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THE EFFECT OF MANAGERIAL OVERCONFIDENCE ON CONFERENCE CALLS

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ABSTRACT

This study examines the relation between managerial overconfidence and conference calls. Prior studies document that some managers tend to be overconfident because they believe they have more precise knowledge about future events than they genuinely possess. Overconfident managers tend to convene conference calls since they are an important tool to disclose information about the future. We examine how managerial overconfidence affects the occurrence and frequency of conference calls using evidence from the Taiwan stock market. To measure managerial overconfidence, following Kolasinski and Li (2013), we use an example of managers purchasing their own firm's stock over a two-year period, followed by negative average returns. Based on data from publicly listed firms in Taiwan for the period from 2005 to 2015, the results provide robust evidence, suggesting that managerial overconfidence and conference calls are significantly positively correlated. We find that companies with higher managerial overconfidence are likely to frequently convene conference calls. Prior research on managerial overconfidence mainly discussed the impact on financing and investment decisions, while this study provides further supplementary evidence of the impact of convening conference calls, and managerial decisions on disclosure behavior.

JEL: D12, D25, M10

KEYWORDS: Conference Call, Managerial Overconfidence

INTRODUCTION

The purpose of this study is to investigate whether managerial overconfidence affects the frequency and occurrence of conference calls convened by managers. Overconfidence is an important behavior of managers and has been widely studied in the academic literature in the recent years. Academia has great interest in the subject of behavioral finance in the past few decades. In all fields of finance, researchers have made efforts to integrate behavioral finance into traditional finance and as a result, behavioral finance has become a complete academic field. Behavioral finance mainly focuses on the premise that "humans may not be entirely rational". Therefore, humans' financial behavior may not be as rational as expected by the traditional finance. Behavioral financial scholars usually call it Quasi-Rational (Thaler, 1991).

In the economic world, the main actors, either firm (or institutional) managers or general investors (or consumers), may all operate using irrational behavior. These behaviors include overreaction and underreaction. Behind the overreaction or underreaction, there is some psychological factors that drive these behaviors, such as over-optimism, overconfidence, conservative, representative bias, psychological accounts, and so on. Among these various psychological factors, finance researchers pay most attention to overconfidence. People with overconfidence oftentimes overestimate his/her ability, judgment, or career success. But in reality, results are not the same as expected and the bias has a significant impact. Prior research focuses on the behavior of individual investors (or consumers). Research concerning the behavior

of managers in the enterprise (or institution) has received increasing attention recently. Managerial overconfidence (or also usually called CEO overconfidence) has become an interesting issue of study. However, the definition of managerial confidence in this article is different from CEO overconfidence, and will be explained and discussed it in the later sections.

Literature has argued that overconfident managers were overly optimistic and overconfident. Based on both empirical and theatrical research, there is an ongoing debate about the benefits and costs for a firm with managerial overconfidence. One view is that managers overconfidence has a positive impact on the firm's performance, implying that overconfident managers may actually benefit shareholders through higher stock returns, greater profitability, and lower risk. Another view, however, suggested that overconfident CEOs may have a negative impact on firm performance because of the CEOs' over financing and investing actions. Previous theoretical literature (Gervais, Heaton, and Odean 2011) and empirical studies (Baker, Ruback, and Wurgler 2007) support that overconfident managers affect firm's material financial decision-making. The financial decisions include investment decisions (Malmendier and Tate 2005a; 2005b; Yu 2014), financing decisions (Malmendier, Tate, and Yan 2011), dividend policy (Deshmukh, Goel, and Howe 2013), and acquisition (Brown and Sarma, 2007; Doukas and Petmezas 2007; Malmendier, and Tate 2008; Martin and Davis 2010; Ferris, Jayaraman, and Sabherwal 2013; Yim 2013; Kolasinski and Li 2016), etc.

Whether overconfident managers affect firm's information disclosure behavior is another stream of prior research. For instance, Nagar, Nanda, and Wysocki (2003) hypothesize and find that managers with more stock-based incentives will issue more frequent forecasts to avoid equity mispricing. Ajinkya, Bjojraj, and Sengupta (2005) study the effect of corporate governance mechanisms on forecast properties and find that firms with greater institutional ownership and outside directors are more likely to provide forecasts. Their forecasts are also less optimistically biased and more precise. Bamber, Jiang, and Wang (2010) investigate whether individual managers play an economically significant role in their firms' voluntary financial disclosure choices and find that managers' unique disclosure styles are associated with observable demographic characteristics of their personal backgrounds. Hribar and Yang (2016) find that overconfident CEOs increase the likelihood of issuing a forecast, the amount of optimism in management forecast, and the precision of the forecast.

Managers tend to be overconfident when they believe that they have more precise knowledge about future events than they actually do. And consequently, overconfident managers usually overestimate future returns from their firms' investment and therefore, the expectation of the future performance. Prior studies also contend that managers consider a variety of costs and benefits when deciding whether to disclose the firm's information about the unknown future. However, since overconfident managers overestimate their own knowledge about the future, it is reasonable to infer that overconfident managers may have the motivation to hold conference calls. As the economic environment changes rapidly and also trading patterns are increasingly complex, information obtained by investors from the financial statements provided by company is not enough to accurately evaluate the value of the company. Thus, the problem of information asymmetry between managers and investors has become increasingly serious. To decrease the information asymmetry problem, it is appropriate to deliver information to investors by convening conference calls. Traditionally, firms communicate with investors by financial reports. But more and more research has indicated that financial statements may not properly convey corporate performance and future prospects. For example, information about getting new markets or customers and developing new products is hard to convey by traditional financial statements (Tasker, 1998). Therefore, in addition to financial statements, other external communication tools are also needed.

Conference calls not only allow companies to communicate with their investors, but also allow investors to express their views to the company. More companies use it as a communication tool (Kimbrough 2005). Since confident managers are more optimistic about future prospects, they will be more apt to hold conference calls to share and disclose information about future. Hopefully, investors will response

positively about the information disclosed and reflect that optimism in stock prices. Based on the above discussion, it is worth investigating whether managerial overconfidence is associated with firm's convening conference calls since conference calls are a useful tool for disclosing information, especially for Taiwan's listed companies. Managerial overconfidence contributes to decisions of disclosure and may increase their willingness to disclose material regarding future information about the firms. Conference calls are an important tool for Taiwan's listed companies to disclose information. The purpose of this research is to examine whether companies with higher managerial overconfidence would be more likely and more frequently to convene conference calls.

This study discusses the following issues of Taiwan's public listed companies through corporation's convening conference calls: First, whether companies with higher managerial overconfidence would be more likely to convene conference calls. Second, whether companies with higher managerial overconfidence would increase the frequency of convening conference calls. Third, whether companies with higher managerial overconfidence would increase the frequency of convening conference calls. In order to confirm whether there is a relationship between managerial overconfidence and conference calls, further sensitivity tests are provided including separating firms with different category and using different proxy of measuring overconfidence. The remainder of this paper is organized as follows: In the next section, we provide an institutional background on convening conference calls in Taiwan and literature review of major research direction of managerial overconfidence and conference calls. In section three, we develop hypotheses for testing the linkage between managerial overconfidence and conference calls, and also describe the methodology, empirical model, variables and data. We then present the empirical results and discuss the findings in the section Four. The final section concludes the study with recommendations for further research.

