

# When Performance Meets Perception: The Divergence Between ESG Ratings and ESG Performance

Xiankang Wang\*

*Faculty of Social Sciences, National University of Singapore, Singapore*

*\*Corresponding Author*

**Abstract:** Environmental, Social, and Governance (ESG) ratings have become critical instruments for investors and stakeholders in assessing corporate sustainability performance. However, substantial divergence exists among ratings provided by different agencies for the same company, raising fundamental questions about the relationship between perceived ESG performance (as captured by ratings) and actual ESG outcomes. This study examines the divergence between ESG ratings and ESG performance using secondary data from six major rating agencies (MSCI, Sustainalytics, Refinitiv, S&P Global, Bloomberg, and FTSE Russell) covering 1,248 publicly traded companies across 15 industries from 2019 to 2024. Employing comprehensive methodological frameworks including correlation analysis, regression decomposition, and panel data models, we document three key findings. First, the average pairwise correlation among ESG ratings is 0.54, indicating moderate to substantial divergence that persists over time. Second, variance decomposition reveals that this divergence stems primarily from measurement differences (58%), followed by scope variations (34%), and weighting methodologies (8%). Third, higher rating divergence is associated with increased information asymmetry (7.8% higher bid-ask spreads), reduced stock price informativeness (4.3% higher market model R-squared), and lower institutional ownership (5.3% reduction). These findings have important implications for investors, Strategists, and rating agencies in understanding and addressing ESG rating heterogeneity in capital markets.

**Keywords:** ESG Ratings; Rating Divergence; Measurement Error; Scope Heterogeneity; Information Asymmetry; Institutional

## Ownership

### 1. Introduction

The rapid expansion of sustainable investing has elevated Environmental, Social, and Governance (ESG) considerations from peripheral ethical concerns to central pillars of investment decision-making. Global ESG assets under management reached \$35.3 trillion in 2024, representing approximately 22% of total professionally managed assets worldwide. This dramatic growth reflects increasing recognition among institutional and retail investors that ESG factors materially affect long-term financial performance, risk profiles, and stakeholder value creation.

ESG rating agencies play a crucial intermediary role in this ecosystem, processing vast amounts of corporate disclosure data and transforming it into standardized scores that purportedly reflect companies' sustainability performance. Major rating providers including MSCI, Sustainalytics, Refinitiv, S&P Global, Bloomberg, and FTSE Russell collectively assess over 15,000 companies globally, with their ratings influencing hundreds of billions of dollars in capital allocation decisions annually. However, a growing body of evidence documents substantial divergence in ESG ratings across providers, with correlations between different agencies' ratings ranging from 0.38 to 0.71, considerably lower than the 0.92-0.99 correlations observed among credit rating agencies [1].

This divergence poses fundamental challenges for market efficiency and capital allocation. When different rating agencies assign significantly different ESG scores to the same company based on ostensibly similar underlying data, several critical questions emerge. First, which rating accurately reflects the company's true ESG performance? Second, what drives these systematic differences in assessment? Third, how does rating divergence affect corporate behavior, investor decisions, and

market outcomes? Understanding these dynamics is essential for multiple stakeholder groups: investors seeking to integrate ESG factors into portfolio construction, companies striving to improve their sustainability performance, policymakers designing disclosure regulations, and rating agencies themselves working to enhance methodological rigor [2]. Recent academic research has begun to unpack the sources of ESG rating divergence, with Berg et al. providing seminal decomposition analysis identifying three primary drivers: scope (which ESG attributes are measured), measurement (how these attributes are assessed), and weight (how individual assessments are aggregated). Building on this framework, subsequent studies have examined economic consequences of rating divergence. Wang et al. demonstrate that ESG rating divergence negatively impacts stock excess returns while simultaneously increasing return volatility. Zhou et al. find that divergence stimulates corporate green innovation, suggesting firms respond to rating uncertainty by increasing sustainability investments [3,4]. Zou et al. show that divergence increases corporate bond spreads, indicating creditors view rating uncertainty as elevating credit risk [5]. Despite this growing literature, significant gaps remain in our understanding. Most existing studies examine limited time periods or geographic regions, focus on specific outcomes without comprehensive analysis of broader market effects, and provide limited insight into which sources of divergence (measurement, scope, or weight) matter most for economic outcomes [6]. Moreover, the literature lacks systematic examination of temporal trends in rating divergence and whether increased disclosure standardization and methodological evolution have reduced heterogeneity over time. This study makes four distinct contributions to the literature. First, we provide comprehensive empirical documentation of ESG rating divergence using an extensive dataset covering 1,248 companies from six major rating agencies over six years [7], substantially expanding the temporal and cross-sectional scope of prior research. Second, we employ advanced decomposition techniques to quantify the relative contributions of scope, measurement, and weighting differences to overall rating divergence, extending Berg et al. to more recent data and broader company coverage [8]. Third, we examine multiple economic consequences of

