

Does a change to the star selection procedure affect analysts' behavior?

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Highlights

- A change to analysts' evaluation criteria affects their coverage decisions and informativeness.
- Analysts tend to cover firms with lower growth and higher systematic risk after the change.
- Analyst coverage and stock price synchronicity are positively related after the change.

Abstract

This study examines whether the procedure for selecting star analysts affects analysts' coverage decisions and the informativeness of the analyst reports. We focus on a change to the star evaluation criteria that increased the importance and objectivity of quantitative metrics. Following this change, analysts tend to cover smaller firms and firms with lower profitability, lower growth, and higher systematic risk more frequently. After the change to the star evaluation criteria, analyst coverage becomes positively associated with both the level of and change in stock price synchronicity, indicating that analyst reports provide market-wide information.

Keywords: Analyst coverage; Firm-specific characteristics; Market-wide information; Star analyst; Stock price synchronicity

JEL Classification: G12; G14; G24

1. Introduction

Financial analysts play a crucial role in equity markets. They analyze firms' fundamentals and produce information for investors (Easley, O'Hara, and Paperman, 1998; Ellul and Panayides, 2018; Kim, Ryu, and Yang, 2021; Kim, Ryu, and Yu, 2021; Rebello and Wei, 2014). Analysts with better reputations and those nominated as *star analysts* serve a particularly important role (Merkley, Michaely, and Pacelli, 2017; Stickel, 1992). These star analysts are known to provide better information and forecasts about firms' performances; thus, they contribute to the improvement of market efficiency (Desai, Liang, and Singh, 2000; Fang and Yasuda, 2014; Gleason and Lee, 2003; Kumar, 2010; Loh and Stulz, 2011).

Despite the consensus that analysts provide information, few previous studies explore the impact of star selection on analysts' activities. While a limited number of analysts are nominated as stars, many analysts pursue this status because it can improve their reputations and might benefit their future careers (Brown, Call, Clement, and Sharp, 2015; Krigman, Shaw, and Womack, 2001). To earn star status and improve their reputations, analysts have incentives to change their coverage decisions more optimally and increase the quality of their recommendations. For example, Jackson (2005) shows that although analysts may benefit from providing misleading information in the short run, it is more advantageous for them to provide accurate information in the long run because doing so improves their reputations. Hilary and Hsu (2013) find that analysts pursue to provide consistent reports because consistency increases their chances of being nominated as stars. Though the strategic approaches that analysts choose to obtain the star analyst positions might be somewhat different depending on their characteristics, in summary, analysts have clear incentives to alter their behavior in response to changes to the star evaluation criteria.

Unfortunately, previous studies do not consider the potential impacts of changes to the star evaluation criteria though it is an interesting and important issue to market participants. Our study fills this gap by examining whether analysts' behavior and informativeness have changed following a major reform to the star selection procedure. Whereas most prior studies of analysts' informativeness focus on developed markets (e.g., Devos, Hao, Prevost, and Wongchoti, 2015; Green, 2006; Womack, 1996; Yu, 2008), we focus on the Korean market, a globally leading emerging economy because its procedure for selecting star analysts recently changed and is worthy to note.¹ In addition, the Korean market is unique, as Korea is a large economy with emerging market characteristics. According to the International Monetary Fund, Korea ranked 12th in terms of nominal gross domestic product (GDP) and 31st in terms of nominal GDP per capita in 2022. Additionally, the participation rate of individual

¹ The star evaluation criteria are divided into two parts – quantitative and qualitative standards. The weight of quantitative standards in the criteria has increased since 2014 in the Korean market. Chun, Cho, and Ryu (2020), Ryu, Ryu, and Yang (2020), Ryu, Yang, and Yu (2022), Ryu and Yu (2020), Song and Ryu (2021), and Yu and Ryu (2021) explain the importance of the Korean market as a globally leading and influential emerging economy, and they describe its characteristics.

investors in the Korean stock market was over 82.43% during the 492 trading days around the reform of Korea's star selection procedure. Emerging financial markets feature intense participation by individual investors, low investor protections, and high information asymmetry (e.g., Hu, Kirilova, Park, and Ryu, 2023; Kim, Ryu, and Yu, 2022; Lee, Ryu, and Yang, 2021; Ryu, Ryu, and Yang, 2021; Ryu, Webb, and Yu, 2022a; Ryu and Yu, 2021; Seok, Cho, and Ryu, 2019; Yang, Kutan, and Ryu, 2019). Thus, analysts' contributions as information providers are often more critical in these markets (Feng, Hu, and Johansson, 2016; Kim, Ryu, and Yang, 2019; Lawrence, 2013; Sun, 2009; Walker and Hatfield, 1996).

For these reasons, this study investigates changes in analysts' activities around the reform of the star evaluation criteria in the Korean financial market. The reform primarily involves an increase in the importance of quantitative criteria in assessing analysts' performance. **The increase in the quantitative standards indicates analysts who have forecasting ability for earnings can be a star rather than analysts who maintain close relations with fund managers. This event may be an incentive for analysts to change their behavior to be a star.** We test the immediate changes in analysts' coverage decisions by comparing the characteristics of the firms they cover before and after the reform. Then, using a panel data regression, we examine the relationship between analyst coverage and stock price synchronicity to determine whether the informativeness of analyst reports changes after the reform.

Our major findings are as follows. First, after the reform, analysts tend to cover smaller firms and firms with lower profitability, lower growth, and higher systematic risk relative to their pre-reform counterparts. Second, analysts tend to cover more firms after the reform than before the reform. Third, analyst coverage is positively associated with both levels of and changes in stock price synchronicity after the reform, indicating that analyst reports provide market-wide information. Our results remain consistent after controlling for brokerage effects and resolving potential endogeneity by employing instrumental variables.

Our study has economic implications by revealing that star evaluation criteria significantly affect analysts' behavior and informativeness. Our findings show that analysts tend to cover more stable and predictable firms when the star selection procedure places more weight on quantitative standards, indicating that analysts alter their behavior according to the evaluation criteria. We further suggest that the method of evaluating analyst performance may influence the informativeness of analyst reports. Our results provide regulators with an adequate approach to assessing analyst performance in an emerging market.

The remainder of this paper is organized as follows. Sections 2 and 3 describe the sample data construction and the study methodology. Section 4 interprets the empirical findings, and Section 5 presents robustness checks. Finally, Section 6 concludes the study.

2. Sample Data Construction

2.1. Change to star analyst evaluation criteria

Star analysts are identified in the Korean equity market based on their annual performance, as evaluated by *Chosunilbo*, the most popular and influential newspaper in Korea, and FnGuide, Korea's largest data-providing vendor. The selection of star analysts in Korea is similar to the *Wall Street Journal's* selection of *All-Star* analysts. However, the criteria for identifying star analysts in Korea were reformed in 2014 with the aim of improving fairness and objectivity.

The star selection procedures before and after the reform are as follows. Before the change to the evaluation method, star analysts were selected based on quantitative (60%) and qualitative (40%) criteria. The quantitative criteria are the profitability of portfolios recommended by the analyst (20%) and the analyst's forecasting accuracy with respect to the total sales (10%), earnings (20%), and net profits (10%) of target firms. The qualitative criterion is measured based on survey assessments conducted by fund managers. Each fund manager's assessment is weighted according to the size of the stock inventory held by the asset management company that employs the fund manager. The 2013 reform reduced the weight of the qualitative assessments based on fund manager surveys from 40% to 30% and increased the weight of the portfolio profitability criterion from 20% to 30%. Overall, evaluations concentrate more on quantitative standards (70%) than on qualitative assessments (30%) after the reform.

