Gender Diversity in the Audit and Compensation Committee, Firm Performance, Risk and Pay-Performance Sensitivity

Chih-I Huang [1], Hsin-Yu Hsu [1], Hsin-Wen Wang [2], and Yuan Chang [1, *]

1. *Department of Finance, National Changhua University of Education*
2. *Department of Business Administration, National Changhua University of Education*

A B S T R A C T

Based on the data of listed non-financial firms on the Taiwan Stock Exchange covering the period of 2011-2015, this study examines whether gender diversity in the audit committee and compensation committee affects firm performance, risk, and director/management's pay-performance sensitivity (PPS). While the existing research has explored the benefit and cost of gender diversity in the director/top management level, this study focuses on firm's two functional committee under corporate board—the audit committee and compensation committee, to explore how the characteristics of the female, e.g. conservativeness, caution and risk aversion affect the functioning efficiency in the committees. Gender diversity is measured by dummy variable of having female member in audit (compensation) committee, the number of female audit (compensation) committee member, and the ratio of female member in audit (compensation) committee. Firm's performance and risk is proxied by several accounting-based/market-based performance and volatility of stock market performance and operating consequences. PPS is estimated by linking between directors/management's compensation and firm's accounting-based performance. Through correlation analysis and multiple regression estimation, empirical evidence generally shows that the higher the degree of gender diversity in audit committee, the better the firm's performance. In addition, greater degree of gender diversity in compensation committee reduces the directors/management's pay-performance sensitivity.

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* Corresponding author, Department of Finance, National Changhua University of Education, No.2, Shi-Da Road, Changhua City, Taiwan, R.O.C. Tel.: 047-232105#7350; Fax: 047-211290; e-mail: ychang@cc.ncue.edu.tw

1. Introduction

The board of director is an important internal mechanism of corporate governance. In the past two decades, many cases of corporate scandals and accounting frauds domestically and abroad were almost accused of the board's missing supervise the management. Therefore, the reform of corporate governance mostly aims at enhancing the board's efficiency, including increasing board's independence, professionals and diversity. At the same time, corporate board is directed to set up functional committees to take various specific responsibility, such as the audit committee, compensation committee and nomination committee, etc. The U.S. Congress focused on the successive occurrences of concealed losses, hidden liabilities, and false financial statements in large companies, such as Enron in 2001. It passed the Sarbanes-Oxley Act in July 2002, hoping to strengthen the quality of accounting record, internal audit system and ensure the accuracy of financial reporting. The Sarbanes-Oxley Act requires public companies to set up audit committee composed entirely of independent director, to strengthen the firm's internal control mechanism. After the Asian financial turmoil, Asian countries, including Taiwan, gradually imitated the U.S and introduced independent director and audit committee system.

The audit committee is a functional committee under the board of directors. It mainly assists the board in supervising the quality and integrity of firm's accounting, auditing, financial reporting process and internal control. The work of the audit committee includes auditing financial statements, accounting policy and procedure, internal control system, major asset and derivative products transactions, major capital loans and endorsements or guarantees, raising or issuance of securities, compliance with laws and regulations, whether managers and directors have related party transactions and possible conflicts of interests, employee complaints reports, fraud investigation reports, corporate risk management, appointment, dismissal or compensation of certified public accountants, appointment and removal of financial, accounting or internal audit supervisors. It can be seen that the audit committee has a significant impact on the firm's operation consequences and stability.

The main purpose of establishing the compensation committee is to set appropriate compensation for directors and the management. It can prevent corporate top tier from receiving high pay that is disproportionate to the firm's performance, and make pay decision more transparent and reasonable, to protect the rights and interests of shareholders and investors. In the past decades, the top management sit back to get high salaries though in firms with poor performance or financial scandals continue to occur. Hence, to bridge the potential anxiety caused by the widening gap between the rich and the poor, and to protect the funds and rights of shareholders, governments in various countries have successively demanded that firm establish compensation committee, reveal the compensation policy of top executives, formulate individual compensation, and increase shareholder meeting's rights to consent to directors' compensation policy. The ratio of firm's performance to the pay of directors and the management is more and more inappropriate in Taiwan's financial market. According to the observation of Taipei Exchange in April 2010, in some firms having lost money for two years, directors and supervisors' average compensation is still increasing rather than decreasing. Furthermore, some firms even arbitrarily allocated high bonus to directors and the management, which leads to shareholders not receiving the dividends. In view of these situations, establishing a compensation committee is indispensable for Taiwan financial markets.