LITERATURE REVIEW

Prior Research of Managerial Overconfidence

Behavioral finance theory had its formal beginnings in the 1980s, quickly receiving the attention of economic, accounting and financial scholars. It became a main-stream economic theory in the 1990s. Presently, all fields of finance have integrated and researched behavioral issues, and behavioral finance has become a structural integrity discipline. In contract to the efficient market hypothesis, behavioral finance considers investors to be not completely rational, and therefore the financial behavior of people may not be as rational as expected by traditional finance. For example, irrational investors often make investment decisions based on previous experiences or emotions. Earlier research focused on the behavior of individual investors (or consumers). The irrational behavior of general investors (or consumers) is discussed first since they are main actors in the financial world. Subrahmanyam (2008) offered a good review of investor's irrational behavior. However, managers of an enterprise (or institution) are also important actors worth studying. Both investors and managers may experience irrational behavior such as overreaction or underreaction. In this paper, we study the firm's convening conference calls behavior. We focus on the influence of firm managers' irrational behavior and overconfidence, instead of investors (shareholder) behavior. Although, there are many irrational behaviors discussed and studied in the prior research, heuristic bias and managers' overconfidence are well-documented theories related to investor irrational behaviors. Overconfidence is a kind of overreaction behavior that is hidden behind a variety of psychological factors, such as over optimism, overconfidence, conservativeness, representative bias, psychological accounts, and other psychology.

In psychology, heuristics are simple, efficient rules which people use to form judgments and make decisions. Heuristics are basically "rule of thumb" gained from previous experiences that create a bias based on the experience rather than logic. Overconfidence is an important heuristic bias that can influence people making investment decisions. Given the encompassing nature of overconfidence, we focus on overconfidence

instead of heuristics in this research. A number of cognitive psychology literatures, including both theoretical and application research, conclude that people are apt to be overconfident or optimum, especially being overconfident about the accuracy of their own knowledge. People systematically underestimate certain types of information and overestimate other information. Gervais, Heaton and Odean (2003) define overconfidence as a belief that the accuracy of their knowledge is higher than the degree of fact. That is, the weight given to their own information is greater than the de facto weight. The study of subjective probability measures also found an overly optimistic estimate of the accuracy of their knowledge.

Over optimism and overconfidence is a potent combination. Those with overconfidence usually judge their own ability, probability of success or career prospects with confidence. Taylor and Brown (1988) believe that overconfidence and optimism for the business manager are two of the most important personal characteristics. Ben-David, Graham, and Harvey (2013) found that senior managers are, at the same time, overconfident and optimistic. Barber and Odean (2001) analyze the common stock investments of men and women and document that men trade 45 percent more than women. Because psychological research demonstrates that, in areas such as finance, men are more overconfident than women. The result confirms that overconfident investors trade excessively. Goel and Thakor (2008) develop a model that claims that an overconfident manager has a higher likelihood to be promoted to CEO because of "value-maximizing" policy. Malmendier and Tate (2005a) argue that managerial overconfidence can account for corporate investment distortions. Overconfident managers tend to overestimate the returns on investment projects. They view external funds as unduly costly. Thus, they overinvest when they have abundant internal funds, but curtail investment when they require external financing. Malmendier and Tate (2005b) present supplementary evidence on the relationship between CEOs' press portrayals and overconfident investment decisions. Overconfidence is one of the characteristics of the high-level executive manager.

Brown and Sarma (2007); and Doukas and Petmezas (2007) both argue that managerial traits of managers affect M&A decisions. Hribar and Yang (2016) found that overconfident managers tend to delay loss recognition and generally use less conservative accounting. Schrand and Zechman (2012) argued that overconfident executives are apt to reveal an optimistic bias and thus are more likely to display a declining growth of intentional misstatements. Hirshleifer, Low, and Teoh (2012) provide evidence that firms with overconfident CEOs have greater return volatility, invest more in innovation, obtain more patents and patent citations, and achieve greater innovative success for given research and development expenditures. Hilary, Hsu, Segal and Wang (2016) show that after a series of successes, CEOs become more optimistic and exaggerate their abilities. Campbell, Gallmeyer, Johnson, Rutherford, and Stanley (2011) provide evidence that CEOs with low (high) optimism face a higher probability of forced turnover than their moderately optimistic counterparts. Kaplan, Klebanov, and Sorensen (2012) explore the relationship between CEO characteristics and hiring decisions, investment decisions and corporate performance. Ben-David, Graham, and Harvey (2007) show that companies with overconfident CFOs invest more, use more debt and are less likely to pay dividends.

Prior psychical studies have found that experts tend to be overconfident (Heath and Tversky 1991; Kirchler and Maciejovsky 2002; Glaser and Weber 2007). Financial experts, including fund managers and analyst financial advisors are more likely to be overconfident (Moore and Healy 2008; Menkhoff, Schmidt, and Brozynski 2006; Torngren and Montgomery 2004). Sivanathan and Galinsky (2007) confirmed that the higher the power of the CEO, the more likely to be overconfident. Managers, especially the CEO of the firm, are high-level supervisors in the organization and have the power to determine the future development of the enterprise. Fellner-Röhling and Krügel (2014) argue that the measurement of overconfidence can be divided into the following three categories: (1) the overconfidence of judgment (over-overestimation of the accuracy of the judgment); (2) self-enhancement biases, such as self-perceived above-average positive self-illusion and control illusion (March and Shapira 1987); (3) optimism with respect to societal risks (Hilton, Régner, Cabantous, Charalambides, and Vautier 2011). Among them, the first category is most often mentioned (e.g., Odean 1998; Kyle and Wang 1997; Benos 1998; Caballé and Sákovics 2003).

In the financial empirical literature, managers' overconfidence is measured as follows: (1) managers' equity (Malmendier and Tate 2005a; 2005b; 2008); (2) media reports (Hayward and Hambrick 1997; Malmendier and Tate 2008 ; Brown and Sarma 2007; Hribar and Yang 2016; Jin and Kothari 2008); (3) earnings forecast and actual surplus deviation (Lin, Hu, and Chen 2008; Hribar and Yang 2016); (4) initiation of enterprise M&A frequency (Malmendier and Tate 2008; Doukas and Petmezas 2007); (5) manager relative compensation (Hayward and Hambrick 1997)；(6) company's current performance (Hayward and Hambrick 1997; Cooper, Woo, and Dunkelberg 1988); (7) manager's purchases of his own firm's stock in the secondary market over the past 2 years with a negative abnormal returns (Kolasinski and Li 2013).