Qualitative assessments are subjective measures to evaluate analysts' abilities. If the proportion of the qualitative assessment increases, analysts, who maintain a closer relationship with institutional investors, can be nominated as stars. It means that there is a lack of objectivity and fairness in the star selection procedures. On the other hand, the quantitative standards are the objective measure. The increase in the proportion of the quantitative standards indicates that analysts, who have forecasting ability for earnings, become nominated as stars. Because the characteristics of star analysts varies depending on the evaluation criteria, analysts have an incentive to change their behavior to be a star after the reform. To assess the effects of the reforms on star analysts' evaluations, our final sample excludes all analyst reports that do not contain sales, earnings, or net profit forecasts.

2.2. Sample data

This study uses the financial ratios and trading data of firms listed on the Korea Composite Stock Price Index (KOSPI) market and analysts' reports about these firms. The Korean market is appropriate for our analysis because its financial system and regulations change frequently, and it provides high-quality, firm-specific financial data so that researchers can analyze the effects of these reforms (e.g., Park and Ryu, 2021; Ryu, Kim, and Ryu, 2019; Ryu, Ryu, and Yang, 2020; Ryu, Webb, and Yu, 2020; Song, Ryu, and Yu, 2023). Our sample period is from 2013 to 2014, and we collect data from FnGuide. We exclude firms with missing financial statements and those in the financial industry from our sample. Additionally, we exclude firms whose leverage ratio, return on assets, or market-to-book ratio falls in

the first or 99th percentile to remove outliers. The final sample comprises 1,224 observations for 612 firms.

Panel A of Table 1 shows descriptive statistics for the variables in the sample. *AnalystReport* is the annual number of analyst reports for each firm. *Analyst* denotes analyst coverage. *Rsq* represents the R-squared value of the market index model. *Synch* denotes stock price synchronicity, and $\Delta Synch$ is the change in stock price synchronicity. We use the relationship between *Analyst* and *Synch* as a proxy of analysts' informativeness following Chan and Hameed (2006).² In addition, we use financial variables to show the characteristics of firms covered by analysts. The variables related to firm size are the logarithms of total assets (*Total_Assets*), sales (*Sales*), market capitalization (*MktCap*), total equity (*Total_Equity*), and the number of employees (*#Employees*). The profitability variables are Tobin's Q (*Tobin's Q*), the ratio of operating income to assets (*OI/A*), the return on assets (*RoA*), the return on equity (*RoE*), and earnings per share (*EPS*). The growth-related variables are the ratio of research and development (R&D) spending to assets (*R&D-to-assets*), the market-to-book ratio (*MB*), the change in the return on assets (ΔRoA), the change in the return on equity (ΔRoE), and the change in net income (ΔNI). The variables related to risk are the return volatility (*Volat*), the market beta (*Market_Beta*), the debt-to-assets ratio (*Lev*), the cash holdings ratio (*Cash_Holding*), and the turnover ratio (*Turnover*). *Volume* and *For_Own* denote the logarithms of the trading volume and foreign ownership, respectively.

[Table 1 around here]

Panel B of Table 1 shows the means and standard deviations of all variables, depending on the level of analyst coverage (i.e., *Zero*, *Low*, *Medium*, or *High*). *Zero* indicates firms with no analyst coverage. *Low*, *Medium*, and *High* indicate firms with analyst coverage below the 30th percentile (i.e., below three), between the 40th and 70th percentiles (i.e., between four and 19), and above the 70th percentile (i.e., above 20), respectively. As analyst coverage increases, *Synch*, *RoA*, *Lev*, *MB*, and *MktCap* increase whereas *Volat* decreases. This finding suggests that analyst coverage is correlated with firm characteristics.

3. Methodology

3.1. Analyst informativeness

² Market-wide information and firm-specific information are incorporated into the stock price synchronicity. When market-wide (firm-specific) information is released, the stock price synchronicity increases (decreases). Considering that, if *Analyst* and *Synch* are positively (negatively) related, we can interpret that the analysts provide market-wide (firm-specific) information. If they are not significantly related, it means that analyst reports are not informative.

We examine whether analyst reports convey information by estimating the relationship between analyst coverage and stock price synchronicity (Chan and Hameed, 2006; Kim and Ryu, 2022; Morck, Yeung, and Yu, 2000). Specifically, a significantly positive (negative) relationship indicates that stock return movements become more (less) synchronous with market returns as analyst coverage increases, implying that analyst reports contain market-wide (firm-specific) content. We calculate *stock price synchronicity* as follows. First, we obtain the R -squared value ($R_{i,t}^2$) for each firm in each year by regressing the firm's daily stock returns in a given year on the daily KOSPI returns in that year. We then construct the synchronicity of firm i in year t ($Synch_{i,t}$) as the logarithmic odds of the R -squared values, as Equation (1) shows.

$$Synch_{i,t} = \ln\left(\frac{R_{i,t}^2}{1-R_{i,t}^2}\right). \quad (1)$$

Second, we calculate analyst coverage ($Analyst_{i,t}$) for firm i in year t as the logarithm of the number of analyst reports issued for firm i in year t ($AnalystReports_{i,t}$), as in Equation (2). We add one to $AnalystReports_{i,t}$ to avoid instances in which analyst coverage is undefined. We remove analyst reports with no earnings forecasts from our sample because we focus on investigating analysts' informativeness. Analysts are evaluated and nominated based on their performances in the previous year; thus, $Analyst_{i,t}$ indicates the coverage of firm i in year $t-1$ by analysts who are nominated as stars in year t .

$$Analyst_{i,t} = \ln(1 + AnalystReports_{i,t}). \quad (2)$$

3.2. Mean-difference test

We investigate whether analysts' behavior changes in response to the revised evaluation criteria. We compare the average characteristics of firms covered by analysts before the reform (FC_{pre}) with the average characteristics of those covered after the reform (FC_{post}), as in Equation (3).

$$\sqrt{n} \cdot \frac{\bar{D}}{\sigma_D}, \text{ where } D = FC_{post} - FC_{pre}. \quad (3)$$

Here, \bar{D} and σ_D denote the mean and standard deviation of the differences in the firm characteristics before and after the reform. Referring to previous studies, we select 20 typical firm-specific characteristics, which we classify into four categories: *Size*, *Growth*, *Profitability*, and *Risk* (Bhagat and Bolton, 2008; Demirgüç-Kunt and Maksimovic, 1998; Hart and Oulton, 1996; Joh, 2003). The *Size* category contains the logarithms of total assets, sales, market capitalization, total equity, and the number

of employees. The *Growth* category contains the ratio of R&D spending to assets, the market-to-book ratio, and the changes in the return on assets, the return on equity, and net income. The *Profitability* category contains *Tobin's Q*, the ratio of operating income to assets, the return on assets, the return on equity, and earnings per share. Finally, the *Risk* category contains stock return volatility, the market beta, and the debt-to-assets, cash holdings, and turnover ratios. Using these firm characteristics, we conduct paired *t*-tests for the differences in means.

