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Does the release of corporate governance evaluation information decrease information asymmetry? Evidence from Taiwan

宣告公司治理評鑑資訊會降低資訊不對稱嗎？以台灣為例

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Abstract: This research takes Taiwan's corporate governance evaluation exercises as the subject to investigate whether releasing their rankings decreases information asymmetry. I follow prior studies and focus on the stock market's bid-ask spread as a measure of information asymmetry, while controlling for its non-information asymmetry-related components. Evidence herein demonstrates that, on average, the bid-ask spread decreases by approximately 1% on the announcement date of corporate governance evaluation rankings as well as one day before the announcement. I also explore long-window effects, documenting results that releasing corporate governance evaluation rankings does decrease information asymmetry over the four days prior to the announcement and two days after the announcement, but I do not find consistent results when I employ the number of transactions as an alternative measure of information asymmetry. I further examine whether investors' predictable behavior and the status of corporate governance evaluation results influence information asymmetry, offering findings that information asymmetry really diminishes no matter whether the firm's EPS in the previous period is positive or negative and whether the status of CG evaluation is upgrade, downgrade, or no change. Lastly, I highlight the empirical findings' implications for regulatory agencies, corporate management, and the overall capital market.

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Keywords: Corporate governance ranking, evaluation, information asymmetry, Taiwan.

摘要：本文以台灣公司治理評鑑制度為研究標的，探討宣告公司治理評鑑資訊是否可以降低資訊不對稱。本文根據過去文獻，以股市的股票買賣價差做為衡量資訊不對稱的代理變數，並控制其他非資訊不對稱的相關變數。實證證據顯示平均而言，股市的股票買賣價差在宣告日及宣告日前一天都會減少1%。本文也進行長窗期的檢測，實證結果發現對於宣告日前四天至宣告後兩天的期間來說，公司治理評鑑資訊會降低資訊不對稱，然而，當本研究使用交易量作為資訊不對稱的代理變數時，並沒有發現前述結果。本研究也進一步測試投資人的預期行為及公司治理評鑑結果的狀態是否會影響資訊不對稱，結果發現不論前一期公司的 EPS 是正數或負數，抑或是公司治理評鑑狀態是升等、降等或是不變，宣告公司治理評鑑資訊造成資訊不對稱下降情況仍存在。最後，本文實證結果可以作為立法者、公司管理階層及整個股市參考之用。

關鍵詞：公司治理排名、評鑑、資訊不對稱、台灣

1. Introduction

Prior research studies such as Amiram *et al.* (2016), Easley and O'Hara (2004), and Leuz and Verrecchia (2000) note that information asymmetry is a common phenomenon in capital markets. According to the disclosure theory, sophisticated investors may learn more from released information (e.g., Bushman *et al.*, 1996; Fischer and Verrecchia, 1999), implying some of them benefit relatively greater from certain disclosure information, proving that information asymmetry does exist. This paper thus asks a fundamental question in information economics: What effect does the public release of firm-specific corporate governance (CG) evaluation information into the market environment have on information asymmetry in a short window surrounding the announcement date? Based on the disclosure theory (e.g., Amiram *et al.*, 2016; Kim and Verrecchia, 1994), the release of specific information does not always

decrease information asymmetry, because there are two countervailing forces - asymmetric increase and asymmetric decrease - that exist simultaneously on the announcement date.

The asymmetry-increasing force emerges, because the information release provides some information that is new to both sophisticated and unsophisticated investors, but such information allows sophisticated investors to react to it more quickly than unsophisticated investors. Therefore, the asymmetry-increasing force enlarges information asymmetry upon the announcement date. On the other hand, the asymmetry-decreasing force emerges, because the information release provides unsophisticated investors some information that is new to them, but which was already known by sophisticated investors. Therefore, along with unsophisticated investors having more information, the decision behavior of unsophisticated investors will gravitate toward sophisticated investors. Hence, the asymmetry-decreasing force lowers information asymmetry on the announcement date by reducing the information gap between sophisticated and unsophisticated investors. To summarize, based on the disclosure theory, the effect of announcing one specific piece of CG evaluation information on the market's information asymmetry depends on the type of asymmetric force dominating that release.

To reform corporate governance domestically, Taiwan's Financial Supervisory Commission (FSC)[2] launched its 5-year Corporate Governance Roadmap. As part of the progress made in 2014 and under the joint efforts of TWSE,[3] TPEx,[4] Taiwan's Securities and Futures Institute (SFI),[5] and FSC, the

[2] FSC was established on July 1, 2004 as the competent authority responsible for the development, supervision, regulation, and examination of financial markets and financial service enterprises in Taiwan. FSC seeks to ensure safe and sound financial institutions, maintain financial stability, and promote the development of the country's financial markets. Its main goals since its establishment have been to create a sound, fair, efficient, and internationalized environment for the financial industry, strengthen safeguards for consumers and investors, and help the financial industry achieve sustainable development.

[3] TWSE is the abbreviation for Taiwan Stock Exchange Corporation.

[4] TPEx is the abbreviation for Taipei Exchange Corporation.

[5] SFI is a non-profit organization established on May 29, 1984 by the Taiwan government. This

Taiwan government announced the CG evaluation system. The purpose of this evaluation system is to assist market participants to better understand the corporate governance practices of TWSE-/TPEx-listed companies.

There have so far been six rounds of corporate governance evaluation exercises. In the first (second) round, the announcement revealed the top 20% (50%) enterprises among all participating firms based on CG scores calculated. Starting from the third year's evaluation on April 14, 2017, the FSC has publicized the rankings of all evaluated companies. Because CG evaluation is a developing and on-going exercise, the type of evaluation indicators and the method of calculation of evaluation scores are modified significantly every two years. Therefore, I use CG evaluation information for the last two years (2018 exercise and 2019 exercise) as my research target.

Following the rule of Taiwan's CG evaluation, the release date of CG evaluation results by FSC is not "scheduled" (i.e., anticipatable) on a specific date every year. In other words, FSC releases the CG evaluation results when it has completed all evaluation processes. In addition, the information related to the CG evaluation is not all disclosed in a company's annual report; e.g., some information is disclosed on the firm's website, implying FSC further helps with collecting and releasing the CG evaluation rankings to the public and thus provides incremental new information to market participants. Since participants in Taiwan's capital market tend to be less sophisticated than those in western economies, promulgating laws and enforcing them through a formal legal system, such as courts, may not effectively strengthen market participants' confidence (e.g., Tai and Hwang, 2020). Thus, participants in Taiwan's capital market value sound CG practices, as demonstrated in this study, because these practices provide an additional layer of protection to their financial interests via mitigating information asymmetry by announcing CG evaluation results. Therefore, based one of the above discussions, releasing CG evaluation results by FSC is an event

organization operates in conjunction with national economic growth policies to guide investment activities, promote academic and practical research in the domains of securities and futures, strengthen services for investors, provide a comprehensive array of information, and enhance the sound development of financial markets domestically.

that could incur shocks to investors, just like earnings announcements or management forecasts (e.g., Amiram *et al.*, 2016).

There are three research studies related to this present one, but they do not use Taiwan samples: Cai *et al.* (2015), Cormier *et al.* (2010), and Kanagaretnam *et al.* (2007). First, Cai *et al.* (2015) explore the impact of a firm's asymmetric information on its choice of corporate governance mechanisms and find that firms facing greater asymmetric information tend to exhibit less intensive board monitoring. Second, Cormier *et al.* (2010) investigate the impact of governance on information asymmetry between managers and investors. Their findings show that several formal monitoring attributes as well as the extent of voluntary governance disclosure reduce information asymmetry. Third, Kanagaretnam *et al.* (2007) look into the relation between the quality of corporate governance and information asymmetry around quarterly earnings announcements. Their results indicate that changes in bid-ask spreads at the time of earnings announcements significantly negatively correlate to board independence, board activity, and the percentage stock holdings of directors and officers.

Based on the above discussions, the biggest difference between my paper and theirs is that their research explores the effect of corporate governance variables, including one variable, several variables, or principal components analysis of several factors, on information asymmetry. Conversely, the main question of my paper is to investigate the impacts on information asymmetry from "releasing" the CG evaluation rankings.

There are two recent research studies exploring Taiwan's CG evaluation system, but the topic of those two papers is not the same as my work: Tai (2020) and Tai and Hwang (2020). Between them, Tai (2020) shows under the condition of better company financial performance that firms receiving an upgraded (downgraded) ranking from corporate governance evaluation exercises experience significantly positive (negative) abnormal returns, implying in a better financial performance environment that investors experience significantly positive reactions to CG information. Tai and Hwang (2020) state that investors' reactions to the CG announcement are stronger among those firms that did not

list in the top 20% in the first exercise, but made it into the top 50% in the second one. In short, the purpose of my study is not the same as that of Tai (2020) and Tai and Hwang (2020), and therefore this work offers new findings and contributions to the literature.