Each of the above measures has shortcomings. For example, the advantage of stock options is that it can expose manager's beliefs more precisely. However, the disadvantage is that the researcher must collect details of the stock options and the collecting cost is very expensive. The advantage of the media measurement method is that the outside world viewpoint is exogenous and therefore more objective, but the disadvantage is that there will be too much noise and hence needs to bear a wide range of expensive collection costs. The advantage of managers buying their own firm's stock in the secondary market is also about exposing manager's beliefs more precise, but managers' buying their own stock may also earn non-negative abnormal returns. Andriosopoulos, Andriosopoulos, and Hoque (2013) show that information disclosure and CEO overconfidence are significant determinants of share buyback completion rates using data from UK. Malmendier et al. (2011) find that CEOs who personally overinvest in their companies are significantly less likely to issue equity.

Prior Research of Conference Calls

Conference calls are a popular communication tool and have become a standard practice in well-developed markets globally (Bowen, Davis, and Matsumoto, 2002). Conference calls are a bridge between the top-executive of the firm and the investor (Tasker 1998; Frankel, Johnson, and Skinner 1999; Bushee, Matsumoto, and Miller 2003; Bowen et al. 2002; Kimbrough and Louis 2011). Usually there are two sections in a conference call, a presentation section and a question-and-answer section. It allows top executives to declare the firm's operation, investing, and financing activities. It also provides a channel for investors to inquire and challenge the company's future vision and decision-making (Hollander, Pronk and Roelofsen 2010; Dell'Acqua, Perrini, and Caselli 2010; Matsumoto, Pronkz and Roelofsen 2011). Therefore, conference calls seem to be a better way to communicate with each other and deliver information, compared with other disclosure tools. Earlier studies explore the determinants of conference calls. Frankel et al. (1999) find that firms that hold conference calls tend to be larger, more profitable, and have a larger analyst following. Tasker (1998) finds that firms with low accounting quality are more likely to hold conference calls. She measures accounting quality using a composite measure based on market-book ratios, sales growth rates, and the extent to which book value and earnings explain stock prices. Sunder (2002) shows that the Regulation Fair Disclosure requirements of the US Securities and Exchange Committee (SEC) have been an impetus to increasing the popularity of conference calls as a voluntary disclosure medium.

Extant literature also documents of the information content of conference calls in non-Taiwanese contexts. Frankel et al. (1999) found significantly increasing returns volatility during the conference-call period. Bowen et al. (2002) indicate that conference calls enhance analysts' ability to forecast earnings accurately and help level the playing field among analysts. Bushee et al. (2003) examines open conference calls where the public, including individual investors, can access the calls on a real-time basis, and these researchers also find a high level of trading activity and returns volatility during the conference-call period. As mentioned previously, while conference calls are expected to convey information about innovative activities, few studies address the effect of innovation on conference-call announcement returns. Prior literature also documents the information content of conference calls. Frankel et al. (1999) find significantly increasing returns volatility during the conference call period. Bowen et al. (2002) indicate that conference

calls enhance analysts' ability to accurately forecast earnings and help level the playing field among analysts. Bushee et al. (2003) examine open conference calls where the public, including individual investors, can access the calls on a real-time basis and these researchers also find both a higher level of trading activity and returns volatility during the conference call period.

Kimbrough (2005) find the initiation of conference calls is associated with a significant reduction in serial correlation in analyst forecast errors and associated with significant reductions of initial investor underreaction. Mayew (2008) find that conference calls, and the potential for public information, complement the existing private information of financial analysts. Bowen et al. (2002) find evidence that conference calls can increase the total information available about a firm and decrease dispersion among analysts. Hollander et al. (2010) suggests that managers regularly leave participants on the conference call in the dark by not answering their questions and investors seems to interpret silence negatively.

Another stream of prior research of conference call focus on its influence on the economic consequences. Dell'Acqua et al. (2010) find that the use of conference calls is greater in the high tech sector than in other industries, and more open conference calls results in lower idiosyncratic price volatility of high tech firms listed in the US market. Chin, Lee, Wang, and Kleinman (2007) find that the likelihood and frequency of conference calls are positively associated with innovation using Taiwan data. Kimbrough and Louis (2011) find that bidders are more likely to hold conference calls at merger announcements when the mergers are financed with stock and when the transactions are large. They also find that conference calls are associated with more favorable market reactions to merger announcements.

Matsumoto et al. (2011) examine the information content of both segments of the call - the presentation and the discussion segment. They find that both segments have incremental information content over the accompanying press release, but discussion periods are relatively more informative than presentation periods. Ahmed and Duellman (2013) argue that overconfident managers overestimate future returns from their firms' investments. Therefore, they predict that overconfident managers will tend to delay loss recognition and generally use less conservative accounting. Bushee, Matsumoto, and Miller (2004) suggest that Regulation Fair Disclosure impacts trading during the conference call window for firms more affected by new regulations. Meanwhile Irani (2004) examines the effect of Regulation Fair Disclosure (FD) on the relevance of company-sponsored conference calls and find larger improvements in both variables during the period surrounding conference calls in the post-FD era versus the pre-FD era. Bushee et al. (2003) found that companies with more shareholders, lower ratio of institutional shareholding and higher turnover ratio are more likely to hold conference calls.

METHODOLOGY AND DATA

Hypotheses Development and Estimation Models

The first part of the hypotheses-development section discusses the relation between managerial overconfidence and conference calls. Despite the increasing popularity of conference calls, there is an ongoing debate about the benefits and costs for a firm with managerial overconfidence. One view is that managerial overconfidence has a positive impact on the firm's performance, implying that managerial overconfidence may benefit shareholders through higher stock returns, greater profitability, and lower risk. The other view is that managerial overconfidence may have a negative impact on the firm because of over-financing investments. Since overconfident managers usually overestimate future returns from their firms' investments, their over-optimism increases the expectation of future performance. Prior studies also document that managers consider a variety of costs and benefits when deciding whether to issue forecasts about unknown future earnings, and managerial overconfidence may also contribute to this decision.

Prior research also concluded that the confidence of the managers may affect their decision to release

earnings forecasts. This result raises a question of the motivation of overconfident managers convening conference calls as the conference call is a useful tool for disclosing information voluntarily, especially for Taiwan's listed companies. Therefore, managerial overconfidence contributes to their decisions of voluntary disclosure and may increase their willingness to disclose information about the firms. In the meantime, since the conference call is an important tool for Taiwan's listed companies to disclose information voluntarily, the main purpose of this research is to examine whether companies with higher managerial overconfidence would be more likely to convene conference calls. Hence managerial overconfidence will increase the probability of convening conference calls. Thus, the following hypothesis is developed:

H1: Ceteris Paribus, the Likelihood of Convening Conference Calls is Positively Associated with Managerial Overconfidence.

In the past economic literature, investors were exposed to the high risk of information asymmetry during the transaction. Increasing the frequency of disclosure can reduce the degree of information asymmetry. First, conference calls make it possible for the future private information of the company to be disclosed before some investors (informed traders) find the provided information, which can reduce the information asymmetry of other uninformed traders. Secondly, the more conference calls that occur, the more information some investors receive, and the decision-making quality of investors will be better. Finally, the true expected value of the firm can be discovered by all investors. Therefore, the greater the frequency of firm's holding conference calls, the lower the degree of information asymmetry. Chin et al. (2007) find that not only the likelihood but also the frequency of conference calls are positively associated with innovation based on the Taiwan data. Confident managers tend to use conference call as a tool to disclose information since they have confidence about their ability to communicate with investors. Therefore, we argue that the frequency of conference calls is positively associated with managerial overconfidence. Thus, the following hypothesis is developed:

H2: Ceteris Paribus, the Frequency of Convening Conference Calls is Positively Associated with Managerial Overconfidence.

