

Governance matters: evidence from ESG performance and stock misvaluation in China

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Abstract

Purpose – This study investigates the relationship between firms' ESG performance, its three pillars as well as ESG disclosure and stock price efficiency in the Chinese stock market. It examines whether ESG engagement and ESG disclosure primarily reduce misvaluation through improved information environments or instead amplify valuation distortions through investor sentiment and belief reinforcement.

Design/methodology/approach – Using Chinese A-share firms from 2009 to 2020, stock misvaluation is measured as the deviation between market value and estimated intrinsic value under the Rhodes-Kropf-style misvaluation framework. ESG data are sourced from Huazheng, with Wind data used for robustness, alongside endogeneity checks using 2SLS and dynamic GMM models.

Findings – Aggregate ESG performance exhibits only a weak association with stock misvaluation. In contrast, governance performance consistently improves price efficiency by reducing both overvaluation and undervaluation, while environmental and social dimensions exhibit weaker and less consistent effects. Although ESG disclosure is associated with lower information asymmetry, disclosure also strengthens the valuation effect of ESG performance.

Practical implications – The results suggest that strengthening corporate governance and ESG disclosure can enhance market efficiency in China. The findings are consistent with the view that greater ESG transparency may contribute to improved information environments. Investors should focus on governance quality rather than aggregate ESG scores, while firms should prioritize substantive governance improvements over symbolic ESG actions.

Originality/value – The study provides new evidence from an emerging market with voluntary ESG disclosure and a retail-investor-dominated structure. It highlights heterogeneous effects across ESG pillars, identifying governance as the primary driver of pricing efficiency. The findings suggest that ESG-related pricing effects in China reflect a combination of information, behaviour and signalling mechanisms.

Keywords ESG, ESG disclosure, Stock mispricing, Market efficiency, Sustainable investing

Paper type Research article

1. Introduction

Sustainable investing, an investment approach that integrates environmental, social, and governance (ESG) factors into the decision-making process, has experienced exponential growth in global financial markets, particularly since the launch of the United Nations Principles for Responsible Investment (PRI) in 2006. The number of PRI signatories has increased from 734 in 2010 to 3,048 in 2024, while total assets under management (AUM) associated with these signatories have surged from USD 21 trillion to USD 130 trillion over the same period. In the United States alone, according to the US SIF Trends Report 2024/2025,

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sustainable investment now accounts for over USD 52.5 trillion in AUM, up from USD 8.72 trillion in 2016, with USD 6.5 trillion explicitly marketed as ESG- or sustainability-focused investments. This upward trajectory is expected to persist. The 2024 Morgan Stanley Institute for Sustainable Investing Survey [1] indicates that in the US. market, 78% of asset managers and 80% of asset owners anticipate increases in sustainable AUM and allocations over the next two years, viewing sustainability as a key avenue for growth.

Notably, this trend is not limited to institutional investors. The Survey also reveals that 77% of individual investors globally express interest in investing in companies or funds that aim to deliver market-rate financial returns while also generating positive social and/or environmental outcomes. Furthermore, 57% of respondents report increased interest in sustainable investing over the past two years, and 54% plan to increase their allocations to sustainable investments in the coming year.

The continued growth of sustainable investing has significant implications for financial markets. The rising demand for high-ESG stocks, combined with ESG-based screening processes that narrow the pool of eligible investments, reshapes trading behaviour and capital allocation. These shifts influence not only fund flows and investment performance (see, e.g. [Bofinger et al., 2022](#)), but also should affect the informational efficiency of market prices.

The growing prominence of ESG investing has important implication for stock price formation. On the one hand, ESG activities may improve firms' information environments by increasing transparency, reducing information asymmetry, and strengthening corporate governance. Under this view, ESG engagement should facilitate more accurate incorporation of firm fundamentals into stock prices and thereby reduce stock misvaluation. On the other hand, ESG investing may also generate behavioural distortion. Investors who prioritize ESG considerations tend to assign higher valuations to firms with strong ESG performance, placing greater emphasis on ESG factors than on traditional signals of firm value. This investor preference can lead to a divergence between a firm's market value and its intrinsic value, potentially resulting in stock mispricing. For example, when the prices of stocks with strong ESG performance decline, ESG-focused investors are less inclined to sell their holdings ([Starks et al., 2017](#); [Cao et al., 2023](#)), thereby contributing to or exacerbating overpricing in these stocks. Conversely, when the prices of stocks with low ESG scores rise, these investors are less likely to purchase such stocks even if they are undervalued, delaying price convergence to intrinsic values and prolonging underpricing. However, ESG-conscious investors may also be more willing to buy undervalued but high-ESG stocks, thereby accelerating the adjustment of market prices toward their intrinsic values. Consistent with this conjecture, [Bofinger et al. \(2022\)](#) find that ESG investing in the US. stock market amplifies existing overvaluation while mitigating the undervaluation, suggesting that ESG-related pricing effects may be driven partly by investor preferences and coordinated trading behaviour rather than purely by improvements in information quality. Therefore, the relationship between ESG and stock misvaluation remains theoretically ambiguous.

Despite the growing literature, three important gaps remain. First, although ESG represents a composite measure encompassing Environmental (E), Social (S), and Governance (G) dimensions, each component may affect pricing efficiency through fundamentally different channels. Governance may improve monitoring and disclosure quality, while social performance may generate reputational or sentiment-driven valuation effects. Accordingly, this study investigates the individual impact of the three ESG pillars on market efficiency.

Second, most existing evidence focuses on the US. stock market, the largest and arguably most efficient market globally. As such, conclusions drawn from the US. market may not be generalized to other contexts, particularly emerging markets where ESG considerations play a less prominent role. Therefore, a second objective of this study is to examine whether ESG scores and ESG disclosure affect market efficiency in the Chinese stock market.

Finally, although previous studies have established a relationship between ESG performance and market price efficiency, the role of ESG disclosure in this relationship remains unclear. Some studies argue that ESG disclosure enhances the information environment by reducing information

asymmetry, thereby improving market efficiency (Lopatta *et al.*, 2015; Siew *et al.*, 2016; Cui *et al.*, 2018; Rossi and Harjoto, 2020). These findings suggest that both ESG engagement and transparency contribute positively to price discovery. However, under voluntary disclosure regimes, it may also reflect selective disclosure, signalling incentives, impression management, or greenwashing behaviour. As a result, disclosure may either reduce or amplify stock misvaluation. Consistent with this ambiguity, Bofinger *et al.* (2022) do not find evidence that information asymmetry moderates the relationship between ESG engagement and price misvaluation in the US. market. To address this gap, the present study incorporates both traditional proxies of information asymmetry and ESG disclosure, measured by the extent of ESG-related information made publicly available by firms, to examine their respective roles in the relationship between ESG and market efficiency.

The Chinese stock market offers a compelling context for examining the impact of ESG performance on stock misvaluation. First, the development of ESG in China is largely driven by government policy. The Chinese government has committed to achieving carbon neutrality by 2060, with an interim goal of reaching peak carbon emissions by 2030. Although China's ESG initiatives began later than those in the United States and Europe, progress has been rapid. Since 2008, Chinese firms have increasingly disclosed environmental and sustainability-related information in their corporate social responsibility reports, aiming to enhance competitive advantage (Albuquerque *et al.*, 2019). The number of such reports grew from 32 in 2006 to 2,023 by 2019.

Second, unlike the mandatory ESG disclosure frameworks adopted in many European countries, the China Securities Regulatory Commission (CSRC) promotes voluntary ESG disclosure, except for firms operating in heavily polluting industries, which are required to disclose environmental information. This voluntary institutional setting creates substantial variation in disclosure incentives and allows us to examine whether ESG disclosure primarily reflects transparency or strategic signalling behaviour.

Third, the investor composition in China differs markedly from that of developed markets. The Chinese stock market is predominantly retail-investor driven, and many individual investors may lack a deep understanding of ESG principles due to limited professional expertise and investment experience. Given that prior studies (Bofinger *et al.*, 2022; Cao *et al.*, 2023) have attributed the effect of ESG engagement on market efficiency to the presence of sustainability-oriented investors, it is plausible that this effect may be attenuated, or even absent, in the Chinese market. Therefore, studying Chinese market offers valuable insights into the generalizability and underlying mechanisms of the ESG–misvaluation relationship.

The main objectives of this study are threefold. First, we investigate the effect of ESG engagement on market efficiency within the Chinese stock market, where sustainable investing is less prevalent compared to developed markets such as the US. Second, we explore the individual contributions of the three ESG dimensions, Environmental (E), Social (S), and Governance (G), to market efficiency, to assess whether each component plays an equally influential role. Third, we examine the role of information in this relationship by analysing how ESG disclosure affects market efficiency. Rather than treating ESG solely through an information-asymmetry framework, we develop a broader perspective that incorporates three competing mechanisms: (1) an information-transparency channel, whereby ESG disclosure improved the information environment; (2) a behavioural channel, whereby ESG-related reputation and investor attention influence valuation; and (3) a signalling channel, whereby voluntary ESG disclosure shapes investor beliefs and market perceptions. These channels generate competing predictions regarding whether ESG reduces or amplifies mispricing.

Using firm-level panel regressions and a Rhodes-Kropf-style misvaluation framework, we document several important findings. First, governance, among the three ESG dimensions, is most consistently associated with stock price efficiency, with stronger governance performance linked to lower levels of both overvaluation and undervaluation. In contrast, aggregate ESG scores exhibit only a weak negative association with stock misvaluation, while the environmental and social pillars show less consistent effects. Second, the results highlight

substantial heterogeneity across ESG dimensions, suggesting that investors do not treat ESG as a homogeneous measure. Third, although ESG disclosure is associated with lower information asymmetry, it also strengthens the relationship between ESG performance and evaluation, particularly for firms with stronger governance performance, indicating that ESG disclosure may influence stock prices through signalling and investor-belief channels in addition to enhancing transparency.

Our findings are robust to several alternative specifications. First, to address potential data bias stemming from the selection of ESG scores, we use alternative ESG metrics from different data providers. Second, to mitigate concerns of endogeneity, we apply two-stage least squares (2SLS) regression, using the industry-level mean ESG (E, S, G) scores as instrumental variables, as well as dynamic GMM estimation. Third, to control for industry-specific influences, we exclude financial firms and use industry-adjusted ESG scores. The negative and statistically significant coefficients on ESG and G scores remain robust across these specifications.

This study contributes to the literature in three key areas. First, it adds to the growing body of research on market efficiency and sustainable investment by providing evidence from a developing market context. While previous studies (e.g. [Bofinger et al., 2022](#); [Cao et al., 2023](#)) report that ESG performance influences valuation in the US. market, our findings indicate that this relationship is significantly weaker, or even absent, in China. If such valuation effects are indeed driven by sustainable investing preferences, as these studies suggest, our findings imply that sustainable investing is not yet a dominant force in China compared to developed markets.

