Proceedings of ICFTBA 2026 Symposium: Driving Organizational Strategic Change for Financial Gains
DOI: 10.54254/2754-1169/2026.BH36537

ESG Rating Divergence, Information Frictions, and Capital Market Efficiency: A Mechanism-Based Synthesis from China

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Abstract. The rapid expansion of ESG (Environment, Society and Governance) investment has placed ESG ratings at the core of capital market decisions. Nevertheless, the significant differences among various rating agencies have drawn widespread attention to the reliability of ESG information and its impact on market efficiency. To this end, this paper establishes a comprehensive analytical framework to assess the impact of ESG rating discrepancies on the information of the capital market, with stock price synchronicity serving as the measurement indicator. Based on a review of the relevant literature, it integrates studies on information asymmetry, limited investor attention, and analyst information intermediation. On this basis, it summarizes three main transmission paths through which ESG rating discrepancies impact information efficiency: heightened information asymmetry, scattered investor attention, and reduced analyst prediction quality. The results suggest that, taking into account the institutional features of China's capital market, including the dominance of retail investors, relatively weak information disclosure, and the strong policy-driven ESG, the aforementioned effects may be significantly amplified in the Chinese context.

Keywords: ESG Rating Divergence, Information Efficiency, Stock Price Synchronicity, Information Asymmetry, Chinese Capital Market

1. Introduction

ESG ratings have become a major source of non-financial information for investors and regulators. In China, the advancement of the dual-carbon policy has further strengthened the significance of ESG assessment in capital markets. However, ESG rating agencies often provide substantially different evaluations for the same firm, with correlations among major ratings remaining relatively low. Such disagreement raises uncertainty about firms' sustainability performance and may limit investors' ability to process firm-level information. While previous studies predominantly mainly attribute ESG rating divergence to methodological differences, data heterogeneity, and disclosure practices, its impacts on capital market information efficiency are still not fully understood. In particular, whether disagreement among rating agencies affects the incorporation of firm-specific information into stock prices has received limited attention. To address this gap, this study develops

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a framework linking ESG rating divergence to stock price synchronicity. Specifically, we examine three questions: how the quality of financial reporting contributes to the divergence in ESG ratings, through which mechanisms the divergence in rating influences stock price synchronicity, and how the institutional characteristics of China's capital market moderate these effects. This study makes three contributions. Firstly, it frames ESG rating divergence as informational friction rather than measurement error. Secondly, it connects financial reporting quality, ESG credibility, and pricing efficiency using accounting, finance, and information economics. Thirdly, it uses evidence from China to show how institutional settings shape the effects of ESG rating divergence.

2. ESG rating divergence: conceptual foundations and causes

2.1. The concept and measurement of ESG rating divergence

ESG rating divergence is the difference in ESG scores assigned by rating agencies to the same firm in the same period. This study investigates inter-agency divergence, meaning disagreement across external ESG rating providers. It excludes intra-firm ESG heterogeneity, which refers to variation across environmental, social, and governance dimensions or business segments within a firm.

Prior studies employ several ways to capture inter-agency ESG divergence. One method utilizes pairwise correlation across agencies, where lower correlation means greater disagreement. Another is the dispersion of ratings for the same firm across agencies, often measured by the standard deviation. Some studies also look at the gap between the highest and lowest ratings. Although these measures are constructed differently, they all reflect disagreement across rating agencies rather than variation within a firm's ESG performance.

Empirical evidence shows ESG ratings are less consistent than traditional financial ratings. Berg et al. report an average correlation of about 0.54 among major ESG rating providers, lower than credit rating agreement [1]. This suggests ESG ratings are more subjective, driven by differences in methods, indicators, data sources, and weights. The divergence goes beyond measurement noise, creating uncertainty about firms' ESG performance and weakening the information environment. When investors receive mixed signals, ESG credibility declines, adding noise to capital markets. As a result, ESG rating divergence can distort price discovery and reduce information efficiency.

2.2. The determinants of ESG rating divergence

2.2.1. Evaluation framework across rating agencies

ESG rating divergence stems from systematic differences in evaluation frameworks across agencies. These differences include ESG dimensions, weighting schemes, and aggregation methods [2]. For instance, MSCI emphasizes industry-specific materiality; accordingly, it assigns greater weight to environmental factors for energy companies and prioritizes social factors for financial institutions [3]. In contrast, Sino-Securities applies a more uniform weighting scheme across industries, which results in systematic differences in rating outcomes for firms with unbalanced ESG profiles.

2.2.2. The heterogeneity of ESG information sources

Across agencies, ESG assessments rely on diverse data sources, including corporate self-disclosures, government databases, media reports, and third-party data vendors. Notably, these sources differ in coverage and reliability; specifically, voluntary corporate disclosures introduce substantial variation, as firms differ in the completeness and timeliness of their sustainability reporting. Thus, when one

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agency integrates data from a comprehensive sustainability report while another lacks access to the same information, rating divergence inevitably occurs.