I now present some reasons to illustrate how this new CG evaluation system in Taiwan is different from prior ones and explain why releasing the CG evaluation rankings in Taiwan is worth exploring. First, as reported in the literature, some studies compile a set of independent variables to proxy corporate governance; still others only employ one or two variables for corporate governance to analyze its effect on dependent variables. For instance, Gompers *et al.* (2003) use 24 provisions to develop a corporate governance index (the G-index) and find that this index strongly predicts the effect of corporate governance on firm value. However, Bebchuk *et al.* (2009) confirm that only 6 out of those 24 provisions included in the G-index contribute to the results of Gompers *et al.* (2003). These studies exemplify the difficulties encountered by researchers at measuring corporate governance. The six rounds of CG evaluation exercises in Taiwan have been conducted using indicators from several corporate governance dimensions, offering a rich dataset to completely and exhaustively investigate the announcement effect of CG evaluation ranking information on information asymmetry.

Second, a governance structure and system could be contingent upon macroeconomic factors. They could also depend on the atmosphere of the business environment (e.g., Yang *et al.,* 2020), firm characteristics, and the nature of the capital market. Hence, a single-country system is more suitable for the inquiry in this study.

Third, different from prior studies, such as Standard & Poor's (2002), FSC has mandated that all listed firms in Taiwan must participate in these corporate governance assessment exercises. These all-inclusive assessment exercises therefore mitigate the potential selection or judgmental biases identified in previous studies.

This study examines short-term rather than long-term effects around the CG

release date. I follow prior research (e.g., Amiram *et al.*, 2016; Kim and Verrecchia, 1994) and focus on the stock market's bid-ask spread as a measure of information asymmetry, while controlling for its non-information asymmetry-related components. I document that, on average, the bid-ask spread decreases by approximately 1% on the CG evaluation information announcement date and one day before the announcement. I also conduct some additional analyses that provide evidence enriching my findings. For instance, I explore long-window effects and use the number of transactions as an alternative measure of information asymmetry. In addition, I test investors' predictable behavior, such as exploring whether the announced company's EPS in the previous period being positive or negative has an impact on information asymmetry and examining whether the status of the CG evaluation results, such as upgrade, downgrade, and no change, influences the information asymmetry.

My evidence contributes to the literature in three facets. First, this study documents that the release of CG evaluation ranking information leads to a mitigation effect on information asymmetry upon announcement. Specifically, my findings that the CG evaluation ranking information reduces announcement-period information asymmetry in the stock market complement the evidence provided by Coller and Yohn (1997) and Lee *et al.* (1993), who show that earnings announcements and management forecasts increase announcement-period information asymmetry.

Second, my evidence is consistent with the findings concerning the mitigation effect of analyst forecasts on information asymmetry (e.g., Amiram *et al.*, 2016). Both short-window and long-window announcement periods produce decreasing effects on information asymmetry, which agree with the evidence from Amiram *et al.* (2016). These results provide some empirical validation of the discussion in Kim and Verrecchia (1994) and Amiram *et al.* (2016), whereby the release of information indeed decreases information asymmetry upon its announcement.

Third, my research extends the line of literature regarding voluntary or non-voluntary disclosure. Among them, Leuz and Verrecchia (2000) explore

German firms when they switched from the German reporting regime to an international reporting regime (e.g., IAS or U.S. GAAP). Their evidence indicates that firms committing to increased levels of disclosure are associated with lower bid-ask spreads and higher share turnover.

Sheu *et al.* (2010) take Taiwan as the research target to explore a firm's market value under the comprehensive disclosure of information relating to the compensation of directors and executives. They find that investors offer a larger valuation to those firms that choose to voluntarily disclose comprehensive information on their compensation mechanism. Chung *et al.* (2012) explore stock returns around 131 derivative-related loss announcements in the South Korea stock market from March 2008 to June 2009. They find that mechanically increasing the quantity of disclosures does not necessarily facilitate a more rational equity valuation.

Chung *et al.* (2015) extend Anglo-American research by studying excess executive compensation and its influence on firm value using samples from Taiwan. They show that excess executive compensation negatively relates to firm value, but voluntary disclosure practices moderate the above relationship. Finally, Hsu *et al.* (2021) use Taiwanese data to examine the impacts of CEO duality on firm performance and further explore the moderating effect of information costs on this relation. Their findings show no significant correlation between leadership style and firm performance, but the above relationship is associated with information costs measured by analysts' earnings forecasts. In short, to my best knowledge, this present research is the first study to explore effects from the disclosure of CG evaluation information on information asymmetry. Therefore, my research extends the line of disclosure literature.

The results obtained herein yield the following implications to the design and implementation of CG practices, which can be nation-/jurisdiction-specific (Demsetz and Lehn, 1985), as countries in the Asia-Pacific region may not be as advanced as the U.S. and UK in several aspects (Johnstone and Goo, 2017); i.e., the severity of regulators, the sophistication of the capital market, and the effectiveness of law enforcement (Fernando and Hou, 2019). According to my

results, releasing CG evaluation ranking information reduces information asymmetry in the announcement period, implying CG practices do matter to market participants (including unsophisticated investors).

The remainder of this study is organized as follows. Section 2 briefly describes the CG evaluation system in Taiwan. Section 3 reviews the literature and develops the research hypotheses. Section 4 describes the research methodology. Section 5 presents research findings and reports the results of additional tests. Finally, Section 6 discusses the implications of the study for regulatory agencies, corporate management, and market participants and highlights directions for future studies.

2. Corporate governance evaluation system in Taiwan

As La Porta *et al.* (1997, 1998, 2000) indicate, CG is a crucial element for developing financial markets and protecting market participants. Many researchers also have pointed out that ill-designed and ineffectively-implemented CG practices could be reasons that caused the 1997 Asian and 2008 global financial crises (e.g., Erkens *et al.*, 2012; Mitton, 2002). As a part of the Asia-Pacific region, Taiwan suffered greatly from both economic events. To avoid similar incidents from happening, Taiwan regulators, like their counterparts in other countries/jurisdictions, have put forth concerted efforts to improve CG practices. As part of this, Taiwan kicked off its own CG reform by launching the 5-year CG Roadmap. In 2014, TWSE, TPEx, SFI, and FSC set up the CG evaluation exercise.

There are four objectives to be accomplished through the CG evaluation system. First, such a system should help shape a beneficial corporate governance culture and provide a stable environment for a firm's future development. Second, the evaluation system is intended to reward outstanding enterprises and encourage corporate executives to use the best corporate governance practices as benchmarks. Third, the corporate governance evaluation exercise provides an opportunity for firms to improve their global images. Fourth and finally, the corporate governance evaluation system should be able to enhance the quality of

Taiwan's capital market, because such a system could expand the level of disclosures, improve reporting transparency, and broaden the level of market participation from investors and creditors of all sizes.

To develop the corporate governance evaluation system, a corporate governance evaluation committee was first formed. After several rounds of public hearings to solicit comments and suggestions, multiple dimensions were identified and incorporated into Taiwan's CG evaluation system. These dimensions were derived according to domestic as well as foreign corporate governance regulations and practices. Each dimension includes several indicators. Their structure has been built based on the five corporate governance principles released by the Organization for Economic Co-operation and Development (OECD) in 2004: (1) protection of shareholders' equity, (2) equitable treatment of shareholders, (3) board composition and operation, (4) information transparency, and protection of stakeholders' interests, and (5) corporate social responsibility. There are 92, 98, 103, 99, 87, and 87 indicators included in the 2014, 2015, 2016, 2017, 2018, and 2019 exercises, respectively. Table A1 lists the composition of indicators in the five CG dimensions from 2014 to 2019.[6]

To reduce the degree of judgmental biases and to simplify the evaluation exercises, the indicators can only be rated by "yes" or "no" answers. To differentiate the rating scores, these indicators were divided into three categories during the 2014 and 2015 exercises: basic (Type A), general (Type B), and advanced (Type C). Among these indicators, "basic" applies to all companies, while "general" applies to all companies unless the indicator is not applicable to the company. Finally, "advanced" focuses on international issues.

Starting from the 2016 ranking exercises, the FSC deleted Type C category and increased Type C+ and Type C– indicators. Type C+ and Type C– indicators are grounds for points being specifically added to or deducted from a company's final evaluation score. Among them, Type C+ indicators address the question of whether a company has performed especially well in the area of corporate

[6] In 2018, FSC combined dimension I and dimension II into one dimension - protection of shareholders' equity and equitable treatment of shareholders.

governance during the year under evaluation. For instance, did the company file its annual financial report within 2 months from the end of the fiscal year? On the other hand, Type C– indicators evaluate whether the company has performed deficiently in the area of corporate governance during the year under evaluation - i.e., Was any of the company's directors or supervisors named as a defendant in any litigation brought by the Securities and Futures Investors Protection Center?