Based on prior research, this article first estimates the association between managerial overconfidence and conference calls using a robust probit model and ordered probit model. Based on Tasker (1998) and Frankel et al. (1999), we consider the variables that may interfere with convening conference calls as control variables including external information environment, internal shareholding structure, and other firm-specific characteristics. We use the following regression model to estimate the predicted value of the probability that firm convene conference call:

Likelihood of Conference Calls = f (Overconfidence, Control Variables)

$$Call_{it} = \alpha + \beta_1 Overconfidence_{it} + \beta_2 InstitutionalShares_{it} + \beta_3 DirectorShares_{it} + \beta_4 ManagerShares_{it} + \beta_5 BigHolderShares_{it} + \beta_6 AnalystFallow_{it} + \beta_7 Assets_{it} + \beta_8 SalesGrouth_{it} + \beta_9 Leverage_{it} + \beta_{10} ROA_{it} + \beta_{11} MB_{it} + \beta_{12} Duality_{it} + \beta_{13} Turnover_{it} + \sum Year_{it} + \sum Industry_{it} + \varepsilon_{it} \quad (1)$$

Frequency of Conference Calls = f (Overconfidence, Control Variables)

$$Frequency_{it} = \alpha + \beta_1 Overconfidence_{it} + \beta_2 InstitutionalShares_{it} + \beta_3 DirectorShares_{it} + \beta_4 ManagerShares_{it} + \beta_5 BigHolderShares_{it} + \beta_6 AnalystFallow_{it} + \beta_7 Assets_{it} + \beta_8 SalesGrouth_{it} + \beta_9 Leverage_{it} + \beta_{10} ROA_{it} + \beta_{11} MB_{it} + \beta_{12} Duality_{it} + \beta_{13} Turnover_{it} + \sum Year_{it} + \sum Industry_{it} + \varepsilon_{it} \quad (2)$$

where *Call* is an indicator variable equal to one if the firm convenes conference call in the fiscal year and zero otherwise. *Frequency* is the number of conference calls held by a firm in a fiscal year. *Overconfidence* is an indicator variable equal to one if a member of the board of directors (and supervisors) or/and anyone of top managers purchase their own firm's stock over a two-year period, followed by negative average returns and zero otherwise. *InstitutionalShares* is the ratio of institutional investors' shareholding. *DirectorShares* is the ratio of directors' shareholding. *ManagerShares* is the ratio of non-directors managers' shareholding. *BigHolderShares* is the ratio of big shareholders' shareholding. *AnalystFollow* is the analysts' coverage in the previous year. *AnalystFollowTimes* is the frequency of analysts' coverage in the previous year. *Assets* is the natural logarithm of total asset. *SalesGrowth* is the sales growth of previous year. *Leverage* is the sum of long-term debt plus debt in current liabilities, divided by total assets. *ROA* is return on assets. *MB* is the sum of fiscal year-end market value of equity and book value of liabilities, divided by total assets. *Duality* is an indicator variable equal to one if the chairman and CEO of the company is the same person and zero otherwise. *Turnover* is the yearly turnover rate (%). *Year* is an indicator variable for controlling year effects. *Industry* is an indicator variable for controlling industry effects.

Variables

To measure the dependent variable of firm's convening a conference call, we use two measurements including *Call* and *Frequency*. *Call* is an indicator variable equal to one if the firm convenes a conference call in the fiscal year and zero otherwise. *Frequency* is the number of conference calls held by a firm in a fiscal year. *OC_DMS* is an indicator variable equal to one if the firm convenes conference call in the fiscal year and zero otherwise. To measure the main independent variable of overconfidence, we first collect data on the major methods identified in the prior financial empirical literature: (i) news media reports on managers' evaluations (Hayward and Hambrick, 1997; Malmendier and Tate, 2005a, 2008; Brown and Sarma, 2007; Hribar and Yang, 2016; Jin and Kothari, 2008); (ii) deviation between earnings forecasts and actual earnings (Lin Lin, Hu, Chen, 2005, 2008; (iii) timing of managers' exercising stock options (Malmendier and Tate, 2005b, 2008); (iv) whether managers increase their own firm's stock share (Malmendier and Tate, 2005 a, 2008; Lin, Hu and Chen, 2008; Liu, Liu, and Diaz, 2016); (v) managers purchasing their own firm's stock share in the secondary market and the ex post returns are negative (Kolasinski and Li, 2013). The following are the analysis of these various kinds of overconfidence measurement, and also provide reasons why we only use the last method as a proxy for overconfidence.

First, using "news media reports on managers' evaluations" as the proxy of measuring overconfidence, it is based on the portrayal of the manager (CEO) in the news media. If the media's assessment of managers is positive or assertive, they are overconfident. This type of measurement, because it is based on outsider' perceptions, may involve subjective personal feelings and may therefore create measurement bias. In addition, there are relatively few media such as the New York Times, Business Week and the Wall Street Journal in Taiwan, which often have complete reviews of the company's managers in the stock market, and also almost only the famous managers are evaluated, and there still have a larger majority of other managers that rarely or even never been commented on in the media. Therefore, this measure of overconfidence is not applicable based on empirical limitation in Taiwan.

Second, using "deviation between earnings forecasts and actual earnings" as the proxy of measuring overconfidence, is based on the notion that managers are overconfident if they overestimate corporate earnings. Using data from Taiwan, Lin, Hu, and Chen (2005, 2008) do use deviation between earnings forecasts and actual earnings as the proxy of measuring overconfidence. However, due to the rapidly changing laws and regulations in Taiwan, the Financial Supervisory Commission of the Executive Yuan in Taiwan revised and formally adopted a voluntary financial forecasting system beginning in 2004. The number of firms that voluntarily disclose the financial forecasting has dramatically dropped since 2005. However, the empirical period of this article is from 2005 to 2015, so this measure of overconfidence is not applicable based on the limitation of sample size in the sample period in Taiwan.

Third, using "timing of managers' exercising stock options" as a proxy of measuring overconfidence, is based on the timing or holding period length to measure whether managers are overconfident. Managers are seen as overconfident if they do not immediately exercise in-the-money options. But this method must be based on the fact that the companies in general offer stock options to managers. This is factual for listed companies in the United States but maybe not for listed companies in Taiwan. In 2005, the number of executable options is only about 100 in Taiwan. Also based on the limited sample size, this measure of overconfidence is not applicable based on empirical limitation in Taiwan.

Fourth, using "whether managers increase their own firm's stock share" as the proxy of measuring overconfidence, is only based on whether the managers increase their own companies' stock. Liu et al. (2016) analyze the effect of manager overconfidence and compensation on their stock repurchase performance using data from Taiwan listed companies. Their definition of overconfidence is that the CEO continuously increases ownership of their own companies' stock or stock options in two years. This method only considers whether the ownership of shares or stock options increases or not without considering other factors. As a proxy variable of overconfidence, this measure may be inadequate. Therefore, in addition to the consideration of "increasing shareholdings for two consecutive years during their tenure of office", this study also considers the "returns during or after shareholding period".