Existing studies have pointed out the importance of the board as a company's internal governance mechanism (Fama and Jensen, 1983; Claessens, Djankov and Lang, 2000). Moreover, more and more views on changes in practice and government regulations show the importance of board members' diversity. The more diversified the board, the more comprehensive the background, intelligence and abilities of each member, which will positively contribute to the efficiency of the board's operation and the firm's value. (Van der Walt and Ingley, 2003; Stephenson, 2004; Robinson and Dechant, 1997;

Catalyst, 2004; Carter, D'Souza, Simkins and Simpson, 2007; Adams and Ferreira, 2009). From the perspective of agency theory (Jensen and Meckling, 1976), a diversified board helps to enhance the independence of the board, and corrupting collectively or corrupting with the management are more unlikely to happen (Carleton, Nelson and Weisbach, 1998; Carter, Simkins and Simpson, 2003). The women tend to have outstanding performance in supervisory behavior and are more able to take the responsibility of monitoring the management (Trinan, Miller and Trzebiatowski, 2014). [1]

The objects in the existing gender diversity research are corporate board and the management. The audit committee and the compensation committee assist the board in monitoring, auditing major decisions, and setting up directors and the management's compensation policy. Hence, it is worthy discussing issue that whether gender diversity plays a role in the operation of audit committee and compensation committee, and then discuss the impact of gender diversity in committee on firm's performance, risk, and top tier compensation policy. Based on the relatively conservative and stable characteristics of the female, this research explores how gender diversity in audit committee affects performance and risks. The audit committee mainly functions as financial consultant and supervisor in the corporate governance mechanism. Its independence and professional requirements are the core to ensure whether the corporate governance mechanism can perform well, and it has a significant impact on the financial consequences and risk. This study also cites the female's characteristics of stricter supervision, careful consideration, relatively conservative, and relatively greater emphasis on the rights and interests of stakeholders, to evaluate whether the presence of women in the compensation committee has impacts on the compensation policy.

Based on data from a total of 796 listed non-financial firms on the Taiwan Stock Exchange from 2011 to 2015, this study examines whether gender diversity of audit committee and compensation committee, affects firm performance, risk, and pay-performance sensitivity of directors and the management. In addition to the introduction, the follow-up structure of this study is as follows. Section 2 is the literature review and hypothesis development. Section 3 introduces variables, econometric models, samples and data source. Section 4 is the empirical result and discussion. The last section is conclusion and suggestion.

2. Literature Review and Hypothesis Development

2.1 Audit Committee and Compensation Committee

To improve corporate governance, strengthen the board's independence, responsibilities and professionals, many countries around the global have successively revised relevant laws and regulations, to force or encourage setup of independent director and audit committee. In view of the financial turmoil's impact, Asian countries have gradually introduced "independent directors" and set up "functional committee". For example, Japan expressly stipulates in its newly revised company law that a public company should be regulated to establish the nomination committee, audit committee and compensation committee under the board, and the independent director of each committee shall be more than half. In its revised company law, South Korea has also introduced independent director and stipulated that companies can establish the audit committee to replace supervisor. Requirements for

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[1] Some scholars have pointed out that a diversified board may incur costs. For example, a minority of directors with certain characteristics may be marginalized by major ones who lack those characteristics (Westphal and Milton, 2000). A diverse board may lead to decrease in cohesion, increase in communication time, lack of distrust and cooperation, and increase in the cost of communication and coordination, due to conflicts of interest. In addition, exterior diversity may make directors lack professionals, and conflicts of interest between directors may occur. Therefore, a diversified board may cause decrease in the efficiency of board's operation, a longer decision-making period, decrease in the quality of decision-making, worsening agency problems (Mosakowski and Earley, 2000; Tajfel and Turner, 1985; Williams and O'Reilly, 1998; Lau and Murnighan, 1998), and other costs.