rating divergence simultaneously, including information asymmetry, stock price informativeness, and institutional ownership, providing holistic assessment of how divergence affects capital markets. Fourth, we investigate temporal trends and cross-sectional heterogeneity in divergence patterns, examining whether rating convergence is occurring and which firm characteristics predict higher or lower divergence.

Our findings reveal that ESG rating divergence represents a systematic rather than random phenomenon, with measurement differences contributing most substantially to variation across rating agencies. This measurement-driven divergence appears particularly pronounced for social and governance dimensions relative to environmental factors, suggesting that less quantifiable aspects of corporate sustainability present greater assessment challenges. Temporal analysis reveals no systematic convergence in ratings over our sample period, despite increased disclosure standardization through frameworks like TCFD and ISSB. Cross-sectional analysis shows that divergence exhibits a U-shaped relationship with firm size, being highest for the smallest and largest companies, and varies substantially across industries, with technology and consumer sectors showing particularly high heterogeneity.

We document that rating divergence creates meaningful information asymmetry, with higher divergence associated with increased bid-ask spreads and probability of informed trading. Additionally, divergence reduces stock price informativeness, as measured by lower firm-specific variation in returns, and decreases institutional ownership, particularly among quantitatively-oriented investors [9,10]. These patterns suggest that rating heterogeneity imposes real costs on capital markets through increased uncertainty and information processing difficulty. The magnitude of these effects is economically significant: a one-standard-deviation increase in rating divergence associates with 7.8% higher bid-ask spreads, 4.3% higher market model R-squared, and 5.3% lower institutional ownership.

The remainder of this paper proceeds as follows. Section 2 reviews relevant theoretical frameworks and empirical literature on ESG ratings and rating divergence. Section 3 describes our data sources, sample construction, and analytical methodology. Section 4 presents

our main empirical findings on the magnitude, sources, and temporal dynamics of rating divergence. Section 5 examines the economic consequences of divergence for information asymmetry and market outcomes. Section 6 discusses implications for theory, practice, and policy. Section 7 concludes with directions for future research.

## **2. Literature Review**

### **2.1 Theoretical Foundations**

The theoretical justification for ESG ratings rests on two complementary frameworks. Stakeholder theory posits that firms create value by managing relationships with diverse stakeholder groups including employees, customers, communities, and the environment, not solely shareholders. Under this framework, ESG ratings serve as aggregated indicators of stakeholder relationship quality, with higher ratings signaling superior stakeholder management that should translate into sustained competitive advantage and long-term value creation. Information asymmetry theory provides complementary justification for rating agencies' intermediary role. Corporate sustainability performance involves multidimensional, often non-financial attributes that are costly for individual investors to observe and evaluate directly. Rating agencies theoretically reduce these information costs by collecting, verifying, and standardizing ESG data, similar to how credit rating agencies process financial information [11-13].

However, both theoretical frameworks assume that ESG ratings accurately reflect underlying performance. Rating divergence challenges this assumption, suggesting either that true ESG performance is multidimensional and cannot be captured by a single metric, or that rating methodologies contain measurement error that obscures true performance. This theoretical tension motivates empirical investigation of how rating divergence relates to actual performance outcomes and market efficiency.

### **2.2 Sources of Rating Divergence**

Berg et al. (2022) provide the foundational framework for understanding rating divergence, decomposing it into three primary sources. Scope divergence occurs when rating agencies measure different sets of ESG attributes. For example, some agencies emphasize climate-

related metrics while others focus more heavily on labor practices or board diversity. This reflects fundamental disagreements about which aspects of corporate sustainability are most material for assessing overall ESG performance. The authors document that scope contributes approximately 38% of total rating variance across six major agencies.

Measurement divergence arises when agencies measure the same attribute but assess it differently. This can result from varying data sources, different interpretation of corporate disclosures, or distinct evaluation criteria. For instance, when assessing carbon emissions, agencies may differ in whether they accept company-reported data, require third-party verification, or employ proprietary estimation models for missing values. Wang and Liu demonstrate that quantitative ESG disclosure quality affects measurement divergence, with higher disclosure quality associated with lower divergence [14]. Berg et al. find that measurement contributes approximately 56% of total rating variation, making it the dominant source of disagreement among agencies [15].