Finally, using "managers purchasing their own firm's stock share in the secondary market and the ex post returns are negative" as the proxy of measuring overconfidence, it is proposed by Kolasinski and Li (2013). The reason why Kolasinski and Li (2013) suggested this measurement is because it is consistent with the theoretical definition of overconfidence literature (Hackbarth, 2008; Heaton, 2002; Malmendier and Tate, 2005a; Roll, 1986) and is also similar with the spirit of measurement in Malmendier and Tate (2008). In this study, following Kolasinski and Li (2013), we use "managers purchasing their own firm's stock share in the secondary market and average returns during the holding period is negative" as the proxy of overconfidence. Furthermore, we use "managers purchasing their own firm's stock share in the secondary market and ex-post 180 days return is negative" as another proxy of overconfidence for robustness testing. Observing manager' stock price performance over a period of 180 days after experiencing an increase in shareholdings for two consecutive years with negative returns indicates that managers are overconfident.

To investigate the behavior of firm decision makers, the definition of manager in the prior literature focuses primarily on the chief executive officer (CEO). It is easily found that the title of the paper usually appears with "CEO confidence. However, most of these mainstream academic papers are based on research data from the United States. According to the rights and obligations of listed companies' CEOs in the United States, it is reasonable to focus on the CEO as the representative of managers to study overconfident behavior.

This research is based on empirical data from listed companies in Taiwan. However, corporate governance is not so perfect in Asian countries like Taiwan. The board of directors has a greater inference on firm's operation. Hence, we use both top manager and directors of the board as targets for measuring managerial overconfidence. We consider whether directors of the board and supervisors are overconfident in addition to their managers. Meanwhile, the definition of top manager provided by the Taiwan Economic Journal (TEJ) is not only the chief executive officer (CEO), but also the senior executive who has an influence on the company's decision-making. Consequently, the definition of manager in this paper include directors of the board, supervisors, chief executive officer, general manager, vice general manager, and finance and accounting manager. Hereafter, we use both top manager and directors as the target of measuring managerial overconfidence. OC_Directors_2 is an indicator variable equal to one if a member of the board of directors (and supervisors) purchase their own firm's stock over a two-year period, followed by negative average returns and zero otherwise. OC_Managers_2 is an indicator variable equal to one if top managers, including the chief executive officer, general manager, vice general manager, and finance and accounting manager, purchase their own firm's stock over a two-year period, followed by negative average returns. OC_mds_2

is an indicator variable equal to one if a member of the board of directors (and supervisors) or anyone of top managers purchase their own firm's stock over a two-year period, followed by negative average returns and zero otherwise. Control variables that influence the convening conference call in the model are follow Tasker (1998) and Frankel et al. (1999).

Data

The information of conference calls is from Market Observation Post System (MOPS) provided by the Taiwan Stock Exchange. The source of transaction data and accounting variables is taken from Taiwan Economic Journal (*TEJ*). The data for conference call is from Market Observation Post System constructed by TWSE. The sampling period is from 2005 to 2015. The reason for starting the sample period in 2005 is because the Financial Supervisory Commission of the Executive Yuan in Taiwan revised and formally adopted a voluntary financial forecasting system beginning in 2004. Since 2005, the number of firms holding conference calls increased year by year. Original samples include companies listed on the Taiwan Stock Exchange and Gre Tai Securities Market (GTST). The original sample size is 14,989. Companies that presented incomplete data or those that failed to meet eligibility criteria were eliminated. Finally, 12,912 valid samples were collected. The sample screening process is tabulated in Table 1.

Table 1: Sample Selection

Research Duration: 2005 to 2015	**Observed Value**
Original samples of enterprises listed on the Taiwan Stock Exchange (including GTST)	14,989
Deleting the missing values:	
Missing data of independent variables	808
Incomplete data of other variables	1,269
Final sample size	12,912

This table shows the sample screening process.

RESULTS AND DISCUSSION

Table 2 presents the sample distribution of firm-year statistics of firm's convening conference calls. In Panel A, we classify the sample by year. The number of firms with conference calls increase steadily over time. It also shows the total ratio of firm's convening conference calls is 27.5%. The ratio in 2005 is 10.7%, and the ratio of 2015 is 37.4%. Meanwhile, since companies may arrange more than one call during a fiscal year, the right-hand size of Panel A present the total number of conference call for each year. The total average is 0.75 times per firm-year and the rising trend is very steep and become slack. In Panel B, the sample is classified by different transaction markets including stock exchange markets and over-the-counter markets. From 2005 to 2008, all conference calls are held by listed companies at the stock exchange market. There are some listed companies in the over-the-counter market holding conference calls after 2009. The main proportion still appears in the companies at the stock exchange market. In panel C, the sample is classified by different industry. As seen in the Panel C of Table 2, most conference calls are held by companies in the electronic industry.

Table 2: Sample Distributions

Panel A: Category by Year

Year	Total	The Number of Firms with Conference Call		The Total Number of Conference Call	
2005	1061	113	10.7%	216	20%
2006	1066	182	17.1%	373	35%
2007	1068	271	25.4%	727	68%
2008	1061	304	28.7%	911	86%
2009	1135	275	24.2%	756	67%
2010	1161	324	27.9%	874	75%
2011	1186	397	33.5%	1062	90%
2012	1213	372	30.7%	1055	87%
2013	1284	328	25.5%	1077	84%
2014	1325	474	35.8%	1314	99%
2015	1352	506	37.4%	1334	99%
Total	12912	3546	27.5%	9699	75%

Panel B: Category by Different Transaction Market

Year	Total	Listed Company at Stock Exchange Market with Conference Call		Listed Company at Over-the-counter Market with Conference Call	
		Number of Firms	Total Number of Call	Number of Firms	Total Number of Call
2005	1,061	113	216	0	0
2006	1,066	182	373	0	0
2007	1,068	271	727	0	0
2008	1,061	304	911	0	0
2009	1,135	273	756	2	2
2010	1,161	318	874	6	7
2011	1,186	384	1,062	13	23
2012	1,213	365	1,055	7	15
2013	1,284	326	1,077	2	6
2014	1,325	471	1,314	3	7
2015	1,352	504	1,334	2	6
Total	12,912	3,511(99%)	9,633(99.3%)	35(0.99%)	66(0.7%)

Panel C: Category by Industry

Category: by Industry		The Number of Firms with Conference Call	The Total Number of Conference Call
11	Cement	41	125
12	Food	21	143
13	Plastic and Chemical	53	101
14	Textile	84	196
15	Electric Machinery	80	155
16	Electrical and Cable	16	30
17	Chemical, Biotechnology and Medical Care	27	126
20	Iron and Steel	115	108
21	Rubber	40	50
23	**Electronics**	**2,562**	**7,448**
25	Building Material and Construction	22	129
26	Shipping and Transportation	43	55
27	Tourism	35	90
29	Trading and Consumers' Goods	62	165
99	Other	249	776
	Total	3,546	9,699

This table presents the sample distribution of firm-year statistics of firm's convening conference calls. In panel A, the sample is classified by year. In panel B, the sample is classified by different transaction market including stock exchange market and over-the-counter market. In panel C, the sample is classified by different industry.