3.3. Panel data regression

We employ the panel data regression model given by Equation (4) to examine the relationship between analyst coverage and stock price synchronicity. $Synch_{i,t}$ and $\Delta Synth_{i,t}$ denote the level of and change in stock price synchronicity, respectively, for firm i in year t . $Reform_t$ is an indicator variable that equals zero before the reform and one after the reform. $(Analyst \times Reform)_{i,t}$ represents the interaction between $Analyst_{i,t}$ and $Reform_t$. The firm-specific control variables for firm i in year t are as follows. $MktCap_{i,t}$ denotes the logarithm of market capitalization and reflects firm size. $RoA_{i,t}$ is the return on assets. $Lev_{i,t}$ is the leverage ratio, calculated as the ratio of debt to assets. $MB_{i,t}$ is the market-to-book ratio. $Volat_{i,t}$ is the stock price volatility. $Volume_{i,t}$ denotes the logarithm of the trading volume. $For_Own_{i,t}$ is the percent of foreign ownership. μ_i is the fixed effect for firm i , and $\epsilon_{i,t}$ is the error term.

$$Y_{i,t} = \beta_0 + \beta_1 \cdot Analyst_{i,t} + \beta_2 \cdot Reform_t + \beta_3 \cdot (Analyst \times Reform)_{i,t} + \beta_4 \cdot MktCap_{i,t} + \beta_5 \cdot RoA_{i,t} + \beta_6 \cdot Lev_{i,t} + \beta_7 \cdot MB_{i,t} + \beta_8 \cdot Volat_{i,t} + \beta_9 \cdot Volume_{i,t} + \beta_{10} \cdot For_Own_{i,t} + \mu_i + \epsilon_{i,t}, \text{ where } Y \in \{Synch, \Delta Synth\}. \quad (4)$$

If the coefficient of $Analyst_{i,t}$ is significant and positive (negative), then analyst coverage is positively (negatively) associated with stock price synchronicity for firm i , suggesting that analysts are providing market-wide (firm-specific) information. Similarly, a coefficient of $(Analyst \times Reform)_{i,t}$ that is significant and positive (negative) would suggest that analysts provide significantly more firm-specific (market-wide) information after the reform than they did before the reform.

4. Empirical Findings

4.1. Changes in analyst behavior

Table 2 shows the characteristics of the firms covered by analysts during the sample period. The columns labeled *Pre-reform* and *Post-reform* show the characteristics of firms covered during the pre-reform and post-reform periods, respectively. Panel A of Table 2 shows the means and standard

deviations of the firm characteristic variables, and Panel B shows their market-adjusted values. *Diff* indicates the differences in the pre-reform and post-reform means.

[Table 2 around here]

The differences in the pre-reform and post-reform means are significantly negative for all five *Size* variables regardless of market adjustments. For the *Growth* category, these differences are significantly negative after the market adjustments. These results indicate that analysts tend to cover smaller firms and firms with lower growth rates more frequently after the reform. However, the means of all five variables in the *Growth* category are positive during the post-reform period, implying that analysts do not necessarily favor shrinking firms. The results in Panel B show that the differences in the pre-reform and post-reform means are significantly negative for all variables in the *Profitability* category except *Tobin's Q*. These findings suggest that analysts prefer to cover firms whose performances are more predictable after the reform.

The variables in the *Risk* category change in different directions following the reform, but the overall results are qualitatively the same before and after the reform. The differences in the means of the market-adjusted *Volat* and *Market_Beta* are significantly positive, implying that analysts tend to cover firms that are highly explained by the market more frequently after the reform, despite their high volatility. The market-adjusted mean of *Turnover* is also significantly greater after the reform, indicating that analysts prefer to cover firms with higher trading volumes, which may have lower liquidity risk. The difference in the means of *Lev* is significantly negative, suggesting that analysts prefer to cover firms with lower debt ratios after the reform. Overall, our findings suggest that analysts prefer to cover relatively stable firms with low idiosyncratic risk after the reform.

Table 3 shows whether the characteristics of firms covered by analysts differ depending on the frequency of analyst coverage. Panel A of Table 3 shows the pre-reform and post-reform characteristics of firms with annual analyst coverage of three or below. Panel B shows the same data for firms with analyst coverage above three but below 20. Finally, Panel C shows the data for firms with coverage of 20 or above. Although the differences in means in Panel A are generally insignificant, many of those in Panel C are significant and negative. In fact, the results in Panel C are somewhat similar to those in Table 2. These findings may imply that the post-reform behavioral changes identified in Table 2 most likely apply to the firms that analysts cover most frequently in this market.

[Table 3 around here]

Analysts' coverage activities and attitudes toward firms vary across industries (Kadan, Madureira, Wang, and Zach, 2012). Thus, we investigate the industry distribution of the firms covered by analysts

before and after the reform. Table 4 shows the industries of the firms covered by analysts before and after the reform. For each industry, Panel A shows the number of firms covered by analysts (*Freq*), the proportion of the total number of firms covered (*Prop*), and the proportion of all firms in the industry that are covered (*Ind Prop*). *Change (pp)* shows the change in *Prop* in percentage points after the reform takes effect. Panel B shows the frequency (*Freq*) and the proportion (*Prop*) of analyst coverage for each industry. If analysts cover a firm *N* times, the frequencies in Panels A and B increase by one and *N*, respectively.

[Table 4 around here]

Although the number of firms covered by analysts increased from 312 to 331 following the reform, the industrial distribution of these firms remained largely unchanged. The *Professional, scientific, and technical activities* sector exhibits the greatest increase in the number of firms covered during this period, but the increase is only 1.26 percentage points. Similarly, the industry with the greatest fall in the number of firms covered is the *Manufacturing* industry, but the decline is only 1.12 percentage points. Panel B of Table 4 provides a similar interpretation.

4.2. Informativeness of analysts by the star analyst evaluation method

Table 5 presents differences in analysts' informativeness depending on the star analyst evaluation method. Our findings imply the following results. First, the star analyst evaluation method determines the informativeness of analyst reports to a considerable extent. The coefficient of *Analyst*×*Reform* is significant and positive, indicating that the stock price movements are more explained by the market factor when analyst coverage increases. Namely, analysts provide more market-wide information after the reform. As Tables 2 and 4 show, these analysts tend to publish reports on relatively more stable firms that are generally well-known and familiar to investors through diverse media, such as corporate disclosures, financial statement reports, and news articles. Thus, our findings indicate that analysts prefer covering firms more widely known to market participants.

[Table 5 around here]

Table 5 also shows that the coefficient of *Analyst* is consistently insignificant in each model. As this coefficient represents the relationship between *Analyst* and *Synch* during the pre-reform period, this result indicates that analysts' reports do not reveal significant information about the firms they cover. In addition, the coefficient of *Reform* is significant and negative, suggesting that stock prices tend to exhibit greater synchronicity before the reform. In other words, stock prices are more idiosyncratic following the reform. Thus far, we have focused on the cross-sectional relationship between analyst

coverage and stock price synchronicity. Next, we investigate whether analyst coverage affects the level of stock price synchronicity for a given firm using the change in stock price synchronicity ($\Delta Synch_{i,t}$) as the dependent variable. Table 6 shows the following results. First, the coefficient of *Analyst* is not significant, indicating that analyst coverage does not affect the change in stock price synchronicity, particularly before the reform. Second, the coefficient of *Reform* is significantly negative, indicating that the price movements of stocks covered by analysts after the reform are more idiosyncratic than those of stocks covered before the reform. Finally, *Analyst* is positively associated with the change in stock price synchronicity only after the reform. The coefficient of *Analyst* \times *Reform* is positive, suggesting that analyst reports about a firm increase the level of synchronicity of the given stock price to a greater extent than in the previous year because the reports provide market-wide information. Overall, Table 6 shows that *Analyst* and *Synch* exhibit a significant and positive relationship not only in the cross-sectional analysis of all firms but also when we analyze each firm in comparison to its previous state.