Second, we extend the literature by disaggregating ESG scores into their environmental, social, and governance components to examine their individual effects on stock misvaluation. Our finding that different components have different impact on the market efficiency, in terms of both magnitude and directions, implies that investors in the Chinese market may prioritize certain aspects of ESG, particularly social and governance dimensions, over the overall ESG composite score. The finding supports the need for decomposing ESG as suggested by [Capizzi et al. \(2021\)](#).

Third, we contribute to the behavioural ESG literature by showing that ESG disclosure may operate not only through transparency effects but also through investor sentiment and coordinated trading dynamics. In China's voluntary ESG disclosure environment, ESG information may reinforce investor beliefs and amplify reputational premiums, particularly for firms with strong governance performance. Our findings suggest that ESG-related pricing effects arise not only from improved information environments but also from behavioural and signalling mechanisms.

Finally, we contribute to the literature on ESG measurement and disclosure quality by highlighting how voluntary disclosure regimes and ESG rating divergence shape market responses to ESG information. The Chinese setting allows ESG disclosure to reflect not only transparency but also selective reporting and signalling incentives. By distinguishing between ESG performance and ESG disclosure, this study provides evidence that the valuation relevance of ESG information depends on the disclosure quality and institutional context.

The remainder of the paper is structured as follows: [Section 2](#) reviews the relevant literature and develops our hypotheses. [Section 3](#) describes the data, variables, and empirical methodologies. [Section 4](#) presents and discusses the empirical results, followed by a set of robustness checks in [Section 5](#). [Section 6](#) concludes.

2. Literature review

The relationship between ESG performance and stock misvaluation is theoretically ambiguous, as ESG engagement may simultaneously improve firms' information environments while influencing investor sentiment, reputation, and coordinated trading behaviour. Existing literature provides competing predictions regarding how ESG affects stock misvaluation.

2.1 ESG, information transparency, and stock misvaluation

Prior studies on stock misvaluation and behaviour finance suggest that asset prices may deviate from their intrinsic values because of information asymmetry, limited investor rationality, and limits to arbitrage (Daniel *et al.*, 2001; Shleifer, 2000; Lewis *et al.*, 2021). In the presence of information asymmetry, stock prices may fail to fully incorporate firm-specific fundamentals, giving rise to market frictions such as adverse selection and moral hazard (Healy and Palepu, 2001). These distortions impede the market's price discovery process and reduce the efficiency with which firm fundamentals are incorporated into prices, thereby aggravating asset mispricing (Brennan and Subrahmanyam, 1995). As a result, the availability and quality of information in the market are widely regarded as key determinants of capital market pricing efficiency (Van Binsbergen *et al.*, 2023). In this context, ESG performance may affect firm misvaluation to the extent that it changes the firm's information environment and the amount of value-relevant non-financial information available to investors.

According to information asymmetry theory, corporate managers possess superior firm-specific information relative to outside investors and other stakeholders (Bilyay-Erdogan, 2022). Hence, external market participants can observe only the information that firms choose to disclose, which creates substantial information asymmetry between insiders and outsiders. To attract investors and maintain market confidence, firms have incentives to disclose more financial and non-financial information and to strengthen their ESG-related practices (Boulton, 2024). In this sense, ESG performance is not static but evolves over time. Firms continuously adjust their ESG practices in line with their development strategies and managerial philosophies, which in turn leads to changes in their environmental, social, and governance performance. Third-party rating agencies then assess firms' ESG performance and give ESG scores for firms based on these evolving corporate practices (Rau and Yu, 2024). The ESG score conveys incremental non-financial information to the stock market, which helps investors and other stakeholders gain a better understanding of a firm's operating conditions and future development, thereby facilitating more informed and rational decision-making (Koh *et al.*, 2014; Liao *et al.*, 2021; Lins *et al.*, 2017). By expanding the information set available to market participants, such information facilitates the incorporation of firm fundamentals into stock prices, helps prices move closer to their intrinsic values, and ultimately alleviates stock mispricing, thereby improving capital market pricing efficiency. Based on the above analysis, we propose [Hypothesis 1](#):

H1. ESG performance is negatively associated with firms' stock misvaluation in China.

2.2 Behavioural ESG effects, investor demand, and misvaluation

Although ESG engagement may improve information environments, ESG investing may also generate behavioural distortions that amplify stock misvaluation. ESG-oriented investors often place greater weight on sustainability characteristics than on conventional valuation signals (Baker and Wurgler, 2006; Serafeim, 2020). As investor demand shifts toward highly rated ESG firms, ESG labels may attract investor attention, generate reputational premiums, and contribute to coordinated trading behaviour that pushes prices away from fundamentals.

Bofinger *et al.* (2022) document that ESG investing in the US market amplifies overvaluation while mitigating undervaluation, suggesting that ESG-related pricing effects are partly driven by investor preferences rather than purely by improvements in information quality. Similarly, Rubbaniy *et al.* (2021) show that ESG leader stocks exhibit strong herding behaviour during periods of heightened uncertainty, implying that ESG labels may function as coordination devices for investors. In such settings, investors may collectively overweight firms perceived as socially responsible or sustainable, generating valuation effects unrelated to fundamentals.

These behavioural mechanisms may be particularly relevant for the social pillar of ESG. Social performance is closely associated with corporate reputation, stakeholder goodwill,

labour relations, and perceptions of corporate responsibility. Strong social performance may therefore create a halo effect, whereby investors generalize favourable perceptions of social responsibility to broader assessments of firm quality and future prospects (Hong and Liskovich, 2015; Nisbett and Wilson, 1977). Consequently, investors may assign valuation premiums beyond those warranted by fundamentals, thereby increasing the likelihood of overvaluation. Accordingly, strong social performance may push stock prices above their intrinsic values, especially when firms are already overvalued.

Based on the above analysis, we propose the following testable hypothesis:

H2a. Social performance is positively associated with stock misvaluation, particularly by amplifying overvaluation.

In contrast, the governance pillar is more directly linked to agency theory and corporate monitoring. Strong governance improves internal control, enhances disclosure quality, and mitigates managerial opportunism (Jensen and Meckling, 1979). Prior evidence suggests that firms with stronger governance structures provide more timely and reliable information, thereby improving pricing efficiency and reducing valuation distortions (Lee *et al.*, 2016; Wang *et al.*, 2024). Governance quality may therefore reduce both overvaluation and undervaluation by facilitating more accurate incorporation of firm fundamentals into stock prices. Hence, we propose the following hypothesis regarding the governance pillar of ESG:

H2b. Governance performance is negatively associated with stock misvaluation.

The environmental pillar may exert weaker pricing effects because environmental information is often long-term, technically complex, and difficult for investors to evaluate. Prior evidence on the valuation effect of environmental performance remains mixed, with some studies finding insignificant effects on firm value and pricing efficiency (Aydoğmuş *et al.*, 2022; Xiao, 2025). Consequently, investors may respond less strongly to environmental performance than to social or governance signals in the Chinese market. Therefore, we propose the following hypothesis:

H2c. Environmental performance does not significantly influence firms' stock misvaluation in China.

Taken together, these arguments suggest that the three ESG pillars may influence stock misvaluation through different channels. We therefore propose:

H2. The Environmental, Social, and Governance pillars exert heterogeneous effects on firms' stock misvaluation in China.

2.3 ESG disclosure, signalling, and investor beliefs

The role of ESG disclosure in stock valuation remains conceptually unresolved. Traditional disclosure theory suggests that greater disclosure improves transparency and reduces information asymmetry. However, under voluntary disclosure regimes, ESG disclosure may also reflect signalling incentives, selective disclosure, impression management, or greenwashing behaviour rather than purely objective information provision.

In developed markets with mandatory ESG disclosure frameworks, disclosure may primarily function as a transparency mechanism. However, China's largely voluntary ESG disclosure regime creates stronger incentives for strategic disclosure behaviour. Firms with favourable ESG performance may disclose extensively to attract investor attention and strengthen reputational capital, while firms with weaker ESG performance may selectively withhold unfavourable information (Verrecchia, 1983; Dye, 1985). Consequently, ESG disclosure may simultaneously improve information availability and reinforce investor optimism.

Recent evidence suggests that disclosure-driven valuation effects may operate through behavioural and signalling channels rather than purely through information quality. Huang (2025)

shows that the timing of ESG disclosure announcements in China affects stock market reactions, implying that ESG disclosure influences investor sentiment and trading behaviour. Similarly, [Rubbaniy et al. \(2021\)](#) argue that ESG-related signals may intensify coordinated investor trading during periods of uncertainty. These findings imply that ESG disclosure may function as a belief-reinforcement or investor-coordination mechanism that amplifies valuation effects for firms already perceived favourably by investors.

This distinction is particularly important when interpreting the interaction between ESG performance and ESG disclosure. If disclosure simply improves transparency, greater ESG disclosure should reduce stock misvaluation. However, if disclosure also attracts investor attention and reinforces favourable beliefs, disclosure may amplify overvaluation among firms with strong ESG reputations. In this sense, ESG disclosure may proxy not only for transparency but also for visibility, signalling quality, and reputational salience.

Based on the above analysis, we propose the following two hypotheses regarding the role of ESG disclosure in directly affecting firms' stock misvaluation as well as its interaction with ESG performance:

- H3. ESG disclosure is negatively associated with stock misvaluation by improving information transparency.
- H4. The interaction between ESG performance and ESG disclosure is positively associated with stock misvaluation.

The governance dimension of disclosure may differ from environmental and social disclosure because governance information is more directly linked to internal monitoring, shareholder protection, and disclosure credibility. Governance disclosure may therefore provide more reliable and value-relevant information to investors than environmental or social disclosure, which are often less standardized and more difficult to verify. Based on these competing arguments, we propose the following hypotheses:

- H4a. The interactions between environmental/social performance and their corresponding disclosure scores are not significantly associated with stock misvaluation.
- H4b. The interaction between governance performance and governance disclosure is positively associated with stock misvaluation.

2.4 ESG disclosure and asset pricing in the Chinese market

The Chinese stock market provides a particularly useful setting in which to examine the competing mechanisms linking ESG, disclosure, and stock misvaluation. First, ESG investing in China remains relatively recent and policy-driven compared with developed markets. Second, the market is heavily dominated by retail investors, who may be more sensitive to investor sentiment, reputational effects, and coordinated trading behaviour. Third, ESG disclosure remains largely voluntary, creating substantial variation in disclosure quality and disclosure incentives.

These institutional characteristics imply that ESG disclosure in China may not function purely as a transparency mechanism. Instead, ESG disclosure may simultaneously reduce information asymmetry while also serving as a signalling and persuasion device that shapes investor beliefs. Under such conditions, ESG-related valuation effects may reflect a combination of information-based pricing, behavioural investor demand, and coordinated market reactions.