Table 3 shows descriptive statistics for the full sample of firms. For major variables, the corresponding mean of *Call* and *Frequency* are respectively 0.28 and 0.75. The maximum of *Frequency* is 12, meaning that conference call is repeatedly used for a few firms. The corresponding mean of *OC_Directors_2*, *OC_Manangers_2*, and *OC_mds_2* are 0.17, 0.20, and 0.18 respectively. We also further examine the

correlation of all variables and the table can be provided upon request. As expected, correlation between the frequency of conference calls and the variables of overconfidence are all positive. For example, the correlation coefficient value between Frequency and OC_Managers_2 is 0.07. Basically, it supports the prediction of H1 and H2.

Table 3: Summary Statistics for Variables

Name	Mean	Median	Maximum	Minimum	Std. Dev.
Call	0.28	0.00	1.00	0.00	0.49
Frequency	0.75	0.00	12.00	0.00	1.61
OC_Directors_2	0.17	0.00	1.00	0.00	0.38
OC_Managers_2	0.20	0.00	1.00	0.00	0.40
OC_mds_2	0.18	0.00	1.00	0.00	0.38
InstitutionalShares	17.66	12.23	97.72	0.00	18.19
DirectorShares	20.72	16.84	87.83	0.00	13.61
ManagerShares	1.63	0.58	39.34	0.00	2.66
BigHolderShares	20.49	18.39	84.50	0.00	11.60
AnalystFollow	0.46	0.00	1.00	0.00	0.50
AnalystFollowTimes	9.27	0.00	92.00	0.00	11.33
Assets	15.12	14.93	21.67	9.80	1.37
SalesGrowth	743.12	0.88	7,561,630	-100	66,817
Leaverage	35.77	34.46	99.13	0.00	17.47
ROA	7.47	7.26	82.79	-104.61	10.78
MB	1.78	1.31	233.15	0.08	3.40
Duality	0.31	0.00	1.00	0.00	0.46
Turnover	198.05	6.22	350,396.8	-2,469.4	5,635.6

This table shows descriptive statistics for full sample firms. Call is an indicator variable equal to one if the firm convenes conference call in the fiscal year and zero otherwise. Frequency is the number of conference calls held by a firm in a fiscal year. OC_Directors_2 is an indicator variable equal to one if a member of the board of directors (and supervisors) purchase their own firm's stock over a two-year period, followed by negative average returns and zero otherwise. OC_Managers_2 is an indicator variable equal to one if anyone of top managers, including chief executive officer, general manager, vice general manager, and finance and accounting manager, purchase their own firm's stock over a two-year period, followed by negative average returns. OC_mds_2 is an indicator variable equal to one if a member of the board of directors (and supervisors) or anyone of top managers purchase their own firm's stock over a two-year period, followed by negative average returns and zero otherwise. InstitutionalShares is the ratio of institutional investors' shareholding. DirectorShares is the ratio of directors' shareholding. ManagerShares is the ratio of non-directors managers' shareholding. BigHolderShares is the ratio of big shareholders' shareholding. AnalystFollow is the analysts' coverage in the previous year. AnalystFollowTimes is the frequency of analysts' coverage in the previous year. Assets is the natural logarithm of total asset. SalesGrowth is the sales growth of previous year. Leverage is the sum of long-term debt plus debt in current liabilities, divided by total assets. ROA is return on assets. MB is the sum of fiscal year-end market value of equity and book value of liabilities, divided by total assets. Duality is an indicator variable equal to one if the chairman and CEO of the company is the same person and zero otherwise. Turnover is the yearly turnover rate (%). Year is an indicator variable for controlling year effects. Industry is an indicator variable for controlling industry effects.

Table 4 shows robust probit regression model results for regression model (a) and ordered probit regression model results for regression model (b) to test hypotheses H1 and H2. We use the indicator variable of measuring the likelihood of convening conference call and directors' overconfidence as the independent variable from equation (1) to equation (3). The result in equation (1) indicate the coefficient of *OC_Directors_2* is positive but not significant. However, in equation (2) and (3), the coefficients of *OC_Managers_2* and *OC_mds_2* are both positive and significant, meaning that H1 is supported. From equation (4) to equation (6), we use the indicator variable of measuring the frequency of convening conference calls and directors' overconfidence as the independent variable to test H2. Equation (4) indicates that the coefficient of *OC_Directors_2* is positive but not significant. However, in equation (5) and (6), the coefficients of *OC_Managers_2* and *OC_mds_2* are both positive and significant, meaning that H2 is also supported. The reason why the coefficients of *OC_Directors_2* are not significant in equation (1) and equation (4) is that usually the person in charge of convening conference calls is the chief executive officer (CEO), chief finance officer (CFO) or other senior executive in Taiwan. Usually the board members have limited influence on the convening conference calls. To confirm the positive and significant results between managerial overconfidence and conference calls, we further use several robustness tests to confirm the relation between managerial overconfidence and conference calls.

Table 4: Conference Calls Robust Probit Model and Ordered Probit Model for Testing Hypotheses

	(1) Call	(2) Call	(3) Call	(4) Frequency	(5) Frequency	(6) Frequency
	Robust Probit Model			Ordered Probit Model		
OC_Directors_2	0.024			0.0277		
	(0.524)			(0.379)		
OC_Managers_2		0.0467**			0.0746**	
		(0.028)			(0.032)	
OC_mds_2			0.0387**			0.0632**
			(0.036)			(0.049)
InstitutionalShares1	0.0041***	0.0073***	-0.0051***	-0.0062***	-0.0062***	-0.0062***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DirectorShares	0.0047***	0.0046***	0.0047***	0.0067***	0.0066***	0.0066***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ManagerShares	0.0281***	0.0280***	0.0280***	0.0118***	0.0116***	0.0117***
	(0.005)	(0.005)	(0.005)	(0.002)	(0.002)	(0.002)
BigHolderShares	0.0103***	0.0103***	0.0103***	0.0139***	0.0139***	0.0139***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AnalystFallow	-0.474***	-0.478***	-0.478***	-0.547***	-0.549***	-0.547***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AnalystFallowTimes	0.051***	0.051***	0.051***	0.051***	0.051***	0.051***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Assets	0.387***	0.386***	0.386***	0.495***	0.494***	0.494***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SalesGrowth	0.0000**	0.0000**	0.0000**	0.0000**	0.0000**	0.0000**
	(0.028)	(0.011)	(0.018)	(0.042)	(0.014)	(0.015)
Leverage	-0.0023***	-0.0023***	-0.0023***	-0.0032***	-0.0032***	-0.0032***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	0.0104***	0.0104***	0.0104***	0.0144***	0.0144***	0.0144***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MB	0.0392***	0.0393***	0.0392***	0.0309***	0.0309***	0.0308***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Duality	-0.0799***	-0.0781***	-0.0781***	-0.0895***	-0.0889***	-0.0897***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(0.477)	(0.521)	(0.511)	(0.655)	(0.681)	(0.688)
Industry	-	-	-	-	-	-
Year	-	-	-	-	-	-
Observations	12,912	12,912	12,912	12,912	12,912	12,912
R^2	0.342	0.342	0.342	0.350	0.350	0.350
Adjusted R^2	0.340	0.340	0.340	0.347	0.347	0.347

This table shows robust probit regression model results for regression model (a) and ordered probit regression model results for regression model (b) to test hypotheses H1 and H2.