Beginning with the 2018 exercise, the FSC removed Type C+ and Type C– categories and added Type AA category, Type A+ category, and extra credit/point deduction indicators. Among them Type AA and Type A+ indicators are rewarded with a higher weight in scoring than other categories' indicators. The nature of these indicators is viewed as "advanced", because they are not only perceived as good CG practices, but also that CG pertains to the compliance of laws and regulations in Taiwan. For instance, one indicator evaluates whether the company has announced its annual financial report within two months from the end of the fiscal year. Because this question is classified as "AA," a firm will receive two (instead of one) points to its CG exercise. One point is added, because it is in one of the CG dimensions, and an extra point is awarded to the total score when the answer to this question is "yes."

Type A+ indicators are scored according to the degree of implementation in practice. A higher score is awarded when a firm achieves high-level performance in a specific area of CG during the year under evaluation. For instance, disclosure of a firm's annual carbon dioxide emissions for the past two years is treated as a type A+ indicator. When a firm makes such a disclosure, one point is added, because it is one of the CG dimensions; in addition, if its content has been verified by an external institution, then one extra point will be added to the total CG score.

For the extra credit/point deduction indicators, one extra point is added (one extra point deducted) when a firm makes a disclosure about one good CG event (one bad CG event) and when its content has been verified by an external institution. For instance, if a company has voluntarily participated in and been certified in other corporate governance-related assessment systems, then an extra

point will be awarded. On the other hand, when a company has material violations of good faith management, corporate social responsibility, or other non-conformity with the principles of corporate governance, then it will lead to a deduction on the CG score. To assist evaluated firms to continue improving their CG mechanisms and practices, indicators probably will be removed from evaluation if the majority of firms have demonstrated that they have followed these CG practices. In this case, new and more challenging CG indicators/practices will be added to the evaluation exercises in order to motivate firms to continue improving their mechanisms and practices. Thus, one may see that indicators incorporated into CG dimensions change from year to year. Table A2 lists the number of indicators by grouping them in categories for the years from 2014 to 2019.

To rate a firm's CG system and to determine the rating scores, both SFI, an organization from the private sector, and the companies under evaluation concurrently collect publicly available data associated with the evaluations. Since the rating system is built based on a point system, the formulae used to calculate the scores of my samples are presented below.

(1).Scores earned in each dimension:

Scores earned in each dimension = [the points in the dimension divided by (the number of indicators within this dimension minus the number of indicators not applicable to the company)] x [the number of indicators in the dimension divided by the total number of indicators] x 100.

(2).Calculation of the total score:

Once the score in each dimension has been calculated, the points are summed up according to categories. The maximum possible total score for the four categories is 100 points. Any extra points are then added to and point deductions are deducted from the total score - that is, any additional points for AA indicators and A+ indicators and any extra credit points or point deductions are included, as the adjustment, to obtain the final total CG score.

As the SFI and the company under evaluation will calculate the CG score

concurrently and independently, the SFI will compare the score according to its own computation with the score calculated by the evaluated entity. If there are differences in scores, then the SFI will request the evaluated firms to provide supporting evidence of their own computations. After obtaining supporting evidence, the SFI will reconcile both scores and make any necessary adjustment. To demonstrate how CG scores are calculated, Table A3 provides an illustrative example of hypothetical company A in 2018.

The evaluated year covers the entire accounting calendar year. For fairness of assessment and to help the evaluated enterprises to improve their corporate governance, these evaluation exercises strictly follow the Corporate Governance Roadmap. The SFI first announces the evaluation results to the general public after the institute has calculated the scores, reconciled them with the evaluated firms, and made proper adjustments. The results of the evaluation exercises are then announced to the general public on the specific date. On April 30, 2015, the SFI released the results of the first corporate governance evaluation exercises. The announcement revealed the names of enterprises listed in the top 20% among all participating firms. On April 8, 2016, the FSC announced the second corporate governance evaluation results of those listed in the top 50% according to the scores reconciled. On April 14, 2017, April 30, 2018, April 30, 2019, and April 30, 2020, respectively, the FSC then announced the third, fourth, fifth, and sixth rounds of CG evaluation results for all participating firms.

3. Literature review and hypotheses' development

Prior literature such as Glosten and Milgrom (1985) and Kalay (2015) states that information asymmetry occurs between sophisticated and unsophisticated investors. There are several reasons to explain the circumstances. First, sophisticated investors have the ability to obtain private information that cannot be accessed by unsophisticated investors. Second, sophisticated investors are more likely to comprehend new information as it is released to all investors. Third, Kim and Verrecchia (1994) investigate some different financial information releases (i.e., earnings announcements, management forecasts, and

analyst forecasts) and state during the announcement period that there are two simultaneous forces that have directionally opposite empirical implication effects on information asymmetry. First, the asymmetry-increasing force exists when a release of information offers new information to "both" sophisticated and unsophisticated investors that increases information asymmetry upon announcement, because sophisticated investors can comprehend the information more quickly than unsophisticated investors. Second, the asymmetry-decreasing force exists when a release of information offers new information only to unsophisticated investors who did not previously have access to it, but for which sophisticated investors previously did already process it; thus, this information release decreases information asymmetry upon announcement. To summarize, the net directional effect on information asymmetry upon an announcement date depends on how the information contained in the release relates to the information previously understood by sophisticated investors.

There are some research studies that provide evidence to support the asymmetry-increasing force. Among them, Lee *et al.* (1993) first find at the time of earnings announcements that bid-ask spreads increase. In addition, Krinsky and Lee (1996) note that the bid-ask spread widens significantly around earnings announcements. Furthermore, Coller and Yohn (1997) document in the short window around the release of a management forecast that the bid-ask spread increases. In short, according to Kim and Verrecchia (1994) and Amiram *et al.* (2016), earnings announcements and management forecasts provide a relatively higher proportion of information that is new to "both" sophisticated and unsophisticated investors than the proportion of information that is already known to sophisticated investors, but new to unsophisticated investors. Hence, information asymmetry increases significantly around earnings announcements and management forecasts.

Extant studies (e.g., Amiram *et al.*, 2016) conversely present that along with the research period of releasing earnings announcements and increase in management forecasts, the information asymmetry effect is decreasing, implying that information asymmetry is temporary. In addition, Cormier *et al.* (2010) find

that some formal monitoring attributes (e.g., board and audit committee size) as well as the extent of voluntary governance disclosure reduce information asymmetry. In other words, this study supports that the voluntary disclosure of CG-related information decreases information asymmetry. Furthermore, several studies state that CG-related information offers a relatively higher proportion of information to unsophisticated investors than the proportion of information that is new to "both" sophisticated and unsophisticated investors. For instance, Tai and Hwang (2020) document that Taiwan's capital market has a limited number of passive institutional shareholders and involves numerous small and dispersed investors - i.e., unsophisticated investors.

The present paper finds that corporate governance rankings do matter to market participants (the majority of whom are unsophisticated investors). This means unsophisticated investors in Taiwan react significantly to the CG evaluation information. Tai (2020) also employs Taiwan equities as the research setting, presenting that there is actually a positive (negative) correlation between such an upgrade (downgrade) after these evaluation exercises as well as abnormal returns under the condition of better company financial performance. In other words, in a better financial performance environment, the majority of unsophisticated investors indeed experience significantly positive reactions to CG information. Moreover, according to the suggestion of Kahneman and Tversky (1973), individuals tend to "anchor" their expectations on the benchmark number received and make adjustments to follow-up assessments accordingly when facing a highly uncertain environment. Because unsophisticated investors have previously accessed less CG information than sophisticated investors already hold, releasing CG-related information therefore offers a relatively higher proportion of information to unsophisticated investors than the proportion of information to sophisticated investors.

Taiwan's SFI is responsible for collecting data from publicly-available (open) sources and calculating scores based on the rules stipulated by the FSC; in other words, the SFI is not in a position to make any subjective judgment in the evaluation exercises. Therefore, compared to earnings announcements and

management forecasts, the release of CG evaluation rankings is similar to analyst forecasts, because they contain a high level of information that is new "only" to unsophisticated investors versus information that is new to both unsophisticated investors and sophisticated investors. In other words, the information related to CG performance is partially already known by sophisticated investors, but this information is almost new to unsophisticated investors.

According to the above logic, I predict and document that the release of CG evaluation information decreases information asymmetry upon the announcement date. To summarize, the CG evaluation ranking announcement is a form of information released by a government information intermediary that has collected public information and calculated evaluation scores, thus paralleling the activities of sophisticated investors. It is likely that, compared to earnings announcements and management forecasts, a relatively large proportion of the information contained in an CG evaluation announcement is new only to unsophisticated investors, thus decreasing information asymmetry with sophisticated investors. This intuition spurs my prediction that releasing CG evaluation ranking information decreases information asymmetry upon announcement.

