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How can transparency affect stock price informativeness? Evidence from 24 emerging markets

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ABSTRACT

This study investigates how internal and external transparency influence stock price informativeness in emerging markets. Internal transparency is measured through corporate governance and product market competition, while external transparency is proxied by the Press Freedom Index and analyst following. The analysis covers 1,256 listed firms across 24 emerging economies from 2002 to 2022, employing pooled OLS, fixed effects, 2SLS, and DGMM estimators. Robustness checks include replacing the Press Freedom Index with the Worldwide Governance Indicator and excluding India and South Korea to mitigate sample bias. Results show that corporate governance significantly enhances stock price informativeness: a one-unit increase in corporate governance score raises informativeness by 0.0032–0.0054%, with significance levels ranging from 1% to 10%. In contrast, higher external transparency reduces informativeness, with press freedom decreasing it by 0.0054% and the Worldwide Governance Indicator by 0.11–0.18%, significant at the 1%–10% levels. The interaction between corporate governance and press freedom reveals a substitutive effect, suggesting that strong governance mitigates reliance on external transparency in shaping informative stock prices. These findings offer policy insights on striking a balance between governance and transparency mechanisms. They also align with UN SDG 12 by encouraging sustainable practices and greater transparency for informed decision-making.

Contribution/ Originality: This study advances the literature by integrating internal and external transparency mechanisms to explain stock price informativeness in emerging markets. It shows that corporate governance enhances informativeness, while press freedom under weak oversight creates noise. Their substitutive interaction underscores the complementary importance of both mechanisms for market efficiency.

1. INTRODUCTION

Stock price informativeness reflects the level at which stock prices incorporate relevant and reliable information about firms promptly (Chen, Wang, & Wang, 2021) and is fundamental to market efficiency. An informative stock price is defined by its ability to reflect both public and private information, where public information tends to drive market-wide co-movement of stock prices. In contrast, private information introduces firm-specific variation (Wang, Li, & Forst, 2021). It is crucial to ensure the stock price is informative as it mitigates information asymmetry between

top management and outside investors, lowers the cost of capital, improves market liquidity, and enhances investors' ability to gauge firm value (Rasheed & Kouser, 2020; Smith, 2024).

Past studies have shown that strong institutional environments in developed markets, such as vigorous enforcement of disclosure rules and protection of investor property rights, promote the integration of firm-level information into stock prices (Bui, Doan, & Kang, 2020). For instance, Barnawi and Abdullah (2023) and Liu, Li, and Lin (2023) highlighted that in developed markets, strong corporate governance enhances the efficient flow of firm-specific information to external stakeholders, while product market competition disciplines managers through market forces. External transparency mechanisms, such as analyst following and press freedom, further strengthen the information environment by ensuring broad dissemination of value-relevant news, which reaches market participants efficiently (Dang, Dang, Hoang, Nguyen, & Phan, 2020; Kim, Zhang, Li, & Tian, 2014).

Nevertheless, emerging markets often lack such institutional strength. Weaker governance, disclosure enforcement, and market liquidity lead to higher information asymmetry, discouraging firms from disclosing sensitive information (Akisik, 2008; Kearney, 2012; Khandelwal, Kumar, Tripathi, & Madhavan, 2023; Lye, Khong, & Hooy, 2019; Thanatawee, 2021). As a result, emerging markets tend to display higher stock price synchronicity (Chaudhary, 2022; Yang, Zhang, & Li, 2023) and substantially lower trading volumes. As illustrated in Figure 1, the average traded volume in emerging markets is markedly lower than in developed markets, signaling weaker market liquidity. Reduced trading activity not only reflects lower liquidity but also constrains the absorption of firm-related information reflected in stock prices, consequently diminishing the informativeness of stock prices, undermining market efficiency and investor confidence (Chen, Lu, & Zhang, 2023).

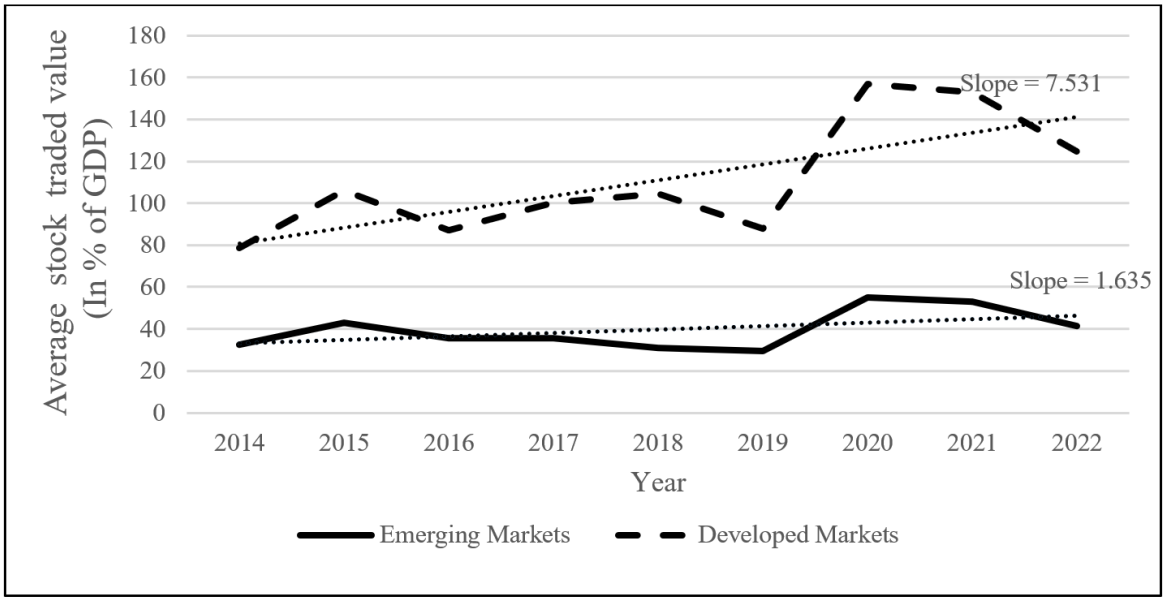

Figure 1. Liquidity and stock price informativeness.

Source: The World Bank (2024).

Understanding the mechanisms that shape transparency in emerging markets is essential for both academics and policymakers. Drawing on the information environment perspective (Bushman, Chen, Engel, & Smith, 2004), this study proposes a two-faceted transparency framework integrating external transparency mechanisms (Rasheed & Kouser, 2020), namely, firm-level corporate governance and product market competition, with external transparency mechanisms, analyst following, and press freedom, to account for variation in stock price informativeness. Both sets of mechanisms are particularly relevant to understanding how information is reflected in stock prices. Using panel data from 24 emerging markets, spanning the period from 2002 to 2022, this study examines both the direct and interactive effects of these mechanisms while accounting for the institutional boundary conditions that shape their

impact in emerging markets. This integrated approach closes the transparency gap in emerging markets by linking information generation and the dissemination of firm-specific information into stock prices.

2. LITERATURE REVIEW

2.1. Stock Price Informativeness

Generally, the asset pricing model treats unsystematic or firm-specific risk as diversifiable. Hence, the market should not price unsystematic risk, and investors will not receive compensation for holding unsystematic risk. However, one stream of research challenges this assumption by highlighting that firm-specific information could enhance stock price informativeness. For instance, Gao (2018) and Ng and Rezaee (2020) argued that firm-specific information, such as company events or developments, can still influence stock prices. However, systematic risks arise due to market-wide factors or macroeconomic risks; firm-specific information can interact with systematic risk when broader factors amplify or diminish the relevance of firm information (Abedifar, Bouslah, & Zheng, 2021). Stock price synchronicity is commonly employed to assess the informativeness of stock prices. Low synchronicity in stock prices indicates high informativeness, and vice versa. With a strong institutional environment, the information market is transparent, allowing for the disclosure of firm-related information; as a result, stock prices demonstrate lower synchronicity with market trends. Previous studies have consistently demonstrated varying levels of stock price informativeness across countries, with developed markets often exhibiting greater stock price informativeness than emerging markets (Zheng, Han, & Yin, 2019).