independent director in its stock exchanges were also added in the security listing rules. A listed company in Taiwan can set up an audit committee to replace the supervisor to perform managerial monitoring. On the one hand, it is responsible for selecting and coordinating with external accountants. On the other hand, it leads internal audit and strengthens the board's supervision of management. Division of job duties and independence of the audit committee assist the board in decision-making. The number of audit committee member shall be at least three, all of them must be independent director. At least one of the members shall have accounting or financial expertise.[2] In the period of 2015-2017, the financial industry that publicly issued shares, and listed companies with paid-in capital of more than 10 billion NTD, must complete the establishment of an audit committee. In the period of 2017-2019, listed companies with the paid-in capital amounting to 2 billion to 10 billion NTD must set up an audit committee.[3]

In addition, even many companies are operating at a loss, and the compensation of directors and the management has never been reduced. For profitable firms, compensation is not fully linked to the performance. Hence, to strengthen the disclosure of information of director and the management, since 2010, in the Market Observation Post System (https://mops.twse.com.tw/mops/web/index), the Taiwan Stock Exchange and Taipei Exchange Market have announced the name of listed companies which have suffered losses for two consecutive years, but the amount of compensation for director and the management or the average compensation for each director and supervisor has increased. Countries around the world, including Taiwan, have successively promoted the compensation committee system. The authority of Taiwan's financial market has successively issued relevant measures of establishing compensation committee for company to follow. The Securities and Exchange Law Article 14-6 amended on January 31, 2018 states that company whose stocks have been listed on the stock exchange or traded, shall set up a compensation committee. Compensation includes salaries of directors, supervisors and managers, stock options and other measures with substantial incentives. The Financial Supervisory Commission of the Executive Yuan also stipulated the Regulations Governing the Appointment and Exercise of Powers by the Remuneration Committee of a Company Whose Stock is listed on the Taiwan Stock Exchange or the Taipei Exchange. The most important task of the compensation committee is to formulate the performance evaluation and salary policy of the company's senior management. Its members must have professional background and maintain independent relationship with the company's directors, supervisors and the management.

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[2] According to the Article 2 of the *Regulations Governing Appointment of Independent Directors and Compliance Matters for Public Companies*, independent director of public company shall meet one of the following professional qualification requirements, together with at least five years work experience: (1) an instructor or higher in a department of commerce, law, finance, accounting, or other academic department related to the business needs of the company in a public or private junior college, college, or university. (2) A judge, public prosecutor, attorney, certified public accountant, or other professional or technical specialist who has passed a national examination and been awarded a certificate in a profession necessary for the business of the company. (3) Having work experience in the area of commerce, law, finance, or accounting, or otherwise necessary for the business of the company.

[3] In addition to amending the *Securities and Exchange Act*, relevant corporate governance sub-laws are successively formulated. Among them, the following related regulations have been formulated for independent directors and audit committees, including the *Regulations Governing Appointment of Independent Directors and Compliance Matters for Public Companies*, Item 2, Article 14-2 of the *Regulations Governing the Exercise of Powers by Audit Committees of Public Companies*, Item 5, Article 14-4 of the *Securities and Exchange Act*, etc. It is hoped that the establishment of independent directors and audit committees will help reduce companies' abnormal or illegal acts.

2.2 Benefit and Cost of Gender Diversity in Corporate Board Level, Top Management Level and Functional Committee Level

In recent years, the female participation in political activities and business operations has become more and more common. The proportion of the female holding important positions in various organizations has been increasing year by year. Female leaders are also often seen in the top positions of many companies in Taiwan as well as in major developed countries around the world. In Taiwan, Gender Equality Committee of the Executive Yuan has required gender ratio reach one-third in committees of ministries and government institutions in 2004. This policy has also been extended to public enterprises, the board of foundation and corporation with government sponsoring more than 50%. As of 2015 statistics from the Executive Yuan, female directors in country-owned enterprises have increased from 11.93% in 2013 to 23.21% in 2015, and female supervisors have increased from 28.26% to 48.28%. The proportion of female director and supervisor in the private sector has also increased to 23%. These show the diversity of director and supervisor in Taiwan has grown significantly in both the public and private sectors.