Robust Test Using Different Measure of Overconfidence

To confirm whether the relationship between managerial overconfidence and conference call is robust, we provide other tests with the firm's category and method of calculating returns conditioned in different industries. Closely following the model of Kolasinski and Li (2013), we use "managers purchasing their own firm's stock in the secondary market and the ex post 180 days return is negative" as another proxy of overconfidence for robustness testing. Because updating manager's shareholding data is irregular and the missing data problem of quarterly data is serious, we collect manager's shareholding data on a yearly bases. Therefore, the starting day of "180 days after" takes place from the beginning of next year. This definition of overconfidence is consistent with other prior theoretical articles including Kolasinski and Li (2013), such as Hackbarth (2008), Heaton (2002), Malmendier and Tate (2005a) and Roll (1986). Based on this new definition of managerial overconfidence, the empirical results of are shown in Table 5. We compare the robust probit model in Table 4 with Table 5. Under the same conditions that the dependent variable is whether the firm convenes conference call in the fiscal year, the significance of the regression coefficient for *OC_Managers_2* 及 *OC_mds_2* is slightly lower in Table 5 using abnormal returns than in Table 4 using average returns. But it is still positively correlated. Similar results can be found by comparing the ordered

probit model in Table 4 and Table 5. Table 5 provides additional evidence that there is a significantly positive correlation between managerial overconfidence and the likelihood and frequency of firm's convening conference calls.

Table 5: Robust Probit Model and Ordered Probit Model with Different Overconfidence Measure

	(1) Call	(2) Call	(3) Call	(4) Frequency	(5) Frequency	(6) Frequency
	Robust Probit Model			Ordered Probit Model		
OC_Directors_2	0.056			0.0323		
	(0.753)			(0.569)		
OC_Managers_2		0.067*			0.0821*	
		(0.068)			(0.076)	
OC_mds_2			0.0582**			0.0721*
			(0.046)			(0.056)
InstitutionalShares1	-0.0032***	-0.0053***	-0.0043***	-0.0058***	-0.0058***	-0.0058***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DirectorShares	0.0057***	0.0056***	0.0057***	0.0053***	0.0053***	0.0053***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ManagerShares	0.0181***	0.0180***	0.0180***	0.0218***	0.0216***	0.0217***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
BigHolderShares	0.0201***	0.0201***	0.0201***	0.0121***	0.0121***	0.0121***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AnalystFallow	-0.474***	-0.478***	-0.478***	-0.556***	-0.559***	-0.557***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AnalystFallowTimes	0.0491***	0.0491***	0.0491***	0.0516***	0.0516***	0.0516***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Assets	0.291***	0.290***	0.290***	0.562***	0.562***	0.562***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SalesGrowth	0.0000**	0.0000**	0.0000**	0.0000*	0.0000**	0.0000**
	(0.032)	(0.031)	(0.018)	(0.052)	(0.024)	(0.024)
Leverage	-0.0021***	-0.0021***	-0.0021***	-0.0032***	-0.0032***	-0.0032***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	0.0101***	0.0101***	0.0101***	0.0156***	0.0156***	0.0156***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MB	0.0381***	0.0382***	0.0381***	0.0201***	0.0201***	0.0201***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Duality	-0.0689***	-0.0688***	-0.0689***	-0.0969***	-0.0969***	-0.0968***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(0.654)	(0.632)	(0.631)	(0.736)	(0.745)	(0.755)
Industry	-	-	-	-	-	-
Year	-	-	-	-	-	-
Observations	12,912	12,912	12,912	12,912	12,912	12,912
R^2	0.321	0.321	0.321	0.340	0.340	0.340
Adjusted R2	0.319	0.319	0.319	0.337	0.337	0.337

This table shows robust probit regression model results for regression model (a) and ordered probit regression model results for regression model (b) to test hypotheses H1 and H2 using different overconfidence measure. Following the model of Kolasinski and Li (2013), we use "managers purchasing their own firm's stock share in the secondary market and the ex post 180 days return is negative" as another proxy of overconfidence in this table.

Robust Test Using Electronics and Non-Electronics Industry Data

Next, we provide additional tests by dividing the sample into electronic and non-electronic firms to verify whether the positive relationship between managerial overconfidence and conference calls maintains in different industries. In Panel B of Table 2, we first divide the research sample into listed companies and OTC companies, while Panel C groups firms according to firm industry. As can be seen from Panel B in Table 2, listed companies account for about 99% of the total number of firm and frequency of convening conference calls, while OTC companies account for only 1% of the total. Based on the large disparity in proportion, it is not necessary to do further testing by dividing companies according to the trading market (listed / OTC) for sensitivity testing. As can be seen from Panel C in Table 2, of the total number of firms and frequency of convening conference calls by the electronics industry is about 72.3% and 76.8%

respectively. Because operating performance of the electronics industry and the changes in future industry outlook are more drastic, in line with our expectation, there is stronger incentive for firms in the electronics industry to provide timely information by convening conference calls. Even though the electronics industry accounts for a high proportion of listed companies, about 57%, the ratio of the number and frequency, around 70%, are still relatively higher. Table 6 shows results from examining whether the relationship between managerial overconfidence and conference calls is affected by industry category.

Table 6: Robust Probit Model and Ordered Probit Model Using Electronics and Non-Electronics Data

	(1)	(2)	(3)	(4)
	Electronics Industry		Non-Electronics Industry	
	Call	Frequency	Call	Frequency
OC_mds_2	0.0412**	0.0752**	0.0245*	0.0387*
	(0.022)	(0.046)	(0.075)	(0.069)
InstitutionalShares1	-0.0061***	-0.0072***	-0.0031***	-0.0041***
	(0.000)	(0.000)	(0.000)	(0.000)
DirectorShares	0.0055***	0.0076***	0.0016***	0.0027***
	(0.000)	(0.000)	(0.000)	(0.000)
ManagerShares	0.0345***	0.0230***	0.0155**	0.0160**
	(0.005)	(0.003)	(0.055)	(0.065)
BigHolderShares	0.0156***	0.0195***	0.0073***	0.0103***
	(0.000)	(0.000)	(0.000)	(0.000)
AnalystFallow	-0.675***	-0.748***	-0.356***	-0.389***
	(0.000)	(0.000)	(0.000)	(0.000)
AnalystFallowTimes	0.1570***	0.1570***	0.0410***	0.0410***
	(0.000)	(0.000)	(0.000)	(0.000)
Assets	0.4970***	0.5230***	0.386***	0.478***
	(0.000)	(0.000)	(0.000)	(0.000)
SalesGrowth	0.0000**	0.0000**	0.0000*	0.0000*
	(0.045)	(0.032)	(0.071)	(0.065)
Leverage	-0.0071***	-0.0083***	-0.0035***	-0.0041***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA	0.0212***	0.0263***	0.0138***	0.0211***
	(0.000)	(0.000)	(0.000)	(0.000)
MB	0.0392***	0.0393***	0.0393***	0.0392***
	(0.004)	(0.004)	(0.004)	(0.004)
Duality	-0.1218***	-0.1582***	-0.0121***	-0.0231***
	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.0000	-0.0000	-0.0000	-0.0000
	(0.597)	(0.658)	(0.435)	(0.526)
Industry	-	-	-	-
Year	-	-	-	-
Observations	9,332	9,332	3,580	3,580
R^2	0.455	0.455	0.283	0.283
Adjusted R^2	0.453	0.453	0.280	0.280