The importance of information transparency in enhancing stock price informativeness has been extensively studied by Chung, Chiu, and Huang (2021) and Watanabe, Imhof, and Tartaroglu (2019). Information transparency ensures that all relevant information is available to investors, enabling them to make more informed decisions. This transparency can be generated internally at the firm level or externally through regulatory or market oversight. Internal and external transparency act as key drivers in monitoring, ensuring that more firm-specific information is reflected in stock prices, as emphasised by Kim et al. (2014). Advancing the information setting through enhanced transparency not only aids in more accurate pricing of firm-specific risks but also increases stock price informativeness by reducing stock price synchronicity. Furthermore, Huang, Pereira, and Wang (2022) argued that corporate transparency is a complex system involving the production, validation, and dissemination of information to external investors. As a result, the corporate transparency system, reinforced by internal and external transparency mechanisms, helps to strengthen the integration of firm-level information into stock valuations, ensuring investors value the firm accurately and make informed decisions.

2.2. Corporate Governance Mechanisms and Stock Price Informativeness

2.2.1. Firm-Level Corporate Governance and Stock Price Informativeness

Firm-level corporate governance enables boards to set the direction for the firm, the CEO to develop a strategic plan, and management to translate the plan into action. The key aspects of firm-level corporate governance often involve the board of directors, its structural makeup, remuneration, compensation packages, and the audit. Fulfilling all these corporate governance aspects helps align shareholders' interests with management (Donaldson, 1990). Agency theory is often used to describe the relationship between managers and shareholders; at the same time, corporate governance helps solve the agency problem between the agent and principal (Khan, 2011). Agency theory addresses the possible divergence of interest between the principal (the shareholder) and the agent (the manager). It also establishes a framework for governance structures to reduce conflicts of interest by requiring the agents to uphold their responsibilities and be accountable for serving shareholders' interests. With a robust corporate governance framework, the board of directors oversees and guides the CEO, who in turn performs the duties assigned by the board. Shareholders externally monitor the proper conduct of firm management, ensuring the firm is on the correct path to prosperity.

According to Kabir, Sobhani, Omar, and Mohamad (2019), corporate governance at the firm level is essential for ensuring that businesses provide reliable and accurate information, lower information production costs, encourage financial analysts to disseminate firm information, and hence, enhance the overall transparency of the firm. Previous research has related corporate governance to stock price informativeness, emphasizing that well-functioning governance supports transparent reporting and social responsibility initiatives (Liu & Zhang, 2017). The release of firm-related information to the public enhances the informativeness of stock prices, helping investors make informed decisions. Evidence from Asian markets suggests that stronger corporate governance is associated with enhanced firm disclosure. For instance, Habib and Jiang (2015) reported that governance improvements in China improve the accuracy of financial disclosure and minimize information asymmetry. Likewise, Barnawi and Abdullah (2023) also showed consistent findings that indicate that governance reforms in emerging Asian economies significantly improve disclosure quality and market transparency. Based on this study background, the association between firm-level governance mechanisms and the informativeness of stock prices is as follows:

H_1: There is a significant positive relationship between firm-level corporate governance and stock price informativeness.

2.2.2. Product Market Competition and Stock Price Informativeness

Prior studies recognize product market competition as a governance mechanism that promotes value-maximizing behavior by firm managers. Additionally, product market competition has been proven to be an external disciplinary mechanism that limits managers from pursuing their own goals. Although product market competition functions as an external disciplinary force, it is still categorized under the broad category of corporate governance mechanisms, as competition is an external constraint that limits managers from pursuing their own goals, aligning their focus with shareholders, motivating them to be accountable, and thus disclosing firm information. Choua, Ng, Sibilkov, and Wang (2011) even highlighted that competition can substitute conventional corporate governance structures, thereby employing external pressure to guarantee internal supervision, effective management performance, and corporate accountability. Product market competition is often associated with the theory of proprietary costs. According to the proprietary cost theory, managers evaluate the costs against the value of disclosing proprietary information and frequently withhold it if it poses a threat to the corporation. A similar interpretation was found in Tang and Chen's (2020) study, suggesting that disclosing firm-specific information is the primary means of differentiating the firm from its competitors and attracting investors. However, when the competition intensifies, firms withhold sensitive information to lower the proprietary cost and protect their competitive advantage. According to the theory, managers assess the costs and benefits of disclosing proprietary information and often withhold it if it poses a threat to the corporation.

Prior studies offer mixed results concerning the relationship between product market competition and the informativeness of stock prices. While some suggest that competition encourages disclosure, others (Acito, Folsom, & Zhao, 2021; Karuna, 2023) argue that firms withhold information to avoid proprietary costs and protect their competitive advantage. Proprietary cost theory (Verrecchia, 1983) holds that managers restrict value-relevant disclosure when it could harm their market position. In developed markets, strong legal protections mitigate this risk, but in emerging markets, weaker enforcement and higher imitation threats amplify the cost of disclosure. Under such conditions, intense competition increases managers' incentives to limit voluntary disclosure, thereby reducing the absorption of firm-specific information into stock prices. As seen in Xie, Xu, and Hsu's (2023) study, listed companies in China often view the disclosure of customer information as incurring proprietary costs. The higher these costs, the more likely firms are to withhold customer identities, as competitors could exploit such information to infer the operational strategies and arrangements of the disclosing firms. Additionally, Malaysian firms also reduce voluntary intellectual capital disclosure when proprietary costs are high (Hashmi, Abdullah, Brahmana, Ansari, & Hasan, 2022). Therefore, this study proposes that in emerging markets, product market competition is inversely related to the informativeness of stock prices.

H_2: There is a significant negative relationship between product market competition and stock price informativeness.

2.3. External Transparency Mechanisms and Stock Price Informativeness

2.3.1. Firm-Level Transparency (Analyst Following) and Stock Price Informativeness

According to investor attention theory, investors often require more attention and information processing, which restricts their ability to evaluate all available investment opportunities. Evidence from previous studies has shown that investors are inclined towards stocks that attract their attention and, thus, are more likely to be persuaded to buy (Chen et al., 2023; Frieder & Subrahmanyam, 2005). Lai, Chang, Hu, and Chou (2022) also obtained similar outcomes, demonstrating that stocks with high trading volumes generate greater investor interest and vice versa.

Analysts' following is an important information source for individual investors who may need more time or resources to conduct an exhaustive assessment of the business's potential. Marhfor, M'Zali, Cosset, and Charest (2013) and Marston (1997) observed that firms that focus more on investor relations tend to attract greater analyst attention, which improves stock price informativeness by offering firm-specific information and earnings estimates. Similarly, Chun and Shin (2018) and Thaker, Mohamad, Kamil, and Duasa (2018) confirmed that analyst following strengthens price informativeness and efficiency in Malaysian and South Korean stock markets. However, Chan and Hameed (2006) found that although increased analyst following does not necessarily lead to greater incorporation of firm-level information into stock prices, it helps reduce information asymmetry and ensures that stock prices reflect underlying values, thereby improving the overall information environment. Thus, this study proposes an association between analyst following and stock price informativeness.

H_3: There is a significant positive relationship between analyst following and stock price informativeness.

2.3.2. Country-Level Transparency (Press Freedom) and Stock Price Informativeness

Press freedom generally has a positive impact on stock price informativeness in developed markets. In such markets, strong regulatory frameworks and stringent disclosure requirements ensure that the information disseminated to the public is accurate and timely (Dang et al., 2020; Kim et al., 2014). With a strong institutional environment, press freedom can thrive, enhancing information transparency and reducing misinformation. Consequently, investors utilize firm information to make informed decisions; this interplay between press freedom and stock price informativeness fosters market efficiency.

However, the success of press freedom in improving market transparency does not solely depend on the extent of press freedom within a country; a previous study has shown that the quality of information shared also impacts market transparency. The media, driven by incentives to attract readership, often prioritizes sensationalized news over accuracy (Core, Guay, & Larcker, 2008). Additionally, some firms might manipulate the media to promote favorable coverage or suppress negative information, thus distorting investor perceptions and firm-specific signals in stock prices (Ahern & Sosyura, 2015). As a result, stock prices are more synchronized than reflecting their actual firm value.