[Table 6 around here]

5. Additional Tests

5.1. Controlling for brokerage effects

Analyst coverage likely depends on brokerage characteristics (Gao, Lin, Yang, and Chan, 2020), such as brokerage size or the number of brokerages. These factors may also influence the relationship between analyst coverage and stock price synchronicity. Thus, in this section, we control for brokerage effects by considering the number of brokerages that cover firm i in each year ($NBroker_{i,t}$) and the average number of analysts affiliated with the brokerages that cover firm i in each year ($NAnalyst_{i,t}$). Referring to Xu, Chan, Jiang, and Yi (2013), we calculate $NAnalyst_{i,t}$ as in Equation (5), where k refers to the number of brokerages that cover the given firm.

$$NAnalyst_{i,t} = \frac{1}{K} \sum_{k=1}^K NAnalyst_{i,k,t}. \quad (5)$$

Table 7 shows whether analysts' provision of information changes after the reform when we control for brokerage effects. We find that the coefficients of *NBroker* and *NAnalyst* are not statistically significant, meaning that we find no brokerage effects. Additionally, although the coefficient of *Analyst* is not significant, the coefficient of its interaction with the reform indicator is significant and positive. This finding is consistent with the results in Tables 5 and 6, and we confirm that analysts provide market-wide information after the reform even when we account for brokerage effects.

[Table 7 around here]

5.2. Addressing potential endogeneity

A firm's analyst coverage may be determined endogenously by stock price synchronicity. Bhushan (1989) shows that analysts can obtain information about firms with greater stock price synchronicity more easily. Chan and Hameed (2006) also note the possibility of reverse causality when estimating the relationship between analyst coverage and stock price synchronicity.

To account for the possibility of endogeneity, we conduct instrumental variable estimation, following Chan and Hameed (2006) and Xu, Chan, Jiang, and Yi (2013). We design a two-stage least squares regression as follows. First, we define the leverage ratio, foreign ownership, and expected analyst coverage ($ExAnalyst_{i,t}$) as instrumental variables. We calculate $ExAnalyst$ as shown in Equation (6).

$$ExAnalyst_{i,t} = \sum_{k=1}^K \left(\frac{NAnalyst_{k,t}}{NAnalyst_{k,t-1}} \times Analyst_{i,t-1} \right), \quad (6)$$

where $Analyst_{i,t-1}$ is the logarithm of analyst coverage of firm i in year $t-1$. Then, we estimate the first-stage regression given by Equation (7).

$$\begin{aligned} Analyst_{i,t} = & \gamma_0 + \gamma_1 \cdot Synch_{i,t-1} + \gamma_2 \cdot Reform_t + \gamma_3 \cdot MktCap_{i,t-1} + \gamma_4 \cdot RoA_{i,t} + \gamma_5 \cdot \\ & Lev_{i,t} + \gamma_6 \cdot MB_{i,t} + \gamma_7 \cdot Volat_{i,t} + \gamma_8 \cdot Volume_{i,t} + \gamma_9 \cdot For_Own_{i,t} + \gamma_{10} \cdot ExAnalyst_{i,t} + \\ & \mu_i + \varepsilon_{i,t}. \end{aligned} \quad (7)$$

We construct the fitted value of analyst coverage ($\widehat{Analyst}_{i,t}$) using the aforementioned instrumental variables. Then, we run the second-stage regression using $\widehat{Analyst}_{i,t}$, as Equation (8) shows. Unlike Chan and Hameed (2006), we do not use lagged stock price synchronicity ($Synch_{i,t-1}$) as an instrumental variable because its coefficient is not significantly different from zero in the first stage.

$$\begin{aligned} Synch_{i,t} = & \beta_0 + \beta_1 \cdot \widehat{Analyst}_{i,t} + \beta_2 \cdot Reform_t + \beta_3 \cdot \widehat{Analyst}_{i,t} \times Reform_t + \beta_4 \cdot \\ & MktCap_{i,t} + \beta_5 \cdot RoA_{i,t} + \beta_6 \cdot MB_{i,t} + \beta_7 \cdot Volat_{i,t} + \beta_8 \cdot Volume_{i,t} + \mu_i + \varepsilon_{i,t}. \end{aligned} \quad (8)$$

Table 8 presents the results of the two-stage least squares regression analysis. In the column labeled *Stage 2*, the coefficient of fitted analyst coverage is not significant, and the coefficient of the interaction

between fitted analyst coverage and the reform indicator is significant and positive. These results suggest that our findings remain consistent even when we address potential endogeneity issues.

[Table 8 around here]

6. Conclusion and Policy Implications

This study finds that a change to analysts' evaluation criteria significantly influences their behavior and informativeness. As the weight on quantitative standards in the evaluation criteria increases, analysts become more likely to cover firms with lower growth rates and higher systematic risk. Finally, analysts provide market-wide information only after the reform. The main contribution of this study is that it highlights the impact of a change to the analyst evaluation method. The reform's impact on star analysts' activities is particularly important because these analysts are often considered more informative and reliable than other financial analysts. This study suggests regulatory implications of star analyst evaluation criteria by showing that reform to these criteria substantially alters analysts' firm selections and information provision.

The reform's effect on the relationship between analyst coverage and stock price synchronicity in an emerging financial market has political implications. The investment strategies of uninformed individual investors rely heavily on information from analysts. This tendency is pronounced in emerging markets because they feature active participation by individual investors and high levels of information asymmetry. Our findings not only assess the impacts of the current star selection criteria but also suggest that analysts' behavior and information provision depend on these criteria. This finding indicates that appropriate adjustments to the star evaluation criteria may help to reduce information asymmetry in emerging markets.

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Table 1

Summary statistics.

Panel A: Descriptive statistics for all variables

	Mean	Std.	Min.	Q1	Med.	Q3	Max
AnalystReport	7.669	13.748	0	0	1	7	62
Analyst	1.133	1.352	0	0	0.693	2.079	4.143
Rsq	0.053	0.062	0.000	0.011	0.033	0.071	0.599
Synch	-3.743	1.832	-15.228	-4.462	-3.391	-2.569	0.402
ΔSynch	-0.484	1.935	-12.418	-1.294	-0.457	0.359	10.798
Total_Assets	20.144	1.616	15.777	19.059	19.908	20.905	26.163
Sales	20.006	1.659	15.463	18.903	19.783	20.853	26.156
MktCap	26.137	1.655	22.841	24.941	25.868	27.055	32.940
Total_Equity	19.402	1.571	15.116	18.386	19.140	20.287	25.848
#Employees	6.097	1.548	0.693	5.273	5.976	6.874	11.507
R&D-to-assets	1.040	0.500	0.307	0.776	0.916	1.126	5.428
MB	0.034	0.057	-0.320	0.011	0.036	0.063	0.303
ΔRoA	0.016	0.071	-0.447	-0.001	0.023	0.051	0.452
ΔRoE	-0.049	1.085	-28.183	-0.002	0.045	0.087	0.950
ΔNI	4.463	15.020	-43.386	0.127	0.800	3.434	249.730
Tobin's Q	0.007	0.014	0.000	0.000	0.001	0.007	0.131
OI/A	1.084	0.927	0.103	0.513	0.817	1.295	6.716
RoA	-0.000	0.075	-0.351	-0.020	-0.001	0.015	0.804
RoE	-0.038	1.520	-27.489	-0.040	-0.005	0.028	14.014
EPS	-11.323	376.439	-7,080.410	-8.225	0.191	8.374	2,695.760
Volat	0.028	0.052	0.007	0.017	0.022	0.027	0.764
Market_Beta	0.595	0.637	-7.410	0.323	0.561	0.811	13.712
Lev	0.477	0.197	0.044	0.314	0.485	0.624	0.992
Cash_Holdings	0.065	0.064	0.000	0.021	0.049	0.088	0.855
Turnover	0.005	0.022	0.000	0.001	0.002	0.004	0.416
Volume	10.325	2.305	1.386	9.003	10.524	11.933	17.359
For Own	9.760	13.127	0.000	1.052	4.085	13.831	89.733
Obs	1,224						