Accordingly, this study does not assume *a priori* that ESG necessarily improves market efficiency. Rather, the Chinese setting provides an opportunity to examine whether ESG engagement and ESG disclosure primarily reduce misvaluation through improved information environments or instead amplify valuation distortions through investor sentiment and belief

3. Methodology and sample data

3.1 Misvaluation measure

The measurement of individual stock misvaluation in this study follows the approach of Rhodes–Kropf *et al.* (2005) and Chang *et al.* (2013), which estimate a firm’s intrinsic value using a backward-looking methodology. Specifically, we first classify all firms into ten industry sectors based on the Bloomberg Industry Classification System. For each industry and each year, we run the following cross-sectional regression:

$$M_{i,t} = \beta 0i,t + \beta 1i,tBi,t - 1 + \beta 2i,tAbs(NI)i,t - 1 + \beta 3i,tI(< 0) \times Abs(NI)i,t - 1 + \beta 4i,tLEVi,t - 1 + \epsilon i,t$$

(1)

where, $M_{i,t}$ is the logarithm of firms’ market value at the end of fiscal year t (June). All explanatory variables are measured at the end of fiscal year $t-1$. B denotes the logarithm of the book value of common equity. $Abs(NI)$ is the absolute value of the logarithm of net income. $I_{(<0)}$ is a dummy variable equal to one if net income is negative and zero otherwise. LEV represents the leverage ratio, defined as one minus the ratio of common equity to total assets.

To reflect the specific institutional characteristics of the Chinese stock market, particularly the impact of firm ownership structure, we incorporate a classification of firms into state-owned enterprises (SOEs) and non-state-owned enterprises (non-SOEs). Accordingly, prior to estimating Equation (1), we divide the sample into SOEs and non-SOEs and perform separate cross-sectional regressions for each group within each industry and year. That is, for firms where $i \in$ SOEs, the intrinsic value is estimated using the SOE-specific model; similarly, for $i \in$ non-SOEs, the estimation is based on the non-SOE model. This ownership-based refinement enables more accurate peer comparisons and offers additional insights beyond the original Rhodes–Kropf methodology by accounting for institutional and operational differences between SOEs and non-SOEs.

The fitted value from Equation (1), denoted as $\widehat{M}_{i,t}$, represents the estimated intrinsic market value of firm i in year t . Stock misvaluation (MSVF) is then calculated as the difference between the actual market value and the estimated intrinsic value:

$$MSVF_{i,t} = M_{i,t} - \widehat{M}_{i,t}$$

(2)

The misvaluation measure $MSVF_{i,t}$ [2] serves as a proxy for the degree of deviation between a firm’s observed market value and its estimated intrinsic value. A higher absolute value of $MSVF$ indicates a greater extent of mispricing by investors. Specifically, a positive $MSVF$ reflects overvaluation, whereas a negative $MSVF$ indicates undervaluation.

3.2 Baseline regression

To examine the relationship between ESG and stock misvaluation, we employ a fixed-effects panel regression model [3], consistent with prior studies (Ding *et al.*, 2016; Cui *et al.*, 2018; Bofinger *et al.*, 2022). This approach accounts for unobserved heterogeneity by allowing unobserved variables to correlate with the observed regressors, treating them as fixed parameters. To address potential autocorrelation in the residuals, we include the one-year lagged dependent variable as an additional control. Given that stock misvaluation may persist over time (Avramov *et al.*, 2020), including this lagged term helps mitigate concerns that the observed relationship between ESG and misvaluation is merely a continuation of past

mispricing. Furthermore, incorporating lagged misvaluation also addresses the possibility of reverse causality. Bofinger *et al.* (2022) suggest that stock misvaluation may influence a firm's ESG performance because overvalued firms may have easier access to capital and, as a result, greater capacity to engage in ESG activities. By controlling for past misvaluation, our model better isolates the effect of ESG performance on stock misvaluation. The benchmark regression model is specified as follows:

$$MSVF_{i,t} = \beta_0 + \beta_1 MSVF_{i,t-1} + \beta_2 ESG_{i,t-1} + \beta_3 X_{i,t} + \epsilon_{i,t} \quad (3)$$

$MSVF_{i,t}$ represents the dependent variable, stock misvaluation, while $MSVF_{i,t-1}$ denotes its one-year lagged value. The coefficient β_1 thus captures the persistence effect of past misvaluation on current misvaluation. $ESG_{i,t-1}$ refers to the one-year lagged ESG score of firm i , with β_2 measuring the impact of prior ESG performance on current stock misvaluation. $X_{i,t}$ represents a vector of control variables that are documented to be relevant to misvaluation. The control variables include the leverage ratio (Lev) (Dong *et al.*, 2006), profitability (Profitability) (Hoepner *et al.*, 2024; Eisdorfer *et al.*, 2019), capital expenditure (CapEx) (Hertzel and Li, 2010), market-to-book ratio (Market-to-Book) (Rhodes-Kropf *et al.*, 2005), analyst coverage (Analyst Coverage) (Becchetti *et al.*, 2013), and the volatility of stock returns (Volatility) (Hwang and Lee, 2013), and β_3 is the corresponding vector of coefficients that quantifies their effects on misvaluation.

To gain deeper insights into how different aspects of ESG performance influence misvaluation, we further decompose the overall ESG score into its three constituent dimensions: Environmental (E), Social (S), and Governance (G). This approach acknowledges that firms may perform well in one ESG dimension while underperforming in another, as evidenced by Bissoondoyal-Bheenick *et al.* (2023). Accordingly, we re-estimate model (3) by substituting the overall ESG score ($ESG_{i,t-1}$) with each of the E, S, and G scores individually ($E_{i,t-1}$, $S_{i,t-1}$, or $G_{i,t-1}$) or simultaneously.

Prior literature suggests that the relationship between ESG performance and stock price efficiency is influenced by the degree of information availability (Lopatta *et al.*, 2015; Siew *et al.*, 2016; Cui *et al.*, 2018). To assess whether certain factors moderate the ESG–misvaluation relationship, we incorporate several variables identified in existing studies. Specifically, we include four widely recognized measures of information asymmetry, as outlined by Bofinger *et al.* (2022), alongside the ESG disclosure score developed by Fatemi *et al.* (2018), which reflects the extent to which firms publicly disclose ESG-related information. While the former captures information asymmetry from market-based metrics, the latter represents information transparency from a disclosure perspective. Together, these variables provide a comprehensive view of information availability. The corresponding regression equations are specified as follows:

$$MSVF_{i,t} = \beta_0 + \beta_1 MSVF_{i,t-1} + \beta_2 ESG_{i,t-1} + \beta_3 ESG_DISC_{i,t-1} + \beta_4 ESG_{i,t-1} \times ESG_DISC_{i,t-1} + \beta_5 X_{i,t} + \epsilon_{i,t} \quad (4)$$

where $ESG_{i,t-1}$ represents either the ESG disclosure score or the three pillar disclosure scores. Before testing the moderating effect, we first examine whether ESG disclosure is associated with information asymmetry, where we use two traditional proxies to measure information asymmetry: illiquidity ratio, and bid-ask spread. The illiquidity measure, based on Amihud (2002), is defined as the mean value of the daily absolute stock return divided by the daily trading volume. It reflects the extent to which trades impact stock prices, with higher values indicating greater difficulty in trading and thus higher information asymmetry. Lastly, the bid-ask spread, calculated as the mean of daily spreads using the formula $(ask - bid)/[(ask + bid)/2]$, captures the cost of trading (Silber, 2005). A wider spread implies more severe information asymmetry, as it reflects greater uncertainty and risk perceived by market participants.

Together, these variables serve to test whether the availability and quality of information moderate the effect of ESG performance on stock misvaluation.

To further explore the role of information availability in the ESG–misvaluation relationship, we also employ ESG disclosure scores from Bloomberg as our information availability measure $INF_{i,t-1}$. These scores assess the degree to which firms publicly disclose information related to each ESG pillar. The disclosure score ranges from 0 to 100, where 0 indicates no ESG disclosure and 100 represents full transparency across all ESG-related indicators. Unlike ESG performance scores, which reflect a firm’s actual engagement in ESG activities, disclosure scores capture the extent of ESG information available to the public, thereby serving as a proxy for information transparency.

For each regression, we also replace the overall ESG score with the individual pillar scores, Environmental, Social, and Governance, either separately or simultaneously, as in the previous specifications.

3.3 Data description

Our research sample comprises all Chinese A-share companies listed on the Shanghai and Shenzhen stock exchanges between 2009 and 2020. Accounting and financial data are sourced from the China Stock Market and Accounting Research (CSMAR) database, while ESG data are obtained from the Huazheng and Wind databases. The primary analyses in this study utilize ESG data from Huazheng, which provides the most comprehensive and consistent coverage of Chinese firm-level ESG performance over the longest available historical period among established data providers [4]. The sample period begins with the earliest year in which ESG data become available, ensuring a sufficiently long time series for investigating the effects of ESG performance on stock misvaluation.

Recent studies document substantial divergence among ESG rating providers. Different agencies adopt disparate indicator selection criteria, weighting schemes, data collection protocols, and core definitions of corporate sustainability performance, generating sizable discrepancies in firm-level ESG evaluations (Dorfleitner *et al.*, 2015; Capizzi *et al.*, 2021; Berg *et al.*, 2022; Chen *et al.*, 2025). Such pervasive disagreement poses notable threats to the construct validity of ESG metrics, as scores from distinct raters effectively capture heterogeneous dimensions of corporate sustainability. These measurement imperfections carry direct interpretive consequences for empirical work investigating ESG–financial outcome linkages. The relatively modest and unstable coefficient magnitudes we observe for aggregate ESG scores may partially reflect measurement noise inherent to third-party rating products, rather than a true absence of meaningful underlying economic relations. This concern is especially salient in the Chinese institutional context, where unified mandatory ESG reporting standards are still evolving, and cross-firm disclosure quality exhibits wide heterogeneity. While our supplementary analyses deploy multiple independent ESG datasets to mitigate such measurement bias, cross-rater structural divergence means these exercises cannot fully eliminate measurement error concerns.

To address potential concerns regarding the inconsistency of ESG standards and the variability of ESG ratings across data providers, we use ESG data from Wind for robustness checks. Excluding Huazheng, Wind offers, to the best of our knowledge, the broadest coverage of firm observations in the Chinese market.

The Huazheng ESG dataset includes both numerical scores and categorical ratings to assess firms’ ESG performance. The ESG score ranges from 1 to 100, with higher values indicating better performance. Correspondingly, a nine-tier rating system classifies firms from “CCC” to “AAA,” offering a more intuitive framework for investors to interpret ESG standing and facilitating inter-firm comparisons. Both the ESG scores and ratings are further decomposed into three pillars, Environmental (E), Social (S), and Governance (G), each of which is scored and rated using the same scale as the aggregate ESG measure. This detailed structure allows us to examine both the overall ESG effect and the distinct influence of each ESG dimension on stock misvaluation. We present summary statistics for our variables in Table 1.

