

## Financial Resilience as Mediator in ESG Risk Rating, Leverage and Profitability Toward Firm Value

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### ABSTRACT (10pt)

This study examines the effects of ESG Risk Rating, leverage, and profitability on firm value, and tests whether financial resilience (Economic Value Added/EVA) mediates these relationships among firms in the IDX ESG Leaders index during 2020–2024. The study employs quantitative panel-data regression with purposive sampling and balanced panel observations. Model selection is conducted using Chow, Hausman, and Lagrange Multiplier (LM) tests. Mediation is tested using the Sobel test. ESG Risk Rating, leverage, and profitability significantly affect firm value. ESG Risk Rating and leverage significantly affect EVA, while profitability does not significantly affect EVA. EVA significantly affects firm value. Sobel results confirm that EVA mediates the effects of ESG Risk Rating and leverage on firm value, but does not mediate profitability's effect on firm value. Financial resilience (EVA) functions as an intervening mechanism for ESG Risk Rating and leverage in explaining firm value in IDX ESG Leaders firms, while profitability influences firm value primarily through direct effects rather than via EVA.

**Keywords:** ESG Risk rating; EVA; Firm Value; ROA; DER

### INTRODUCTION

The transition toward sustainable finance has increased the relevance of ESG information in investment decisions and corporate valuation. In Indonesia, firms included in the IDX ESG Leaders index are generally perceived as having stronger sustainability profiles and lower ESG-related risk exposures. This index serves as a benchmark for sustainability-oriented investors, making it an appropriate setting to examine how ESG factors interact with traditional financial metrics in determining firm value. However, market valuation does not always move consistently with sustainability signals. Evidence from IDX ESG Leaders firms indicates that firm value---commonly proxied by Price to Book Value (PBV)---can decline even when sustainability profiles remain relatively favorable, reflecting the possibility that investors continue to weigh conventional financial fundamentals heavily in pricing decisions. This phenomenon raises important questions about the mechanisms through which sustainability-related information is ultimately reflected in market valuation.

Empirically, prior studies in Indonesia and international settings report mixed results regarding ESG and firm value. For example, ESG disclosure may be valued by investors as a signal of long-term governance quality and sustainability orientation, which can strengthen valuation. Yet, studies focusing on ESG risk in IDX ESG Leaders also show that ESG risk does not necessarily translate into immediate firm-value changes, especially when markets are still in transition toward mature sustainability integration and when investors emphasize financial indicators such as leverage and profitability as primary valuation anchors (Aditya & Hasnawati, 2025; Fachrezi et al., 2024; Jiayi et al., 2024; Mahmood et al., 2025).

From a corporate-finance perspective, leverage and profitability remain central drivers of firm value. Leverage (commonly proxied by Debt-to-Equity Ratio/DER) may raise firm value if debt is managed optimally, yet excessive leverage can increase financial risk and reduce investor confidence. Similarly, profitability (ROA) provides a direct signal of operational efficiency and earning capacity, often becoming the strongest short-term determinant of valuation. Empirical results in Indonesia also suggest that leverage can weaken firm value when it elevates risk beyond investors' tolerance (Alwan & Risman, 2023; Khalisma & Risman, 2025).

This study adds an intervening mechanism that is closer to value creation logic: financial resilience measured by EVA, which captures the ability of a firm to generate economic profit after accounting for the cost of capital. EVA is conceptually relevant because investors may reward firms not only for accounting profits (ROA) but also for value creation beyond capital charges. Therefore, EVA may function as a transmission channel through which ESG risk management and capital structure decisions shape firm value.

Accordingly, the objective of this study is to analyze (1) the direct effects of ESG Risk Rating, leverage, and profitability on firm value (PBV), (2) the effects of ESG Risk Rating, leverage, and profitability on EVA, (3) the effect of EVA on firm value, and (4) the mediating role of EVA in linking ESG Risk Rating, leverage, and profitability to firm value among IDX ESG Leaders firms during 2020–2024.

## **Literature Review**

### **Stakeholder Theory**

Stakeholder theory posits that a company should not only be accountable to shareholders but also to other stakeholders such as customers, employees, creditors, and society at large. According to Freeman (1984), the success of a firm is dependent on its ability to manage the interests of diverse stakeholder groups, which are affected by the company's operations. This theory provides a strong foundation for incorporating sustainability practices such as environmental, social, and governance (ESG) initiatives into corporate strategy.