From the perspective of regulation encouragement and development on female participation in top tier of the organization around the world, the proportion of the female on the board in large companies should be no less than 30% in Germany. If no female is found to be suitable for being the director, the seat must be vacated and new female director will replace in the next term. In Sweden, for country-owned enterprises, each gender must hold at least 40% of the board. In France, before 2016, the proportion of women on the board of a listed company must reach 40%. The European Union stipulates that before 2020, the ratio of female director and supervisor in country-owned and large listed companies (more than 250 employees) in EU countries should reach at least one-third of the seats. In Hong Kong, female member in the board of supervisor must be at least 30% in listed companies. The United Arab Emirates has also allowed women to serve as director of country-owned enterprise since 2012.

This study extracts the viewpoints in existing studies on how gender diversity of the company's board helps to improve the efficiency of the board's functioning, which supports that female participation in the audit committee helps to improve the quality of the audit committee's operation. Existing studies have found that the decision group with gender diversity tends to provide a broader information base in decision-making process (Van Knippenberg, de Dreu and Homan, 2004; Dahlin, Weingart and Hinds, 2005). While different genders have different background, experience, ability, sources of information, gender diversity in management can provide more decision-making information and improve the quality of the decision. Group with gender diversity can evaluate information more comprehensively (Dahlin et al., 2005). The male and the female tend to use different evaluation criteria with alternatives (Park, 1996; Crow, Fok, Hartman and Payne, 1991).

However, diversity in the management incurs costs. Social identity theory (Tajfel and Turner, 1979) and self-identity theory (Leonard, Mehra and Katerberg, 2008) pointed out that diversity in an organization may disrupt the process of organizational operation. These theories assumed that people create social categories based on individual preference of differences, including gender, and believe that significant social categories promote differences within and outside the group (Tajfel, 1978; Hewstone, Rubin and Willis, 2002). Distinction is the key factor leading to significant differences within and outside the group (Leonard, Mehra and Katerberg, 2008; McGuire and Padawer-Singer, 1976). Since gender can be easily distinguished visually, organization members are prone to conflicts (Ridgeway, 2009) due to differences in social categories and reduced communication (Chrobot-Mason et al., 2009; Li and Hambrick, 2005). This reduces the efficiency and performance of the organization's operations.

Campbell and Minguez-Vera (2008) took Spanish companies as a sample, and found that female directors were good supervisors. When external governance is not perfect, the presence of female

director can make up for this deficiency. Nielsen and Huse (2010) took Norwegian non-financial companies as an example, and found that when the ratio of female director is higher, corporate board's decision and operation can be effectively controlled, thereby improving supervision efficiency and helping improve corporate performance and value. Shen and Wu (2013) used the Chinese banking industry as a research sample, and found that the performance of Chinese banking industry did have significant changes before and after female directors are employed. More female director, more senior or educated female director being hired, can reduce risk-taking behaviors of Chinese banking firms, and in turn enabled Chinese banking industry to have better financial performance during the financial crisis. Ramirez (2003) pointed out that the diversity of board member helps the board to monitor the management, and effectively reduce corruption or capture of shareholder wealth within the enterprise. Rosener (2003) and Konrad and Kramer (2006) found that compared to companies with only male director, those with more female board member have better corporate governance, and the interests of various stakeholders in companies can be considered.