Weighting divergence occurs when agencies assign different importance to the same attributes when aggregating them into overall scores. Some agencies employ industry-specific weightings that adjust for materiality differences across sectors, while others use uniform weights. Additionally, agencies differ in how they balance environmental, social, and governance pillars. Research suggests this weighting heterogeneity accounts for approximately 6% of overall rating divergence, considerably less than scope or measurement factors. This finding implies that agencies agree more on relative importance of ESG dimensions than on which dimensions to measure or how to measure them.

### **2.3 Economic Consequences**

Recent literature examines how rating divergence affects corporate and market outcomes, revealing complex effects. Brandon et al. document a 'noise effect' whereby rating divergence weakens investors' responses to ESG information, reducing the pricing of ESG factors in equity markets [16]. This suggests that divergence creates uncertainty that rational investors discount when making allocation decisions. Conversely, Avramov et al. find that higher ESG rating uncertainty is associated with higher expected returns, consistent with

investors demanding risk premiums for ESG-related uncertainty [17].

Wang et al. extend these findings, demonstrating that ESG rating divergence negatively impacts stock excess returns while simultaneously increasing return volatility [18]. Their analysis of Chinese A-share listed companies shows that investor sentiment, ESG improvement potential, and information transparency play moderating roles. Dong et al. examine the relationship between ESG rating disagreement and stock price crash risk in China, finding that higher divergence increases crash risk through both noise effects and information effects [19].

Beyond equity markets, rating divergence influences other economic outcomes. Zou et al. demonstrate that divergence increases corporate bond spreads, suggesting creditors view rating uncertainty as increasing credit risk. Liu et al. show that divergence reduces earnings forecast accuracy by financial analysts, consistent with rating heterogeneity complicating fundamental analysis. Ling et al. find that divergence increases audit fees as auditors perceive greater audit risk when ESG assessments vary substantially across agencies. These findings collectively suggest that rating divergence creates meaningful frictions in information processing and capital allocation [20,21].

Emerging research also examines how companies respond to rating divergence. Zhou et al. provide evidence that firms increase green innovation in response to higher divergence, potentially attempting to signal true sustainability commitment amid rating uncertainty. Geng et al. corroborate this finding for Chinese firms [22]. However, the mechanisms underlying corporate responses remain incompletely understood, and whether divergence-induced innovation represents genuine sustainability improvement or strategic reputation management requires further investigation.

## 2.4 Research Gaps

Despite growing attention to ESG rating divergence, several important gaps remain. First, most studies examine divergence during limited time periods, raising questions about whether observed patterns represent systematic features or period-specific phenomena. Second, existing research provides limited analysis of temporal trends in divergence. Third, while studies decompose aggregate divergence into

components, few examine how different sources of divergence differentially affect economic outcomes. This study addresses these gaps by examining extended time series data, analyzing temporal trends, and investigating which types of divergence matter most for market outcomes.

## 3. Research Methodology

### 3.1 Data and Sample

Our primary data source consists of ESG ratings from six major rating agencies: MSCI, Sustainalytics, Refinitiv (Asset4), S&P Global (formerly RobecoSAM), Bloomberg, and FTSE Russell. These agencies collectively represent over 80% of the global ESG rating market by assets under management influenced. We obtained rating data for the period January 2019 through December 2024, providing six years of observations. This extended time series allows examination of both cross-sectional variation in rating divergence and temporal dynamics as ESG methodologies have evolved.

Our sample includes 1,248 publicly traded companies meeting the following criteria: (1) constituent of the MSCI World Index as of December 2024, ensuring focus on large, liquid securities; (2) coverage by all six rating agencies for at least 48 months during the sample period, providing sufficient data for longitudinal analysis; (3) market capitalization exceeding \$2 billion as of December 2024; and (4) exclusion of financial services firms due to their distinct regulatory environment. The final sample spans 15 industry sectors based on Global Industry Classification Standard (GICS) codes, with representation from 32 countries.

To ensure cross-agency comparability, we standardize all ESG ratings to a 0-100 scale using percentile ranks within each agency's coverage universe. This normalization addresses the fact that different agencies employ different native scales. Percentile transformation preserves ordinal ranking information while making ratings directly comparable across agencies.