In this study, ESG Risk Rating serves as a proxy for how a company manages its non-financial risks and stakeholder relationships. ESG is seen as a measure of long-term sustainability and reputational resilience. According to Risman and Herlina (2020), ESG risk management can signal transparency, ethical practices, and operational responsibility, which in turn affect investor perception and firm value.

Thus, stakeholder theory supports the notion that lower ESG risk (i.e., better ESG performance) enhances stakeholder trust and reduces risk premiums, thereby potentially increasing firm valuation (PBV). This theory underpins the pathway from ESG Risk Rating → PBV, with Economic Value Added (EVA) acting as a possible mediator in translating stakeholder value into financial returns.

### **Signaling Theory**

Signaling theory explains how companies use observable indicators to convey private information to investors, especially in markets characterized by asymmetric information (Spence, 1973). Financial indicators such as profitability are considered credible signals of firm quality and future performance.

Return on Assets (ROA) is used in this study to represent profitability. According to Brigham and Houston (2014), high ROA signals managerial effectiveness in utilizing assets to generate earnings. This is consistent with the argument by Risman & Subhani (2021), who found that profitability plays a critical role in conveying positive signals to the capital market, ultimately impacting firm value.

The signaling mechanism assumes that firms with superior profitability are more transparent and better managed, which increases market confidence and may elevate PBV. EVA is tested as a mediating variable to determine whether profitability truly translates into value creation after capital costs.

### **Modigliani-Miller Theory II**

Modigliani and Miller's Proposition II (1958) contends that under certain assumptions, the cost of equity increases with financial leverage due to higher financial risk, yet firm value remains unchanged. However, in real markets with taxes, bankruptcy costs, and agency conflicts, leverage can both positively and negatively influence firm value depending on its optimality.

In this research, Debt-to-Equity Ratio (DER) is used to measure leverage. According to Adhitya and Hermuningsih (2020), higher DER reflects a reliance on external funding which can be interpreted either as confidence in growth or as financial distress if excessive.

The MM II theory explains how increased leverage may impact firm value by altering the cost of equity and risk perception. EVA is used to test whether leverage leads to real economic value creation or merely accounting-based effects on PBV.

### **Firm Value (PBV)**

Price to Book Value (PBV) reflects how the market values a firm relative to its book equity. It is influenced by both financial fundamentals and non-financial factors such as ESG perception. According to Sugiono and Untung (2016), a higher PBV indicates market optimism about a firm's future profitability and risk management.

In this study, PBV is the ultimate outcome variable influenced by ESG, DER, and ROA. It encapsulates the market's aggregate evaluation of firm performance and is consistent with the theoretical expectations of all aforementioned theories: stakeholder value, financial signaling, capital structure discipline, and agency alignment.

## **METHOD**

Data regression. The population comprises firms included in the IDX ESG Leaders index on the Indonesia Stock Exchange (IDX) during 2020–2024, selected because these firms represent sustainability-screened public companies, making them suitable for examining the value relevance of ESG risk information alongside financial fundamentals.

The sample is determined through purposive sampling based on data availability and completeness. The selection criteria include: (1) firms consistently listed in IDX ESG Leaders throughout 2020–2024, (2) firms publishing complete annual reports/financial statements for the observation period, and (3) availability of ESG Risk Rating data and required inputs for EVA calculation. Based on these criteria, the final sample consists of 15 firms over five years, yielding a balanced panel of 75 firm-year observations.

This study uses secondary data collected from annual reports and financial statements published by the IDX and company websites. The variables include firm value proxied by

Price-to-Book Value (PBV), ESG risk proxied by ESG Risk Rating (risk-based rating used in the IDX ESG Leaders assessment), leverage proxied by Debt-to-Equity Ratio (DER), profitability proxied by Return on Assets (ROA), and financial resilience proxied by Economic Value Added (EVA). PBV is computed as market price per share divided by book value per share; DER is measured as total debt (or liabilities) relative to total equity; ROA is measured as net income divided by total assets.