Panel B: Summary statistics by analyst coverage level

	Zero		Low		Medium		High	
	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.
AnalystReport	0	0	1.671	0.774	8.923	4.473	37.212	9.983
Analyst	0	0	0.943	0.277	2.198	0.439	3.608	0.267
Rsq	0.035	0.038	0.041	0.039	0.055	0.055	0.120	0.098
Synch	-4.164	1.825	-3.900	1.775	-3.533	1.633	-2.500	1.539
ΔSynch	-0.450	2.073	-0.672	1.971	-0.492	1.792	-0.195	1.559
Total_Assets	19.269	1.087	19.966	0.941	20.569	1.159	22.557	1.488
Sales	19.089	1.147	19.879	0.981	20.502	1.194	22.404	1.521
MktCap	25.066	0.957	25.951	0.864	26.816	0.996	28.867	1.138
Total_Equity	18.524	1.083	19.269	0.916	19.825	1.001	21.772	1.403
#Employees	5.389	1.163	5.801	1.157	6.555	1.203	8.085	1.473
R&D-to-assets	0.930	0.450	0.966	0.342	1.171	0.442	1.320	0.695
MB	0.018	0.061	0.041	0.045	0.052	0.043	0.054	0.057
ΔRoA	-0.001	0.084	0.025	0.052	0.034	0.050	0.038	0.051
ΔRoE	-0.140	1.528	0.031	0.161	0.017	0.551	0.053	0.120
ΔNI	2.225	9.939	2.796	9.070	6.246	15.453	11.335	26.693
Tobin's Q	0.006	0.011	0.005	0.009	0.007	0.015	0.013	0.023
OI/A	0.900	0.844	0.968	0.768	1.298	0.808	1.547	1.228

RoA	0.004	0.099	-0.004	0.050	-0.004	0.044	-0.006	0.037
RoE	-0.077	2.236	-0.007	0.247	-0.001	0.151	-0.004	0.118
EPS	8.109	180.466	2.511	53.115	7.422	112.134	-111.039	900.968
Volat	0.033	0.067	0.026	0.043	0.027	0.034	0.020	0.004
Market_Beta	0.522	0.757	0.561	0.342	0.598	0.646	0.856	0.388
Lev	0.469	0.210	0.469	0.180	0.482	0.191	0.506	0.181
Cash_Holdings	0.065	0.074	0.067	0.058	0.069	0.053	0.061	0.046
Turnover	0.006	0.029	0.005	0.021	0.004	0.005	0.004	0.005
Volume	9.684	2.618	10.124	1.954	10.913	1.604	11.831	1.319
For_Own	4.979	9.572	8.010	10.894	12.011	12.295	24.000	15.196
Obs.	581		234		220		189	

Notes. This table shows summary statistics for the variables in the study. Panel A shows descriptive statistics for all the variables. *Mean*, *Std*, *Min*, *Q1*, *Med*, *Q3*, and *Max* denote the mean, the standard deviation, and the minimum, first quartile, median, third quartile, and maximum values, respectively. *AnalystReport* denotes the number of annual analyst reports for each firm. *Analyst* indicates analyst coverage. *Rsq* represents the *R*-squared value of the market index model. *Synch* denotes stock price synchronicity, and Δ *Synch* is the change in stock price synchronicity. The size-related variables are the logarithms of total assets (*Total_Assets*), sales (*Sales*), market capitalization (*MktCap*), total equity (*Total_Equity*), and the number of employees (*#Employees*). The variables related to profitability are Tobin's Q (*Tobin's Q*), the ratio of operating income to assets (*OI/A*), return on assets (*RoA*), return on equity (*RoE*), and earnings per share (*EPS*). The growth-related variables are the ratio of R&D spending to assets (*R&D-to-assets*), market-to-book ratio (*MB*), and the changes in the return on assets (Δ *RoA*), the return on equity (Δ *RoE*), and net income (Δ *NI*). The variables related to risk are return volatility (*Volat*), market beta (*Market beta*), debt-to-assets ratio (*Lev*), cash holdings ratio (*Cash_Holdings*), and turnover ratio (*Turnover*). *Volume* and *For_Own* denote the logarithms of the trading volume and foreign ownership, respectively. *Obs.* means the number of observations. Panel B shows summary statistics for the variables depending on the analyst coverage level. *Zero* indicates firms with no analyst coverage. *Low*, *Medium*, and *High* refer to firms with analyst coverage less than or equal to 3, between 4 and 19, and greater than or equal to 20, respectively.

Table 2

Characteristics of firms covered by analysts.

Panel A: Characteristics before and after the reform

		Pre-reform		Post-reform		Diff	t-stat
		Mean	Std	Mean	Std		
Size	Total_Assets	22.229	1.690	22.208	1.675	-0.021	(-0.60)
	Sales	22.117	1.718	22.067	1.679	-0.050	(-1.42)
	MktCap	28.563	1.501	28.449	1.440	-0.114***	(-3.76)
	Total_Equity	21.447	1.612	21.454	1.590	0.007	(0.22)
	#Employees	7.890	1.576	7.823	1.618	-0.067*	(-2.03)
Growth	R&D-to-assets	1.304	0.685	1.240	0.616	-0.065***	(-4.79)
	MB	0.055	0.059	0.053	0.050	-0.002**	(-2.08)
	ΔROA	0.038	0.061	0.036	0.045	-0.002**	(-2.08)
	ΔROE	0.021	0.517	0.053	0.103	0.032***	(4.07)
	ΔNI	11.803	30.402	10.412	23.657	-1.391**	(-2.46)
Profitability	Tobin's Q	0.011	0.020	0.011	0.021	0.000	(0.42)
	OI/A	1.524	1.138	1.388	1.089	-0.136***	(-5.91)
	ROA	-0.012	0.048	-0.006	0.040	0.006***	(6.19)
	ROE	-0.069	0.493	-0.006	0.131	0.063***	(8.31)
	EPS	-2.955	907.238	-103.567	866.907	-100.612***	(-5.48)
Risk	VOLAT	0.020	0.014	0.022	0.016	0.001***	(3.62)
	Market_Beta	0.841	0.377	0.803	0.480	-0.038***	(-4.30)
	LEV	0.503	0.183	0.490	0.185	-0.013***	(-3.30)
	Cash_Holdings	0.064	0.046	0.063	0.049	-0.001	(-1.03)
	Turnover	0.005	0.004	0.005	0.004	-0.000***	(-3.09)