### 3.2 Measurement of Rating Divergence

We employ three complementary measures of ESG rating divergence. First, we calculate pairwise Spearman rank correlations between all possible agency pairs (15 unique pairs from 6 agencies), providing intuitive assessment of rating agreement. Second, we compute the coefficient of variation (CV) for each company

across the six agencies, defined as the standard deviation divided by the mean. Third, following Berg et al., we decompose overall rating divergence into contributions from scope, measurement, and weighting differences through variance decomposition analysis [23,24].

### 3.3 Analytical Framework

Our analytical approach consists of three main components. First, we conduct descriptive analysis documenting the magnitude and patterns of ESG rating divergence across companies, industries, and time periods. Second, we perform decomposition analysis to quantify the relative contributions of scope, measurement, and weighting to overall divergence. Third, we examine economic consequences of rating divergence by estimating panel regressions relating our divergence measures to information asymmetry (bid-ask spreads, probability of informed trading), stock price informativeness (market model R-squared), and institutional ownership. We control for firm characteristics including size, leverage, profitability, and growth opportunities, with firm and year fixed effects. Standard errors are clustered at the firm level.

## 4. Empirical Results

### 4.1 Descriptive Statistics

Table 1 presents summary statistics for ESG ratings across the six agencies in our sample. Panel A shows that mean standardized ratings range from 48.3 (MSCI) to 52.7 (FTSE Russell), indicating relatively balanced distributions after percentile normalization. Standard deviations range from 24.1 (Sustainalytics) to 28.6 (Bloomberg), revealing considerable cross-sectional variation and suggesting agencies disagree substantially about which companies represent ESG leaders versus laggards. Panel B presents company-level statistics, showing that the average coefficient of variation across the six ratings is 0.283, with substantial heterogeneity (standard deviation = 0.127).

**Table 1. Descriptive Statistics of ESG Ratings**

Panel A: Agency-Level Statistics	Mean	Std Dev	Min	Max	N
MSCI	48.3	27.2	2.1	98.7	1,248
Sustainalytics	49.7	24.1	3.8	97.3	1,248
Refinitiv	51.2	26.4	1.9	99.1	1,248
S&P Global	50.4	25.8	2.7	98.4	1,248
Bloomberg	49.1	28.6	1.3	99.6	1,248
FTSE Russell	52.7	25.3	3.2	98.9	1,248
Panel B:	Mean	Std Dev	P25	Median	P75

Company-Level Divergence					
Coefficient of Variation	0.283	0.127	0.192	0.267	0.358
Rating Range (Max-Min)	31.4	14.7	21.3	29.8	39.1

Note: All ratings are standardized to 0-100 scale using percentile ranks. Sample includes 1,248 companies covered by all six agencies during 2019-2024.

### 4.2 Correlation Analysis

Table 2 presents pairwise Spearman rank correlations among the six rating agencies. The average pairwise correlation is 0.54, considerably lower than the 0.92-0.99 correlations observed among credit rating agencies. Individual correlations range from 0.38 (MSCI-Bloomberg) to 0.71 (Refinitiv-S&P Global), indicating substantial heterogeneity in rating agreement. All correlations are statistically significant at the 1% level, but the moderate magnitudes suggest that different agencies are capturing meaningfully different dimensions of corporate ESG performance rather than measuring the same underlying construct with measurement error.

**Table 2. Pairwise Correlations Between ESG Rating Agencies**

Agency	MSCI	Sust.	Refin.	S&P	Bloom.	FTSE
MSCI	1.000					
Sustainalytics	0.52***	1.000				
Refinitiv	0.49***	0.58***	1.000			
S&P Global	0.46***	0.63***	0.71***	1.000		
Bloomberg	0.38***	0.47***	0.55***	0.59***	1.000	
FTSE Russell	0.54***	0.61***	0.68***	0.66***	0.52***	1.000
Average Correlation	0.54					

Note: Table reports Spearman rank correlations. \*\*\* indicates significance at 1% level. Sample includes 1,248 companies over 2019-2024.

Temporal analysis reveals that rating correlations have remained relatively stable over our six-year sample period. The average pairwise correlation fluctuates between 0.51 and 0.57 across years, with no systematic trend toward convergence or divergence. This stability is somewhat surprising given that ESG disclosure standards and rating methodologies have evolved considerably during this period, including adoption of TCFD frameworks and increased regulatory requirements in Europe and other jurisdictions.

### 4.3 Variance Decomposition

Table 3 presents results from variance decomposition analysis, partitioning overall rating divergence into contributions from scope, measurement, and weighting differences.

Measurement divergence emerges as the dominant source of rating heterogeneity, accounting for 58.2% of total variance. This finding aligns closely with Berg et al. (2022), who document 56% measurement contribution using different data and time periods, suggesting robust replicability of this pattern.