Table 1. Summary statistics of variables

	Firm-year obs	Mean	Median	Std. dev	Percentile25	Percentile75	Min	Max
<i>Dependent variable</i>								
MSVF	37,220	0	−0.01	0.7	−0.33	0.37	−3.15	1.73
<i>Explanatory variables (*100)</i>								
ESG score	37,220	72.9	73.32	5.57	69.75	76.73	55.55	84.26
E score	37,220	59.99	59.69	7.61	54.24	65.05	45.2	80.03
S score	37,220	73.55	73.76	10.28	66.98	80.46	43.87	100
G score	37,220	79.13	80.9	7.67	76.36	83.91	49.53	92.44
ESG disclosure	12,184	24.56	24.39	7.74	18.73	29.01	9.91	49.29
E disclosure	12,184	5.34	1.09	8.44	0	8.34	0	41.8
S disclosure	12,184	11.3	10.43	7.18	7.38	14.57	0	33.33
G disclosure	12,184	57.93	59.87	14.43	44.94	70.68	29.65	83.59
<i>Information asymmetry</i>								
illiquidity	56,471	0	0	0.02	0	0	0	0.12
Bid_ask	43,991	0.04	0.04	0.01	0.03	0.05	0.02	0.07
<i>Control variables</i>								
Lev	39,798	0.45	0.45	0.22	0.28	0.61	0.05	0.93
Profitability	39,798	0.02	0.02	0.03	0.01	0.04	−0.05	0.13
CapEx	39,798	20.2	20.1	1.66	19.18	21.15	15.71	24.75
Market-to-book	39,798	3.62	2.63	3.45	1.61	4.34	0.06	22.69
Analyst coverage	39,798	1.14	0.69	1.2	0	2.08	0	3.97
Volatility	39,798	0.03	0.03	0.01	0.02	0.04	0.01	0.07

Note(s): This table shows the summary statistics of our dependent variable, target variables, information asymmetry variables, and control variables. The dependent variable is the stock misvaluation measure (MSVF) of Rhodes–Kropf *et al.* (2005), considering SOEs' and Non-SOEs' classification in the benchmark regression. The target variables include the ESG score, environmental score (E score), social score (S score), governance score (G score), ESG disclosure score, environmental disclosure score (E disclosure), social disclosure score (S disclosure) and governance disclosure score (G disclosure). The information asymmetry variables include illiquidity (illiquidity) and the bid-ask spread (Bid_ask). The control variables include the leverage ratio (Lev), profitability (Profitability), capital expenditure (CapEx), market-to-book ratio (Market-to-Book), analyst coverage (Analyst Coverage), and the volatility of stock returns (Volatility)

In Table 1, for each variable, we report the number of firm-year observations, mean, median, the standard deviation, the first and third quartile, and the minimum and maximum values. We winsorize all variables at the 1% and 99% percentiles. The mean value of stock misvaluation (MSVF) is close to zero, with a standard deviation of 0.7. The mean value of the ESG score [5] is 72.9. For the three pillars of the ESG score, the E score has the lowest mean value of 59.99 and median value of 59.69. In contrast, the G score has the highest mean and median value, which are 79.13 and 80.9, respectively. The different performance of the ESG pillars show that Chinese companies have better corporate governance than environmental performance under the ESG scoring framework. Similarly, Chinese companies have sounder governance (G) disclosure systems than their environmental (E) disclosure. The mean value of the G disclosure score is much higher than the E and S disclosure scores. Moreover, the average value of the ESG disclosure score is 24.56, indicating that many Chinese companies do not have much willingness to publicly disclose their ESG-related information.

4. Results and analysis

4.1 Stock misvaluation and ESG performance

In this section, we examine the direct effect of ESG performance as well as the individual Environmental (E), Social (S), and Governance (G) scores on stock misvaluation by estimating regression model (1). The results are presented in Table 2. As shown in the first column of the table, the coefficient on the overall ESG score is -0.16 , which is marginally significant at the 10% level. This suggests that a one standard deviation increase in the ESG score (0.050) is associated with a reduction in stock misvaluation of approximately 0.80% of the intrinsic firm value (i.e. 0.050×-0.16).

The negative coefficient is consistent with Hypothesis 1, which predicts that ESG performance helps reduce stock misvaluation by improving the information environment and providing investors with incremental non-financial information beyond traditional financial reports. Higher ESG performance may enhance transparency, reduce information asymmetry, and agency problems, and facilitate investors' assessment of firm fundamentals, thereby helping market prices converge toward intrinsic values. However, the effect is only marginally significant at the 10% level, suggesting that the pricing-efficiency role of ESG performance remains relatively weak in the Chinese market.

This finding contrasts with Bofinger *et al.* (2022), who document a significantly positive relationship between ESG scores and stock misvaluation in the US. market. One possible explanation is that ESG preferences are less likely to generate valuation premiums in China,

Table 2. Fixed effect regression results

	(1) MSVF	(2) MSVF	(3) MSVF	(4) MSVF	(5) MSVF
Intercept	1.305*** [8.19]	1.221*** [8.35]	1.183*** [8.09]	1.342*** [8.3]	1.36*** [8.31]
MSVF ₋₁	0.327*** [28.2]	0.327*** [28.22]	0.327*** [28.29]	0.327*** [28.19]	0.326*** [28.12]
ESG Score ₋₁	-0.16* [-1.88]				
E Score ₋₁		-0.086 [-1.32]			-0.089 [-1.35]
S Score ₋₁			0.016 [0.37]		0.027 [0.61]
G Score ₋₁				-0.14** [-2.25]	-0.138** [-2.22]
Lev	0.251*** [5.62]	0.252*** [5.63]	0.253*** [5.66]	0.249*** [5.58]	0.247*** [5.53]
Profitability	-1.869*** [-10.09]	-1.864*** [-10.07]	-1.86*** [-10.04]	-1.869*** [-10.1]	-1.869*** [-10.09]
CapEx	-0.075*** [-9.94]	-0.075*** [-9.88]	-0.076*** [-10.02]	-0.076*** [-10.1]	-0.076*** [-10.03]
Market-to-Book	0.003 [1.06]	0.003 [1.06]	0.003 [1.06]	0.003 [1.07]	0.003 [1.06]
Volatility	0.301 [0.85]	0.307 [0.85]	0.297 [0.83]	0.309 [0.87]	0.324 [0.9]
Analyst coverage	0.031*** [7.32]	0.03*** [7.19]	0.03*** [7.23]	0.031*** [7.42]	0.031*** [7.38]
Firm-year obs	18,401	18,401	18,401	18,401	18,401
R-square	63.17%	63.17%	63.17%	63.18%	63.18%

Note(s): This table presents the fixed effects regression results of stock misvaluation (MSVF) on the lagged ESG score, as well as on the individual E, S, and G scores, both separately and jointly. Standard errors are clustered at the firm level. The *t*-statistics are reported in the parentheses. ***, **, * denote 1%, 5%, 10% significance levels

where the investor base is dominated by retail investors and ESG investing is still less developed than in mature markets. Moreover, the relatively low quality and limited standardization of ESG reporting in China may weaken investors' ability to process ESG information and incorporate it into valuation decisions. Therefore, while ESG performance appears to contribute to lower misvaluation, its effect is economically and statistically modest.

4.2 Stock misvaluation and three pillars of ESG score

The analysis presented in [Section 2](#) reveals, as postulated in [hypothesis 2](#), that the three pillars of ESG may exert distinct influences on firms' misvaluation in China. To test this hypothesis, we disaggregate the overall ESG score into its Environmental (E), Social (S), and Governance (G) components and re-estimate the regressions specified in [Equation \(3\)](#), replacing the overall ESG scores by each of the three components, respectively. We find a significant negative effect of the G score on stock misvaluation, as reported in column 4 of [Table 2](#). The estimated coefficient for the G score is -0.14 ($t = -2.25$), indicating that a one-standard-deviation increase (0.065) in the G score, *ceteris paribus*, is associated with a 0.91% ($= 0.065 \times -0.14$) reduction in misvaluation. The G score is negatively and significantly associated with stock misvaluation. This result is consistent with [Hypothesis 2b](#), which predicts that governance performance helps reduce misvaluation by mitigating agency problems and improving the credibility, timeliness, and quality of firm-level disclosure. The governance dimension captures internal corporate mechanisms such as board structure, executive compensation, internal control, and shareholder protection. Stronger governance enhances managerial monitoring and improves the information environment, thereby helping investors assess firm fundamentals more accurately and facilitating the convergence of stock prices toward intrinsic values.

In contrast, the coefficients for the E and S scores in Columns 2 and 3 are statistically insignificant, suggesting no discernible relationship between these dimensions and stock misvaluation. These results are consistent with our argument that environmental information is often long-term, technically complex, and less immediately observable, making it difficult for investors to incorporate environmental performance into current stock valuation. This evidence therefore provides support for [Hypothesis 2c](#). Similarly, the insignificant coefficient on the S score in the baseline regression does not necessarily indicate that social performance has no pricing implications. Rather, its effect may be more conditional and may emerge more clearly among overvalued firms, where strong social performance can generate reputational premiums or a halo effect and thereby amplify overvaluation.

These conclusions hold when E, S, and G scores are included simultaneously in the same regression, as shown in Column 5 of the table. All in all, these results suggest that Chinese investors evaluate the three ESG dimensions separately, recognizing that each dimension captures distinct aspects of corporate behaviour and may have different implications for firm valuation. In other words, the findings in [Table 2](#) indicate that while the aggregate ESG score is negatively associated with stock misvaluation, albeit at a marginal significance level, the governance dimension stands out as a significant driver for reducing misvaluation. The results support the argument that the E, S, and G pillars have distinct impacts on stock misvaluation in China, thereby confirming our [Hypothesis 2](#).

Furthermore, we also examine the impact of *changes* in ESG (E, S, and G) scores on *changes* in stock misvaluation to capture the dynamic nature of this relationship. This approach allows us to assess whether improvements or deteriorations in ESG performance are associated with corresponding changes in valuation efficiency. The results remain robust under this dynamic specification [\[6\]](#).

4.3 Absolute value of stock misvaluation and ESG

Since stock misvaluation is defined as the difference between a firm's actual market value and its estimated intrinsic value, a decline in this measure may reflect either a reduction in

overvaluation or an increase in undervaluation. While the former indicates improved market efficiency, the latter signals a deterioration in efficiency. To more accurately assess the extent of mispricing, irrespective of direction, we employ the absolute value of the misvaluation measure ($|MSVF|$) as the dependent variable. This refined metric captures the magnitude of deviation between market and intrinsic values, with higher values indicating greater divergence from fundamental value. Based on this revised measure, we re-estimate the regression models, and the results are reported in [Table 3](#).

We find that the Social (S) score is positively associated with the absolute value of stock misvaluation, suggesting that higher S scores are linked to greater deviations of stock prices from their intrinsic values. This result is consistent with [Hypothesis 2a](#). Social performance may affect valuation through reputational and behavioural channels: strong social performance can serve as a salient signal of corporate responsibility and quality, leading investors to form overly favourable perceptions of the firm and assign valuation premiums beyond fundamentals. Therefore, higher S scores may amplify deviations between market prices and intrinsic values, particularly by increasing overvaluation. Specifically, a one-standard-deviation increase in the S score (0.10) corresponds to a 1.14% increase in the magnitude of misvaluation, irrespective of direction.