4. Research design and sample detection

4.1 Empirical equation

The date of releasing CG evaluation results by FSC is not "scheduled" on a specific date every year, implying FSC releases the CG evaluation results once it has completed all evaluation processes. In addition, the information related to CG evaluations has not all been disclosed in an annual report - for example, some information has been disclosed on a firm's website. In other words, FSC collects and releases the CG evaluation rankings to the public, which can provide incremental new information to all market participants. Hence, releasing CG evaluation results is an event and produces shocks to investors, like earnings announcements or management forecasts. Therefore, the study examines

short-term effects around their release date and follows prior research (e.g., Kim and Verrecchia, 1994; Amiram *et al.*, 2016) by focusing on the stock market's bid-ask spread as a measure of information asymmetry.

Amihud (2002), Bacidore *et al.* (2002), and Heflin *et al.* (2005) suggest that the bid-ask spread is a superior measure of information asymmetry, because the alternatives are much more likely to contain significant measurement error. Recent studies (i.e., Amiram *et al.* (2016)) also adopt the bid-ask spread as a measure of information asymmetry. Therefore, I use the stock bid-ask spread across several days spanning the announcement date as my measure of information asymmetry to test my predictions concerning the effect of a CG evaluation information release on announcement-period information asymmetry. Because the CG evaluation announcement is an information release by a government information intermediary that has only collected public information, calculated evaluation scores, and announced the evaluation results, I expect that compared to earnings announcements and management forecasts, a relatively large proportion of the information contained in such an announcement is new only to unsophisticated investors, thus decreasing information asymmetry with sophisticated investors. To summarize, I use the stock bid-ask spread across the announcement date to proxy information asymmetry and predict that the estimated coefficient of "announcement" is significantly negative.

To control for other variables influencing the bid-ask spread, I set up several control variables based on the finance theory (e.g., Glosten and Milgrom, 1985; Stoll, 1978) and prior literature (e.g., Amiram *et al.*, 2011; Amiram *et al.*, 2016; Coller and Yohn, 1997). In short, I employ the following equation, which uses the daily bid-ask spread as the dependent variable and several control variables in order to absorb non-information asymmetry components. Referring to Amiram *et al.* (2016) and unlike Gompers *et al.* (2003) and Johnson *et al.* (2009), who draw on a long-window approach, I use a short-window method to allow this paper to make a direct and noise-free assessment of the effect of the CG evaluation release on market investors.

I therefore set up the following equation, where I use three daily

observations spanning announcement date, including one day before the announcement, the announcement date itself, and one day after.

$$Spread_{i,d} = \beta_0+\beta_1 Pre1_{i,d}+\beta_2 Info0_{i,d} +\beta_3 Price_{i,d}+\beta_4 Lnsize_{i,t-1} +\beta_5 Volatility_{i,t-1} +\beta_6 Turnover_{i,t-1}+\beta_7 Depth_{i,d} +\beta_8 Volume_{i,d}+\beta_9 CAR_{i,d} +\varepsilon_{i,d} \quad (1)$$

Here, variable subscripts i, d, and t proxy firm, day, and quarter, respectively. *Spread* is the bid-ask spread percentage on announcement day d. My primary independent variable is *Info0*, which is an indicator variable that equals one if day d is the announcement day for an CG evaluation information release concerning firm i and zero otherwise. Moreover, I add *Pre1*, which is an indicator variable that equals one if day d is the day immediately prior to the announcement day and zero otherwise.

In my empirical design the bid-ask spread one day after the announcement day (*Post1*) is reflected in the intercept. Thus, the included indicator variables are *Pre1* and *Info0* to capture the change in the bid-ask spread from one day before the announcement date to one day after the announcement. If a CG evaluation information release indeed decreases information asymmetry as I predict, then I should find that $\beta_2 < 0$.

I next discuss control variables. According to Stoll (1978), daily stock price (*Price*) is added to control for market makers' processing costs. Referring to Demsetz (1968), I also set up firm size (*Lnsize*) and prior-quarter average return volatility (*Volatility*) to control for inventory risk and then prior-quarter average daily turnover (*Turnover*) to control for liquidity in the firm's shares, which can influence inventory holding costs. Based on Amiram *et al.* (2016), I increase the daily number of transactions (*Depth*) to control the market maker's potential adjustment to price depth, because of an alternative protection mechanism against inventory risk or information asymmetry. I also refer to Amiram *et al.* (2016) and add daily trading volume (*Volume*) and the value of abnormal returns from -2 to 0 (*CAR*) to control the impacts of inventory risk and differential news content. I lastly employ several modifications to this basic empirical structure in subsequent analyses and discuss them along with the associated results in Section 5.

4.2 Sample selection and data

There have so far been six rounds of corporate governance evaluation exercises. For the first (second) CG evaluation exercises, the FSC released the top 20% (50%) enterprises among all participating firms based on CG scores calculated. Staring from the third year's evaluation, the FSC has publicized the rankings of all evaluated companies. To examine the research hypothesis stated herein and further extend my research to distinguish the information asymmetry effects among firms receiving an upgrade, downgrade, or no change in CG evaluation exercises, I can only employ data from the third year's evaluation. However, CG evaluation is a developing and on-going exercise, and the type of evaluation indicators and the method of calculation of evaluation scores are modified significantly every two years. Therefore, as a research target I use CG evaluation information for the last two years: the 5th CG evaluation exercise and the 6th CG evaluation exercise.[7]

Among the two above, in 2019 the FSC announced the results of the former on April 30. One year later in 2020, the FSC announced the outcomes of the latter exercise also on April 30. I use 901 TWSE-listed companies that participated in the 6th round of the CG ranking exercises as my samples.[8] One firm is removed from the pool of observations due to missing values of *Spread*. In addition, I use three daily observations spanning the announcement date, including one day before, the announcement date itself, and one day after. This leaves a total of 2,700 TWSE-listed companies in the population for my analyses.

As shown in Table 1, I present the process of sample selection. I obtain data from the *Taiwan Economic Journal* (TEJ). For data not available in the TEJ

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[7] In the "5.3.4 Good news and bad news effects" section, I use the rankings of firms in the 5th round of the exercise as the benchmark to determine whether a firm has an upgrade, downgrade, or no change in the 6th round of the exercise. Therefore, the CG evaluation information I use is from the 5th and the 6th rounds of the exercise. However, I only use 901 TWSE-listed companies that participated in the 6th round of CG ranking exercises as samples in Eq. (1), because the trading system is quite different between 2019 and 2020; i.e., intraday continuous trading was implemented on March 23, 2020.

[8] Please refer to footnote 6.

Table 1

Sample collection process

Initial firm-year observations	2,703
Less companies with missing data	(3)
Firm-year samples used in the study	2,700
Proportion of final observations (%)	99.89%

database, I collect them manually from the respective firms' financial statements.

5. Emprical resulsts

5.1 Descriptive statistics and correlation analyses

Table 2 presents the descriptive statistics of Eq. (1). The mean (median) value for *Spread* is 0.027 (0.021). The average bid-ask spread of my paper is lower than the bid-ask spreads in Lee *at al.* (1993) and Coller and Yohn (1997), because I use more recent data, which are characterized by higher-level market liquidity and lead to lower bid-ask spreads. The mean (median) values for *Pre1* and *Info0* are the same, which are respectively 0.333 and 0, while the mean (median) value for *Price* is 51.209 (24.564). In addition, the mean (median) values for *Depth*, *Volume*, and *CAR* are 1,584.680 (403), 3,897.630 (774.5), and 1.641 (1.452), respectively. This means on average that the number of transactions is around 1,584, the average amount of trading volume (divided by 1,000) is around 3,897 lots (1 lot = 1000 shares), and the value of abnormal returns ranging from -2 to 0 is 1.641.

Table 3 reveals the Pearson product-moment correlation of Eq. (1), which presents that *Spread* significantly and negatively correlates with *Pre1* and *Info0*, thus partially supporting my hypothesis. However, by simply looking at the significance of the correlation coefficients between the two variables, it is not possible to decide accurately whether my prediction is fully supported, because it does not control the impact of other variables. Therefore, I use regression analysis to investigate my prediction in greater detail.