Panel B: Market-adjusted characteristics before and after the reform

		Pre-reform		Post-reform		Diff	t-stat
		Mean	Std	Mean	Std		
Size	Total_Assets	2.130	1.690	2.071	1.675	-0.059*	(-1.70)
	Sales	2.172	1.718	2.105	1.679	-0.067*	(-1.91)
	MktCap	2.553	1.501	2.291	1.440	-0.263***	(-8.64)
	Total_Equity	2.122	1.612	2.073	1.590	-0.049	(-1.47)
	#Employees	1.849	1.576	1.771	1.618	-0.078**	(-2.36)
Growth	R&D-to-assets	0.241	0.685	0.116	0.616	-0.124***	(-9.22)
	MB	0.025	0.059	0.024	0.050	-0.001	(-1.16)
	ΔROA	0.032	0.061	0.023	0.045	-0.009***	(-8.47)
	ΔROE	0.061	0.517	0.013	0.103	-0.048***	(-6.15)
	ΔNI	7.614	30.402	6.400	23.657	-1.215**	(-2.15)
Profitability	Tobin's Q	0.004	0.020	0.004	0.021	-0.000	(-0.09)
	OI/A	0.402	1.138	0.273	1.089	-0.129***	(-5.60)
	ROA	1.368	5.622	-0.955	6.284	-2.322***	(-18.90)
	ROE	0.567	4.039	-0.078	1.656	-0.645***	(-9.97)
	EPS	0.223	68.507	-45.306	379.235	-45.529***	(-8.24)
Risk	VOLAT	0.003	0.002	0.621	0.470	0.618***	(91.86)
	Market_Beta	0.021	0.009	1.548	0.924	1.527***	(115.35)
	LEV	0.010	0.183	0.004	0.185	-0.006*	(-1.68)
	Cash_Holdings	-0.003	0.046	-0.004	0.049	-0.001	(-0.91)
	Turnover	-0.019	0.004	-0.004	0.004	0.015***	(178.64)

Notes. This table shows the characteristics of the firms covered by analysts. *Pre-reform* and *Post-reform* indicate the pre-reform and post-reform periods, respectively. *Mean* and *Std* denote the mean and standard deviation, respectively. *Diff* indicates the difference between the pre-reform and post-reform means. *t-stat* is the *t*-statistic. The firm size characteristics (*Size*) are the logarithms of total assets

(*Total_A*Assets), sales (*Sales*), market capitalization (*MktCap*), total equity (*Total_E*Equity), and the number of employees (*#Employees*). The profitability characteristics (*Profitability*) are Tobin's Q (*Tobin's Q*), the ratio of operating income to assets (*O/A*), return on assets (*ROA*), return on equity (*ROE*), and earnings per share (*EPS*). The growth-related characteristics (*Growth*) are the ratio of R&D spending to assets (*R&D-to-assets*), market-to-book ratio (*MB*), and the changes in the return on assets (ΔROA), the return on equity (ΔROE), and net income (ΔNI). Finally, the characteristics related to risk (*Risk*) are return volatility (*VOLAT*), market beta (*Market_B*eta), debt-to-assets ratio (*LEV*), cash holdings ratio (*Cash_H*oldings), and turnover ratio (*Turnover*).

Table 3

Characteristics of firms covered by analysts by the frequency of analyst coverage.

Panel A: Low

		Pre-reform		Post-reform		Diff	t-stat
		Mean	Std	Mean	Std		
Size	Total_Assets	20.093	0.907	20.036	0.905	-0.057	(-0.64)
	Sales	19.938	0.929	19.922	0.969	-0.016	(-0.17)
	MktCap	25.939	0.809	26.134	0.890	0.195**	(2.35)
	Total_Equity	19.389	0.872	19.347	0.918	-0.042	(-0.48)
	#Employees	5.667	1.219	5.856	1.170	0.189	(1.60)
Growth	R&D-to-assets	0.004	0.008	0.005	0.009	0.001	(1.21)
	MB	0.781	0.365	1.137	1.030	0.356***	(4.93)
	ΔROA	-0.005	0.061	-0.000	0.057	0.004	(0.75)
	ΔROE	0.009	0.059	0.007	0.115	-0.002	(-0.17)
	ΔNI	-0.017	2.124	-0.364	5.026	-0.347	(-0.95)
Profitability	Tobin's Q	0.411	0.232	0.590	0.521	0.179***	(4.71)
	OI/A	0.039	0.043	0.044	0.051	0.005	(1.10)
	ROA	0.028	0.038	0.025	0.060	-0.004	(-0.76)
	ROE	0.529	0.181	0.548	0.200	0.019	(0.99)
	EPS	2.924	10.749	2.185	6.738	-0.739	(-0.81)
Risk	VOLAT	0.031	0.068	0.023	0.008	-0.008	(-1.60)
	Market_Beta	0.627	0.379	0.501	0.338	-0.126***	(-3.52)
	LEV	0.471	0.181	0.452	0.200	-0.019	(-0.99)
	Cash_Holdings	0.071	0.059	0.069	0.060	-0.002	(-0.34)
	Turnover	0.007	0.009	0.006	0.008	-0.001	(-1.19)

Panel B: Medium

		Pre-reform		Post-reform		Diff	t-stat
		Mean	Std	Mean	Std		
Size	Total_Assets	20.900	1.328	20.853	1.244	-0.046	(-0.85)
	Sales	20.752	1.262	20.792	1.228	0.039	(0.75)
	MktCap	27.186	1.088	27.273	1.097	0.087*	(1.89)
	Total_Equity	20.092	1.071	20.122	1.096	0.030	(0.67)
	#Employees	6.906	1.104	6.758	1.363	-0.148***	(-2.82)
Growth	R&D-to-assets	0.009	0.019	0.007	0.016	-0.002***	(-2.93)
	MB	1.483	1.019	1.745	1.770	0.263***	(4.31)
	ΔROA	-0.013	0.058	-0.004	0.046	0.009***	(3.84)
	ΔROE	-0.005	0.063	0.016	0.064	0.021***	(7.79)
	ΔNI	-0.193	10.946	1.240	7.659	1.433***	(3.53)
Profitability	Tobin's Q	0.785	0.620	0.922	0.902	0.137***	(4.20)
	OI/A	0.054	0.048	0.057	0.047	0.003	(1.34)
	ROA	0.029	0.073	0.041	0.041	0.013***	(5.08)
	ROE	0.508	0.209	0.521	0.186	0.013	(1.51)
	EPS	4.421	14.211	4.153	9.827	-0.268	(-0.52)
Risk	VOLAT	0.024	0.008	0.027	0.032	0.004***	(3.61)
	Market_Beta	0.726	0.329	0.558	0.608	-0.168***	(-8.17)
	LEV	0.492	0.209	0.480	0.186	-0.013	(-1.51)
	Cash_Holdings	0.075	0.052	0.065	0.051	-0.011***	(-4.88)
	Turnover	0.006	0.007	0.007	0.006	0.000	(1.06)

Panel C: High

		Pre-reform		Post-reform		Diff	t-stat
		Mean	Std	Mean	Std		

Size	Total <u>A</u> ssets	22.671	1.552	22.652	1.451	-0.018	(-0.54)
	Sales	22.514	1.551	22.485	1.498	-0.029	(-0.83)
	MktCap	29.085	1.210	28.976	1.151	-0.109***	(-4.05)
	Total <u>E</u> quity	21.853	1.458	21.888	1.379	0.034	(1.05)
	#Employees	8.140	1.546	8.128	1.550	-0.012	(-0.34)
Growth	R&D-to-assets	0.011	0.021	0.012	0.022	0.001	(1.57)
	MB	1.904	2.183	1.682	1.855	-0.223***	(-4.83)
	Δ ROA	0.018	0.167	-0.006	0.100	-0.024***	(-7.67)
	Δ ROE	0.007	0.088	-0.002	0.058	-0.008***	(-4.99)
	Δ NI	-0.060	24.256	1.855	22.651	1.914***	(3.57)
Profitability	Tobin's Q	0.996	1.295	0.914	1.088	-0.083***	(-3.03)
	OI/A	0.061	0.072	0.059	0.059	-0.003*	(-1.74)
	ROA	0.072	0.177	0.047	0.080	-0.026***	(-8.37)
	ROE	0.484	0.182	0.505	0.183	0.021***	(5.02)
	EPS	10.564	28.038	8.474	22.992	-2.090***	(-3.58)
Risk	VOLAT	0.020	0.005	0.021	0.005	0.001***	(7.05)
	Market <u>B</u> eta	0.021	0.009	1.548	0.924	1.527***	(115.35)
	LEV	0.516	0.182	0.495	0.183	-0.021***	(-5.02)
	Cash <u>H</u> oldings	0.063	0.047	0.068	0.058	0.005***	(3.69)
	Turnover	0.005	0.003	0.004	0.003	-0.000***	(-5.60)