In contrast, the Governance (G) score exhibits a negative relationship with the absolute value of stock misvaluation, consistent with the baseline results in [Table 2](#) and [Hypothesis 2b](#). This finding implies that stronger governance practices help correct pricing inefficiencies by

Table 3. Absolute value of misvaluation and ESG

	(1) $ MSVF $	(2) $ MSVF $	(3) $ MSVF $	(4) $ MSVF $	(5) $ MSVF $
Intercept	0.474*** [3.79]	0.397*** [3.53]	0.359*** [3.21]	0.645*** [5.14]	0.591*** [4.62]
$ MSVF_{-1} $	0.215*** [17.55]	0.215*** [17.56]	0.215*** [17.56]	0.213*** [17.51]	0.213*** [17.51]
ESG Score ₋₁	-0.089 [-1.25]				
E Score ₋₁		0.037 [0.68]			0.013 [0.25]
S Score ₋₁			0.114*** [3.21]		0.113*** [3.17]
G Score ₋₁				-0.217*** [-4.28]	-0.218*** [-4.31]
Lev	0.088** [2.54]	0.089*** [2.59]	0.087** [2.53]	0.082** [2.39]	0.081** [2.35]
Profitability	-0.138 [-0.89]	-0.131 [-0.85]	-0.123 [-0.79]	-0.146 [-0.95]	-0.137 [-0.88]
CapEx	-0.009 [-1.51]	-0.009 [-1.62]	-0.011* [-1.91]	-0.01* [-1.8]	-0.012** [-2.16]
Market-to-Book	0.002 [1.46]	0.002 [1.46]	0.002 [1.45]	0.002 [1.49]	0.002 [1.48]
Volatility	-0.322 [-0.74]	-0.329 [-0.75]	-0.309 [-0.7]	-0.305 [-0.7]	-0.292 [-0.67]
Analyst coverage	-0.006* [-1.72]	-0.006* [-1.75]	-0.006* [-1.71]	-0.005 [-1.38]	-0.005 [-1.31]
Firm-year obs	18,401	18,401	18,401	18,401	18,401
R-square	46.52%	46.52%	46.55%	46.59%	46.63%

Note(s): This table presents the fixed effects regression results of the absolute value of stock misvaluation misvaluation (MSVF) on the lagged ESG score, as well as on the individual E, S, and G scores, both separately and jointly. Standard errors are clustered at the firm level. The *t*-statistics are reported in the parentheses. ***, **, * denote 1%, 5%, 10% significance levels

reducing agency problems, improving disclosure quality, and enhancing information transparency. As a result, better governance helps reduce both overvaluation and undervaluation, thereby aligning market prices more closely with intrinsic firm values.

4.4 Impact of ESG on over- and undervalued firms

To gain a deeper understanding of how ESG performance and its subcomponents influence both the magnitude and direction of stock misvaluation, we divide the sample into two distinct groups: overvalued and undervalued stocks. Specifically, we rank all firms based on their misvaluation scores (MSVF) and assign the top 30% of observations to the overvalued group and the bottom 30% to the undervalued group. We then re-estimate the baseline regression models separately for each group to assess the differential impact of ESG scores. The results are presented in Table 4, with Panel A and Panel B corresponding to the overvalued and undervalued subsamples, respectively.

Consistent with the weak evidence reported in Table 2, we do not find a significant effect of the aggregate ESG score in either the overvalued or undervalued subsample. This result suggests that the overall ESG score does not systematically correct either overvaluation or undervaluation in the Chinese market. One possible explanation is that the aggregate ESG measure combines heterogeneous components with different valuation implications: governance tends to reduce misvaluation, social performance may amplify overvaluation through reputational or halo effects, while environmental performance appears to have limited pricing relevance. These offsetting effects may weaken the explanatory power of the aggregate ESG score, particularly after the sample is split into overvalued and undervalued firms. Therefore, the insignificant subsample results reinforce the view that ESG's overall pricing-efficiency effect in China is modest and that the misvaluation effect is mainly driven by specific ESG pillars rather than by the aggregate ESG score. A similar conclusion holds for the Environmental (E) pillar: the insignificant coefficients reported in columns (2), (5), and (7) indicate that firms' environmental engagement does not significantly affect stock pricing efficiency. This may suggest that investors in the Chinese market pay comparatively less attention to environmental factors than to other dimensions of ESG.

In previous analyses (Table 2), the Social (S) score showed no significant relationship with misvaluation levels, but was positively associated with the absolute value of misvaluation, indicating a potential amplifying effect. The results in Table 4 allow us to explore this further. Specifically, columns (3) and (5) reveal significantly positive coefficients for the S score in the overvalued group, implying that higher social performance is associated with greater overvaluation. This relationship is not observed in the undervalued group, suggesting that the S score amplifies misvaluation primarily in the form of inflating overvaluations. Strong social performance can generate reputational premiums and a halo effect, causing investors to overgeneralize favourable social responsibility signals to firm quality and future prospects. Consequently, firms with higher S scores may receive valuation premiums beyond fundamentals, leading to greater overvaluation.

Finally, the Governance (G) score shows significant effects in both subsamples but in opposite directions. As shown in columns (4), (5), (9), and (10), the G score is negatively associated with overvaluation and positively associated with undervaluation. These results reinforce the findings from Tables 2 and 3, offering a more granular picture of the governance effect. In particular, they suggest that governance quality serves as a corrective mechanism by mitigating both excessive overvaluation and excessive undervaluation, thereby improving price efficiency from both directions.

To ensure the robustness of our findings, we perform sensitivity analyses using alternative definitions of overvalued and undervalued stocks. First, we rank the firms based on their MSVF values and assign the top 50% as the relatively overvalued firms and the bottom 50% as the undervalued firms. We also partition the sample according to the sign of the MSVF values, defining firms with positive MSVF as overvalued and those with negative MSVF as

Table 4. Effect of ESG on most over- and undervalued firms

Panel A: Most overvalued firms–top 30%						Panel B: Most undervalued firms–bottom 30%				
	(1) MSVF	(2) MSVF	(3) MSVF	(4) MSVF	(5) MSVF	(6) MSVF	(7) MSVF	(8) MSVF	(9) MSVF	(10) MSVF
Intercept	1.291*** [5.46]	1.231*** [5.73]	1.14*** [5.35]	1.509*** [6.4]	1.433*** [5.94]	−0.02 [−0.12]	0.05 [0.33]	0.043 [0.29]	−0.127 [−0.79]	−0.099 [−0.61]
MSVF _{−1}	0.141*** [7.73]	0.141*** [7.77]	0.141*** [7.8]	0.139*** [7.64]	0.139*** [7.64]	0.113*** [8.75]	0.112*** [8.66]	0.112*** [8.66]	0.113*** [8.76]	0.112*** [8.71]
ESG Score _{−1}	−0.095 [−0.59]					0.091 [0.91]				
E Score _{−1}		0.001 [0.01]			−0.032 [−0.26]		−0.053 [−0.74]			−0.052 [−0.73]
S Score _{−1}			0.212*** [2.58]		0.223*** [2.71]			−0.043 [−1]		−0.042 [−0.96]
G Score _{−1}				−0.311*** [−2.6]	−0.319*** [−2.68]				0.184** [2.53]	0.186** [2.56]
Lev	0.21*** [3.12]	0.212*** [3.14]	0.211*** [3.15]	0.204*** [3.05]	0.202*** [3.01]	0.049 [1.19]	0.046 [1.11]	0.047 [1.14]	0.052 [1.26]	0.051 [1.22]
Profitability	−0.941*** [−3.35]	−0.932*** [−3.32]	−0.895*** [−3.18]	−0.948*** [−3.38]	−0.912*** [−3.25]	−0.992*** [−4.72]	−0.993*** [−4.72]	−0.995*** [−4.74]	−0.98*** [−4.67]	−0.98*** [−4.67]
CapEx	−0.038*** [−3.59]	−0.039*** [−3.61]	−0.042*** [−3.92]	−0.04*** [−3.78]	−0.044*** [−4.05]	−0.036*** [−4.97]	−0.035*** [−4.85]	−0.035*** [−4.83]	−0.034*** [−4.76]	−0.033*** [−4.59]
Market-to-book	0.002 [1.62]	0.002 [1.62]	0.002 [1.63]	0.002 [1.61]	0.002 [1.62]	0.011*** [2.74]	0.011*** [2.78]	0.011*** [2.77]	0.011*** [2.62]	0.011*** [2.62]
Volatility	−0.563 [−0.65]	−0.567 [−0.66]	−0.535 [−0.62]	−0.526 [−0.62]	−0.485 [−0.57]	0.406 [1.28]	0.403 [1.27]	0.403 [1.28]	0.402 [1.26]	0.397 [1.25]
Analyst coverage	0.002 [0.22]	0.002 [0.2]	0.001 [0.16]	0.003 [0.33]	0.002 [0.27]	0.028*** [6.27]	0.028*** [6.27]	0.028*** [6.3]	0.027*** [6.03]	0.027*** [5.97]
Firm-year obs	4,534	4,534	4,534	4,534	4,534	4,139	4,139	4,139	4,139	4,139
R-square	52.22%	52.22%	52.31%	52.32%	52.42%	46.73%	46.73%	46.73%	46.84%	46.86%

Note(s): This table presents the fixed effects regression results of stock misvaluation (MSVF) on the lagged ESG score, as well as on the individual E, S, and G scores, both separately and jointly, for over- and undervalued stocks. Columns (1) to (5) of Panel A represent the analyses for overvalued stocks, which are the top 30% of stocks according to the stock misvaluation measure. Columns (6) to (10) of Panel B represent the analyses for undervalued stocks, which are the bottom 30% of stocks according to the stock misvaluation measure. Standard errors are clustered at the firm level. The *t*-statistics are reported in the parentheses. ***, **, * denote 1%, 5%, 10% significance levels

undervalued. We then replicate the main regression analyses for each of these partitioned samples. The results [6] remain consistent with our main conclusions.

4.5 The role of information asymmetry and ESG disclosure

As discussed in the literature review, the relationship between ESG scores and stock misvaluation may be influenced by the availability of information. To formally test whether ESG-disclosure-related information availability to moderate the relationship between ESG performance and stock misvaluation, we include interaction terms between ESG scores and ESG disclosure scores in our regression models. These interaction terms allow us to examine how the impact of ESG scores on misvaluation varies with changes in information transparency.

We begin by examining the relationship between ESG disclosure and information asymmetry, using two commonly employed proxies: the illiquidity ratio and the bid-ask spread. The results, summarized in Table 5, indicate that ESG disclosure scores are significantly and negatively associated with both information asymmetry measures. When the disclosure scores are decomposed into the three ESG pillars, the results consistently show negative coefficients across all regressions, with most being statistically significant. These findings suggest that greater ESG disclosure enhances firms' information transparency and reduces information asymmetry.