Table 2
Descriptive statistics for eq. (1) (N=2,700)

Variable	Mean	Median	Std. Dev.	Maximum	Minimum
Spread	0.027	0.021	0.019	0.209	0
Pre1	0.333	0	0.471	1	0
Info0	0.333	0	0.471	1	0
Price	51.209	24.564	150.370	4,028.830	2.840
Lnsize	9.847	9.776	0.632	12.895	8.595
Volatility	1.936	1.548	1.401	8.759	0
Turnover	0.646	0.251	1.258	13.396	0.004
Depth	1,584.680	403	3,387.060	54,191	1
Volume	3,897.630	774.500	9,938.230	143,263	0
CAR	1.641	1.452	1.753	12.717	-6.762

Notes: *Spread* = Firm i's bid-ask spread in basis points on trading day d, measured as the highest deal price minus lowest deal price, scaled by the mean value. *Pre1* = An indicator variable that equals one if trading day d is the first trading day preceding the announcement day of an CG evaluation information release and zero otherwise. *Info0* = An indicator variable that equals one if trading day d is the CG evaluation information announcement date and zero otherwise. *Price* = Firm i's stock price on day d. *Lnsize* = Log of firm i's average market value of equity during quarter t-1. *Volatility* = Firm return volatility, defined as the standard deviation of firm i's monthly stock return during fiscal quarter t-1. *Turnover* = Average daily stock turnover of firm i during quarter t-1. *Depth* = Firm i's number of transactions on trading day d. *Volume* = Firm i's trading share volume on day d (divided by 1,000). *CAR* = Value of the cumulative abnormal return from -2 to 0 for firm i's CG evaluation information release.

5.2 Regression analyses

Referring to Amiram *et al.* (2016), I control the configurations for fixed effects and clustered standard error structures. Thus, I include a firm fixed variable as I run my regression equation. In addition, I winsorize all continuous variables at the 1% and 99% levels.

Table 4 reports the results from the estimation of Eq. (1). The estimated coefficients of *Pre1* and *Info0* are respectively -0.009 and -0.008 and significant at the 1% level (t = -11.06 and -10.3). This indicates an approximate 1% reduction in the bid-ask spread on announcement day and one day before the

Table 3

Pearson correlation matrix for eq. (1) (N=2,700)

	Spread	*Pre1*	*Info0*	*Price*	*Lnsize*	*Volatility*	*Turnover*	*Depth*	*Volume*	*CAR*
Spread	1	-0.038*	-0.037*	0.059**	-0.108**	0.209**	0.210**	0.180**	0.111**	0.329**
Pre1	-0.038*	1	-0.500**	-0.001	-0.000	0.000	-0.0003	-0.005	-0.0004	0.200**
Info0	-0.037*	-0.500**	1	0.002	-0.0004	0.000	-0.0003	0.030	0.031	0.110**
Price	0.059**	-0.001	0.002	1	0.291**	0.097**	0.130**	0.074**	0.001	-0.018
Lnsize	-0.108**	-0.0004	-0.0004	0.291**	1	0.007	0.074**	0.512**	0.458**	0.008
Volatility	0.209**	0.000	0.000	0.097**	0.007	1	0.401**	0.173**	0.104**	-0.101**
Turnover	0.210**	-0.0003	-0.0003	0.130**	0.074**	0.401**	1	0.365**	0.232**	-0.090**
Depth	0.180**	-0.005	0.030	0.074**	0.512**	0.173**	0.365**	1	0.904**	0.043*
Volume	0.111**	-0.000	0.031	0.001	0.458**	0.104**	0.232**	0.904**	1	0.045*
CAR	0.329**	0.200**	0.110**	-0.018	0.008	-0.101**	-0.090**	0.043*	0.045*	1

Notes:

(1) All variables are as defined in Table 2.

(2) ** and * indicate significance at the 1% and 5% levels, respectively.

announcement of CG evaluation information. It is also consistent with my hypothesis that the announcement of CG evaluation information decreases information asymmetry. Hence, the findings support my prediction.

The regression results of all control variables are significant and consistent with the existing literature, implying it is appropriate for Eq. (1) to include these control variables. For example, my results are in accordance with Stoll (1978), because the coefficient of *Price* in Eq. (1) is 0.00001 (t=5.13). This shows that market makers' processing costs really influence the bid-ask spread on the day of, one day before, and one day after the announcement.

5.3 Additional analysis

I conduct four additional analyses to provide evidence to enrich my findings and make the results robust. First, I extend my event period from a short window to a long window. In other words, I add five new independent variables in the equation: five days, four days, three days, and two days subsequent to the

Table 4

Empirical results for eq. (1) (N=2,700)

$Spread_{i,d} = \beta_0+\beta_1 Pre1_{i,d}+\beta_2 Info0_{i,d} +\beta_3 Price_{i,d}+\beta_4 Lnsize_{i,t-1} +\beta_5 Volatility_{i,t-1} +\beta_6 Turnover_{i,t-1}+\beta_7 Depth_{i,d} +\beta_8 Volume_{i,d}+\beta_9 CAR_{i,d} +\varepsilon_{i,d}$ Eq. (1)

Variable	Parameter Estimate	t Value
Intercept	0.100	16.13***
Pre1	-0.009	-11.16***
Info0	-0.008	-10.3***
Price	0.000	5.13***
Lnsize	-0.008	-13.3***
Volatility	0.002	8.91***
Turnover	0.001	4.59***
Depth	0.000	8.99***
Volume	-0.000	-4.17***
CAR	0.004	23.96***
Firm Fixed Effect	Yes	
Clustered SE	Firm, Quarter	
AdjR^2	0.2882	
F Value	122.43	

Notes:

(1) All variables are as defined in Table 2.

(2) *** indicates significance at the 1% level.

announcement and two days after the announcement. Second, I change the measure of information asymmetry from bid-ask spread (*Spread*) to the number of transactions (*Depth*) to re-examine my prediction. Third, I explore whether investors' predictable behavior impacts information asymmetry. In other words, I test the financial performance of a company in the previous period - whether an evaluated company's EPS in the previous period is positive or negative - and its impacts on information asymmetry. Fourth, I examine whether the status of CG

evaluation results (such as upgrade, downgrade, and no change) has different impacts on information asymmetry.

5.3.1 Longer-window information asymmetry effects

My primary test focuses on short-window announcement-period information asymmetry. Unlike the primary test, in this section I analyze the effects of information releases on information asymmetry in a longer window around the announcement date by estimating the following Eq. (2):

$$\begin{aligned} Spread_{i,d} = {} & \beta_0+\beta_1 Pre4_{i,d}+\beta_2 Pre3_{i,d}+\beta_3 Pre2_{i,d}+\beta_4 Pre1_{i,d}+\beta_5 Info0_{i,d}+\beta_6 Post1_{i,d} \\ & +\beta_7 Post2_{i,d}+\beta_8 Price_{i,d}+\beta_9 Lnsize_{i,t-1}+\beta_{10} Volatility_{i,t-1}+\beta_{11} Turnover_{i,t-1} \\ & +\beta_{12} Depth_{i,d}+\beta_{13} Volume_{i,d}+\beta_{14} CAR_{i,d}+\varepsilon_{i,d} \end{aligned} \quad (2)$$

Here, *PostN* (*PreN*) is an indicator variable that equals one if day d is trading day N after (before) the announcement day (*Info0*) and equals zero otherwise. All other variables are as previously defined. In addition, the bid-ask spread five days before the announcement day (*Pre5*) is reflected in the intercept, and thus the included indicator variables are *Pre4*, *Pre3*, *Pre2*, *Pre1*, *Info0*, *Post1*, and *Post2* to capture the change in the bid-ask spread from five days before the announcement date to two days after the announcement.

Table 5 presents the results from estimating Eq. (2). The estimated coefficients of *Pre4*, *Pre3*, *Pre2*, *Pre1*, *Info0*, *Post1*, and *Post2* are all negative and significant at the 1% level (t = -18.37, -12.59, -17.14, -15.32, -14.97, -5.63, and -10.07, respectively) and indicate a reduction in the bid-ask spread from four days before the announcement of CG evaluation information to two days after its announcement. The findings are consistent with my hypothesis that the announcement of CG evaluation information decreases information asymmetry. To summarize, the announcement of CG evaluation information decreases information asymmetry for both short-window and longer-window announcement periods.[9]

[9] I also change the measure of the control variable, CAR, from (t-2 ~ t) to (t-10 ~ t-5). The estimated coefficients of *Pre4*, *Pre3*, *Pre2*, *Pre1*, *Info0*, *Post1*, and *Post2* are still all negative and significant at the 1% level (t = -18.02, -12.14, -17.09, -15.29, -14.98, -5.57, and -10.02,

Table 5

Empirical results for eq. (2) (N=11,683)

$$Spread_{i,d} = \beta_0+\beta_1 Pre4_{i,d}+\beta_2 Pre3_{i,d}+\beta_3 Pre2_{i,d}+\beta_4 Pre1_{i,d}+\beta_5 Info0_{i,d}+\beta_6 Post1_{i,d}+\beta_7 Post2_{i,d}+\beta_8 Price_{i,d}+\beta_9 Lnsize_{i,t-1}+\beta_{10} Volatility_{i,t-1}+\beta_{11} Turnover_{i,t-1}+\beta_{12} Depth_{i,d}+\beta_{13} Volume_{i,d}+\beta_{14} CAR_{i,d}+\varepsilon_{i,d} \quad \text{Eq. (2)}$$