2.2.3. Financial reporting quality and disclosure practices

From the perspective of corporate information, financial reporting practices are an important but relatively underexplored source of ESG rating divergence [4]. Existing studies suggest that financial reporting quality affects ESG rating consistency by influencing the availability, credibility, and comparability of corporate information. Firms with higher-quality reporting tend to provide more transparent and reliable disclosures, reducing information asymmetry and leading rating agencies to rely on a more consistent information set. Therefore, higher financial reporting quality may improve information visibility and reduce ESG rating divergence.

Conversely, poor financial reporting quality increases disagreement among rating agencies via multiple channels. Incomplete or opaque disclosures force agencies to rely on different data sources, methods, and assumptions, thus leading to inconsistent assessments. In addition, firms involved in earnings management may also selectively disclose ESG information or engage in greenwashing, emphasizing positive activities while hiding negative ones. This creates uneven information access across agencies and increases ESG rating divergence.

The information visibility mechanism may be especially relevant in the Chinese market, where information intermediaries and monitoring systems are less developed than in mature markets, and ownership is more concentrated with higher information asymmetry. In this context, corporate financial disclosures become a key public source for ESG evaluation. Variation in disclosure quality thus affects how rating agencies observe and interpret firms' sustainability activities, amplifying ESG rating divergence. Accordingly, financial reporting quality shapes ESG rating divergence via disclosure behavior,and through the visibility, accessibility, and credibility of information available to rating agencies.

3. The mechanisms of ESG rating divergence and information efficiency

In the capital market, information efficiency refers to the extent to which stock prices incorporate specific information of the enterprise in a timely and unbiased manner [5]. In existing studies, stock price synchronicity is often used as an inverse indicator of information efficiency, because higher synchronicity indicates that less specific enterprise information is incorporated into the price.

3.1. Information frictions in ESG rating generation

ESG rating divergence introduces informational frictions by generating inconsistent assessments of firms' sustainability performance. When different rating agencies provide conflicting evaluations of the same firm, investors face uncertainty regarding the credibility and economic implications of ESG information. Rather than serving as a clear indicator of corporate sustainability, ESG ratings turn into a source of ambiguity.

This divergence increases market-level information noise and reduces the informational value of ESG disclosures. Investors and other market participants must incur additional costs to evaluate and reconcile differences across rating providers, which raises the cost of acquiring and processing firm-specific information and weakens transparency in sustainability assessment [6].

From an information economics perspective, ESG rating divergence is an informational friction [7]. It increases the cost of obtaining and verifying ESG information, so investors rely more on

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aggregated or noisy signals. This reduces the incorporation of firm-specific information into prices and lowers capital market information efficiency.

3.2. Constraints on investor information processing

The effects of ESG rating divergence are amplified by investors' limited attention and bounded information-processing capacity. When rating agencies give conflicting ESG assessments, investors must identify the sources of disagreement and assess differences in methods, data, and criteria. This comparison process increases the cognitive cost of interpreting ESG signals, given that investor attention is a scarce resource.

The increased cognitive burden associated with rating disagreement may crowd out attention devoted to other firm-specific information, including financial disclosures, operating performance, and strategic developments. Faced with multiple inconsistent ESG signals, investors may adopt simpler heuristics and rely more on easily accessible market- or industry-level information. This substitution away from idiosyncratic information toward common signals strengthens co-movement in stock prices, resulting in higher stock price synchronicity and lower informational efficiency.

3.3. Impaired information intermediation and market efficiency

ESG rating divergence may affect market efficiency through financial information intermediaries [8]. Analysts serve as key intermediaries by collecting, processing, and disseminating firm-specific information to investors. In this context, conflicting ESG assessments increase uncertainty about firms' sustainability risks and long-term prospects, making earnings forecasting more difficult [9]. As a result, analysts' forecast errors increase and forecast dispersion widens, thus reflecting greater disagreement and lower precision in information processing.

Moreover, the weakening of analysts' intermediary role impairs the transmission of firm-specific information to capital markets. And ESG rating divergence forces analysts to reconcile inconsistent signals across rating providers, which reduces the precision of their forecasts and increases reliance on judgmental adjustments rather than observable inputs. As a result, analyst outputs contain less firm-specific content, and their role in aggregating and refining private information is weakened. Investors then shift toward market- and industry-level indicators that are more stable but less informative about idiosyncratic fundamentals. Consequently, ESG rating divergence reduces capital market information efficiency, as reflected in higher stock price synchronicity.