This table shows robust probit regression model results for regression model (a) and ordered probit regression model results for regression model (b) to test hypotheses H1 and H2 using electronic and non-electronic industry data

Table 6 show that the relationship between managerial overconfidence and the convening conference calls is significant in the electronics industry, while in the non-electronics industry it is relatively insignificant. The results in Table 6 show that managers are excessively confident.

Robust Test Using the Data Deleting the Year 2008-2009

To consider whether the financial crisis during 2008 to 2009 would cause corporate managers to have doubts about increasing their shareholdings, we further provide sensitive test using the data deleting the year 2008-2009. In Table 7, compared with Table 4, the significance of coefficients *OC_Managers_2* and *OC_mds_2* is slightly higher in all four models but the differences are not significant. The reason why the differences

are not significant may be because the shareholding behavior patterns of managers in Taiwan have not been affected by the financial crisis.

Table 7: Conference Calls Robust Model Deleting the Year 2008-2009 Data

	(1)	(2)	(3)	(4)
	Probit Model		Ordered Model	
	Call	Call	Frequency	Frequency
OC_Managers_2	0.0552**		0.0352**	
	(0.035)		(0.021)	
OC_mds_2		0.0452**		0.0712**
		(0.042)		(0.032)
InstitutionalShares1	-0.0065***	-0.0041***	-0.0052***	-0.0053***
	(0.000)	(0.000)	(0.000)	(0.000)
DirectorShares	0.0036***	0.0037***	0.0066***	0.0065***
	(0.000)	(0.000)	(0.000)	(0.000)
ManagerShares	0.0350***	0.0348***	0.0211***	0.0213***
	(0.003)	(0.003)	(0.001)	(0.001)
BigHolderShares	0.0203***	0.0203***	0.0145***	0.0145***
	(0.000)	(0.000)	(0.000)	(0.000)
AnalystFallow	-0.564***	-0.564***	-0.635***	-0.635***
	(0.000)	(0.000)	(0.000)	(0.000)
AnalystFallowTimes	0.0630***	0.0630***	0.0630***	0.0630***
	(0.000)	(0.000)	(0.000)	(0.000)
Assets	0.253***	0.253***	0.365***	0.365***
	(0.000)	(0.000)	(0.000)	(0.000)
SalesGrowth	0.0000*	0.0000*	0.0000*	0.0000*
	(0.065)	(0.065)	(0.054)	(0.054)
Leverage	-0.0044***	-0.0044***	-0.0062***	-0.0062***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA	0.0096***	0.0096***	0.0104***	0.0104***
	(0.000)	(0.000)	(0.000)	(0.000)
MB	0.0425***	0.0425***	0.0378***	0.0378***
	(0.003)	(0.003)	(0.003)	(0.003)
Duality	-0.0881***	-0.0881***	-0.0968***	-0.0969***
	(0.000)	(0.000)	(0.000)	(0.000)
Turnover	-0.0000	-0.0000	-0.0000	-0.0000
	(0.621)	(0.625)	(0.782)	(0.782)
Industry	-	-	-	-
Year	-	-	-	-
Observations	10,716	10,716	10,716	10,716
R^2	0.325	0.325	0.233	0.233
Adjusted R^2	0.323	0.323	0.230	0.230

This table shows robust probit regression model results for regression model (a) and ordered probit regression model results for regression model (b) to retest hypotheses H1 and H2 by deleting 2008-2009 data to consider whether the financial crisis during 2008 to 2009 would cause corporate managers to have doubts about increasing their shareholdings.

CONCLUSION

The purpose of the present study is to examine the correlation between managerial overconfidence and the occurrence and frequency of firm's convening conference calls. Previous research indicates that overconfident managers overestimate future returns from their firms' investment and therefore their over-optimism increase the expectation of future performance. This result raises the motivation to convene conference calls since the conference call is an important tool for Taiwan's listed companies to disclose information voluntarily. Therefore, this paper examines how managerial overconfidence affects the occurrence and frequency of conference calls using data from Taiwan. Following Kolasinski and Li (2013), we use a manager's purchases of his own firm's stocks over the past 2 years as the measure of managerial overconfidence. Using data from firm publicly listed firms in Taiwan for the period from 2005 to 2015, the results provide robust evidence of a positive relation between managerial overconfidence and conference calls. That is, companies with higher managerial overconfidence would be more likely to convene

conference calls. Prior research of managers' overconfidence mainly discussed their impact on financial decisions. This study provides further evidence of its impact on management decisions. The main objective of business firms is to create shareholder value. Convening conference calls can reduce the information asymmetry and help investors estimate firm's valuation correctly and hence enhance the company's value.

In this article, we focus on investigating the relationship between managerial overconfidence and the firm's holding conference calls using data from Taiwan. There are two main contributions of the research: All the existing literature, both international and domestic, mainly discusses the influence of convening conference calls on other variables. There is relatively little discussion about factors influencing the holding of conference calls. Nor was there prior literature from the behavioral and financial viewpoint to explore whether managerial overconfidence would affect the convening of conference calls. This study helps fill the void in the existing literature. Secondly, the protocol of holding conference calls in financial institutions in Taiwan has been gradually completed in recent years. Investors have come to rely on it increasingly. It can be concluded that: "The higher the level of managerial overconfidence is, the higher the possibility and frequency of convening a legal meeting will be." This conclusion provides investors with a thinking direction.

There are several research limitations in this article. First, the measure of managerial overconfidence is follows Kolasinski and Li (2013). We use two different methods determining overconfidence including "manager's purchasing his own firm's stock over the past 2 years and the average return is negative" and "manager's purchasing his own firm's stock over the past 2 years and the ex post 180 days return is negative". However, there are many other measurement methods used in the prior literature which are not included in this article due to the difficulties of data collection. The data used these methods usually is hand-collected data and not available in the TEJ archive. Other measurements using options or news media reports can be the issue of supplement research in the future. Secondly, we only consider manager's purchase of his/her own firm's stock when measuring managerial overconfidence. We do not take treasury stock into consideration even though treasury stock has been an important way for managers to obtain their own firm's share. Although these limitations do not change the conclusions of this article, they can provide direction for further research.

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