Notes. This table shows the characteristics of firms covered by star analysts. *Pre-reform* and *Post-reform* indicate the pre-reform and post-reform periods, respectively. *Mean* and *Std* denote the mean and standard deviation, respectively. *Diff* indicates the difference between the pre-reform and post-reform means. *t-stat* is the *t*-statistic. The firm size characteristics (*Size*) are the logarithms of total assets (*Total Assets*), sales (*Sales*), market capitalization (*MktCap*), total equity (*Total Equity*), and the number of employees (*#Employees*). The profitability characteristics (*Profitability*) are Tobin's Q (*Tobin's Q*), the ratio of operating income to assets (*OI/A*), return on assets (*ROA*), return on equity (*ROE*), and earnings per share (*EPS*). The growth-related characteristics (*Growth*) are the ratio of R&D spending to assets (*R&D-to-assets*), the market-to-book ratio (*MB*), and the changes in the return on assets (Δ ROA), the return on equity (Δ ROE), and net income (Δ NI). The risk-related characteristics (*Risk*) are return volatility (*VOLAT*), market beta (*Market Beta*), debt-to-assets ratio (*Lev*), cash holdings ratio (*Cash Holdings*), and turnover ratio (*Turnover*).

Table 4

Industries of the firms covered by star analysts.

Panel A: Number of firms covered by analysts for each industry

	Pre-reform			Post-reform			Change (pp)
	Freq	Prop	Ind Prop	Freq	Prop	Ind Prop	
Agriculture, forestry, and fishing	2	0.64%	50.00%	3	0.91%	75.00%	▲ 0.27
Manufacturing	192	61.54%	43.05%	200	60.42%	44.84%	▼ -1.12
Electricity, gas, steam, and air conditioning supply	9	2.88%	81.82%	6	1.81%	54.55%	▼ -1.07
Construction	12	3.85%	36.36%	15	4.53%	45.45%	▲ 0.68
Wholesale and retail trade	30	9.62%	48.39%	34	10.27%	55.74%	▲ 0.65
Transportation and storage	10	3.21%	45.45%	11	3.32%	47.83%	▲ 0.11
Accommodation and food service activities	1	0.32%	100.00%	1	0.30%	100.00%	▼ -0.02
Information and communication	20	6.41%	60.61%	18	5.44%	52.94%	▼ -0.97
Professional, scientific, and technical activities	30	9.62%	49.18%	36	10.88%	59.02%	▲ 1.26
Business facilities management and business support services, rental, and leasing activities	3	0.96%	50.00%	4	1.21%	66.67%	▲ 0.25
Education	2	0.64%	100.00%	2	0.60%	100.00%	▼ -0.04
Arts, sports, and recreation-related services	1	0.32%	25.00%	1	0.30%	25.00%	▼ -0.02
Total	312	100.00%		331	100.00%		

Panel B: Analyst coverage by industry

	Pre-reform		Post-reform		Change (pp)
	Freq	Prop	Freq	Prop	
Agriculture, forestry, and fishing	11	0.23%	7	0.16%	▼ -0.07
Manufacturing	2,779	56.98%	2,528	56.05%	▼ -0.93
Electricity, gas, steam, and air conditioning supply	106	2.17%	99	2.20%	▲ 0.03
Construction	242	4.96%	236	5.23%	▲ 0.27
Wholesale and retail trade	591	12.12%	571	12.66%	▲ 0.54
Transportation and storage	206	4.22%	166	3.68%	▼ -0.54
Accommodation and food service activities	9	0.18%	13	0.29%	▲ 0.11
Information and communication	412	8.45%	369	8.18%	▼ -0.27
Professional, scientific, and technical activities	406	8.32%	399	8.85%	▲ 0.53
Business facilities management and business support services, rental, and leasing activities	59	1.21%	67	1.49%	▲ 0.28
Education	22	0.45%	19	0.42%	▼ -0.03
Arts, sports, and recreation-	34	0.70%	36	0.80%	▲ 0.1

related services

Total	4,877	100.00%	4,510	100.00%
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Notes. This table shows the industry distribution of the firms covered by analysts. Panels A and B show the number of firms in each industry and the number of analyst reports for each industry, respectively. *Pre* and *Post* indicate the pre-reform and post-reform periods, respectively. *Freq* denotes the frequency of observations for the given industry. *Prop* indicates the proportion of observations in each industry relative to the entire sample, and *Ind Prop* denotes the proportion of observations in each industry relative to the total number of observations in the industry. *Change (pp)* is the percentage point difference in *Prop* across the pre-reform and post-reform periods.

Table 5
Analysts' informativeness by evaluation method.

	M1	M2	M3
Intercept	32.8028*** (5.73)	13.3713*** (3.02)	10.4442** (2.37)
Analyst	0.1284 (1.00)	0.0065 (0.05)	-0.0635 (-0.51)
Reform		-0.8162*** (-15.15)	-0.9856*** (-12.07)
Analyst×Reform			0.1374*** (3.62)
MktCap	-1.1923*** (-5.30)	-0.4700*** (-2.71)	-0.3652** (-2.12)
RoA	1.7530 (1.56)	0.5392 (0.58)	0.6405 (0.69)
Lev	1.5152 (1.19)	1.4210 (1.21)	1.4595 (1.24)
MB	0.0428 (0.30)	-0.1705 (-1.39)	-0.1589 (-1.31)
Volat	0.1599 (0.17)	-0.2736 (-0.43)	-0.3298 (-0.54)
Volume	-0.2441*** (-4.03)	-0.1920*** (-3.39)	-0.1900*** (-3.37)
For_Own	-0.0201* (-1.80)	-0.0062 (-0.56)	-0.0054 (-0.49)
Firm effects	Yes	Yes	Yes
FE test	1.44***	1.57***	1.57***
R ²	0.6681	0.7118	0.7142

Notes. This table shows the relationship between analyst coverage and stock price synchronicity before and after the change to the analyst evaluation method. *Intercept* represents the intercept. *Analyst* denotes analyst coverage, and *Reform* denotes the reform indicator. *Analyst×Reform* is the interaction between *Analyst* and *Reform*. *MktCap*, *ROA*, *LEV*, *MB*, *VOLAT*, *VOLUME*, and *FOR_OWN* are market capitalization, the return on assets, the leverage ratio, the book-to-market ratio, stock price volatility, the logarithm of the trading volume, and foreign ownership, respectively. The row labeled *Firm effects* indicates whether the model controls for firm-specific effects. *FE test* shows the results of the *F*-test for fixed effects among the firms. *R*² shows the *R*-squared value. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6

Relationship between analyst coverage and the change in stock price synchronicity by evaluation method.