Variable	Parameter Estimate	t Value
Intercept	0.098	33.5***
Pre4	-0.011	-18.37***
Pre3	-0.007	-12.59***
Pre2	-0.01	-17.14***
Pre1	-0.009	-15.32***
Info0	-0.009	-14.97***
Post1	-0.003	-5.63***
Post2	-0.006	-10.07***
Price	0.000	7.52***
Lnsize	-0.007	-25.42***
Volatility	0.002	16.72***
Turnover	0.001	9.37***
Depth	0.000	16.98***
Volume	-0.000	-5.8***
CAR	0.002	25.18***
Firm Fixed Effect	Yes	
Clustered SE	Firm, Quarter	
AdjR^2	0.2254	
F Value	243.86	

Notes:

(1) *Pre4* = An indicator variable that equals one if trading day d is the four trading days preceding the announcement day of an CG evaluation information release and zero otherwise. *Pre3* = An indicator variable that equals one if trading day d is the three trading days preceding the announcement day of an CG evaluation information release and zero otherwise. *Pre2* = An indicator variable that equals one if trading day d is the two trading days preceding the announcement day of an CG evaluation information release and zero otherwise. *Post1* = An indicator variable that equals one if trading day d is the one trading day after the announcement day of an CG evaluation information release and zero otherwise. *Post2* = An indicator variable that equals one if trading day d is the two trading days after the announcement day of an CG evaluation information release and zero otherwise. All other variables are as defined in Table 2.

(2) *** indicates significance at the 1% level.

respectively), implying a reduction in the bid-ask spread from four days before the announcement of CG evaluation information to two days after its announcement.

5.3.2 Alternative measures of information asymmetry

Prior literature suggests that the bid-ask spread is a better measure of information asymmetry, because the alternatives are much more likely to contain significant measurement error (e.g., Amihud, 2002; Bacidore *et al.*, 2002; Heflin *et al.*, 2005). Therefore, my main test takes the bid-ask spread as a proxy to measure information asymmetry. On the other hand, some studies (i.e., Amiram *et al.* (2016)) use quoted depth as one alternative measure of information asymmetry; however, in Taiwan I cannot obtain bid size and offer size from the government website, and so I employ the number of transactions at the announcement date (*Depth*) as a measure of information asymmetry. Specifically, an increase (decrease) in *Depth* reflects a decrease (increase) in information asymmetry.

Table 6 reports the results, where I use *Depth* as the dependent variable (as defined previously) and *Spread* as a control variable. As reported, the estimated coefficients of *Pre1* and *Info0* are not significant (t = 0.52 and 1.23) and thus do not support my hypothesis. In short, when I change a measure of information asymmetry from *Spread* to *Depth*, the results do not align with each other. Therefore, the announcement of CG evaluation information can decrease information asymmetry, conditional on whether the definition of information asymmetry is the bid-ask spread (*Spread*).

To sum up, my findings are consistent with prior literature - i.e., Amihud (2002), Bacidore *et al.* (2002), and Heflin *et al.* (2005) - documenting that the bid-ask spread (*Spread*) is a better measure of information asymmetry than the number of transactions (*Depth*), because *Depth* is more likely to contain a significant measurement error. For instance, *Depth* is substantially affected by the intraday continuous trading system that was implemented on March 23, 2020. I also use the bid-ask spread (*Spread*) as a control variable in this additional test, so that the bid-ask spread (*Spread*) will absorb *Depth*'s effects about information asymmetry when *Spread* is a control variable. According to the above discussions, the bid-ask spread (*Spread*) is the best measure for information

Table 6

Empirical results for alternative measures of information asymmetry (N=2,700)

$Depth_{i,d} = \beta_0+\beta_1 Pre1_{i,d}+\beta_2 Info0_{i,d} +\beta_3 Price_{i,d}+\beta_4 Lnsize_{i,t-1} +\beta_5 Volatility_{i,t-1} +\beta_6 Turnover_{i,t-1}+\beta_7 Depth_{i,d} +\beta_8 Volume_{i,d}+\beta_9 CAR_{i,d} +\varepsilon_{i,d}$

Variable	Parameter Estimate	t Value
Intercept	-7743.561	-16.56***
Pre1	33.385	0.52
Info0	77.3	1.23
Price	0.149	0.86
Lnsize	769.803	16.38***
Volatility	30.762	1.59
Turnover	395.713	17.97***
Volume	0.27	92.96***
CAR	-12.087	-0.74
Spread	12814	8.99***
Firm Fixed Effect	Yes	
Clustered SE	Firm, Quarter	
$AdjR^2$	0.8614	
F Value	1864.39	

Notes:
(1) Change the measure of information asymmetry from *Spread* (firm i's bid-ask spread in basis points on trading day d) to *Depth* (number of transactions at the announcement date).
(2) *Depth* = Number of transactions at the announcement date. All other variables are as defined in Table 2.
(3) *** indicates significance at the 1% level.

asymmetry, and thus my main test takes the bid-ask spread (*Spread*) as a proxy to measure information asymmetry in a more suitable method.

5.3.3 Predictable behavior of market investors

Prior literature provides evidence of predictable behavior by market makers around anticipated events. For example, So and Wang (2014) find that

predictable behavior by market makers exists for earnings announcements. Therefore, this section examines whether an evaluated company's EPS in the previous period is positive or negative. It indicates a specific predictable behavior of market investors and can have impacts on the correlation between the release of CG evaluation information and the level of information asymmetry.

Table 7 reports the results from estimating Eq. (1) separately for whether the EPS in the previous period of a company that is on the announcement list is positive or negative. As reported, the estimated coefficients of *Pre1* and *Info0* are significantly negative for both groups (for the EPS>0 group, t = -9.58 and -8.44; for the EPS<0 group, t = -5.93 and -5.98), suggesting that our results are not attributable to differences in the predictable behavior of market investors. In other words, no matter whether the EPS is positive or negative for a company on the announcement list, there is a mitigation of information asymmetry upon announcement and one day before announcement.

5.3.4 Good news and bad news effects

Referring to Amiram *et al.* (2016) and McNichols and O'Brien (1997), analysts prefer to announce good news and may censor negative opinions, and this censoring may not occur for the cases of earnings announcements and management forecasts. In other words, good or bad news may provide different impacts on information asymmetry. To address these concerns, I re-estimate Eq. (1) separately for sample partitions based on whether the ranking is an upgrade, downgrade, or no change. To conduct examinations, I use the rankings of firms in the 5th round of the exercise as the benchmark to determine whether a firm has an upgrade, downgrade, or no change in the 6th round of the exercise. Of the firms examined, 683 received an upgrade, 549 received a downgrade, and 1468 did not receive a revision in their CG ranking.

As Table 8 reports, my inferences hold in all the upgrade, downgrade, or no change sample partitions (for the upgrade group, t = -6.07 and -5.81; for the downgrade group, t = -4.37 and -4.29; for the no change group, t = -8.86 and

Table 7

Empirical results for the predictable behavior of market investors (N=2,700)

$$Spread_{i,d} = \beta_0+\beta_1 Pre1_{i,d}+\beta_2 Info0_{i,d}+\beta_3 Price_{i,d}+\beta_4 Lnsize_{i,t-1}+\beta_5 Volatility_{i,t-1}+\beta_6 Turnover_{i,t-1}+\beta_7 Depth_{i,d}+\beta_8 Volume_{i,d}+\beta_9 CAR_{i,d}+\varepsilon_{i,d} \quad \text{Eq. (1)}$$

	EPS>0		**EPS<0**	
Variable	Parameter Estimate	t Value	Parameter Estimate	t Value
Intercept	0.067	9.66***	0.150	10.24***
Pre1	-0.008	-9.58***	-0.009	-5.93***
Info0	-0.007	-8.44***	-0.009	-5.98***
Price	0.000	4.99***	0.000	2.28**
Lnsize	-0.005	-7.54***	-0.013	-8.64***
Volatility	0.002	9.53***	0.001	2.39**
Turnover	0.001	5.54***	0.002	2.05**
Depth	0.000	6.86***	0.000	5.79***
Volume	-0.000	-3.23***	-0.000	-3.61***
CAR	0.004	18.52***	0.004	14.15***
Firm Fixed Effect	Yes		Yes	
Clustered SE	Firm, Quarter		Firm, Quarter	
N	1,779		921	
AdjR^2	0.318		0.266	
F Value	93.26		38.08	

Notes:
(1) This study uses a company's EPS in the previous period as the standard value to separate observations into two groups: EPS is positive (EPS>0) and EPS is negative (EPS<0).
(2) All variables are as defined in Table 2.
(3) *** and ** indicate significance at the 1% and 5% levels, respectively.