Carter et al. (2003) investigated the American board of directors to examine the impact of board diversity on company's value. The author found a positive correlation between the existence of female directors and company performance (measured by Tobin's Q). Erhardt, Werbel and Shrader (2003) studied the impact of population diversity on the board of directors. The author found that there is a positive correlation between the corporate financial indicators and population diversity of board of directors. Francoeur et al. (2008) studied the impact of gender difference on the board of director of company with high betas, high price-to-book ratios, or high standard deviations of analysts' forecasts. The author found evidence that more female member on the board may not have an impact on stock returns. Miller and Del Carmen Triana (2009) studied the impact of innovation and corporate reputation on the relationship between gender diversity of the board of director and corporate performance. The author found that there is no relationship between gender diversity of the board and company performance, however, but the results show that there is a positive correlation between board gender diversity and innovation (in the form of R&D expenditure). Adams and Ferreira (2009) found that a gender-diversified board of directors is more likely to make CEOs responsible for poor stock price performance. The gender diversity of the board of directors has a beneficial effect on companies with weak shareholder's rights. Rose (2007) found that the number of female board members on the Danish board is not significantly related to the company's performance measured by Tobin' Q. However, in Spain, Campbell and Mínguez-Vera (2008) found that the positive impact of the proportion of women board member increases the value of the company. Nguyen et al. (2015) found evidence from Vietnam and showed that when the proportion of female directors reaches a critical point of about 20%, the marginal positive performance effect of gender diversity on the board disappears. In a study conducted in China, Liu, Wei and Xie (2014) found a positive and significant relationship between board gender diversity and company performance. The author also finds that female executive directors are more efficient than female directors. Abdullah, Ismail and Nachum (2016) conducted a study on Malaysian companies and found that gender diversity on the board of directors has a positive impact on accounting performance.

Adams and Ferreira (2009), Gul et al. (2011) pointed out that female directors have higher attendance records than male directors, and they are more willing to join supervisory-related committees and engage in more auditing work. Carter et al. (2003) pointed out that the positive relationship between gender diversity and corporate value may be due to women's better understanding of diversified markets, and female directors bring better creativity and innovation to the board. Female senior managers tend to be more cautious when making important decisions (Huang and Kisgen, 2013; Levi et al., 2014). Levi et al. (2014) showed that compared with bidders composed of only male directors, bidders composed of

female directors make fewer acquisitions, and if they do, bid premiums are lower. In addition, it is found that companies run by female CEOs have lower leverage than companies run by male CEOs (Faccio et al., 2011). Camerer and Lovallo (1999) believe that when an agent is optimistic about himself, overconfidence is generated, and Lundeberg et al. (1994) indicated that the female in general are not overconfident than men. From above arguments, this research proposes hypothesis 1 and hypothesis 2:

Hypothesis 1: *Gender diversity in the audit committee is positively correlated with firm performance. The higher the degree of female participation in the audit committee, the better the firm performance.*

Hypothesis 2: *Gender diversity in the audit committee is negatively correlated with firm risk. The higher the degree of female participation in the audit committee, the lower the firm risk.*

In addition, about the reform of corporate governance system, governments in different countries generally require the establishment of compensation committee, to improve the reasonableness of directors, supervisors, and the management compensation. Existing research such as Vafeas and Afxentiou (1998), Perry and Zenner (2001), Park, Nelson and Huson (2001), Anderson and Bizjak (2003) and Sun and Cahan (2009, 2012), researchers have confirmed the establishment of compensation committee or similar institutions contribute to the transparency and reasonableness of corporate top tire pay policy, including pay-performance sensitivity, etc. This research refers to Adams and Ferreira (2009), Carter, Simkins and Simpson (2003), Shen and Wu (2013), Zhang, Huang and Xu (2012), and Chang and Wang (2016), board gender diversity helps to produce more objective and diverse governance viewpoints. The common traits of the female is that they are delicate in mind, easier to find small details, and have a wider range of thinking than men. In addition, women are usually more able to take care of others, making the female employer care of employees be relatively better than that of the male. Zhang et al. (2012) mentioned that female director tends to have specific psychological characteristics, such as being more willing to listen to voices of different stakeholders, tending to be more affectionate, kind, helpful, compassionate and caring about the welfare of others (Eagly et al., 2003).