In emerging Asian markets, limited regulatory oversight makes media more susceptible to manipulation and misinformation, as seen in countries such as India, Indonesia, and the Philippines, where weak institutional regulation and political influence have enabled the spread of inaccurate news (Guo, 2020; Kaur et al., 2018). Even if press freedom promotes broad information disclosure, coverage often pertains to market-wide events rather than being specific to a particular firm due to its broader appeal, resource constraints, and access to firm-specific information. Combined with the manipulation of information to attract readership, this focus introduces significant market noise, encouraging investors to rely on general market-wide signals rather than firm-level information. Therefore, the stock price will be reduced (Darch & Underwood, 2009).

In addition, Dang et al. (2020) highlighted the complicated relationship between media and stock price informativeness. For instance, when the market could be more efficient, the media often rely on old firm information

due to resource limitations and limited access to the latest firm information. Without new firm information, the media's role in enhancing the business information environment is negligible. Therefore, emerging markets are often characterized by more inefficiencies than developed markets and weak regulatory disclosure and disclosure rules; this study proposes the association between press freedom and stock price informativeness as follows.:

H_5: There is a significant negative relationship between press freedom and stock price informativeness.

2.4. Interaction Effects on Stock Price Informativeness

2.4.1. Interaction Effect of Corporate Governance and Analyst Following on Stock Price Informativeness

Corporate governance encompasses the procedures and policies that ensure internal accountability and transparency in firms, fostering an open culture that enables stakeholders to understand the business activities and financial performance (Elms & Grosvold, 2025). Corporate governance aims to diminish agency problems while promoting alignment between managers and shareholders (Dey, 2008; Hill & Jones, 1992). In contrast, the analyst following provides external transparency, offering independent evaluations that can significantly influence stock performance through increased investor focus (Chan, Li, & Xin, 2021; Rezaei & Ghanaeenejad, 2014). Corporate governance and analyst following can substitute for each other where strong governance reduces reliance on analysts, or are complementary, where analysts provide essential scrutiny in firms with weak governance (Lin & Wang, 2023). Together, these mechanisms enhance stock price informativeness by ensuring comprehensive and accurate information is available to investors, contributing to a more efficient market (Armstrong, Guay, & Weber, 2010; Preussner & Aschauer, 2022). As such, this study posits the association among corporate governance, analyst following, and stock price informativeness as follows:

H_5: Corporate governance and analyst following are either substitutes or complements in improving stock price informativeness.

2.4.2. Interaction Effect of Corporate Governance and Press Freedom on Stock Price Informativeness

Corporate governance is essential for reducing agency problems by promoting greater transparency within firms. Mechanisms such as independent boards and auditing align managerial actions with shareholder interests (Larcker & Tayan, 2020). However, emerging markets often require greater transparency due to the evolution of regulatory frameworks and inadequate enforcement of disclosure requirements. For instance, in India, inadequate oversight contributes to low-quality disclosures (Balasubramanian, Black, & Khanna, 2010) while in Thailand, weak enforcement limits corporate transparency despite formal disclosure requirements (Jiraporn, Miller, Yoon, & Kim, 2008). Hence, press freedom serves as a substitute for disclosing firm information, despite its imperfections (Burnie, 2021; Dang, Huynh, & Nguyen, 2021). Conversely, in environments with strong corporate governance and press freedom, both complement each other, creating a more prosperous information environment, internal and external, which boosts stock price informativeness and market efficiency (Feng, Li, & Xu, 2023). As such, this study posits the association among corporate governance, press freedom, and stock price informativeness as follows:

H_6: Corporate governance and press freedom are either substitutes or complements in improving stock price informativeness.

2.4.3. Interaction Effect of Product Market Competition and Analyst Following on Stock Price Informativeness

Product market competition is regarded as an external disciplinary force of the corporate governance mechanism, influencing the firm's management to react positively and implement corporate strategies that propel the firm in obtaining market share through innovation (Choua et al., 2011). Based on the literature review, product market competition can complement or substitute for analysts in influencing the informativeness of stock prices. According to Farooq, Bendriouch, Satt, and Archane (2023), disclosing firm information is essential in highly competitive industries. It helps firms maintain their competitiveness and credibility with investors. An analyst can complement product market competition by releasing more firm-related information and promoting transparency in the

information environment. Conversely, Verrecchia (2004) argued that firms in intensely competitive markets often limit the disclosure of firm information to reduce proprietary costs associated with releasing sensitive information about the firm's future direction. Therefore, the analyst acts as a substitute, playing a crucial role in disclosing firm information, which enhances the information environment for investors by providing accurate and timely information (Yu, 2010). Accordingly, this study proposes the following associations between product market competition, analyst following, and stock price informativeness.

H_7: Product market competition and analyst following are either substitutes or complements in improving stock price informativeness.

2.4.4. Interaction Effect of Product Market Competition and Press Freedom on Stock Price Informativeness

Generally, competition helps to shape the firm's disclosure decisions. Firms in industries characterized by intense competition often reveal more firm-specific information to remain competitive. However, owing to the disclosure rules and enforcement in emerging markets, Enache and Kim (2020) and Wang et al. (2021) found that competition acts as a force against firms to disclose sensitive information.

Consequently, press freedom acts as a substitute for product market competition, serving as an external watchdog to ensure corporate disclosures and external scrutiny, thereby governing any corporate misconduct and misinformation (Peled, 2016; Uzar, 2022; Wasiuzzaman, 2018). However, when both are present, they complement each other, creating a synergistic effect that enhances stock price informativeness by ensuring that firm information is disclosed. Product market competition ensures that management discloses firm information to attract competitiveness, and a free press discloses general market signals or firm-related information, or both (Kim et al., 2014).

Therefore, fostering competitive dynamics and press freedom is crucial for improving market efficiency and reducing information asymmetry in emerging markets. As such, this study posits the interaction effect among product market competition, press freedom, and stock price informativeness as follows.

H_8: Product market competition and press freedom are either substitutes or complements in improving stock price informativeness.

3. RESEARCH METHODOLOGY

3.1. Data

The study sample comprises 24 emerging countries, all selected from the Morgan Stanley Capital International (MSCI) Emerging Markets Index. The data on press freedom, sourced from the Reporters Without Borders database, was initially published in October 2002; hence, the research sample spans from 2002 to 2022, covering 20 years of data. The sample size is established by the availability of consistent and comparable corporate governance (CG) scores from the Bloomberg database, which ensures uniform measurement across countries and years. While this constraint naturally limits the number of observations, it enhances the reliability and comparability of the governance variable, thereby improving construct validity. Additionally, the selected sample period corresponds with the rise and increasing importance of corporate governance codes in emerging markets, which began in the early 2000s (Aguilera & Jackson, 2010).

Corporate governance, a key indicator of internal transparency, became a significant focus during this period, making the 2002–2022 period particularly crucial for determining the relationship between corporate governance, press freedom, and other variables in these markets. Additionally, the summary of the 1,256 sample firms by country and the variables are detailed in Tables 1 and 2, respectively.

Table 1. The Distribution of the 1,256 Sample Firms in 24 Emerging Markets from 2002 to 2022.

No.	Country	No. of firms	Percentage (%)	No.	Country	No. of firms	Percentage (%)
1	Brazil	3	0.24	13	Mexico	47	3.74
2	Chile	13	1.04	14	Peru	4	0.32
3	China	130	10.35	15	Philippines	28	2.23
4	Columbia	8	0.64	16	Poland	31	2.47
5	Czech Republic	1	0.08	17	Qatar	10	0.80
6	Egypt	3	0.24	18	Saudi Arabia	14	1.11
7	Greece	8	0.64	19	South Africa	63	5.02
8	Hungary	2	0.16	20	South Korea	203	16.16
9	India	471	37.50	21	Taiwan	23	1.83
10	Indonesia	48	3.82	22	Thailand	30	2.39
11	Kuwait	11	0.88	23	Turkey	40	3.18
12	Malaysia	48	3.82	24	UAE	17	1.35

Table 2. Summary of study variables.