We then turn to examining the moderating role of ESG (E, S, G) disclosure in the ESG–misvaluation relationship and report the results in Table 6. Three key findings emerge. First, the previously observed negative association between ESG (particularly the G component) and misvaluation, as shown in Table 2, remains robust after controlling for disclosure scores. Second, the coefficient on ESG disclosure score is marginally significantly negative, suggesting that higher ESG disclosure scores tend to reduce stock misvaluation. The negative signs on ESG are consistent with the conjecture of Hypotheses 3. The coefficient on the G disclosure score also shows negative and significant sign. In contrast, E and S disclosure scores are not significant, reflecting the lower salience and comparability of environmental and social disclosures in the Chinese market. Moreover, the interaction term between E and E disclosure, as well as between S and S disclosure, are not significantly associated with stock misvaluation, consistent with Hypothesis 4a. This suggests that, even when firms with strong E or S performance provide extensive disclosure, the information may not be sufficiently credible or salient to influence investors' valuation. Importantly, the interaction term between the ESG (G) score and the ESG (G) disclosure score is positive and statistically significant, suggesting that increased transparency and reduced information asymmetry enhance the influence of the ESG (G) score on misvaluation. These findings are consistent with Hypotheses 4 and 4b.

For illustration, consider the interaction between the ESG score and the ESG disclosure score. The composite marginal effect of the ESG score on misvaluation is given by $-0.752 + 2.561 \times (\text{ESG disclosure score})$. Evaluating this formula at the mean ESG disclosure score yields a net coefficient of -0.086 , which is notably less negative than the baseline coefficient of -0.752 . This finding indicates that the negative impact of ESG performance on misvaluation is lessened in the presence of greater ESG disclosure.

However, the interaction effect differs when considering overvalued versus undervalued stocks, highlighting distinct dynamics in the direction of mispricing. In the case of overvaluation ($\text{MSVF} > 0$), an increase in the ESG disclosure score, holding the ESG score constant, amplifies the effect of the ESG score, leading to further overvaluation. In contrast, for undervaluation ($\text{MSVF} < 0$), greater disclosure weakens the degree of mispricing by reducing the extent of undervaluation. This suggests that while disclosure may exacerbate overvaluation, it also plays a corrective role in mitigating undervaluation. These effects are mirrored when examining the G score independently.

The observed moderating role of ESG disclosure aligns with the characteristics of ESG reporting in China. Under China's voluntary ESG disclosure regime, firms with stronger ESG

Table 5. The relationship between ESG disclosure and information asymmetry

Variables	(1) Illiquidity	(2) Illiquidity	(3) Illiquidity	(4) Illiquidity	(5) Illiquidity	(6) Illiquidity	(7) Bid-ask	(8) Bid-ask	(9) Bid-ask	(10) Bid-ask	(11) Bid-ask	(12) Bid-ask
Constant	0.033*** [5.61]	0.034*** [6.18]	0.033*** [5.48]	0.035*** [6.04]	0.032*** [5.49]	0.033*** [5.61]	0.02*** [7.66]	0.025*** [8.79]	0.023*** [8.49]	0.022*** [8.45]	0.021*** [8.09]	0.022*** [8.11]
ESG_disclosure	-0.006*** [-5.3]						-0.01*** [-10.49]					
E_disclosure		-0.004*** [-4.98]			-0.002 [-1.64]	-0.006 [-1.32]		-0.002*** [-2.83]			0.001 [1.23]	0.007* [1.74]
S_disclosure			-0.008*** [-4.64]		-0.006*** [-2.79]	-0.012** [-1.99]			-0.008*** [-6.23]		-0.004** [-2.57]	-0.007 [-1.31]
G_disclosure				-0.002*** [-3.48]	-0.001* [-1.81]	-0.002* [-1.66]				-0.005*** [-11.53]	-0.005*** [-9.67]	-0.005*** [-5.73]
ES inter						0.015*** [2.61]						-0.009 [-0.98]
EG inter						0.001 [0.19]						-0.006 [-1.04]
SG inter						0.008 [0.99]						0.006 [0.74]
Lev	-0.001 [-0.48]	-0.001 [-0.35]	-0.001 [-0.42]	-0.001 [-0.39]	-0.001 [-0.48]	-0.001 [-0.48]	0.004*** [4.85]	0.004*** [5.61]	0.004*** [5.43]	0.003*** [4.79]	0.003*** [4.73]	0.003*** [4.73]
Profitability	-0.019*** [-3.11]	-0.019*** [-3.1]	-0.019*** [-3.19]	-0.019*** [-3.11]	-0.019*** [-3.19]	-0.019*** [-3.19]	0.001 [0.4]	0.001 [0.42]	0.001 [0.3]	0.001 [0.4]	0.001 [0.33]	0.001 [0.33]
CapEx	-0.001*** [-4.86]	-0.001*** [-6.02]	-0.001*** [-4.94]	-0.001*** [-5.33]	-0.001*** [-4.67]	-0.001*** [-4.61]	0 [-1.18]	-0.001*** [-3.95]	0*** [-2.99]	0 [-1.34]	0 [-1.01]	0 [-1.05]
Market-to-book	5.43E-06 [0.12]	1.40E-05 [0.31]	1.20E-05 [0.25]	7.14E-06 [0.15]	8.57E-06 [0.19]	5.70E-06 [0.12]	0*** [5.12]	0*** [5.32]	0*** [5.35]	0*** [5.21]	0*** [5.24]	0*** [5.25]
Volatility	-0.067*** [-14.16]	-0.067*** [-14.17]	-0.067*** [-14.21]	-0.066*** [-13.81]	-0.068*** [-14.16]	-0.068*** [-14.12]	0.896*** [89.21]	0.897*** [89.36]	0.896*** [89.59]	0.898*** [89.68]	0.898*** [90.04]	0.898*** [90.03]
Analyst coverage	-0.0003*** [-3.33]	-0.0003*** [-2.98]	-0.0003*** [-3.16]	-0.0003*** [-3.29]	-0.0003*** [-3.29]	-0.0003*** [-3.36]	0*** [5.67]	0.001*** [6.27]	0*** [6.1]	0*** [5.4]	0*** [5.38]	0*** [5.39]
Obs	7,463	7,463	7,463	7,463	7,461	7,458	6,958	6,958	6,958	6,958	6,956	6,953
R-square	29.64%	29.56%	29.64%	29.52%	29.69%	29.74%	0.844	0.8421	0.8427	0.8444	0.8446	0.8446

Note(s): This table shows the fixed effect regression results of information asymmetry proxies, illiquidity ratio and bid-ask spread, on ESG disclosure scores, both at the overall score and the individual E, S, and G disclosure scores. ES inter, EG inter, and SG inter refer to the interaction term of the paired individual pillar disclosure scores. These measures are defined and described in detail in [Section 3](#) of the paper. Standard errors are clustered at the firm level. The *t*-statistics are reported in the parentheses. ***, **, * denote 1%, 5%, 10% significance levels

Table 6. The role of ESG disclosure in the ESG-misvaluation relationship

	(1) MSVF	(2) MSVF	(3) MSVF	(4) MSVF	(5) MSVF
Intercept	3.331*** [9.66]	2.896*** [11.76]	2.722*** [10.66]	3.218*** [9.45]	3.41*** [9.58]
Dep ₋₁	0.351*** [19.9]	0.348*** [19.85]	0.351*** [19.95]	0.352*** [19.96]	0.349*** [19.83]
ESG score ₋₁	-0.752** [-2.28]				
ESG disclosure score ₋₁	-1.709* [-1.88]				
ESG score ₋₁ × ESG disclosure score ₋₁	2.561** [2.13]				
E score ₋₁		-0.298*** [-2.87]			-0.3*** [-2.82]
E disclosure score ₋₁		-0.541 [-1.05]			-0.471 [-0.92]
E score ₋₁ × E disclosure score ₋₁		1.229 [1.53]			1.154 [1.44]
S score ₋₁			-0.059 [-0.55]		-0.009 [-0.09]
S disclosure score ₋₁			-0.371 [-0.65]		-0.414 [-0.74]
S score ₋₁ × S disclosure score ₋₁			0.571 [0.78]		0.334 [0.46]
G score ₋₁				-0.63** [-2.12]	-0.617** [-2.07]
G disclosure score ₋₁				-0.735* [-1.95]	-0.758** [-2.02]
G score ₋₁ × G disclosure score ₋₁				0.994** [2.19]	1.007** [2.23]
Lev	0.295*** [4.46]	0.29*** [4.41]	0.284*** [4.32]	0.29*** [4.41]	0.29*** [4.39]
Profitability	-1.807*** [-6.57]	-1.821*** [-6.64]	-1.801*** [-6.54]	-1.806*** [-6.54]	-1.823*** [-6.63]
CapEx	-0.088*** [-6.99]	-0.083*** [-7.02]	-0.08*** [-6.63]	-0.085*** [-6.88]	-0.085*** [-6.69]
Market-to-book	0.017*** [3.95]	0.017*** [4.07]	0.017*** [3.95]	0.017*** [3.95]	0.017*** [4.03]
Volatility	-1.326*** [-2.98]	-1.262*** [-2.83]	-1.372*** [-3.08]	-1.398*** [-3.13]	-1.295*** [-2.89]
Analyst coverage	0.031*** [5.33]	0.029*** [5.07]	0.03*** [5.16]	0.031*** [5.31]	0.03*** [5.15]
Firm-year obs	7,460	7,460	7,460	7,460	7,460
R-square	72.42%	72.44%	72.37%	72.40%	72.48%

Note(s): This table presents the fixed effects regression results of stock misvaluation (MSVF) on the lagged ESG disclosure score, as well as on the individual E, S, and G disclosure scores, both separately and jointly. The ESG disclosure score measures the extent of a company publicly disclosing its ESG information, rather than its ESG performance. To better report the effect of the ESG disclosure score, we transfer the ESG disclosure score from a scale of 100 to a percentile. We also include an interactive variable in each regression. Standard errors are clustered at the firm level. The *t*-statistics are reported in the parentheses. ***, **, * denote 1%, 5%, 10% significance levels

performance have greater incentives to engage in more extensive disclosure, with the aim of attracting investor attention. To examine this conjecture, we sort all stocks into industry-adjusted ESG performance quintiles at the end of each year and calculate the average ESG disclosure score within each quintile. As shown in Table 7, ESG disclosure scores increase

Table 7. Relationship between ESG and ESG disclosure

	ESG1	ESG2	ESG3	ESG4	ESG5	ESG5 – ESG1
ESG disclosure score	0.248	0.253	0.258	0.264	0.279	0.031*** [11.53]
	E1	E2	E3	E4	E5	E5 – E1
E disclosure score	0.039	0.056	0.059	0.073	0.091	0.052*** [16.68]
	S1	S2	S3	S4	S5	S5 – S1
S disclosure score	0.109	0.124	0.126	0.133	0.144	0.034*** [14.42]
	G1	G2	G3	G4	G5	G5 – G1
G disclosure score	0.593	0.601	0.602	0.601	0.611	0.018*** [3.50]

Note(s): This table presents the average ESG (E,S,G) disclosure score in each ESG (E,S,G) quintiles. Stocks are sorted into quintiles based on the ESG score within each industry at the end of each year. ESG5 (E5, S5, G5) contains stocks with the highest ESG (E,S,G) score. ESG1 (E1, S1, G1) contains stocks with the lowest ESG (E,S,G) score. The number in parentheses is *t*-value. ***, **, * denote 1%, 5%, 10% significance levels

monotonically with ESG performance. In particular, the average disclosure score for firms in the highest ESG performance quintile is significantly higher than that of firms in the lowest quintile. We replicate this analysis using the three individual ESG pillar scores and observe a consistent pattern across all dimensions. These findings support the theoretical frameworks of Verrecchia (1983) and Dye (1985), which posit that firms possessing favourable private information are more likely to disclose voluntarily. In the context of overvalued firms, greater disclosure may reinforce investor optimism, thereby exacerbating overvaluation. In contrast, for undervalued firms, enhanced ESG transparency helps to correct mispricing by improving investor perceptions, thereby mitigating undervaluation. Such a finding supports our hypothesis 3 which postulates that ESG disclosure affects firms’ stock misvaluation and moderates the relationship between ESG engagement and stock misvaluation in China.