Scope divergence contributes 33.9% of total variance, indicating that agencies meaningfully differ in which ESG attributes they include in their assessments. Detailed examination reveals that scope divergence is particularly pronounced for social dimensions (28.4% scope share vs. 42.1% for environmental). All six agencies measure core environmental metrics like carbon emissions and energy use, but they differ substantially in coverage of social attributes such as supply chain labor practices, product safety standards, and community investment. This likely reflects genuine disagreement about which social factors are most material for assessing corporate sustainability.

**Table 3. Variance Decomposition of ESG Rating Divergence**

Source of Divergence	Variance Share (%)	95% CI	F-statistic
Measurement Divergence	58.2	[54.7, 61.8]	127.3** *
Scope Divergence	33.9	[30.8, 37.1]	74.2***
Weighting Divergence	7.9	[6.1, 9.8]	17.3***
<b>Total</b>	<b>100.0</b>		
By ESG Pillar	Environmental	Social	Governance
Measurement Share (%)	48.3	64.7	61.8
Scope Share (%)	42.1	28.4	29.7
Weighting Share (%)	9.6	6.9	8.5

*Note: Variance decomposition following Berg et al. (2022). Confidence intervals based on 10,000 bootstrap replications. \*\*\* indicates significance at 1% level.*

Weighting divergence accounts for only 7.9% of total variance, suggesting that how agencies aggregate individual ESG attributes into overall scores matters less than what they measure and how they measure it. Analysis by ESG pillar reveals that measurement divergence is highest for social (64.7%) and governance (61.8%) dimensions compared to environmental (48.3%), suggesting that less quantifiable aspects of corporate sustainability present greater methodological challenges.

## 5. Economic Consequences of Rating Divergence

### 5.1 Information Asymmetry

Table 4 presents panel regression results relating company-level rating divergence to information asymmetry, measured by relative bid-ask spreads and probability of informed trading (PIN). All specifications include firm fixed effects to control for time-invariant heterogeneity and year fixed effects to account for market-wide trends. Standard errors are clustered at the firm level.

**Table 4. ESG Rating Divergence and Information Asymmetry**

Dependent Variable	Bid-Ask (1)	Bid-Ask (2)	PIN (3)	PIN (4)
Rating Divergence (CV)	0.042*** (0.013)	0.038*** (0.011)	0.032*** (0.009)	0.028*** (0.008)
Log (Market Cap)		- 0.028*** (0.005)		- 0.021*** (0.004)
Leverage		0.015** (0.006)		0.011* (0.006)
ROA		-0.024** (0.010)		-0.018** (0.007)
Trading Volume		- 0.019*** (0.004)		- 0.014*** (0.003)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	7,488	7,488	7,488	7,488
R-squared	0.654	0.731	0.582	0.647

*Note: Standard errors clustered at firm level in parentheses. \*\*\*, \*\*, \* denote significance at 1%, 5%, 10% levels. Bid-Ask is relative bid-ask spread (%). PIN is probability of informed trading.*

Results show that a one-standard-deviation increase in rating divergence (CV = 0.127) is associated with  $0.042 \times 0.127 = 0.0053$  or approximately 0.53 percentage points higher bid-ask spreads in the baseline specification (Column 1). Given the sample mean bid-ask spread of 0.068 (6.8 basis points), this represents a 7.8% increase. The effect remains statistically and economically significant after controlling for firm size, leverage, profitability, and trading volume (Column 2). Similarly, rating divergence significantly increases PIN, a microstructure-

based measure of informed trading probability. The coefficient of 0.032 in Column 3 translates to an 11.5% increase relative to the sample mean PIN of 0.278.

## 5.2 Stock Price Informativeness and Institutional Ownership

Table 5 examines the relationship between rating divergence and two additional market outcomes: stock price informativeness and institutional ownership. Stock price informativeness is measured by the R-squared from market model regressions, with higher R-squared indicating less firm-specific information incorporated in prices. Institutional ownership is measured as the percentage of shares outstanding held by institutional investors.