Variable	Abbrev.	Definition	Dataset sources
Stock price informativeness	*SPI*	It is the opposite of stock return synchronicity and reflects firm-specific information. The following shows the steps to compute *SPI*: (1) Using the daily stock price, compute the natural logarithm of daily return, R_i For each firm i: $R_i = ln\frac{P_t}{P_{t-1}}$ (2) Then, regress the daily log returns of firm i at day t, $R_{i,t}$ on market log returns, R_{Mt} . Using the market model: $R_{i,t} = \alpha + \beta R_{Mt} + \varepsilon$ (3) Extract the coefficients of determination or the R^2 The value of each firm i indicates how much the market returns explain the firm's stock returns. (4) Calculate the stock price informativeness, which is the reverse of R^2 value, written as: $SPR - squared$	Daily firm's stock prices and market index were downloaded from the Bloomberg database.
Corporate governance	*CG*	The Corporate Governance Score (CGSCORE) is derived from the Environmental, Social, and Governance (ESG) disclosure score, on a scale from 0 (no disclosure) to 100 (full disclosure). Governance metrics include the composition and percentage of independent versus executive directors, the number of board members, the average age of directors, the percentage of directors' meeting attendance, and the size of the board.	Downloaded from the Bloomberg Database.
Product market competition	*PMC*	Product market competition refers to the competition between firms offering similar products or services. The *PMC* is calculated as one minus the Herfindahl-Hirschman Index (1-*HHI*). Larger values suggest a more competitive business environment. The *HHI* of industry j is calculated as: $HHI_j = \sum_{i=1}^{n} s_{ij}^2$ Where s_{ij} indicates the proportion of firm i net sales relative *to* industry j, with n firms for a given year. The industry classification benchmark (ICB) is a 2-digit classification code.	The firms' total sales were downloaded from the Bloomberg database; the ICB 2-digit classification code is obtained from FTSE Russell's database.
Analyst following	*AF*	The number of analysts accumulates over the course of a year. The larger the value, the higher the analyst's followership.	Downloaded from Bloomberg Database.
Press freedom	*PFI*	Press freedom refers to the ability of journalists to produce and share news independently, without interference or threats to their safety. The index is evaluated on a scale of 0 (worst) to 100 (highest level of press freedom). To ensure consistency with other years, the press freedom score for 2011-2012 needs to be transformed to a range of 0 to 100, as this year's questionnaire allocates a broader distribution of scores, spanning from negative points to over 100 points.	Downloaded from Reporters Without Borders' Database.
Worldwide Governance Indicators	*WGI*	The Worldwide Governance Indicators (WGI) is a World Bank dataset that measures six governance dimensions (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption), with	Downloaded from the World Bank's Database.

Variable	Abbrev.	Definition	Dataset sources
		scores ranging from −2.5 (weak) to +2.5 (strong) for cross-country and temporal comparisons.	
Firm-level Control Variables			
Firm size	*SIZE*	The logarithmic transformation of a firm's total assets as of year *t*.	The firm's yearly total assets (in US dollars) are downloaded from the Bloomberg database.
Financial leverage	*LEV*	The total liabilities to assets ratio for firm *i* at the end of year *t*. $LEV_{i,t} = \frac{Total\ Liabilities}{Total\ Assets}$	The firm's yearly total liabilities and assets (US dollars) are downloaded from the Bloomberg database.
Country-level Control Variables			
Gross domestic product	*GDP*	The proxy for economic growth is the natural logarithm of gross domestic product for each country *i* at year *t*. $GDP_{i,t}$ = *Natural logarithm of GDP (in US dollars)*	Downloaded from the World Bank's Database.
Domestic Credit to the Private Sector	*DCPS*	It refers to financial resources supplied to the private sector by financial institutions. It is used as a proxy for financial development for each country *i* at year *t*.	Downloaded from the World Bank's Database.

3.2. Research Framework

Figure 2 depicts the research framework, highlighting the interrelated relationships between various transparency mechanisms and the informativeness of stock prices. This study examines the impact of corporate governance mechanisms and external transparency mechanisms on the informativeness of stock prices. The corporate governance mechanisms are measured using firm-level corporate governance and product market competition, while the external transparency mechanisms are measured using press freedom and analyst following. Additionally, this study seeks to analyze the interaction effects between internal and external transparency in influencing stock price informativeness. This study controls for firm- and country-level variables to ensure unbiased results. Through this comprehensive approach, the study aims to provide deeper insights into the possible relationships and interactions among these variables of interest.

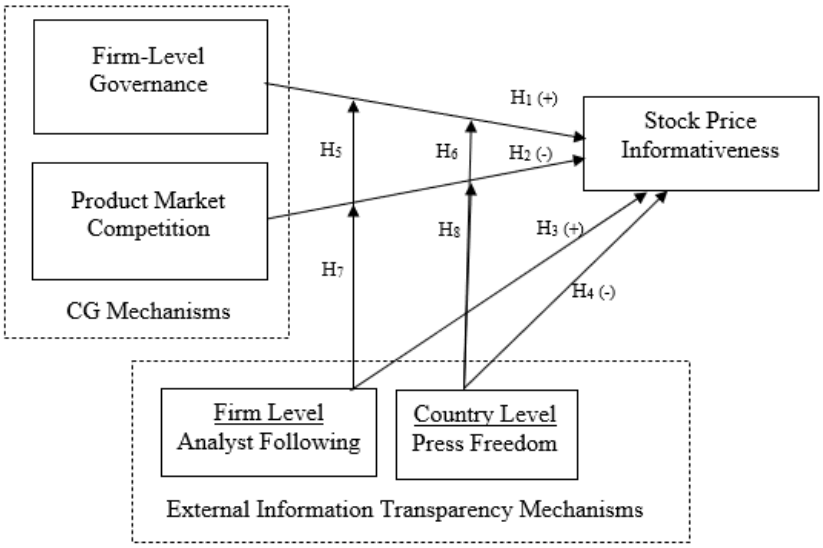

Figure 2. The research framework.[1]

[1] H_5-H_8 examine moderation effects. No directional sign is imposed ex ante because the interaction term may be either a substitutive or complementary mechanism affecting stock price informativeness.

3.3. Model Specification

Panel data were employed in this study and were examined through fixed effects (FE), two-stage least squares (2SLS), and dynamic generalized method of moments (DGMM) estimation methods. The rationale for employing DGMM analyses is to control for any latent relationship involving the lagged dependent variable (stock price informativeness) and the disturbance term. Furthermore, DGMM analyses enable us to address the potential endogeneity issue, primarily due to the possibility of reverse causation. Internal transparency is improved if stock prices are more informative, and vice versa. These show the reverse causality between stock price informativeness and transparency. Moreover, a firm's governance practices are adjusted in response to market signals, demonstrating the firm's responsiveness and aligning with the interests of its stakeholders. Following the approach of Semykina and Wooldridge (2010), this study applies lagged endogenous variable terms as instrumental variables, systematically testing the nearest and shortest lags until all instrument validity criteria are met. In addition to utilizing lagged terms, diagnostic tests, comprising fixed- and time-effects tests (Hausman, 1978) and the Arellano-Bond test for autocorrelation in the differenced residuals, are conducted to assess the suitability of the instruments used in the DGMM model (Arellano & Bond, 1991). The study employs forward orthogonal deviations combined with the bias-corrected robust two-step Arellano-Bond GMM estimator, effectively accommodating panel datasets with missing observations and offering greater asymptotic efficiency than the one-step estimator (Windmeijer, 2005). Hence, the model's estimates remain reliable despite the presence of autocorrelation and heteroskedasticity.