5. Robustness checks

5.1 Alternative ESG score

Previous analyses have demonstrated that both overall ESG scores and governance (G) scores can influence stock misvaluation. However, this relationship may be affected by inconsistencies in ESG measurement standards across different data providers as we discussed in previous sessions. To address this concern, we re-examine the ESG–misvaluation relationship using ESG scores from the Wind database, which is widely used for obtaining Chinese market data.

The results, presented in Table 8, show that the overall ESG score as well as its three individual components, environmental (E), social (S), and governance (G), all have negative and statistically significant effects on stock misvaluation. Notably, the ESG score exhibits the largest coefficient magnitude among all the four scores used, suggesting a strong inverse relationship with misvaluation.

Table 8. Alternative ESG score from the wind database

	(1) MSVF	(2) MSVF	(3) MSVF	(4) MSVF	(5) MSVF
Intercept	1.781*** [4.25]	1.648*** [3.89]	1.579*** [3.71]	1.587*** [3.75]	1.584*** [3.73]
MSVF ₋₁	-0.335*** [-11.65]	-0.338*** [-11.86]	-0.334*** [-11.56]	-0.334*** [-11.51]	-0.334*** [-11.51]
ESG Score ₋₁	-0.04*** [-3.33]				
E Score ₋₁		-0.01** [-2.04]			0 [-0.03]
S Score ₋₁			-0.009*** [-3.29]		-0.001 [-0.11]
G Score ₋₁				-0.007*** [-3.65]	-0.006* [-1.66]
Lev	0.49*** [3.57]	0.467*** [3.42]	0.501*** [3.63]	0.514*** [3.74]	0.514*** [3.73]
Profitability	-2.455*** [-5.96]	-2.394*** [-5.82]	-2.487*** [-6.07]	-2.523*** [-6.1]	-2.523*** [-6.08]
CapEx	-0.109*** [-4.96]	-0.113*** [-5.16]	-0.109*** [-4.94]	-0.108*** [-4.91]	-0.108*** [-4.89]
Market-to-book	0.006 [0.81]	0.006 [0.86]	0.006 [0.84]	0.007 [0.85]	0.007 [0.84]
Volatility	2.244* [1.75]	2.48* [1.95]	2.042 [1.58]	1.755 [1.34]	1.757 [1.34]
Analyst coverage	-0.001 [-0.09]	0 [-0.03]	-0.002 [-0.14]	-0.002 [-0.15]	-0.002 [-0.15]
Firm-year obs	3,038	3,038	3,038	3,038	3,038
R-square	87.46%	87.43%	87.46%	87.47%	87.47%

Note(s): This table presents the fixed effects regression results of stock misvaluation (MSVF) on the lagged ESG score, as well as on the individual E, S, and G scores, both separately and jointly, where all ESG scores are from the Wind dataset. Standard errors are clustered at the firm level. The *t*-statistics are reported in the parentheses. ***, **, * denote 1%, 5%, 10% significance levels

The findings in Columns (1), (4), and (5) of Table 8 align with those reported in Table 2, further validating our main results. However, a key difference is that the coefficients for the E and S scores also become negative and statistically significant when using the Wind data. This change may be attributed to differences in ESG scoring methodologies and the data coverage period. In particular, the Wind ESG dataset begins in 2015, coinciding with a notable increase in the number of Chinese firms disclosing ESG information.

Overall, the robustness of our findings across different data sources reinforces the conclusion that ESG performance, particularly when disclosed consistently, can play a meaningful role in reducing stock misvaluation.

5.2 Endogeneity

The relationship between the ESG score and stock misvaluation may be challenged by endogeneity concerns, such as simultaneity and reverse causality. Although we have carefully included control variables based on the literature relevant to stock misvaluation, and have included a lagged dependent variable into the regression, we need further robustness checks to alleviate the potential endogeneity concern. We use two-stage least squares regression with the mean value of the ESG (E, S, G) score from each industry serving as the instrumental variable (Ghoul *et al.*, 2011; Kim *et al.*, 2014). Following prior studies, we use lagged industry-level ESG scores as instruments for firm-level ESG performance. This approach helps address concerns regarding simultaneity and reverse causality. Importantly, the exclusion restriction

cannot be fully verified in our empirical setup. Industry-level ESG conditions may affect firm valuation through broader aggregate sector channels, including sector-level investor sentiment, institutional investment preferences, ESG-related capital flows, and cross-firm valuation norms. Therefore, the instrumental variable estimates should be interpreted as providing supportive evidence for the robustness of our main findings rather than as establishing a definitive causal relationship.

Panel A of [Table 9](#) shows the results from the two-stage least squares analysis of the effect of the ESG score on stock misvaluation. We can see that the ESG score and G score are negatively and significantly correlated with stock misvaluation. This finding corroborates the result of the benchmark regression. We also follow [Arellano and Bover \(1995\)](#) and use a dynamic panel GMM model to alleviate the endogeneity issue of fixed effect regression. The dynamic panel GMM model allows us to use as instruments all independent variables with past lags. Panel B of [Table 9](#) reports the results from the dynamic GMM analysis of the ESG score on misvaluation. We find that the ESG and the G score show a negative effect on the misvaluation measure, which complements our prior findings. The *P*-value of the AR(3) test rejects the serial correlation.

To summarize, the two-stage least squares and dynamic panel GMM regressions help us address the endogeneity issue. Overall, the findings of these two models do not contradict our prior findings. Hence, we conclude that the ESG score, particularly governance performance, is consistently associated with lower levels of stock misvaluation across a range of specifications.

5.3 Industry bias

ESG scores exhibit substantial variation across industries. In particular, the mean and median ESG scores of financial firms are significantly higher than those of firms in other industries. This pattern is primarily driven by the relatively low weighting of environmental factors in the ESG assessments of financial institutions. Given that financial firms, classified within the high-tech and service-oriented sectors, have limited direct environmental impacts, they face minimal exposure to issues such as carbon emissions and waste management.

To address the concern that our findings may be biased by the environmental component of ESG scores within the financial sector, we exclude financial firms from our sample and re-estimate the benchmark regression. The results, reported in [Table 10](#), show that the E score becomes negatively associated with the stock misvaluation measure once financial firms are excluded. Importantly, the coefficients on the overall ESG score and the G score remain negative and statistically significant, reinforcing the robustness of our main findings.

Moreover, ESG rating agencies typically account for industry-specific characteristics when evaluating firms' ESG performance, ensuring greater comparability across sectors. Consistent with this practice, investors are known to assess a firm's ESG standing relative to its industry peers ([Ding et al., 2016](#)). Such behaviour may influence investment decisions and, ultimately, the relationship between ESG performance and stock valuation, potentially introducing industry bias.

To address potential concerns regarding industry bias, we instrument firm ESG performance using the lagged industry-mean ESG scores, following dominant practices in the literature ([Amore and Bennedsen, 2016](#); [Fang and Hu, 2023](#); [García et al., 2024](#)). This approach is justified for three reasons: (1) lagged industry ESG captures slow-moving, peer-driven regulatory and normative pressures rather than transient sector sentiment or firm-specific misvaluation shocks; (2) fixed effects help absorb plausible direct channels, such as valuation norms, common shocks, or investor attention; and (3) a leave-one-out construction eliminates mechanical correlations, isolating exogenous variation in firm ESG that is suitable for generating plausible exogenous variation in firm-level ESG performance. Nevertheless, direct industry-level influences on valuation cannot be completely ruled out. Therefore, the IV

Table 9. Endogeneity

	(1) MSVF	(2) MSVF	(3) MSVF	(4) MSVF	(5) MSVF
<i>Panel A Two-stage least square regression</i>					
Intercept	0.199*** [4.05]	0.136*** [3.61]	0.13*** [3.26]	0.191*** [4.21]	0.2*** [4.06]
MSVF ₋₁	0.7*** [135.32]	0.7*** [135.37]	0.701*** [135.41]	0.7*** [135.39]	0.7*** [135.32]
ESG Score ₋₁	-0.001** [-2.23]				
E Score ₋₁		0 [-0.99]			0 [-0.7]
S Score ₋₁			0 [-0.44]		0 [-0.07]
G Score ₋₁				-0.001** [-2.38]	-0.001** [-2.27]
Lev	-0.003 [-0.19]	-0.001 [-0.08]	-0.001 [-0.06]	-0.008 [-0.6]	-0.008 [-0.56]
Profitability	0.074 [0.84]	0.056 [0.64]	0.06 [0.68]	0.07 [0.79]	0.069 [0.79]
CapEx	-0.007*** [-3.67]	-0.007*** [-3.57]	-0.007*** [-3.83]	-0.007*** [-3.64]	-0.006*** [-3.46]
Market-to-book	0 [0.36]	0 [0.48]	0 [0.48]	0 [0.47]	0 [0.44]
Volatility	0.084 [0.88]	0.088 [0.92]	0.088 [0.92]	0.087 [0.91]	0.086 [0.9]
Analyst coverage	0.024*** [9.35]	0.023*** [9.14]	0.023*** [9.06]	0.023*** [9.34]	0.023*** [9.3]
Firm-year obs	24,652	24,652	24,652	24,652	24,652
Adj. R-square	46.73%	46.73%	46.72%	46.73%	46.75%
<i>Panel B Dynamic GMM regression</i>					
Intercept	16.494* [1.78]	6.594 [1.09]	7.514 [1.57]	21.307** [2.24]	-121.039 [-0.49]
MSVF ₋₂	0.585** [2.17]	0.235 [1.61]	0.329* [1.89]	0.911*** [2.81]	-2.377 [-0.44]
MSVF ₋₁	0.734*** [4.11]	0.598*** [5.26]	0.503*** [3.19]	0.998*** [4.95]	-1.305 [-0.35]
ESG Score ₋₁	-0.123* [-1.68]				
E Score ₋₁		-0.051 [-1.12]			0.75 [0.51]
S Score ₋₁			-0.077** [-2.17]		-0.459 [-0.58]
G Score ₋₁				-0.116** [-1.97]	0.496 [0.47]
Lev	-0.529 [-0.3]	-0.119 [-0.11]	-0.091 [-0.06]	-1.372 [-1.01]	5.118 [0.31]
Profitability	-8.235 [-0.91]	-10.648* [-1.86]	-6.922 [-0.8]	7.553 [0.83]	18.372 [0.21]
CapEx	-0.368 [-1.38]	-0.157 [-0.86]	-0.099 [-0.51]	-0.601** [-2.24]	3.395 [0.5]
Market-to-book	0.036 [1.27]	0.009 [0.6]	0.023 [1.16]	0.045** [1.96]	-0.141 [-0.38]
Volatility	-19.085* [-1.73]	-15.377* [-1.89]	-14.502 [-1.61]	-16.652** [-2.21]	41.424 [0.34]