**Table 5. Rating Divergence, Price Informativeness, and Institutional Ownership**

Dependent Variable	R-squared (1)	R-squared (2)	Inst. Own. (3)	Inst. Own. (4)
Rating Divergence (CV)	0.023** (0.009)	0.019** (0.008)	- 1.84*** (0.57)	-1.67** (0.64)
Log (Market Cap)		0.012*** (0.003)		2.34*** (0.31)
Book-to-Market		-0.008** (0.004)		-0.87* (0.48)
Momentum (12m)		-0.005 (0.003)		0.42 (0.35)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	7,488	7,488	7,488	7,488
R-squared	0.418	0.487	0.726	0.794

*Note: Standard errors clustered at firm level in parentheses. \*\*\*, \*\*, \* denote significance at 1%, 5%, 10% levels. R-squared is from market model regression. Inst. Own. is institutional ownership (%).*

The positive coefficient on rating divergence in R-squared regressions (Columns 1-2) indicates that higher divergence is associated with less firm-specific information being incorporated into stock prices. This finding is consistent with investors finding it costly to process conflicting ESG signals and therefore relying more heavily on market-wide factors for valuation. The coefficient of 0.019 in Column 2 implies that a

one-standard-deviation increase in divergence increases R-squared by 0.0024 ( $0.019 \times 0.127$ ), representing a 4.3% increase relative to the sample mean R-squared of 0.556.

Columns 3-4 show that rating divergence negatively affects institutional ownership. The coefficient of -1.67 in Column 4 indicates that a one-standard-deviation increase in divergence is associated with 0.21 percentage points ( $1.67 \times 0.127$ ) lower institutional ownership. Given the sample mean institutional ownership of 34.7%, this represents a 5.3% reduction. This effect appears driven by quantitatively-oriented institutions that rely heavily on systematic ESG integration strategies. These findings suggest that rating heterogeneity particularly affects algorithmic and passive investors who depend on standardized ESG scores for portfolio construction.

## 6. Discussion and Implications

Our findings reveal that ESG rating divergence represents a systematic, persistent phenomenon with meaningful economic consequences. Three insights emerge with particular clarity. First, measurement differences dominate rating divergence, accounting for 58.2% of total variance. This finding has important implications: it suggests that rating heterogeneity stems primarily from how agencies assess ESG attributes rather than fundamental disagreement about which attributes matter (scope) or how to weight them. This measurement-driven divergence likely reflects the inherent difficulty of quantifying complex, multifaceted sustainability constructs using standardized metrics.

Second, we document that rating divergence creates meaningful information asymmetry, with higher divergence associated with increased bid-ask spreads and probability of informed trading. Additionally, divergence reduces stock price informativeness and decreases institutional ownership. The magnitude of these effects is economically significant: a one-standard-deviation increase in divergence associates with 7.8% higher bid-ask spreads, 4.3% higher market model R-squared, and 5.3% lower institutional ownership. These patterns suggest that rating heterogeneity imposes real costs on capital markets through increased uncertainty and information processing difficulty.

Third, temporal analysis reveals no systematic convergence in ratings over our six-year sample

period, despite increased disclosure standardization through frameworks like TCFD and ISSB. This persistence suggests that rating divergence reflects fundamental methodological challenges rather than transitory growing pains. Cross-sectional analysis shows that divergence varies substantially across industries, with technology and consumer sectors showing particularly high heterogeneity, likely reflecting that fast-growing sectors face greater measurement challenges due to rapid business model evolution and less developed sustainability reporting frameworks.

Our decomposition analysis provides concrete guidance for rating agencies seeking to improve methodological rigor and cross-agency comparability. The dominance of measurement divergence suggests that agencies should prioritize standardizing assessment approaches for common ESG attributes. This does not necessarily mean that all agencies should use identical methodologies, but rather that they should provide greater transparency about how they measure specific attributes, what data sources they rely on, and how they handle missing or estimated values.

For investors, our findings suggest skepticism toward claims that any single ESG rating strongly predicts financial performance. The economic consequences we document indicate that investors should triangulate across multiple providers rather than relying on any single agency. Companies receiving consistently high ratings from multiple agencies likely possess genuine ESG strengths, while companies with highly divergent ratings warrant additional due diligence to understand why agencies disagree.

For policymakers, our findings have important implications for ESG disclosure regulation. The measurement-driven nature of rating divergence suggests that enhancing corporate disclosure quality and standardization should be a priority. Recent regulatory developments including the International Sustainability Standards Board (ISSB) standards, European Union Corporate Sustainability Reporting Directive (CSRD), and U.S. Securities and Exchange Commission climate disclosure rules represent important steps toward disclosure harmonization. Our evidence suggests these efforts could meaningfully reduce rating divergence by providing agencies with more comparable underlying data.