The analysis applies a three-equation panel framework: (1) PBV regressed on ESG Risk Rating, DER, and ROA; (2) EVA regressed on ESG Risk Rating, DER, and ROA; and (3) PBV regressed on ESG Risk Rating, DER, ROA, and EVA. Panel model selection is conducted by comparing the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) using the Chow test, Hausman test, and Langrange Multiplier test. Based on these tests, estimation is conducted using the Random Effect Model (REM).

Hypotheses are tested using the t-test at a 5% significance level, while model feasibility is assessed using the F-test and Adjusted R-squared. The mediating role of EVA is evaluated using a path-analytic logic and the Sobel test to assess the significance of indirect effects. All computations and estimations are performed using EViews.

## RESULTS AND DISCUSSION

### Descriptive statistics

The descriptive statistics presented in Table 1 report the mean, median, maximum, minimum, and standard deviation for each research variable. Firm value, proxied by PBV, records a mean of 2.0836 with values ranging from 0.1600 to 7.3017. The standard deviation of 1.7043 indicates a relatively wide dispersion in market valuation across firms and over time, suggesting that investors do not assign uniform valuation multiples even within a sustainability-screened sample.

For the independent variables, ESG Risk Rating shows a mean of 21.4173, with a minimum of 11.3100 and a maximum of 42.4100. The standard deviation of 5.6922 suggests noticeable heterogeneity in ESG risk profiles among sampled firms. Leverage (DER) has a mean of 1.7921, ranging from 0.0900 to 6.9000, with a standard deviation of 1.7731, indicating substantial variation in capital structure choices and reliance on debt financing. Profitability (ROA) records a mean of 0.0541, with values spanning from -0.0314 to 0.1667 and a standard deviation of 0.0339. This pattern implies differences in firms' operational efficiency and earnings capacity, including some periods where profitability turns negative.

Regarding the mediating variable, Economic Value Added (EVA) records a mean of 5,133,441.3 and a median of 730,521, with a minimum of -6,426,088.1 and a maximum of 58,020,573. The standard deviation of 12,503,476 indicates high dispersion, reflecting substantial differences in economic profit generation after considering capital costs. The presence of negative EVA values suggests that some firm-year observations did not generate economic value beyond their capital charge. Overall, the descriptive results demonstrate sufficient variability across all variables, supporting the appropriateness of applying panel data regression to examine the proposed relationships.

**Table 1. Descriptive Statistic results**

PBV	ESG	ROA	DER	EVA
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Mean	2.083622	21.41733	0.054094	1.792133	5,133,441.3
Median	1.400000	21.03000	0.047500	1.070000	730,521
Maximum	7.301729	42.41000	0.166700	6.900000	58,020,573
Minimum	0.160000	11.31000	-0.031400	0.090000	-6,426,088.1
Std. Dev.	1.704306	5.692204	0.033860	1.773103	12,503,476
Probability	0.000001	0.166177	0.057028	0.000002	0.000000
Observations	75	75	75	75	75

Source: Processed data using Eviews

To determine the most appropriate panel estimator, this study applies three standard specification tests for each regression equation: Chow test (CEM vs FEM), Hausman test (FEM vs REM), and Breusch–Pagan Lagrange Multiplier (LM) test (CEM vs REM). The decision rule follows the 5% significance level.

**Table 2. Regression Model I result**

Effect Tests	Criteria	Statistic	Results (Prob.)
Chow Test	<i>Cross-section Chi-Square</i>	73.036349	0.0000
Hausman Test	<i>Cross-Section Random</i>	1.975968	0.5774
Lagrange Multiplier (Breusch-Pagan)	<i>Cross-Section Breusch Pagan</i>	38.01905	0.0000

Source: Processed data using Eviews

Chow test yields a cross-section Chi-square statistic of 73.036349 with  $p = 0.0000$ , indicating statistically significant cross-sectional heterogeneity; thus, the pooled specification (CEM) is rejected in favor of the Fixed Effects Model (FEM). Next, Hausman test reports a cross-section random statistic of 1.975968 with  $p = 0.5774$ , implying that the difference between FEM and REM estimates is not systematic; therefore, the Random Effects Model (REM) is preferred. Consistently, LM test produces a statistic of 38.01905 with  $p = 0.0000$ , rejecting CEM in favor of REM. Accordingly, REM is selected as the final estimator for Model I.