The base and interaction models are using OLS regression.

$$SPI_{i,t} = \alpha_0 + \alpha_1 CG_{i,t} + \alpha_2 PMC_{i,t} + \alpha_3 AF_{i,t} + \alpha_4 PFI_{i,t} + \sum_{j=1}^{4} \alpha_{j+4} CTRL_{j,i,t} + e_{i,t} \quad (1)$$

$$SPI_{i,t} = \alpha_0 + \alpha_1 CG_{i,t} + \alpha_2 PMC_{i,t} + \alpha_3 AF_{i,t} + \alpha_4 PFI_{i,t} + \alpha_5 (CG \times AF)_{i,t} + \alpha_6 (CG \times PFI)_{i,t} + \alpha_7 (PMC \times AF)_{i,t} + \alpha_8 (PMC \times PFI)_{i,t} + \sum_{j=1}^{4} \alpha_{j+8} CTRL_{j,i,t} + e_{i,t} \quad (2)$$

The base and interaction models specifications, employing both the FE and 2SLS estimators.

$$SPI_{i,t} = \alpha_0 + \alpha_1 \widehat{CG_{i,t}} + \alpha_2 \widehat{PMC_{i,t}} + \alpha_3 \widehat{AF_{i,t}} + \alpha_4 \widehat{PFI_{i,t}} + \sum_{j=1}^{4} \alpha_{j+4} CTRL_{j,i,t} + e_{i,t} \quad (3)$$

$$SPI_{i,t} = \alpha_0 + \alpha_1 \widehat{CG_{i,t}} + \alpha_2 \widehat{PMC_{i,t}} + \alpha_3 \widehat{AF_{i,t}} + \alpha_4 \widehat{PFI_{i,t}} + \alpha_5 (CG \times AF)_{i,t} + \alpha_6 (CG \times PFI)_{i,t} + \alpha_7 (PMC \times AF)_{i,t} + \alpha_8 (PMC \times PFI)_{i,t} + \sum_{j=1}^{4} \alpha_{j+8} CTRL_{j,i,t} + e_{i,t} \quad (4)$$

The DGMM models of base and interaction are as follows:

$$SPI_{i,t} = \beta_1 \widehat{SPI_{i,t-1}} + \beta_2 \widehat{CG_{i,t}} + \beta_3 \widehat{PMC_{i,t}} + \beta_4 \widehat{AF_{i,t}} + \beta_5 \widehat{PFI_{i,t}} + \sum_{j=1}^{4} \beta_{j+5} CTRL_{j,i,t} + e_{i,t} \quad (5)$$

$$SPI_{i,t} = \beta_1 \widehat{SPI_{i,t-1}} + \beta_2 \widehat{CG_{i,t}} + \beta_3 \widehat{PMC_{i,t}} + \beta_4 \widehat{AF_{i,t}} + \beta_5 \widehat{PFI_{i,t}} + \beta_6 (CG \times AF)_{i,t} + \beta_7 (CG \times PFI)_{i,t} + \beta_8 (PMC \times AF)_{i,t} + \beta_9 (PMC \times PFI)_{i,t} + \sum_{j=1}^{4} \beta_{j+9} CTRL_{j,i,t} + e_{i,t} \quad (6)$$

Where:SPI denotes stock price informativeness, CG denotes corporate governance, PMC denotes product market competition, AF denotes analyst following, PFI denotes the press freedom index, and the circumflex denotes the predicted value of the instrumental variables, $CTRL$ includes firm- and country-level control variables (firm size, financial leverage, gross domestic product, and domestic credit to the private sector). To ensure the robustness of the analysis, PFI is later substituted by WGI, which denotes the worldwide governance indicator and was tested again using Equations 5 and 6. Furthermore, Equations 5 and 6 are retested by removing India and South Korea from the sample data to avoid biased results.

4. RESULTS

4.1. OLS, FE, 2SLS Models

Due to the presence of outliers that can distort model estimations, all variables have been winsorized at the top and bottom 1 percent. Table 3 summarizes the descriptive statistics for the data before and after winsorization. Winsorization mitigates the influence of extreme values, making the dataset more robust against outliers. The winsorized mean stock price informativeness (SPI) averages 0.920 (on a 0–1 scale), indicating that market factors do not explain a significant portion of stock price variance. This highlights that stock prices are notably affected by firm-specific information. For other variables, such as product market competition (PMC), the raw mean was 0.123, with

a maximum value of 0.729, as observed in Giga Device Semiconductor, Chile. After winsorization, the maximum value is reduced to 0.344 and the mean to 0.098, limiting the effect of extreme values. Similarly, the maximum financial leverage (LEV) value decreased from 87.246 (the value generated by Sri Trang Agro-Industry Public Company Limited, Thailand) to 10.096, thereby lowering the mean to 3.589. Overall, winsorization enhances the model's reliability by reducing skewness caused by extreme values, leading to more accurate and meaningful estimations.

Table 3. Descriptive analysis of raw and Winsorized data.

Variable	Range	Raw Data				Winsorized Data				
		Mean	Std. Dev	Min	Max	Mean	Std. Dev	Min	Max	N
SPI	0-1	0.994	0.030	0.790	0.994	0.920	0.004	0.823	0.980	21,777
CG	Score 0-100	66.339	15.459	27.150	99.307	66.995	12.687	45.304	83.594	14,480
PMC	0-1	0.123	0.186	0.028	0.729	0.098	0.114	0.030	0.344	21,654
AF	Count (Total in a year)	8.967	10.535	1.000	63.000	8.011	8.085	4.000	24.000	18,713
PFI	Score 0-100	46.710	23.468	0.750	99.590	45.038	21.205	12.130	76.490	25,643
WGI	-2.5 to 2.5	-0.482	0.458	-1.304	0.257	-0.482	0.458	-1.304	0.257	24,860
SIZE	USD (Natural log transformed)	19.203	22.668	10.373	21.045	19.203	22.668	10.373	21.045	21,922
LEV	%	20.783	8.742	0.578	87.246	3.589	2.803	1.319	10.095	20,783
GDP	USD (natural log transformed)	28.132	28.535	25.223	30.319	27.805	27.471	25.894	28.624	26,103
DCPS	% of GDP	75.861	44.670	9.300	182.868	75.280	41.592	28.340	138.095	26,061

Table 4. Correlation analysis.

Variable	*SPI*	*CG*	*PMC*	*AF*	*PFI*	*WGI*	*SIZE*	*LEV*	*GDP*	*DCPS*
SPI	1.000									
CG	0.014*	1.000								
PMC	-0.003	-0.021***	1.000							
AF	0.021**	-0.199***	0.325***	1.000						
PFI	-0.010**	-0.082*	0.018***	0.062***	1.000					
WGI	-0.015*	0.146***	0.232***	0.080***	0.079*	1.000				
SIZE	0.006	0.098***	0.468***	0.400***	0.036***	0.171*	1.000			
LEV	-0.001	0.015*	0.133***	0.040*	-0.027***	0.080*	0.532***	1.000		
GDP	-0.004	0.174***	-0.386***	0.017*	0.293***	-0.108*	-0.101***	-0.113***	1.000	
DCPS	-0.029*	0.119***	-0.119***	-0.032*	0.058***	-0.164*	0.031***	-0.110***	0.129***	1.000

Note: *, **, and *** show statistical significance at the 90%, 95%, and 99% confidence level, respectively.

Meanwhile, Table 4 presents the results of the correlation analysis. Notably, stock price informativeness (SPI) shows correlations with most variables, though corporate governance (CG), analyst following (AF), press freedom (PFI), worldwide governance indicators (WGI), and domestic credit to the private sector (DCPS). The correlations are mostly significantly related to stock price informativeness (SPI). Additionally, the correlation analysis reveals several key relationships: corporate governance (CG) is positively and significantly correlated with the Worldwide Governance Indicator (WGI) and gross domestic product (GDP), indicating that better corporate governance is associated with stronger economic performance and governance. Product market competition (PMC) is strongly and positively correlated with firm size (SIZE) and analyst following (AF), indicating that larger, more competitive markets tend to attract more analyst attention and thrive despite competitive pressures. Lastly, financial leverage (LEV) is strongly associated with firm size (SIZE), indicating that larger firms tend to rely more heavily on leverage.