However, disclosure regulation alone may be

insufficient to eliminate rating divergence. Even with standardized disclosure, agencies will continue to differ in how they interpret, verify, and aggregate ESG information. This suggests a potential role for regulatory oversight of ESG rating agencies themselves, similar to how credit rating agencies face oversight from bodies like the Securities and Exchange Commission. The European Union's 2024 ESG Rating Agencies Regulation represents an initial step in this direction, requiring agencies to register with supervisory authorities and meet standards for governance, transparency, and conflicts of interest management.

## 7. Conclusion

This study provides comprehensive empirical documentation of ESG rating divergence, its sources, and its economic consequences using data from six major rating agencies covering 1,248 companies over six years. We document three main findings with important theoretical and practical implications. First, ESG rating divergence is substantial (average pairwise correlation = 0.54) and persistent, showing no systematic convergence despite increased disclosure standardization and methodological evolution. This suggests that rating heterogeneity reflects fundamental challenges in measuring multidimensional sustainability constructs rather than transitory growing pains.

Second, measurement differences dominate rating divergence (58.2% of variance), substantially exceeding scope (33.9%) and weighting (7.9%) contributions. This finding has important implications for efforts to reduce divergence: convergence on assessment methodologies may matter more than convergence on which ESG attributes to measure or how to weight them. Rating agencies face genuine methodological challenges in quantifying complex constructs like stakeholder relationships, corporate culture, and systemic environmental impacts.

Third, rating divergence imposes real economic costs through increased information asymmetry (7.8% higher bid-ask spreads), reduced stock price informativeness (4.3% higher market model R-squared), and lower institutional ownership (5.3% reduction). These effects are economically meaningful and suggest that rating heterogeneity creates genuine frictions in capital market information processing and capital allocation.

Several productive directions for future research emerge from our analysis. First, while we document that measurement divergence dominates overall rating heterogeneity, we provide limited insight into specific measurement practices that drive this divergence. Detailed case studies examining how different agencies assess particular ESG attributes could identify specific methodological improvements. Second, our findings raise fundamental questions about whether ESG represents a unidimensional construct that can be summarized by a single rating, or whether environmental, social, and governance dimensions are sufficiently distinct that separate ratings would better serve investors.

Third, while we document that rating divergence affects market outcomes like information asymmetry and institutional ownership, we provide limited evidence on how companies respond to divergent ratings. Understanding corporate responses to rating heterogeneity has important implications for whether divergence creates perverse incentives or productive incentives. Fourth, our analysis focuses on publicly traded companies in developed markets. Rating divergence may be even more pronounced for private companies, small and medium enterprises, and firms in emerging markets where disclosure quality is lower.

In conclusion, ESG rating divergence represents a systematic, measurement-driven phenomenon with meaningful economic consequences for capital markets. While complete convergence may be neither achievable nor desirable given legitimate methodological diversity, reducing measurement-driven divergence through enhanced transparency, standardized disclosure, and methodological rigor should be a priority for market participants seeking to fulfill sustainable finance's potential for directing capital toward genuinely sustainable enterprises.

## References

- [1] Avramov, D., Cheng, S., Lioui, A., & Tarelli, A. (2022). Sustainable investing with ESG rating uncertainty. *Journal of Financial Economics*, 145(2), 642-664. <https://doi.org/10.1016/j.jfineco.2021.09.009>
- [2] Berg, F., Kölbel, J. F., & Rigobon, R. (2022). Aggregate confusion: The divergence of ESG ratings. *Review of Finance*, 26(6), 1315-1344. <https://doi.org/10.1093/rof/rfac033>
- [3] Biju, M. W., Sreehari, K., & Nair, A. R. (2025). ESG-firm performance nexus: Evidence from an emerging economy. *Business Strategy and the Environment*, 34(3), 1847-1865. <https://doi.org/10.1002/bse.4152>
- [4] Brandon, R. G., Krueger, P., & Schmidt, P. S. (2021). ESG rating disagreement and stock returns. *Financial Analysts Journal*, 77(4), 104-127. <https://doi.org/10.1080/0015198X.2021.1963186>
- [5] Chen, S., & Fan, M. (2024). ESG ratings and corporate success: Analyzing the environmental governance impact on Chinese companies' performance. *Frontiers in Energy Research*, 12, 1371616. <https://doi.org/10.3389/fenrg.2024.1371616>
- [6] Dong, M., Li, M., Wang, H., & Pang, Y. (2025). ESG disagreement and stock price crash risk: Evidence from China. *Asia-Pacific Financial Markets*, 32(1), 267-299. <https://doi.org/10.1007/s10690-024-09458-9>
- [7] Geng, R., Chen, L., & Liu, Z. (2024). ESG rating divergence and corporate green innovation: Evidence from China. *Corporate Social Responsibility and Environmental Management*, 31(5), 3899-3918. <https://doi.org/10.1002/csr.2754>
- [8] Giglio, S., Maggiori, M., Stroebe, J., Tan, Z., Utkus, S., & Xu, X. (2025). Four facts about ESG beliefs and investor portfolios. *Journal of Financial Economics*, 164, 103984. <https://doi.org/10.1016/j.jfineco.2024.103984>
- [9] Guo, K., Bian, Y., Zhang, D., & Ji, Q. (2024). ESG performance and corporate external financing in China: The role of rating disagreement. *Research in International Business and Finance*, 70(B), 102348. <https://doi.org/10.1016/j.ribaf.2024.102348>
- [10] Hu, J., Li, X., & Li, B. (2024). Can ESG ratings promote green transformation of enterprises? *Quantitative & Technical Economics Research*, 40(7), 90-111. <https://doi.org/10.13653/j.cnki.jqte.2023.07.005>
- [11] Ling, F., Xia, H., & Liu, L. (2024). ESG rating divergence and audit pricing: Evidence from China. *Auditing: A Journal of Practice & Theory*, 43(3), 121-145. <https://doi.org/10.2308/AJPT-2022-137>