-7.85). This means that the results are robust regardless of whether a firm shows an upgrade, downgrade, or no change in the 6th round of exercise. In other words, it is unlikely that the findings herein are driven by either forecast bias or censoring related to the nature of the news. To sum up, my main argument is examining whether releasing CG evaluation ranking information decreases

Table 8

Empirical results for good news and bad news effects (N=2,700)

$$Spread_{i,d} = \beta_0+\beta_1 Pre1_{i,d}+\beta_2 Info0_{i,d}+\beta_3 Price_{i,d}+\beta_4 Lnsize_{i,t-1}+\beta_5 Volatility_{i,t-1}+\beta_6 Turnover_{i,t-1}+\beta_7 Depth_{i,d}+\beta_8 Volume_{i,d}+\beta_9 CAR_{i,d}+\varepsilon_{i,d} \quad \text{Eq. (1)}$$

	Upgraded		**Downgraded**		**No change**	
Variable	Parameter Estimate	t Value	Parameter Estimate	t Value	Parameter Estimate	t Value
Intercept	0.087	7.24***	0.190	10.13***	0.098	12.24***
Pre1	-0.010	-6.07***	-0.009	-4.37***	-0.008	-8.86***
Info0	-0.008	-5.81***	-0.009	-4.29***	-0.007	-7.85***
Price	0.000	1.45	0.000	4.48***	0.000	7.15***
Lnsize	-0.007	-5.73***	-0.017	-8.89***	-0.008	-10.33***
Volatility	0.002	4.42***	0.001	2.74***	0.002	7.22***
Turnover	-0.0001	-0.12	-0.001	-1.56	0.002	5.41***
Depth	0.000	5.09***	0.000	3.02***	0.000	6.18***
Volume	-0.000	-3.69***	-0.000	-0.13	-0.000	-1.56
CAR	0.004	13.18***	0.003	8.12***	0.004	19.39***
Firm Fixed Effect	Yes		Yes		Yes	
Clustered SE	Firm, Quarter		Firm, Quarter		Firm, Quarter	
N	683		549		1468	
AdjR^2	0.2882		0.2677		0.3325	
F Value	31.68		23.26		82.19	

Notes:
(1) This study uses the rankings of firms in the 5th round of the exercise as the benchmark to determine whether a firm has an upgrade, downgrade, or no change in the 6th round of the exercise.
(2) All variables are as defined in Table 2.
(3) *** indicates significance at the 1% level.

information asymmetry upon announcement instead of exploring what the reactions of investors are to the results of CG evaluation (e.g., upgraded or downgraded). Therefore, the findings of Table 8 are consistent with my main argument, regardless of whether a firm showing an upgrade, downgrade, or no change in the 6th round of exercise releasing CG evaluation ranking information

decreases information asymmetry.

6. Conclusion

According to prior literature (i.e., Amiram *et al.* (2016)), there are two countervailing forces on short-window information asymmetry between sophisticated and unsophisticated investors when one specific piece of information is announced. The release of information can increase information asymmetry if it contains material that is new to both sophisticated and unsophisticated investors; however, the release of information can decrease information asymmetry if it contains material that is new to unsophisticated investors, but already known by sophisticated investors. Past studies often focus on information releases that likely contain both categories of information to differing relative degrees (e.g., earnings announcements, management earnings forecasts, etc.), implying this kind of information release contains information that is new to both sophisticated and unsophisticated investors. However, a few papers target the information asymmetry effects of information release types that have a relatively high concentration of information that is new to unsophisticated investors, but already known by sophisticated investors (e.g., Amiram *et al.*, 2016). This work thus explores whether releasing CG evaluation information will decrease information asymmetry.

Compared to earnings announcements and management forecasts, a release of CG evaluation information decreases information asymmetry, implying that such a release contains relatively more information that is new only to unsophisticated investors. I further conduct some additional analyses to enrich the findings. First, I explore long-window effects, and the results document that CG evaluation information decreases information asymmetry over the four days subsequent to the announcement and two days after the announcement. In short, the information asymmetry across a CG evaluation information release presents a mitigation effect during both the short-window and long-window announcement periods.

Second, I use the number of transactions as one alternative measure of

information asymmetry. However, I do not find a mitigation effect during the announcement period as I define information asymmetry by the number of transactions.

Third, I test the predictable behavior of investors. In other words, I explore whether the EPS in the previous period for a company on the list being positive or negative has any impacts on information asymmetry.

Fourth, I test whether the status of CG evaluation results (such as upgrade, downgrade, no change) influences information asymmetry. My empirical results show that both the sign of EPS in the previous period and the status of CG evaluation results decrease information asymmetry on the announced date and one day before the announcement.

To summarize, most of my findings support that a release of CG evaluation information can decrease information asymmetry and the findings can provide implications for countries with emerging market economies. Furthermore, Taiwan is the only country that requires all listed companies to participate in the evaluation system, and so to my best knowledge it is the first study to target the announcement effects of CG evaluation information on information asymmetry.

My study offers several contributions to the CG literature and has implications for information asymmetry research. First, CG does matter, because a release of CG evaluation information can decrease information asymmetry. Therefore, corporate executives should invest resources into CG and put forth efforts to maintain it, because CG performance does provide information content to investors.

Second, this study shows that a release of CG evaluation information can decrease information asymmetry. Therefore, regulators may draw lessons from it on how to improve their CG mechanisms/practices through mandated announcements of CG evaluation information. In short, CG evaluation ranking exercises can be effective at mitigating the principal-principal conflict in Taiwan, because announcing CG evaluation information can decrease information asymmetry. It is plausible to assume that similar exercises can also be implemented in developed countries in the West to minimize principal-agent

problems that commonly exist there.

Third, based on the findings herein, raising the bar of CG practices is generally beneficial. This is particularly true for those with limited access to corporate information or to individuals without the necessary knowledge to evaluate such information properly, because announcing CG evaluation information can decrease information asymmetry.

This study also sheds interesting insight on the administration of CG practices of publicly-listed firms. As discussed earlier, the FSC as a regulatory agency in Taiwan has stipulated the mechanisms and rules for the ranking exercises. SFI, a non-profit independent organization, is responsible for collecting publicly available data, calculating the CG scores, and ranking the participating companies. Since market participants indeed react significantly to the CG announcements, this study shows that it might not be *entirely* necessary for regulators to strive solely for *optimal* CG. Instead, it might be more beneficial for regulators to be innovative in creating the right CG structure and then leave the implementation of CG practices to the private sector. Thus, public and private sectors can work together to improve CG, because releasing the CG evaluation information does decrease information asymmetry.

Based on the evidence obtained in the study, three research directions deserve attention. First, in Taiwan the principal-principal conflict exists, whereas principal-agent problems occur in developed countries of the West. Therefore, comparing the impact of a release of CG evaluation information in these two separate areas is an issue worth further exploration. Second, future research can investigate how CG rankings influence firms' other characteristics, such as cost of capital, cost of debt, and other corporate decisions. Finally, differences in reporting rules and accounting conventions between nations/jurisdictions can affect how countries/economies create and implement their CG practices to protect their market participants. As a result, researchers are encouraged to explore theories from various scopes to advance our understanding of CG-related issues.

References

Amihud, Y. (2002). Illiquidity and stock returns: Cross-section and time-series effects. *Journal of Financial Markets*, *5*(1), 31-56.

Amiram, D., Landsman, W. R., Peasnell, K. V., and Shakespeare, C. (2011). Market reaction to securitization retained interest impairments during the financial crisis of 2007-2008: Are implicit guarantees worth the paper they're not written on? *Available at SSRN 1508664*.

Amiram, D., Owens, E., and Rozenbaum, O. (2016). Do information releases increase or decrease information asymmetry? New evidence from analyst forecast announcements. *Journal of Accounting and Economics*, *62*(1), 121-138.

Bacidore, J. M., Battalio, R. H., and Jennings, R. H. (2002). Depth improvement and adjusted price improvement on the New York Stock Exchange. *Journal of Financial Markets*, *5*(2), 169-195.

Bebchuk, L., Cohen, A., and Ferrell, A. (2009). What matters in corporate governance? *The Review of financial studies*, *22*(2), 783-827.

Bushman, R. M., Gigler, F., and Indjejikian, R. J. (1996). A model of two-tiered financial reporting. *Journal of Accounting Research*, *34*, 51-74.

Cai, J., Liu, Y., Qian, Y., and Yu, M. (2015). Information asymmetry and corporate governance. *Quarterly Journal of Finance*, *5*, 1-32.

Chung, H., Judge, W. Q., and Li, Y. H. (2015). Voluntary disclosure, excess executive compensation, and firm value. *Journal of Corporate Finance*, *32*, 64-90.

Chung, J., Kim, H., Kim, W., and Yoo, Y. K. (2012). Effects of disclosure quality on market mispricing: Evidence from derivative-related loss announcements. *Journal of Business Finance & Accounting*, *39*(7-8), 936-959.

Coller, M., and Yohn, T. L. (1997). Management forecasts and information asymmetry: An examination of bid-ask spreads. *Journal of Accounting Research*, *35*(2), 181-191.