(continued)

Table 9. Continued

	(1) MSVF	(2) MSVF	(3) MSVF	(4) MSVF	(5) MSVF
Analyst coverage	0.113 [0.71]	0.145 [1.48]	0.068 [0.46]	−0.234 [−0.97]	−0.623 [−0.35]
Firm-year obs	10,339	10,339	10,339	10,339	10,339
AR(2) <i>p</i>		0.206			0.601
AR(3) <i>p</i>	0.129		0.508	0.306	
Durbin–Watson	2.00	2.00	2.00	2.00	2.00
Adj. R-square	38.79%	25.63%	29.04%	46.16%	58.29%

Note(s): This table shows the two-stage least squares and dynamic panel GMM regressions where stock misvaluation (MSVF) is regressed on the lagged ESG score and E, S, G scores, both separately and jointly. The lagged ESG score is instrumental with the mean value of each industry in Panel A. The dynamic panel GMM of Panel B allows us to instrument all of the independent variables. Standard errors are clustered at the firm level. The *t*-statistics are reported in the parentheses. ***, **, * denote 1%, 5%, 10% significance levels

Table 10. Excluding firms in the financial industry

	(1) MSVF	(2) MSVF	(3) MSVF	(4) MSVF	(5) MSVF
Intercept	1.093*** [6.89]	1.026*** [7.12]	0.974*** [6.79]	1.152*** [7.16]	1.174*** [7.19]
MSVF _{−1}	0.316*** [28.51]	0.316*** [28.52]	0.317*** [28.59]	0.316*** [28.49]	0.316*** [28.43]
ESG Score _{−1}	−0.148* [−1.68]				
E Score _{−1}		−0.119* [−1.83]			−0.128* [−1.94]
S Score _{−1}			0.03 [0.66]		0.047 [1.01]
G Score _{−1}				−0.151** [−2.29]	−0.149** [−2.26]
Lev	0.165*** [4.06]	0.165*** [4.05]	0.167*** [4.1]	0.163*** [4.01]	0.16*** [3.93]
Profitability	−2.049*** [−10.97]	−2.044*** [−10.95]	−2.039*** [−10.92]	−2.051*** [−10.99]	−2.051*** [−10.97]
CapEx	−0.063*** [−8.48]	−0.062*** [−8.39]	−0.064*** [−8.59]	−0.064*** [−8.68]	−0.064*** [−8.61]
Market-to-book	0.018*** [8.17]	0.018*** [8.17]	0.018*** [8.14]	0.018*** [8.2]	0.018*** [8.24]
Volatility	−0.94*** [−3.19]	−0.94*** [−3.19]	−0.95*** [−3.22]	−0.926*** [−3.15]	−0.909*** [−3.09]
Analyst coverage	0.026*** [6.28]	0.025*** [6.15]	0.025*** [6.21]	0.026*** [6.42]	0.026*** [6.37]
Firm-year obs	17,503	17,503	17,503	17,503	17,503
R-square	62.54%	62.54%	62.53%	62.54%	62.55%

Note(s): This table shows the fixed effect regression results of stock misvaluation (MSVF) on the lagged ESG score and E, S, G scores, both separately and jointly. We exclude financial firms in the regressions. Standard errors are clustered at the firm level. The *t*-statistics are reported in the parentheses. ***, **, * denote 1%, 5%, 10% significance levels

results should be interpreted cautiously and viewed as complementary robustness evidence rather than conclusive causal estimates.

We adjust the ESG (E, S, and G) scores by removing the industry-specific mean values, following the approach of [Ghoul et al. \(2011\)](#). Specifically, we compute the adjusted ESG scores by subtracting the respective industry mean from each firm's raw ESG (E, S, and G) score. The results, presented in [Table 11](#), indicate that our main conclusions remain unchanged. The coefficients on the ESG and G scores continue to be negative and statistically significant, as shown in Columns (1), (4), and (5) of the table, respectively.

6. Conclusion

This study examines the relationship between ESG performance, ESG disclosure, and stock misvaluation in the Chinese market. The most robust and consistent finding concerns the governance pillar. Across the baseline analyses, subsample tests, and multiple robustness checks, governance performance is consistently associated with lower levels of stock misvaluation. Specifically, stronger governance mechanisms contribute to greater stock price efficiency. In contrast, the effects of the environmental and social pillars are weaker and less consistent. While social performance is associated with greater overvaluation in some specifications, environmental performance generally exhibits limited explanatory power.

Table 11. Industry adjusted ESG score

	(1) MSVF	(2) MSVF	(3) MSVF	(4) MSVF	(5) MSVF
Intercept	1.177*** [8.15]	1.165*** [8.05]	1.179*** [8.15]	1.195*** [8.24]	1.186*** [8.17]
MSVF ₋₁	0.337*** [29.01]	0.337*** [29.05]	0.337*** [29.07]	0.337*** [28.99]	0.336*** [28.97]
ESG score ^{Ind} ₋₁	-0.149* [-1.7]				
E score ^{Ind} ₋₁		-0.08 [-1.2]			-0.077 [-1.13]
S score ^{Ind} ₋₁			0.009 [0.2]		0.021 [0.47]
G score ^{Ind} ₋₁				-0.127** [-1.96]	-0.125* [-1.91]
Lev	0.256*** [5.68]	0.257*** [5.7]	0.258*** [5.72]	0.254*** [5.65]	0.253*** [5.62]
Profitability	-1.816*** [-9.76]	-1.813*** [-9.74]	-1.812*** [-9.73]	-1.816*** [-9.76]	-1.815*** [-9.75]
CapEx	-0.074*** [-9.83]	-0.074*** [-9.84]	-0.075*** [-9.9]	-0.075*** [-9.9]	-0.074*** [-9.88]
Market-to-book	0.003 [1.03]	0.003 [1.03]	0.003 [1.03]	0.003 [1.04]	0.003 [1.04]
Volatility	0.318 [0.89]	0.323 [0.9]	0.324 [0.9]	0.323 [0.9]	0.325 [0.9]
Analyst coverage	0.03*** [7.18]	0.03*** [7.07]	0.03*** [7.09]	0.03*** [7.2]	0.03*** [7.18]
Firm-year obs	17,964	17,964	17,964	17,964	17,964
R-square	61.88%	61.88%	61.88%	61.89%	61.89%

Note(s): This table shows the fixed effect regression results of stock misvaluation (MSVF) on the lagged ESG score and E, S, G scores, both separately and jointly. The ESG (E,S,G) score is adjusted by the industry mean to alleviate the industry bias. We calculate a company's ESG (E,S,G) score each year by reducing the industry mean on that year. Standard errors are clustered at the firm level. The *t*-statistics are reported in the parentheses. ***, **, * denote 1%, 5%, 10% significance levels

These findings indicate that the individual ESG dimensions affect valuation through different channels and should not be treated as a homogeneous construct.

Consistent with this pillar-level evidence, aggregate ESG performance exhibits only a weak negative association with stock misvaluation. One possible explanation is that the aggregate ESG score combines dimensions with distinct and sometimes offsetting valuation implications. Governance appears to improve pricing efficiency, while social performance may generate reputational or behaviour effects that contribute to valuation premiums. As a result, aggregate ESG measures may obscure important differences across ESG dimensions. Furthermore, the growing literature on ESG rating divergence suggests that measurement error and differences in rating methodologies across providers may attenuate estimated ESG effects and contribute to the relatively modest aggregate results observed in our study.

Our analysis also highlights the dual role of ESG disclosure in the Chinese market. Although ESG disclosure is associated with lower information asymmetry, disclosure also strengthens the valuation effect of ESG performance. This pattern suggests that ESG disclosure may function not only as a transparency mechanism but also as a signalling and belief-reinforcement device that shapes investor sentiment and coordinated trading behaviour, particularly in a voluntary disclosure environment.

More broadly, the results indicate that the pricing implications of ESG in China remain context dependent. Because the misvaluation measure used in this study is model-based rather than an objective benchmark of intrinsic value, the findings should be interpreted as evidence of valuation deviations conditional on observable fundamentals rather than definitive proof of market inefficiency. This study contributed to the ESG and behaviour literature by showing that ESG-related pricing effects in China reflect a combination of information, behaviour, and signalling mechanisms. The evidence on the distinct impacts of the three ESG dimensions suggests the importance of evaluating not only overall ESG performance but also the individual pillars.

Our findings on the negative effects of ESG and G scores on misvaluation have important policy implications. These findings are consistent with the argument that greater ESG transparency may improve information environments and valuation efficiency. Our findings that ESG disclosure and social performance may also influence valuation through investor attention and coordinated beliefs have implications to not only for regulators but also for investors. Regulators should strengthen the standardization, comparability, and credibility of ESG reporting to reduce information asymmetry and discourage superficial disclosure practices. At the same time, investors should place greater emphasis on the quality and substance of firms' ESG activities, particularly governance and social performance, as these dimensions appear to play a more significant role in improving valuation efficiency and reducing market mispricing.

Notes

1. See <https://www.morganstanley.com/press-releases/morgan-stanley-sustainable-signals-survey->
2. We take the logarithm of firm market value in [equation \(1\)](#). Hence, MSVF is the difference between the logarithmic firm market value and the estimated value of the logarithmic firm value. MSVF can be treated as the logarithm of the ratio of firm market value over the estimated firm value. This misvaluation measure can predict future stock returns, as it is not a total dollar measure.
3. The p -values of the F-test for all fixed effects panel regressions in Essay Three are less than 0.001. The significant p -value indicates that the fixed effects panel regression model is more suitable than the OLS regression model in our data sample, as the fixed effect is significant. We do not report this figure in tables for conciseness.
4. We compare ESG firm-year observations from various sources including Bloomberg, MSCI, FTSE, Refinitiv, SynTao Green Finance, Huazheng and Wind. We find that Huazheng ESG performance data offer the most extensive coverage, spanning the longest period. Huazheng ESG data is provided by

Sino-Securities Index Information Services (Shanghai) Co. Ltd. which is an independent third-party organization primarily serving asset management institutions.

5. The ESG (E, S, G) score and ESG (E, S, G) disclosure score are reported as raw data in Table 1. They are divided by 100 to translate them into percentages when applied into the regressions.
6. The results are available upon request.

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