Strobl, Rama and Mishra (2016) employed the data of 5,630 observations from public companies in the United States and found that the female presence on the compensation committee is not significantly associated with CEO pay. Khan, Waleed, Nouman and Khurram (2020) found that firms with gender-diverse compensation committee strengthen the CEO pay-performance link only in Chinese listed firms but not in Australia and Pakistan. Usman, Zhang, Wang, Junqin and Makki (2018) found evidence that gender-diverse compensation committees limit CEOs' total cash compensation and strengthen the link between CEO pay and firm performance, but only independent female directors have a significant impact. While existing studies show controversial result, this study argues that a gender-diversified compensation committee is less likely to formulate a situation where company's resources are excessively concentrated on directors, supervisors and senior management, which makes the compensation policy more reasonable and reflect a higher degree of pay-performance sensitivity. Hence, the third hypothesis is:

Hypothesis 3: *Gender diversity in the compensation committee is positively correlated with the reasonableness of the directors and management compensation. The higher the degree of gender diversity in the compensation committee, the higher the pay-performance sensitivity of directors and management.*

3. Variables, Econometric Models, Samples and Data

3.1 Variable

3.1.1 Main Explanatory Variable: Gender Diversity

The main explanatory variable is the degree of gender diversity in the audit and compensation committee. First, a dummy variable for female audit committee member (*AUDITFD*), which is one if there is female member in audit committee, and zero otherwise. Second, the number of female member in audit committee (*AUDITFN*). Third, the ratio of female member in audit committee (*AUDITFR*), defined as the number of female audit committee member divided by the total number of audit committee member. Fourth, a dummy variable of female compensation committee member (*COMPFD*), which is one when there is at least one female compensation committee member, and zero otherwise. Fifth, the number of female compensation committee member (*COMPFN*). Sixth, the female compensation committee ratio (*COMPFR*), defined as the number of female compensation committee member divided by the total number of compensation committee member. The greater the value of the above six variables, the greater the gender diversity in the audit committee and compensation committee.

3.1.2 Explained Variables: Performance, Risk and Directors/Management Pay

This study uses two accounting-based performance indicators, including return on assets (*ROA*: dividing firm's after-tax net income by average total assets), return on equity (*ROE*: dividing firm's after-tax net income by average total equity), and two market-based performance indicators, Tobin's Q (*TOBINQ*: book value of liabilities plus market value of common stock and divided by book value of assets), and annual stock return (*ASTR*).

Regarding risk indicators, this study uses five risk indicators. First, the standard deviation of stock returns (*RETSTD*), the standard deviation of the daily stock return of a specific company in a specific year. The greater the volatility of the stock return, the greater the wealth uncertainty investors will face when holding the company's stock, and the greater the uncertainty of the company's stock market performance. Second, the stock return skewness coefficient (*SKEW*), the skew coefficient of the daily return of a specific company in a specific year. The lower the value, the greater the risk of the company's stock price collapsing, and the higher the risk of company's stock market performance downgrading. Third, the daily stock return rate of 95% (Value at Risk) [*VAR*], calculated by sorting the specific company's annual daily return rate (about 250 daily stock returns) from small to large, and then selecting the 5% lowest rate of return. This is used to indicate the lowest level of return on the company's stock price under the 95% confidence level. The smaller the value, the lower the lowest return on the company under 95% confidence level, and the higher downside risk and loss when investors hold the company's stock. Fourth, the standard deviation of return on assets in the past five years (*ROASTD*). The larger the value, the greater the volatility of the company's profits, and the greater the risk of corporate real operations. Fifth, the standard deviation of the return on equity (*ROESTD*), is defined as the former. The larger the value, the higher the risk of shareholder returns.

Existing studies mostly focus on whether there is a significant positive connection between the compensation of senior managers and company performance, and whether the degree of connection is influenced by other factors, such as firm characteristics, corporate governance condition and ownership structure. However, the board of director is an extremely important institution in corporate governance, and the compensation of directors and supervisors also has a motivating effect on directors' performance in managerial monitoring and advising. Therefore, this study also explores the relationship between directors' compensation and performance. This research uses several compensation variables for directors and the management, which are described as below.