**Table 3. Regression Model II result**

Effect Tests	Criteria	Statistic	Results (Prob.)
Chow Test	<i>Cross-section Chi-Square</i>	91.269564	0.0000
Hausman Test	<i>Cross-Section Random</i>	4.394137	0.2219
Lagrange Multiplier (Breusch-Pagan)	<i>Cross-Section Breusch Pagan</i>	47.64995	0.0000

Source: Processed data using Eviews

Model II, the Chow test shows a cross-section Chi-square statistic of 91.269564 with  $p = 0.0000$ , again rejecting CEM and suggesting FEM as a better alternative at this stage. The

Hausman test yields a **statistic** of 4.394137 with  $p = 0.2219$ , supporting the use of REM over FEM. The LM test further confirms this choice with a statistic of 47.64995 and  $p = 0.0000$ , indicating that REM outperforms the pooled model. Hence, REM is adopted as the final estimator for Model II.

**Table 4. Regression Model III result**

Effect Tests	Criteria	Statistic	Results (Prob.)
Chow Test	<i>Cross-section Chi-Square</i>	68.653855	0.0000
Hausman Test	<i>Cross-Section Random</i>	1.021327	0.9065
Lagrange Multiplier (Breusch-Pagan)	<i>Cross-Section Breusch Pagan</i>	35.65912	0.0000

Source: Processed data using Eviews

Similarly, Model III’s Chow test produces a cross-section Chi-square statistic of 68.653855 with  $p = 0.0000$ , rejecting CEM in favor of FEM. However, Hausman test indicates a cross-section random statistic of 1.021327 with  $p = 0.9065$ , implying that REM is more appropriate than FEM. This decision is reinforced by LM test statistic of 35.65912 with  $p = 0.0000$ , which rejects CEM in favor of REM. Therefore, REM is selected as the final estimator for Model III.

Across all three regression equations, the combined evidence from the Chow, Hausman, and LM tests indicates that the Random Effects Model (REM) provides the most appropriate specification for inference in this study.

To Examine the direct effects of ESG Risk Rating, Leverage, Profitability on Firm Value, panel regression analysis was conducted using the Random Effect Model. The results of firm value equation are summarized in table 5.

**Tabel 5. Output Equation Regression I**

Variabel	Koefisien	t-Statistik	Prob.	Result
<i>ESG Risk Rating (X1)</i>	0.051998	3.191601	0.0021	Positif Signifcant
<i>Leverage (X2)</i>	0.443766	3.993020	0.0002	Positif Signifcant
<i>Profitabilitas (X3)</i>	5.954921	2.961554	0.0042	Positif Signifcant
C	-1.053124	-2.669170	0.0094	
<i>R Square</i>	0.327849			
<i>Adjusted R-Square</i>	0.299448			
<i>F-Statistic</i>	11.54368			
<i>Prob (F-Statistic)</i>	0.000003			Simultan Signifcant

Source: Processed data using Eviews

**Equation I: Determinants of Firm Value (PBV)**

Table 5 presents the estimation results for Equation I, where firm value (PBV) is regressed on ESG Risk Rating (X1), leverage (DER/X2), and profitability (ROA/X3). The results show that ESG Risk Rating has a positive and significant coefficient ( $\beta = 0.051998$ ,  $t =$

3.191601,  $p = 0.0021$ ). Leverage (DER) is also positive and significant ( $\beta = 0.443766$ ,  $t = 3.993020$ ,  $p = 0.0002$ ), and profitability (ROA) remains positive and significant ( $\beta = 5.954921$ ,  $t = 2.961554$ ,  $p = 0.0042$ ).

In terms of model fit, the regression explains a moderate portion of variation in PBV ( $R^2 = 0.327849$ ; Adjusted  $R^2 = 0.299448$ ). The model is simultaneously significant (F-statistic = 11.54368; Prob(F) = 0.000003), indicating that the three predictors jointly contribute to explaining PBV.