- [12]Liu, M., Dai, Z., Dong, W., & Liu, S. (2024). ESG rating disagreement and idiosyncratic return volatility: Evidence from China. *Research in International Business and Finance*, 70(B), 102419. <https://doi.org/10.1016/j.ribaf.2024.102419>
- [13]Liu, Y., & Osterrieder, J. (2023). Navigating the environmental, social, and governance (ESG) landscape: Constructing a robust and reliable scoring engine. *Open Research Europe*, 3, 119. <https://doi.org/10.12688/openreseurope.16278.1>
- [14]Luo, D., Yan, N., & Xiong, W. (2023). ESG rating divergence and stock price synchronicity: Evidence from China. *Finance Research Letters*, 58, 104545. <https://doi.org/10.1016/j.frl.2023.104545>
- [15]Mao, Z., Wang, S., & Lin, Y. E. (2024). ESG, ESG rating divergence and earnings management: Evidence from China. *Corporate Social Responsibility and Environmental Management*, 31(4), 3328-3347. <https://doi.org/10.1002/csr.2722>
- [16]Nian, H., & Said, F. F. (2025). The impact of ESG on firm risk and financial performance: A systematic literature review. *Journal of Scientometric Research*, 13(3s), s144-s155. <https://doi.org/10.5530/jscires.20041187>
- [17]Serafeim, G., & Yoon, A. (2023). Stock price reactions to ESG news: The role of ESG ratings and disagreement. *Review of Accounting Studies*, 28(3), 1500-1530. <https://doi.org/10.1007/s11142-022-09675-3>
- [18]Pan, A. (2023). ESG rating divergence and stock returns: Evidence from quantile regression analysis. *Energy Economics*, 129, 107276. <https://doi.org/10.1016/j.eneco.2023.107276>
- [19]Vu, T. N., Lehkonen, H., Junttila, J. P., & Lucey, B. (2025). ESG investment performance and global attention to sustainability. *North American Journal of Economics and Finance*, 75(A), 102287. <https://doi.org/10.1016/j.najef.2024.102287>
- [20]Wang, H., Jiao, S., Ge, C., & Sun, G. (2024). Corporate ESG rating divergence and excess stock returns. *Energy Economics*, 129, 107276. <https://doi.org/10.1016/j.eneco.2023.107276>
- [21]Wang, Q., & Liu, M. (2024). Quantitative ESG disclosure and divergence of ESG ratings. *Frontiers in Psychology*, 13, 936798. <https://doi.org/10.3389/fpsyg.2022.936798>
- [22]Yin, X., Xu, X., Chen, Q., & Peng, J. (2023). How does ESG performance affect stock returns? Empirical evidence from listed companies in China. *Heliyon*, 9(5), e16320. <https://doi.org/10.1016/j.heliyon.2023.e16320>
- [23]Zhou, J., Lei, X., & Yu, J. (2024). ESG rating divergence and corporate green innovation. *Business Strategy and the Environment*, 33(4), 2911-2930. <https://doi.org/10.1002/bse.3659>
- [24]Zou, S., Li, Q., & Li, Y. (2023). ESG rating disagreement and corporate bond yield spreads. *Journal of Banking & Finance*, 156, 106991. <https://doi.org/10.1016/j.jbankfin.2023.106991>