Table 5 presents the results of ordinary least squares (OLS), fixed effects (FE), and two-stage least squares (2SLS) estimation methods, along with various diagnostic tests and corrective measures, following the specification of the models. All the interaction models are presented using the mean-centered variables. As supported by Gujarati and Porter (2009), neither the OLS nor the FE models indicate multicollinearity issues, as the ranges for variance inflation factors (VIF) are 1.430 and 1.450, respectively, which are below the threshold value of 10. The results of the Hausman test further suggest the appropriateness of the fixed effects used, as chi-square test statistics are significant, with values from 17.940 to 21.410. Additionally, the models incorporate time-specific effects, as confirmed by F-statistics ranging from 20.030 to 20.120, indicating that the FE models reject the null hypothesis of "no time-specific effects" at the 1% level (Baum, 2006). CG has a significantly positive relationship with SPI in both the OLS and FE models. As shown in Table 5, a one-unit increase in CG score results in a 0.0021% increase in SPI in the OLS model and a 0.0020% increase in the FE model. Furthermore, both interaction models further amplify this relationship, increasing SPI by 0.0020% in the OLS model and 0.0024% in the FE model, both of which are statistically significant at the 1% level. The results are consistent with those of Kabir et al. (2019), Khan (2011), and Liu and Zhang (2017). In summary, strong corporate governance structures enhance transparency and mitigate agency conflicts, resulting in more accurate and reliable information being disclosed to the market. This, in turn, enhances stock price informativeness by effectively reflecting the firm's value and prospects.

PMC exhibits a significantly negative relationship with SPI in FE models, but it is insignificant in both the OLS and 2SLS models. The results align with those of Acito et al. (2021), who noted that heightened competition increases proprietary costs, prompting firms to limit disclosures to protect their competitive advantage. Similarly, the positive relationship between AF and SPI is significant in 2SLS models. As mentioned by investor attention theory, analysts help capture investor attention by focusing on a firm's financial information, reducing information asymmetry, and providing firm-specific information, thereby positively contributing to stock price informativeness (Chen et al., 2023; Marhfor et al., 2013). Furthermore, PFI has a significantly negative impact on SPI across both OLS and FE models. As illustrated in Table 5, a one-unit increase in PFI decreases SPI by 0.0010% in the OLS model and 0.0000405% in the FE model. Regarding the interaction models, SPI further decreases by 0.0012% in OLS and 0.000075% in FE models. Both results support prior empirical findings, such as those by Ahern and Sosyura (2015), Core et al. (2008), and Dang et al. (2020). In emerging markets, greater press freedom often yields general market-wide signals rather than firm-specific insights. Additionally, due to weaker regulatory oversight in emerging markets, press freedom can generate noise by promoting sensationalism, bias, and information overload, thereby diluting firm-specific information.

Regarding the test of interaction effects, CG × AF, CG × PFI, and PMC × AF are partially significant across the OLS, FE, and 2SLS approaches. This suggests that the results may depend on the methodological approach used. Only PMC × PFI shows a significant relationship with SPI for all the OLS, FE, and 2SLS estimations. As illustrated in Table 5, the interaction term, PMC × PFI, has a positive effect on SPI in the OLS (0.0035%) and FE (0.0026%) models, but a negative effect on SPI in the 2SLS (-0.000036%) model. The relationships are statistically significant at

the 5% level for the OLS model and at the 1% level for both the FE and 2SLS models. The results in both the OLS and FE models are consistent with studies by Kim et al. (2014). In emerging markets, where press freedom is often coupled with weak regulatory oversight, product market competition and press freedom complement each other by fostering an environment that provides accurate and comprehensive firm information readily available to investors, thereby enhancing stock price informativeness.

4.2. Dynamic GMM and Robustness Tests

To ensure the robustness of the results, PFI, used as a measure of country-level external transparency, is replaced with the Worldwide Governance Indicators (WGI). The DGMM methodological approach is employed, and the corresponding results are presented in Table 6. Additionally, a sample bias test is conducted by removing data from the two countries with the largest sample sizes, India and South Korea. Specifically, India accounted for 37.5% of the sample (471 firms), while South Korea represented 16.16% (203 firms). Given the disproportionately high representation of these two countries, their exclusion mitigates sample bias, ensuring that the results more accurately reflect general trends across the broader dataset. By replacing the original measure with an alternative and removing outliers from the sample, the robustness tests strengthen the validity and reliability of the results.

Table 6 summarizes the results of the models using PFI and then substituted with WGI, which both proxy for country-level external transparency mechanisms. Diagnostic tests, such as the insignificance of Sargan's and Hansen's *J* statistics, confirm the validity of overidentification restrictions, while the negative and significant AR (1) and the positive, insignificant AR (2) in first differences concurrently support the suitability of the instruments. Stock price informativeness is persistent, as shown by the significant coefficient of the lagged dependent variable term (SPI_{t-1}), ranging from 0.041 to 0.045. Additionally, CG, PFI, and WGI have shown significant results in relation to SPI.

For instance, as illustrated in Table 6, a one-unit increase in CG increases SPI by approximately 0.0052 in the base model and 0.0042 in the interaction model, both of which are statistically significant at the 1% and 10% levels, respectively. In the alternative model using WGI, a one-unit increase in CG results in a 0.0054% and 0.0055% increase in SPI in the interaction model, with all effects significant at the 1% level. The results from dynamic GMM reinforce the earlier findings from OLS, FE, and 2SLS models. The results also confirm a positive relationship between CG and SPI, driven by enhanced transparency and reduced agency problems. The results also show a negative relationship between the PFI (later substituted by WGI) and SPI. As shown in Table 6, a one-unit increase in the PFI results in a 0.0054% decrease in SPI in the base model and a 0.0050% decrease in the interaction model, both of which are statistically significant at the 1% and 5% levels, respectively. In the alternative model using WGI, a one-unit increase in WGI results in a 0.18% decrease in SPI in the base model and a 0.10% decrease in the interaction model, with both effects statistically significant.

Hence, the results prove that greater press freedom enhances market-wide information but introduces noise that obscures firm-specific signals, reducing SPI. Additionally, the interaction terms CG×PFI and CG×WGI are negatively significant with respect to SPI. This further highlights the critical role of corporate governance in emerging markets. Strong corporate governance is vital for enhancing stock price informativeness, as it compensates for limited press freedom by ensuring firm-specific information is reliably communicated to the market.

Table 5. The results of the ordinary least squares, fixed effects, and two-stage least squares regression models.

Dependent variable: Stock price informativeness *(SPI)*	OLS Models		Fixed Effects Models		2SLS Models	
	Base	Interaction	Base	Interaction	Base	Interaction
H_1: Corporate governance (*CG*)	0.000012***	0.000020***	0.000020***	0.000024***	0.000020*	0.00000615*
H_2: Product market competition (*PMC*)	0.00028	-0.00025	-0.0029**	-0.0030***	-0.00051	-0.00058
H_3: Analyst following (*AF*)	-0.00000146	0.00000179	0.000012	0.000013	0.00012***	0.000114***
H_4: Press freedom (*PFI*)	-0.000010***	-0.000012***	-0.00000405*	-0.00000750**	-0.000091***	-0.00017***
H_5: *CG*×*AF*		-0.00000115***		-0.000000829*		0.000000392
H_6: *CG*×*PFI*		-0.00000069***		-0.000000778		-0.00000360 ***
H_7: *PMC*×*AF*		0.000065*		0.000066		0.000016
H_8: *PMC*×*PFI*		0.000035**		0.000026***		-0.00000360***
Firm size (*SIZE*)	-18.870	-18.510	16.610	16.720*	-15.910**	-15.190***
Financial leverage *(LEV)*	-0.000017	-0.000016	0.000025	0.000021	0.00012**	0.00013**
Gross domestic product *(GDP)*	-35.978***	-35.784***	-35.279***	-35.244***	-36.335	-36.643
Domestic credit to the private sector *(DCPS)*	-0.0000485***	-0.00000490***	-0.00000584	-0.00000722	-0.000077***	-0.00012***
χ^2 statistic (Hausman test)			17.940*** (0.0064)	21.410** (0.011)		
VIF (Multicollinearity)	1.430	1.450	1.430	1.450		
Time effect test (*F* statistic)	20.030***	20.120***	20.030***	20.120***		
Anderson canon. Corr. LM statistic (Underidentification test)					274.346*** (0.000)	172.469*** (0.000)
Cragg-Donald F statistic (Weak identification test)					123.896* Higher than critical value (max 7.030 at 10%)	121.697* Higher than critical value (max 7.030 at 10%)
Hansen J statistic (Overidentification test – *p*-value)					0.420	0.316
Model fit test (F statistic)	12.830***	11.430***	12.380***	12.550***	15.110***	13.280***
Lags of instruments					1-2	1-2
N (observations)	12687	12687	12687	12687	9397	9397
N (groups)	1165	1165	1165	1165	1086	1086

Note: *, **, and *** show statistical significance at the 90%, 95%, and 99% confidence level, respectively. The *p*-values are reported in parentheses. Mean-centred interaction terms are used, and all models are robust to both autocorrelation and heteroskedasticity. All variables corresponding to the hypotheses (H_1-H_8) are labelled.