4. The Chinese capital market context and its institutional environment

4.1. Developed markets and information efficiency

Empirical evidence from developed markets consistently shows that ESG rating divergence affects capital market outcomes by increasing information frictions. In particular, studies based on U.S. and European markets document that firms with greater ESG rating divergence exhibit higher costs of equity capital, increased return volatility, and lower institutional ownership. Taken together, these findings support an information asymmetry channel, suggesting that rating divergence increases perceived information risk and weakens investor confidence in ESG signals.

Regarding stock price synchronicity, further evidence suggests that ESG-related disclosure inconsistency, which is closely linked to rating divergence, is associated with higher synchronicity, particularly in settings with weaker disclosure regulation. This result is consistent with the view that

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ESG information ambiguity impairs the incorporation of firm-specific information into stock prices. Overall, evidence from developed markets indicates a robust positive association between ESG rating divergence and information inefficiency, primarily driven by higher information risk and lower signal credibility.

4.2. Institutional features of the Chinese A-share market

The Chinese A-share market provides a setting in which the effects of ESG rating divergence are likely to be amplified due to its distinctive institutional characteristics [10].

First, retail investors account for a dominant share of trading activity, implying lower average information-processing capacity and greater susceptibility to conflicting ESG signals. Compared with institutional investors, retail investors encounter more significant cognitive constraints and may face greater difficulty in reconciling inconsistent ESG assessments, reinforcing the investor attention channel.

Second, the overall information environment remains relatively weak, characterized by lower analyst coverage, less comprehensive disclosure, and higher baseline information asymmetry. In such an environment, the additional ambiguity introduced by ESG rating divergence imposes higher information acquisition and processing costs on market participants, reducing the incorporation of firm-specific information into stock prices.

Third, the ESG rating industry in China remains less mature, with substantial methodological heterogeneity across domestic and international providers. In particular, domestic agencies such as Sino-Securities and SynTao Green Finance often diverge from international rating agencies in terms of indicator selection, weighting schemes, and data sources. Thus, this institutional heterogeneity contributes to higher baseline levels of rating divergence and increases uncertainty regarding firms' sustainability performance.

These institutional characteristics suggest that ESG rating divergence in China interacts with existing market frictions rather than operating in isolation. Greater information asymmetry, limited information-processing capacity, and weaker information intermediation reduce investors' ability to interpret conflicting ESG signals and hinder the transmission of firm-specific information into stock prices. As a result, institutional frictions amplify the pricing effects of ESG rating divergence, thus leading to a larger decline in capital market information efficiency.

4.3. The cross-sectional heterogeneity in the Chinese market

From the perspective of ownership structure, differences in ownership concentration and control rights across firms represent a key moderating factor [11]. Specifically, state-owned enterprises typically face more stable information environments and stronger external monitoring, which can help attenuate the adverse effects of ESG rating divergence. By contrast, privately controlled firms with concentrated ownership are more exposed to information asymmetry, thereby strengthening the relationship between rating divergence and information inefficiency.

In addition, industry characteristics also shape the impact of rating divergence. Firms in heavily regulated or high-pollution industries are subject to stricter disclosure requirements and external scrutiny, which may reduce both the level and impact of divergence. By contrast, firms in emerging industries-such as technology and healthcare-face less standardized ESG metrics, leading to greater divergence and stronger pricing effects.In contrast, firms in emerging sectors such as technology and healthcare, where ESG metrics are less standardized, may experience greater rating divergence and stronger market consequences.These moderating factors suggest that the effects of ESG rating

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divergence are not uniform, but depend critically on firm-level governance, industry characteristics, and the broader institutional environment.

5. Conclusion

This study reviews how ESG rating divergence affects capital market information efficiency. And it links information economics and behavioral finance to explain how divergence influences price formation through multiple channels. The analysis suggests that ESG rating divergence serves as a source of informational friction by raising information acquisition costs, diverting investor attention, and weakening analysts' role in processing and transmitting firm-specific information. Importantly, the effects of ESG rating divergence vary with market context. In China, retail investor dominance, weaker disclosure standards, and regulatory heterogeneity intensify rating divergence effects, hence making its impact on capital markets more pronounced.

Based on these findings, this study views ESG rating divergence as a determinant of market efficiency rather than a measurement issue, and further highlights the role of institutional context in shaping its information effects. Policy implications include standardizing ESG rating methodologies and strengthening mandatory disclosure to reduce information noise in capital markets. Third-party verification and assurance can further limit greenwashing and improve ESG information credibility. Moreover, it suggests future research using quasi-natural experiments or cross-country comparisons to identify causal mechanisms, and text analysis and machine learning methods applied to corporate disclosures and rating reports to improve measurement of ESG information quality and rating divergence. By conceptualizing ESG rating divergence as a systematic source of informational friction, this study provides a novel perspective on the role of ESG information in capital markets and its implications for pricing efficiency, particularly in emerging economies.

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