**Tabel 6. Output Equation Regression II**

Variabel	Koefisien	t-Statistik	Prob.	Result
<i>ESG Risk Rating (X1)</i>	0.084752	2.870471	0.0054	Positif Signifikan
<i>Leverage (X2)</i>	0.898851	4.302275	0.0001	Positif Signifikan
<i>Profitabilitas (X3)</i>	3.827022	1.083245	0.2824	Tidak Signifikan
C	-1.141383	-1.578064	0.1190	
<i>R Square</i>	0.282972			
<i>Adjusted R-Square</i>	0.252676			
<i>F-Statistic</i>	9.339969			
<i>Prob (F-Statistic)</i>	0.000028			Simultan Signifikan

Source: Processed data using Eviews

### Equation II: Determinants of Financial Resilience (EVA)

Table 6 reports Equation II, where financial resilience (EVA) is regressed on ESG Risk Rating, DER, and ROA. The results indicate that ESG Risk Rating is positive and significant ( $\beta = 0.084752$ ,  $t = 2.870471$ ,  $p = 0.0054$ ) and DER is likewise positive and significant ( $\beta = 0.898851$ ,  $t = 4.302275$ ,  $p = 0.0001$ ). In contrast, ROA is not statistically significant in explaining EVA ( $\beta = 3.827022$ ,  $t = 1.083245$ ,  $p = 0.2824$ ).

The explanatory power is moderate ( $R^2 = 0.282972$ ; Adjusted  $R^2 = 0.252676$ ). The model remains jointly significant (F-statistic = 9.339969; Prob(F) = 0.000028), supporting the adequacy of the equation in explaining EVA at the 5% level.

**Tabel 7. Output Equation Regression III**

Variabel	Koefisien	t-Statistik	Prob.	Kesimpulan
<i>ESG Risk Rating (X1)</i>	0.039094	2.292125	0.0249	Positif Signifikan
<i>Leverage (X2)</i>	0.318425	2.586253	0.0118	Positif Signifikan
<i>Profitabilitas (X3)</i>	5.333923	2.667578	0.0095	Positif Signifikan
Financial Resilience (M)	0.145345	2.248146	0.0277	Positif Signifikan
C	-0.871655	-2.193700	0.0316	
<i>R Square</i>	0.374649			
<i>Adjusted R-Square</i>	0.338915			
<i>F-Statistic</i>	10.48430			
<i>Prob (F-Statistic)</i>	0.000001			Simultan Signifikan

### Equation III: Firm Value (PBV) with EVA as Mediator

Table 7 presents Equation III, which estimates PBV as a function of ESG Risk Rating, DER, ROA, and financial resilience (EVA/M). The results show that ESG Risk Rating remains positive and significant ( $\beta = 0.030904$ ,  $t = 2.292125$ ,  $p = 0.0249$ ). DER is also positive and significant ( $\beta = 0.318425$ ,  $t = 2.586253$ ,  $p = 0.0118$ ), as is ROA ( $\beta = 5.333923$ ,  $t = 2.667578$ ,  $p = 0.0095$ ). Importantly, EVA exhibits a positive and significant association with PBV ( $\beta = 0.145345$ ,  $t = 2.248146$ ,  $p = 0.0277$ ), indicating that EVA contributes additional explanatory power to firm value when included alongside the core predictors.

Model III shows improved explanatory power relative to Equation I ( $R^2 = 0.374649$ ; Adjusted  $R^2 = 0.338915$ ) and is simultaneously significant (F-statistic = 10.48430; Prob(F) = 0.000001). These results provide the regression-based foundation required for subsequent mediation inference (tested using the Sobel procedure in the next section), with EVA entering Equation III significantly while also being explained by key predictors in Equation II.

**Tabel 8. Sobel Tests**

Variabel	P-value	Result
ESG=>EVA=>PBV	0,01441797	Mediated
DER=>EVA=>PBV	0,01783292	Mediated
ROA=>EVA=>PBV	0,0907955	Not Mediated

Table 8 reports Sobel test results used to evaluate whether Economic Value Added (EVA) serves as a mediating mechanism linking ESG Risk Rating, leverage (DER), and profitability (ROA) to firm value (PBV). Using a 5% significance threshold, the Sobel p-values indicate that the indirect effect of ESG Risk Rating on PBV through EVA is statistically significant ( $p = 0.01441797$ ), supporting the presence of mediation. Likewise, the indirect effect of DER on PBV via EVA is also significant ( $p = 0.01783292$ ), confirming that EVA transmits part of the leverage effect into market valuation.

