and Performance Management*, 58(3), 215–237. <https://doi.org/10.1108/17410400910938832>.
- Sandberg, J., Juravle, C., Hedesström, T.M., & Hamilton, I. (2009). The heterogeneity of socially responsible investment. *Journal of Business Ethics*, 87(4), 519–533. <https://doi.org/10.1007/s10551-008-9956-0>.
- Šević, N.P., & Bajalski, B. (2019). Managing corporate social and environmental responsibility. *Knowledge International Journal*, 30(1), 55–60. <https://doi.org/10.35120/kij300155p>.
- Shakil, M.H. (2021). Environmental, social and governance performance and financial risk: Moderating role of ESG controversies and board gender diversity. *Resources Policy*, 72, 102144. <https://doi.org/10.1016/j.resourpol.2021.102144>.
- Sousa, L.M., Viana, D.C., Neto, A.P.L., Castro, Z.R., de Aguiar, G.Q.M., & da Silva, I.R. (2023). The evolutions achieved in companies with the implementation of environmental, social and governance: Integrative review. *International Journal of Business, Economics and Management*, 10(4), 44–53. <https://doi.org/10.18488/62.v10i4.3502>.
- Tang, R. (2023). Does green investment improve company performance: Empirical analysis based on reputation perspective. *BCP Business & Management*, 49, 292–307. <https://doi.org/10.54691/bcpbm.v49i.5434>.

- Ullmann, A.E. (1985). Data in search of a theory: A critical examination of the relationships among social performance, social disclosure and economic performance of US firms. *Academy of Management Review*, 10(3), 540–557. <https://doi.org/10.5465/AMR.1985.4278989>.
- Waddock, S.A., & Graves, S.B. (1997). The corporate social performance–financial performance link. *Strategic Management Journal*, 18(4), 303–319.
- Weber, O., Diaz, M., & Schwegler, R. (2014). Corporate social responsibility of the financial sector: Strengths, weaknesses and the impact on sustainable development. *Sustainable Development*, 22(5), 321–335. <https://doi.org/10.1002/sd.1543>.
- Widyawati, L. (2020). A systematic literature review of socially responsible investment and environmental social governance metrics. *Business Strategy and the Environment*, 29(2), 619–637. <https://doi.org/10.1002/bse.2393>.
- Wu, K.T., Lin, S.H., Wang, Q., & Chang, Y. (2023). How do firm's CSR performance and ESG ratings affect performance and risk? *International Review of Accounting, Banking and Finance*, 15(1), 1–46.
- Yan, S. (2025). Sustainability and competitive advantage: The impacts of ESG practices on business performance. *International Journal of Business and Management*, 20(6). <https://doi.org/10.5539/ijbm.v20n6p261>.
- Yoon, B., Lee, J., & Byun, R. (2018). Does ESG performance enhance firm value? Evidence from Korea. *Sustainability*, 10(10), 3635. <https://doi.org/10.3390/su10103635>.
- Zhao, C., Guo, Y., Yuan, J., Wu, M., Li, D., Zhou, Y., & Kang, J. (2018). ESG and Corporate Financial Performance: Empirical Evidence from China's Listed Power Generation Companies. *Sustainability*, 10(8), 2607. <https://doi.org/10.3390/su10082607>.