Cormier, D., Ledoux, M., Magnan, M., and Aerts, W. (2010). Corporate governance and information asymmetry between managers and investors. *Corporate Governance*, *10*, 574-589.

Demsetz, H. (1968). The cost of transacting. *The Quarterly Journal of Economics*, *82*(1), 33-53.

Demsetz, H., and Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *Journal of Political Economy*, *93*(6), 1155-1177.

Easley, D., and O'hara, M. (2004). Information and the cost of capital. *The Journal of Finance*, *59*(4), 1553-1583.

Erkens, D. H., Hung, M., and Matos, P. (2012). Corporate governance in the 2007–2008 financial crisis: Evidence from financial institutions worldwide. *Journal of Corporate Finance*, *18*(2), 389-411.

Fernando, J., Li, L., and Hou, Y. (2019). Corporate governance and correlation in corporate defaults. *Corporate Governance: An International Review*, *28*, 188-206.

Fischer, P. E., and Verrecchia, R. E. (1999). Public information and heuristic trade. *Journal of Accounting and Economics*, *27*(1), 89-124.

Glosten, L. R., and Milgrom, P. R. (1985). Bid, ask and transaction prices in a specialist market with heterogeneously informed traders. *Journal of Financial Economics*, *14*(1), 71-100.

Gompers, P., Ishii, J., and Metrick, A. (2003). Corporate governance and equity prices. *The Quarterly Journal of Economics*, *118*(1), 107-156.

Heflin, F. L., Shaw, K. W., and Wild, J. J. (2005). Disclosure policy and market liquidity: Impact of depth quotes and order sizes. *Contemporary Accounting Research*, *22*(4), 829-865.

Hsu, S., Lin, S. W., Chen, W. P., and Huang, J. W. (2021). CEO duality, information costs, and firm performance. *The North American Journal of Economics and Finance*, *55*, 101011.

Johnson, S. A., Moorman, T. C., and Sorescu, S. (2009). A reexamination of corporate governance and equity prices. *The Review of Financial Studies*, *22*(11), 4753-4786.

Johnstone, S., and Goo, S. H. (2017). *Corporate governance: Report on implementing corporate governance in Hong Kong*. Hong Kong Institute of Certified Public Accountants.

Kahneman, D., and Tversky, A. (1973). On the psychology of prediction. *Psychological Review*, *80*(4), 237-251.

Kalay, A. (2015). Investor sophistication and disclosure clienteles. *Review of Accounting Studies*, *20*(2), 976-1011.

Kanagaretnam, K., Lobo, G. J., and Whalen, D. J. (2007). Does good corporate governance reduce information asymmetry around quarterly earnings announcements? *Journal of Accounting and Public Policy*, *26*, 497-522.

Kim, O., and Verrecchia, R. E. (1994). Market liquidity and volume around earnings announcements. *Journal of Accounting and Economics*, *17*(1-2), 41-67.

Krinsky, I., and Lee, J. (1996). Earnings announcements and the components of the bid-ask spread. *The Journal of Finance*, *51*(4), 1523-1535.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. W. (1997). Legal determinants of external finance. *The Journal of Finance*, *52*(3), 1131-1150.

La Porta, R., Lopez-de-Silanes, F., Schleifer, A., and Vishny, R. W. (1998). Law and finance. *Journal of Political Economy*, *106*, 1113-1155.

La Porta, R., Lopez-de-Silanes, F., Schleifer, A., and Vishny, R. W. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, *58*, 3-27.

Lee, C. M., Mucklow, B., and Ready, M. J. (1993). Spreads, depths, and the impact of earnings information: An intraday analysis. *The Review of Financial Studies*, *6*(2), 345-374.

Leuz, C., and Verrecchia, R. E. (2000). The economic consequences of increased disclosure. *Journal of Accounting Research*, *38*, 91-124.

McNichols, M., and O'Brien, P. C. (1997). Self-selection and analyst coverage. *Journal of Accounting Research*, *35*, 167-199.

Mitton, T. (2002). A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis. *Journal of Financial Economics*, *64*(2), 215-241.

Sheu, H. J., Chung, H., and Liu, C. L. (2010). Comprehensive disclosure of compensation and firm value: The case of policy reforms in an emerging market. *Journal of Business Finance & Accounting*, *37*(9-10), 1115-1144.

So, E. C., and Wang, S. (2014). News-driven return reversals: Liquidity provision ahead of earnings announcements. *Journal of Financial Economics*, *114*(1), 20-35.

Standard & Poor's (2002). *Standard & Poor's corporate governance scores: Criteria, methodology and definitions*. New York, NY: McGrawHill Companies, Inc.

Stoll, H. R. (1978). The pricing of security dealer services: An empirical study of NASDAQ stocks. *The Journal of Finance*, *33*(4), 1153-1172.

Tai, Y. H. (2020). The relation between the corporate governance evaluation and abnormal returns: The role of company financial performance. *Asia-Pacific Journal of Accounting & Economics.* Advance online publication. doi.org/10.1080/16081625.2020.1828952

Tai, Y. H., and Hwang, N. C. R. (2020). Market reactions to corporate governance ranking announcements: Evidence from Taiwan. *Abacus*, *56*(4), 627-648.

Yang, D., Cheng, L., Wang, G., Wang, Y., and Zhang, L. (2020). Investor protection and cost of debt: Evidence from dividend commitment in firm bylaws. *Corporate Governance: An International Review*, *56*(4), 627-648.

Appendix A

Table A1

Composition of indicators in CG dimensions

Dimension/Year	2014	2015	2016	2017	2018	2019
Protection of shareholders' equity	13	14	13	13	17 (2)	17 (2)
Equitable treatment of shareholders	14	13	15	14		
Board composition and operation	30	33	35	32	30	29
Information transparency and protection of stakeholders' interests	21	23	21	21	20	21
Corporate social responsibility	14	15	15	15	18	18
Others (1)	-	-	4	4	-	-
Extra credit/Point deduction (3)	-	-	-	-	2	2
Total	92	98	103	99	87	87

Notes:

(1) In 2016, FSC added one dimension, Others, but then deleted this dimension starting from 2018.

(2) In 2018, FSC combined dimension I and dimension II into one dimension - protection of shareholders' equity and equitable treatment of shareholders.

(3) One extra point is added (one extra point is deducted) when a firm makes a disclosure about one good CG event (one bad CG event) and when its content has been verified by an external institution.

Table A2

Number of indicators by categories

	Type of indicator/Year	2014	2015	2016	2017	2018	2019
A	**Basic** (Questions applied to all entities evaluated)	69	70	81	75	68	67
B	**General** (Questions applied to all entities evaluated unless the indicator is not applicable)	7	10	7	10	2	1
C (1)	**Advanced** (Questions applied to entities with international issues)	16	18	-	-	-	-
C+ (1)	**Advanced (**Type C+ indicators are grounds for points being specifically added to a company's final evaluation score)	-	-	10	9	-	-
C– (1)	**Advanced** (Type C– indicators are grounds for points being specifically deducted from a company's final evaluation score)	-	-	5	5	-	-
AA (2)	**Advanced** (Questions pertain to the compliance of laws and regulations in Taiwan)	-	-	-	-	6	4
A+ (2)	**Advanced** (Questions raised and scored based on the degree of implementation in practice)	-	-	-	-	9	13
	Extra credit/Point deduction (2)	-	-	-	-	2	2
	Total	92	98	103	99	87	87

Notes:

(1) From the 2016 ranking exercises, FSC deleted Type C category and added two new categories: Type C+ category and Type C– category.

(2) From 2018, FSC removed Type C+ category and Type C– category and added Type AA category, Type A+ category, and extra credit/point deduction indicators.

Table A3

An illustration of CG ranking score calculation

Dimension	Number of indicators within this dimension	Points for satisfying Type A indicators	Points for satisfying Type B indicators	Points for satisfying Type AA indicators	Points for satisfying Type A+ indicators	Number of inapplicable Type B indicators	Number of indicators in the dimension divided by total number of indicators
I	17	9	1	-	-	-	20%
II	30	20	-	-	3	1	35%
III	20	10	-	2	-	-	24%
IV	18	12	-	1	1 (Only satisfied the basic requirement)	-	21%

Extra credit indicators: 1 point

Point deduction indicators: 1 point

The score is calculated as follows: [(Dimension I score) x assigned weighting + (Dimension II score) x assigned weighting + (Dimension III score) x assigned weighting + (Dimension IV score) x assigned weighting] x 100 + (additional points for type AA indicators) + (additional points for type A+ indicators) + (additional points for extra credit indicators) – (points deducted for point deduction indicators) = Total score. Therefore, the score of Company A is 76.26. 76.26 = { 〔(9+1)/17〕x 20%+〔(20+3)/(30-1)〕x 35% + 〔(10+2)/20〕x 24% + 〔(12+1+1)/18〕x 21% } x 100 + (2+1)+3+1-1.