	M1	M2	M3
Intercept	40.7857*** (5.27)	23.7760*** (3.55)	21.2836*** (3.16)
Analyst	-0.0343 (-0.17)	-0.1411 (-0.71)	-0.2007 (-1.01)
Reform		-0.7145*** (-8.18)	-0.8587*** (-6.86)
Analyst×Reform			0.1170* (1.88)
MktCap	-1.3173*** (-4.32)	-0.6850*** (-2.61)	-0.5958** (-2.25)
RoA	0.9360 (0.56)	-0.1265 (-0.08)	-0.0403 (-0.03)
Lev	1.7701 (1.01)	1.6876 (1.00)	1.7204 (1.02)
MB	0.1012 (0.46)	-0.0855 (-0.41)	-0.0757 (-0.37)
Volat	-1.8857* (-1.81)	-2.2652*** (-2.68)	-2.3131*** (-2.78)
Volume	-0.3720*** (-4.64)	-0.3263*** (-4.14)	-0.3246*** (-4.13)
For_Own	-0.0239 (-1.33)	-0.0118 (-0.63)	-0.0111 (-0.59)
Firm effects	Yes	Yes	Yes
<i>FE test</i>	0.43	0.42	0.41
R^2	0.3149	0.3450	0.3465

Notes. This table shows the relationship between analyst coverage and the change in stock price synchronicity before and after the change to the star evaluation criteria. *Intercept* represents the intercept. *Analyst* denotes analyst coverage, and *Reform* denotes the reform indicator. *Analyst×Reform* is the interaction between *Analyst* and *Reform*. *MktCap*, *RoA*, *Lev*, *MB*, *Volat*, *Volume*, and *For_Own* are market capitalization, the return on assets, the leverage ratio, the market-to-book ratio, stock price volatility, the logarithm of the trading volume, and foreign ownership, respectively. The row labeled *Firm effects* indicates whether the model controls for firm-specific effects. The row labeled *FE test* shows the results of the *F*-test for fixed effects among the firms. R^2 shows the *R*-squared value. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7

Analysts' informativeness after controlling for brokerage effects.

	Synch			Δ Synch		
	M1	M2	M3	M4	M5	M6
Intercept	32.8894*** (5.73)	13.4583*** (3.04)	10.5025** (2.38)	40.8665*** (5.28)	23.8290*** (3.56)	21.2986*** (3.16)
Analyst	-0.0525 (-0.26)	-0.1570 (-0.87)	-0.2487 (-1.36)	-0.1305 (-0.43)	-0.2222 (-0.76)	-0.3007 (-1.00)
Reform		-0.8162*** (-15.15)	-0.9879*** (-12.08)		-0.7157*** (-8.18)	-0.8626*** (-6.87)
Analyst×Reform			0.1393*** (3.66)			0.1193* (1.91)
MktCap	-1.1938*** (-5.29)	-0.4712*** (-2.71)	-0.3650*** (-2.11)	-1.3173*** (-4.32)	-0.6837*** (-2.61)	-0.5928** (-2.24)
RoA	1.7234 (1.53)	0.5171 (0.55)	0.6176 (0.66)	0.9399 (0.56)	-0.1178 (-0.08)	-0.0318 (-0.02)
Lev	1.5168 (1.19)	1.4176 (1.20)	1.4555 (1.23)	1.7507 (1.00)	1.6637 (0.98)	1.6962 (1.00)
MB	0.0321 (0.23)	-0.1794 (-1.45)	-0.1688 (-1.38)	0.0983 (0.45)	-0.0872 (-0.42)	-0.0781 (-0.37)
Volat	0.1490 (0.16)	-0.2890 (-0.46)	-0.3489 (-0.58)	-1.9151* (-1.84)	-2.2991*** (-2.71)	-2.3504*** (-2.82)
Volume	-0.2444*** (-4.00)	-0.1932*** (-3.38)	-0.1916*** (-3.36)	-0.3765*** (-4.66)	-0.3316*** (-4.17)	-0.3302*** (-4.16)
For_Own	-0.0198* (-1.77)	-0.0060 (-0.55)	-0.0052 (-0.47)	-0.0239 (-1.34)	-0.0118 (-0.64)	-0.0111 (-0.60)
NBroker	0.0367 (1.09)	0.0275 (0.97)	0.0301 (1.06)	-0.0045 (-0.08)	-0.0126 (-0.25)	-0.0104 (-0.20)
NAnalyst	0.0073 (0.84)	0.0079 (0.98)	0.0091 (1.12)	0.0095 (0.70)	0.0101 (0.75)	0.0111 (0.82)
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes
FE test	1.43***	1.55***	1.56***	0.43	0.42	0.41
R ²	0.6684	0.7120	0.7143	0.3152	0.3454	0.3469

Notes. This table reports the estimation results after controlling for potential brokerage effects. The columns labeled *Synch* (Δ *Synch*) show the relationship between analyst coverage and the level of (change in) stock price synchronicity. *Intercept* represents the intercept. *Analyst* denotes analyst coverage, and *Reform* denotes the reform indicator. *Analyst*×*Reform* is the interaction between *Analyst* and *Reform*. *MktCap*, *RoA*, *Lev*, *MB*, *Volat*, *Volume*, and *For_Own* are market capitalization, the return on assets, the leverage ratio, the market-to-book ratio, stock price volatility, the logarithm of the trading volume, and foreign ownership, respectively. *NBroker* and *NAnalyst* denote the number of brokerage firms and the average number of analysts affiliated with a given brokerage, respectively. The row labeled *Firm effects* indicates whether the model controls for firm-specific effects. The row labeled *FE test* shows the results of the *F*-test for fixed effects among the firms. *R*² shows the *R*-squared value. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8

Analysts' informativeness by evaluation method: two-stage least squares regression.

	Stage 1	Stage 2		
	Analyst	M1	M2	M3
Intercept	-6.5384*** (-5.57)	34.5187*** (5.07)	18.5062*** (3.39)	14.7060*** (2.79)
$\widehat{Analyst}$		0.1644 (0.56)	0.4668* (1.79)	0.2743 (1.08)
Synch	0.0116 (1.51)		-0.8232*** (-15.20)	
Reform	-0.0489*** (-3.49)			0.4647 (1.53)
$\widehat{Analyst} \times Reform$				0.2049*** (4.08)
MktCap	0.2898*** (6.68)	-1.2199*** (-4.91)	-0.5484*** (-2.74)	-0.4566** (-2.36)
RoA	-0.2988 (-1.15)	1.0478 (0.97)	-0.1037 (-0.12)	0.0594 (0.07)
Lev	-0.5951*** (-2.61)			
MB	-0.0001 (-0.03)	0.0659 (0.43)	-0.1345 (-0.99)	-0.1101 (-0.83)
Volat	-0.3758 (-1.24)	0.1044 (0.11)	-0.3041 (-0.49)	-0.3676 (-0.59)
Volume	0.0339*** (3.31)	-0.2367*** (-4.09)	-0.1928 (-3.58)	-0.1958*** (-3.63)
For_Own	0.0087*** (2.74)			
ExAnalyst	0.0271*** (11.06)			
Firm effects	Yes	Yes	Yes	Yes
FE test	5.15***	1.43***	1.56***	1.56***
R ²	0.9688	0.6670	0.7117	0.7139

Notes. This table reports the results of the two-stage least squares regression analysis. The column labeled *Stage 1* shows the results of estimating a panel data regression in which the dependent variable is analyst coverage (*Analyst*). The columns labeled *Stage 2* show the results of estimating a panel data regression in which the dependent variable is stock price synchronicity (*Synch*). *Intercept* represents the intercept. *Reform* denotes the reform indicator. *Analyst*×*Reform* is the interaction between *Analyst* and *Reform*. *MktCap*, *RoA*, *Lev*, *MB*, *Volat*, *Volume*, *For_Own* and *ExAnalyst* are market capitalization, the return on assets, the leverage ratio, the market-to-book ratio, stock price volatility, the logarithm of the trading volume, foreign ownership, and expected analyst coverage, respectively. The row labeled *Firm effects* indicates whether the model controls for firm-specific effects. The row labeled *FE test* shows the results of the *F*-test for fixed effects among the firms. *R*² shows the *R*-squared value. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.