In contrast, the Sobel test shows that the indirect pathway  $ROA \rightarrow EVA \rightarrow PBV$  is not statistically supported ( $p = 0.0907955$ ), implying that EVA does not mediate the relationship between profitability and firm value in this model. Overall, these findings suggest that EVA functions as a value-transmission channel for ESG Risk Rating and leverage, but not for profitability, consistent with the regression evidence that ROA does not significantly explain EVA in Equation II.

The findings suggest that valuation among sustainability-screened firms is shaped by both ESG-related risk signals and conventional financial fundamentals. The significant association between ESG Risk Rating and PBV indicates that investors incorporate ESG-related risk information into valuation decisions even within an ESG-screened index. This result is consistent with the view that ESG-related risks and their management can influence perceived long-term resilience and expected cash-flow stability.

Leverage significantly relates to PBV, implying that debt financing is valued when perceived as supporting productive investment and scalable growth. This aligns with the interpretation that, within the observed sample, investors may view leverage as a financing

strategy rather than purely as risk, particularly when firms are sustainability-screened and generally expected to maintain governance quality.

Profitability also relates positively to PBV, reinforcing the market's sensitivity to firms' ability to generate returns from assets. However, the non-significant ROA–EVA relationship underscores a conceptual distinction between accounting profitability and economic value creation. While ROA captures accounting efficiency, EVA incorporates capital costs; thus, firms may display strong ROA without generating meaningful economic profit when capital charges remain substantial. This explains why ROA directly relates to PBV but does not transmit through EVA in this sample.

Importantly, EVA is positively associated with PBV and mediates the effects of ESG Risk Rating and leverage on firm value. This indicates that the market response to ESG risk management and financing decisions is stronger when these factors translate into economic profit after capital costs. The mediation evidence aligns with broader findings that financial performance can serve as a pathway through which strategic initiatives influence sustainability-oriented outcomes (Siswanti et al., 2024). In a value-based setting, EVA acts as a mechanism that converts risk management quality and capital structure decisions into market-relevant value signals.

## CONCLUSION

This study addresses the ongoing debate on whether ESG information is value-relevant when ESG is measured using risk-based ratings rather than disclosure indices, particularly within sustainability-screened samples. Prior studies report mixed evidence and often focus on direct valuation effects, while paying limited attention to the mechanism through which ESG-related risk and financial fundamentals are translated into firm value. Moreover, little evidence is available for emerging markets such as Indonesia, especially for firms included in the IDX ESG Leaders index, where sustainability orientation is already embedded.

Using a three-equation panel framework, this study finds that ESG Risk Rating, leverage (DER), and profitability (ROA) are positively associated with firm value (PBV). ESG Risk Rating and DER also exhibit significant positive relationships with Economic Value Added (EVA), whereas ROA does not significantly explain EVA. EVA itself is positively related to PBV and mediates the effects of ESG Risk Rating and DER on firm value, but does not mediate the ROA–PBV relationship. These findings indicate that economic value creation after capital costs constitutes an important channel through which ESG-related risk management and financing decisions become reflected in market valuation.

The results imply that investors in sustainability-screened firms do not respond to ESG orientation alone, but also to the firm's ability to convert ESG risk management and capital structure decisions into economic profit. This supports the value-based management perspective that EVA conveys information beyond accounting profitability and can be reflected in firm valuation (Risman, 2021). At the same time, the findings highlight the importance of carefully interpreting ESG Risk Rating effects, given the documented divergence and measurement complexity of ESG ratings (Berg et al., 2022).

To strengthen firm value, managers of ESG-oriented firms should focus not only on reducing ESG-related risk exposure, but also on ensuring that sustainability and financing strategies enhance EVA, for example through efficient capital allocation and disciplined cost-of-

capital management. From a research and policy perspective, integrating value-based performance measures such as EVA into ESG analysis can help clarify when sustainability efforts are likely to be rewarded by the market, consistent with recent sustainability research emphasizing performance-based transmission channels (Siswanti et al., 2024).

Future studies may extend this analysis by incorporating alternative ESG measures or providers, additional control variables, and broader samples beyond index constituents to improve generalizability. Methodologically, future research could apply dynamic panel techniques or robustness tests to address potential endogeneity. Further exploration of alternative value-creation proxies may also enrich understanding of how sustainability-related information is priced in emerging capital markets.

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