Table 6. The Results of the dynamic generalized method of moments.

Dependent variable: Stock price informativeness *(SPI)*	Dynamic generalized method of moments models			
	Press Freedom (*PFI*)		Worldwide Governance indicator (*WGI*)	
	Base	**Interaction**	**Base**	**Interaction**
SPI_{t-1}	0.042***	0.041***	0.045***	0.040**
H_1: corporate governance (*CG*)	0.000052***	0.000042**	0.000054***	0.000055***
H_2: Product market competition (*PMC*)	0.0048	0.0058	-0.028**	-0.022*
H_3: Analyst following (*AF*)	0.000038	-0.000055	0.00000715	-0.000040
H_4: Press freedom (*PFI*)	-0.000054***	-0.000050**		
H_5: Worldwide Governance Indicators (WGI)			-0.0018*	-0.001**
H_6: *CG*×*AF*		-0.00000196*		-0.00000143
H_7: *CG*×*PFI*		-0.00000150***		
H_8: *CG*×*WGI*				-0.00016*
H_9: *PMC*×*AF*		-0.00010		-0.00016
H_{10}: *PMC*×*PFI*		-0.000028		
H_{11}: *PMC*×*WGI*				-0.00000633**
Firm Size (*SIZE*)	17.733	16.846	-17.442	19.407
Financial Leverage (*LEV*)	-0.00000455	-0.000032	0.000017	0.000013
Gross Domestic Product (*GDP*)	-33.564***	-33.553***	-33.631***	-33.622***
Domestic Credit to Private Sector (*DCPS*)	-0.000066***	-0.000058***	-0.00010***	-0.000098***
χ^2 statistic (Sargan test of overidentifying restrictions)	47.050 (0.540)	44.020 (0.120)	40.560 (0.250)	40.370 (0.150)
χ^2 statistic (Hansen test of overidentifying restrictions)	44.770 (0.600)	43.150 (0.150)	38.270 (0.300)	37.990 (0.280)
z statistic (AR(1) in first differences test)	-2.260*** (0.000)	-2.300* (0.050)	-1.350* (0.077)	-1.430* (0.054)
z statistic (AR(2) in first differences test)	1.96 (0.150)	1.27 (0.300)	1.42 (0.151)	1.43 (0.153)
Model fit test (χ^2 Wald statistic)	367.420***	382.110***	310.700***	373.850***
Lags of instruments	1-2	1-2	1-2	1-2
N (observations)	11324	11324	10246	10246
N (groups)	1145	1145	1138	1138

Note: *, **, and *** show statistical significance at the 90%, 95%, and 99% confidence level, respectively. The p-values are reported in parentheses. Mean-centred interaction terms are used, and all models are robust to both autocorrelation and heteroskedasticity. All variables corresponding to the hypotheses (H_1-H_{11}) are labelled.

Table 7. The results of the ordinary least squares, fixed effects, and two-stage least squares models (Sample – Exclusion of India and South Korea Countries).

Dependent variable: Stock price informativeness *(SPI)*	OLS models		Fixed effects models		2SLS models	
	Base	Interaction	Base	Interaction	Base	Interaction
H_1: corporate governance (*CG*)	0.000015***	0.000020***	0.000032***	0.000034***	0.000074**	0.000066**
H_2: Product market competition (*PMC*)	0.00051	0.00043	-0.004***	-0.004***	-0.00014	0.0020
H_3: Analyst following (*AF*)	-0.00000292	0.00000239	0.0000368**	0.000031*	0.00016**	0.00012*
H_4: Press freedom (*PFI*)	-0.00000442**	-0.00000537*	-0.000018***	-0.000017***	-0.00010***	-0.00013***
H_5: *CG*×*AF*		-0.00000239***		-0.00000208***		-0.000000926
H_6: *CG*×*PFI*		-0.000000491***		-0.000000563***		-0.00000219***
H_7: *PMC*×*AF*		0.000014		-0.000031		0.00020
H_8: *PMC*×*PFI*		0.00000976		-0.000000563***		-0.000069
Firm Size (*SIZE*)	18.617	18.878	16.398**	16.406**	-16.198	15.811**
Financial leverage *(LEV)*	-0.000034	-0.000029	-0.000000424	-0.00000909	0.00012	0.00012
Gross domestic product *(GDP)*	-36.937***	-36.667***	-34.707***	-34.653***	-33.321***	-33.155***
Domestic credit to the private sector *(DCPS)*	-0.00000212	-0.00000141	0.00000803	0.00000640	-0.000069***	-0.000085***
χ^2 statistic (Hausman test)			83.090*** (0.000)	128.730*** (0.000)		
VIF (Multicollinearity)	1.590	1.610	1.510	1.480		
Time effect test (*F* statistic)	43.960***	43.300***	43.300***	43.60***		
Anderson canon. Corr. LM statistic (Underidentification test)					127.059*** (0.000)	118.329*** (0.000)
Cragg-Donald F statistic (Weak identification test)					44.406* Higher than critical value (max 7.030 at 10%)	34.901* Higher than critical value (max 7.030 at 10%)
Hansen J statistic (Overidentification test – *p*-value)					0.250	0.251
Model fit test (F statistic)	6.650***	6.830***	11.360***	11.220***	6.410***	5.880***
Lags of instruments					1-2	1-2
N (observations)	5820	5820	5820	5820	4251	4251
N (groups)	542	542	542	542	491	491

Note: *, **, and *** show statistical significance at the 90%, 95%, and 99% confidence level, respectively. The p-values are reported in parentheses. Mean-centred interaction terms are used, and all models are robust to both autocorrelation and heteroskedasticity. All variables corresponding to the hypotheses (H_1-H_8) are labelled.

Table 7 summarises the outcomes of the sample bias test using OLS, FE, and 2SLS models, excluding samples from two subsets of countries. All interaction models are presented using mean-centered variables. As supported by Gujarati and Porter (2009), neither the OLS nor the FE models indicate multicollinearity issues, as the ranges for variance inflation factors (VIF) are 1.480 and 1.610, respectively, which are below the threshold value of 10. The significant chi-square statistics from the Hausman tests range from 83.090 to 128.730, indicating that fixed-effect models are more appropriately used. Additionally, time-specific effects are included, as indicated by F-statistics ranging from 43.300 to 43.960, which reject the null hypothesis of "no time-specific effects" in the fixed-effect models with significance at the 1% level (Baum, 2006). Based on Table 7, both CG and PFI exhibit significant positive and significant negative relationships with SPI across OLS, FE, and 2SLS models. The results show consistency with the earlier models, without excluding the two countries from the sample data. For the interaction term, CG × AF is negatively and significantly associated with SPI in both the FE and 2SLS models. Whereas CG × PFI is significantly negative in relation to SPI, the results are consistent with those obtained earlier.

Table 8. The results of the dynamic generalized method of moments (Sample – Exclusion of India and South Korea).

Dependent variable: Stock price informativeness *(SPI)*	**Dynamic generalized method of moments models**			
	Main models		**Models with alternative measurement (*WGI*)**	
	Base	**Interaction**	**Base**	**Interaction**
SPI_{t-1}	0.043**	0.039*	0.056***	0.059*
H_1: corporate governance (*CG*)	0.000050**	0.000040*	0.000032**	0.000032**
H_2: product market competition (*PMC*)	-0.00053	-0.000062	0.006	0.006
H_3: Analyst following (*AF*)	0.00016*	0.000042	0.00012	0.00015
H_4: Press freedom (*PFI*)	-0.000057***	-0.000053***		
H_5: Worldwide Governance Indicators (WGI)			-0.00011*	-0.00038**
H_{5a}: *CG*×*AF*		-0.00000341		0.000000482
H_{6a}: *CG*×*PFI*		-0.00000104*		
H_{6a}: *CG*×*WGI*				-0.00000309*
H_{7a}: *PMC*×*AF*		-0.00031		-0.00024
H_{8a}: *PMC*×*PFI*		-0.000036		
H_{8a}: *PMC*×*WGI*				0.000065
Firm Size (*SIZE*)	18.945	17.306	-18.869**	-18.886
Financial leverage *(FL)*	0.000019	-0.00000142	-0.00000620	-0.00000680*
Gross domestic product *(GDP)*	-34.160***	-34.231	-36.215***	-36.210***
Domestic credit to the private sector *(DCPS)*	-0.000026	-0.000016	-0.000016*	-0.000020*
χ^2 statistic (Sargan test of overidentifying restrictions)	44.070 (0.100)	42.040 (0.220)	22.780 (0.150)	22.720 (0.300)
χ^2 statistic (Hansen test of overidentifying restrictions)	31.860 (0.100)	31.070 (0.300)	22.540 (0.280)	22.560 (0.350)
z statistic (AR (1) in first differences test)	-1.380*** (0.000)	-1.370** (0.044)	-1.490* (0.078)	1.360* (0.090)
z statistic (AR (2) in first differences test)	1.490 (0114)	1.160 (0.270)	1.350 (0.140)	1.310 (0.190)
Model fit test (χ^2 Wald statistic)	267.340***	346.540***	349.590***	343.170***
Lags of instruments	1-2	1-2	1-2	1-2
N (Observations)	5182	5182	4693	4693
N (Groups)	531	531	529	529

Note: *, **, and *** show statistical significance at the 90%, 95%, and 99% confidence level, respectively. The p-values are reported in parentheses. Mean-centred interaction terms are used, and all models are robust to both autocorrelation and heteroskedasticity. All variables corresponding to the hypotheses (H_1-H_5) are labelled.

Table 8 presents the results using the DGMM approach, excluding India and South Korea from the sample size. Similarly, diagnostic tests are conducted before establishing the optimal DGMM models. Insignificant Sargan and Hansen J tests confirm the validity of overidentification restrictions, and the expected AR (1) significance alongside

the insignificant AR (2) in first differences further verify the appropriateness of the instruments. The persistence results in stock price informativeness, which is statistically significant as evidenced by the lagged dependent variable term (SPI_{t-1}), with a coefficient range from 0.039 to 0.059. In Table 8, CG and PFI consistently yield significant positive and negative results, respectively, in relation to SPI, both in the main models and with alternative measurements, WGI. Based on the findings, the main models indicate that a one-unit increase in CG raises SPI by 0.005% and 0.004% in the base and interaction models, respectively. In the alternative model, the effect is 0.0032% (base model) and 0.0032% (interaction model). As for the PFI, a one-unit increase in PFI reduces SPI in the main model by –0.0057% (base model) and –0.0053% (interaction model), while in the alternative model, the reduction is larger, at –0.011% (base model) and –0.038% (interaction model). These results are consistent across different regression methods and align with earlier findings, excluding only two countries. For the interaction term, only CG×PFI and CG×WGI have consistently significant negative results with the lagged dependent variable for both the original and the model with alternative measurement. The results suggest that CG and PFI (later substituted by WGI) are important variables that explain stock price informativeness in emerging markets.

5. DISCUSSIONS AND CONCLUSION

This study concludes that in emerging markets, stock price informativeness is substantially influenced by corporate governance and country-level external transparency mechanisms, as proxied by the Press Freedom Index and the Worldwide Governance Indicators. Firm-level corporate governance exhibits a significant positive relationship with the informativeness of stock prices. Effective corporate governance enhances transparency in management practices, holds management accountable to shareholders, and ensures comprehensive disclosure of corporate information to the market. Consequently, stock prices reflect a higher proportion of firm-specific information, enabling investors to make more informed judgments. Conversely, the Press Freedom Index and the Worldwide Governance Indicator, which serve as alternative measures of external transparency, show a significant inverse relationship with stock price informativeness in emerging markets. While both press freedom and governance quality aim to improve broader information environments, their focus tends to be on market-wide information transparency rather than firm-specific details. Additionally, noise and uncertainty may arise due to the evolving economies in emerging markets and the need to review and update the appropriateness of disclosure regulatory policies. As a result, substantial press freedom might hinder the external watchdog function and compromise the accuracy of information, particularly firm-related information. Similarly, although the Worldwide Governance Indicator measures governance quality, it may unintentionally increase regulatory complexity, leading to more conservative management practices. Ultimately, this can delay the timely disclosure of firm-related or market-wide information, resulting in a less transparent market. This highlights the limitations of external transparency mechanisms in the absence of effective corporate governance.

Concerning the interaction effect, the findings of this study suggest a dynamic relationship characterized by a significant negative relationship between corporate governance and external transparency, as proxied by the Press Freedom Index and the Worldwide Governance Indicator. This negative relationship highlights the substitutive effect between corporate governance and external transparency, indicating that corporate governance is crucial in the absence of press freedom in emerging markets to enhance stock price informativeness. Effective corporate governance enables firms to achieve greater transparency by providing timely and accurate disclosures, ensuring the alignment of management's actions with shareholder interests. When investors can rely on reliable and consistent firm information, it enhances the informativeness of stock prices. Conversely, high press freedom can become a double-edged sword. Generally, press freedom improves the information environment. However, the information disseminated by the press is predominantly market-wide in nature. In contrast to firm-specific information, press freedom often provides market-wide information. Additionally, if excessive information is disclosed when emerging markets face evolving disclosure regulatory rules and loose disclosure frameworks, this could result in noise,

hindering investors from negotiating against firm information and thus diluting clarity. In response, companies in emerging markets may adopt a more cautious approach to disclosure, wary of potential misinterpretation of information within a crowded media landscape. Thus, strong corporate governance can substitute for press freedom by providing precise, firm-specific information; nonetheless, an overload of external, market-wide information generated by the free press prevents investors from obtaining reliable information, thereby reducing stock price informativeness. These dynamic forces complicate the relationship between governance and external transparency in affecting market transparency in emerging markets.

This study reveals that corporate governance and external transparency mechanisms jointly influence stock price informativeness, with their effectiveness depending on the institutional context of emerging markets. These insights expand the theoretical boundaries of the information environment perspective, providing policy-relevant guidance for improving market information efficiency in emerging economies. The results align with UN SDG 12: Responsible Consumption and Production. Strong corporate governance fosters transparency and promotes responsible business practices, contributing to sustainable production and ethical development. To achieve the core aspect of SDG 12, effective governance frameworks are essential as they enhance information flow and reduce corporate risks and market inefficiencies. Policymakers should ensure proper disclosure of regulatory structures in emerging markets and promote corporate governance and press freedom, as both are vital for stock price informativeness. For instance, policymakers must establish clear guidelines encouraging firms to consistently promote transparency in information disclosure while fostering journalists to report accurate and relevant news responsibly. This balanced approach emphasizes the importance of corporate governance and external transparency in enhancing stock price informativeness, promoting market efficiency, and enabling investors to make informed decisions when selecting potential stocks for investment. However, this study has limitations, including data quality issues from emerging markets, the potential for endogeneity despite the use of 2SLS and DGMM, and an emphasis on a quantitative approach that may overlook qualitative aspects of governance. Due to varying institutional contexts, the findings may not be fully applicable across all regions. Future research could improve the study by incorporating more comprehensive governance measures (e.g., ESG ratings) and/or adopting qualitative methods. A comparative analysis across different regions, examining varying degrees of press freedom, may provide valuable insights.

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