First, the total compensation of the main managers (*LNCOMPMT*), is defined as the total compensation of the main managers, and the natural logarithm is taken. The total compensation of the main managers includes salaries, severance pay, bonus special payments, cash dividends and stock dividends received by the main managers. Second, the average compensation of key managers (*LNCOMPMA*), is defined as the total compensation of key managers being divided by the number of people paid, and take the natural logarithm. Third, the total compensation of directors and supervisors (*LNCOMPBT*), is defined as the total compensation of directors and supervisors taking the natural logarithm. The total compensation of directors and supervisors includes the total amount of salary and compensation received by all directors and supervisors, including cash dividends, stock dividends and salaries, retirement pay and bonuses of being concurrent director. Fourth, the average compensation of directors and supervisors (*LNCOMPBA*), is defined as the total compensation of directors and supervisors being divided by the number of people paid, and take the natural logarithm. Fifth, the total compensation of directors, supervisors and main managers (*LNCOMPBMT*), is defined as the natural logarithm of directors, supervisors and main managers' total compensation. Sixth, the average compensation of directors, supervisors and main managers (*LNCOMPBMA*), is defined as the total compensation of directors, supervisors and main managers being divided by the number of people paid, and take the natural logarithm.

3.1.3 Control Variable

Referring to existing studies, such as Karpoff (1987), Ittner, Lanen and Larcker (2002), Karathanassisa and Drakos (2004), Luo and Hachiya (2005), Demsetz and Villalonga (2001), Jensen and Meckling (1976), Morck, Shleifer And Vishny (1988), Yermack (1996), Sihan Wang and Yuan Zhang (2020), etc., this study considers controlling the potential variables that impact firm performance and risk, including asset size (*LNASSET*), debt ratio (*DEBTR*), revenue growth rate (*SALSGR*), number of years established (*AGE*), annual trading volume of common stock (*LNTURN*), board size (*BOARD*), independent director ratio (*INDRATIO*), directors' shareholding ratio (*DIRHOLD*), manager's shareholding ratio (*MANAHOLD*) and foreign institutional investors' shareholding ratio (*FORHOLD*). The arguments for controlling company performance and risk by above variables are briefly summarized as follows.

Larger enterprise scale helps the company hold a more favorable competitive position. This can improve company performance, so the company is more able to withstand the negative impact of the company's cash flow uncertainty, and over-risk management decisions are more unlikely to be made. Therefore, the company operation and stock market performance have a low risk propensity. The company size (*LNASSET*) is measured by taking natural logarithm of the company's total assets. A company with a higher debt ratio has lower long-term debt solvency, higher financial risks and bankruptcy risks. Most of the company's operating income becomes interest expenses, which restricts the company's future investment funds, and in turn affects the company's profitability. The debt ratio (*DEBTR*) is defined as the company's total liabilities being divided by its total assets. The higher the company's revenue growth, the higher the company's market share will be in the future, and the company can stay in a relatively growing industry. Also, it will be more likely to consolidate its competitive position, improve operating performance, and reduce risks. The revenue growth rate (*SALESGR*) is defined as the annual growth rate of the company's net operating income. Being established for a longer time not only means a company can operate efficiently in the market, but also the company's profitability is relatively stable. The longer it has been established, the more knowledge of a specific business environment and expertise are received, which will reduce the company's operating costs, and lead to better performance. Therefore, the company's performance tends to be better and the risk will

be lower. The number of years of establishment (*AGE*) is defined as the number of data year subtracting that of the year where the company was established, and plus one. The trading amount of company's stock getting greater, not only indicates that the company's stock is the focus of investors in the entire stock market, but also means that it is an investment object with greater information circulation in the financial market. In addition, it also shows that investors' divergence of the company's prospects will be higher, which increases the volatility of stock prices and the company's risk. The stock turnover (*LNTURN*) is defined as the annual stock turnover and then taking natural logarithm.

The increase in the total number of the board reduces the efficiency of decision-making, and the free rider problem among directors on the duty of monitoring and advising each other will worsen, thereby reducing the quality of management decisions, leading to decline in company performance and increased risks. The size of the board (*BOARD*) is defined as the total number of seats on the board. The independence of the board has an impact on the company's performance and risk by affecting the quality of board decisions. The higher the independence of the board, the more independently, impartially and objectively the board can supervise the management, which improves the quality of management decision-making, enhances company performance, and reduces company risks. The independence of the board is measured by the independent director ratio (INDRATIO), which is defined as the number of independent directors being divided by the total number of board members. The higher the ratio of shareholding directors get, the more directors' personal interests are in line with the company interests. Directors' investment in management and supervision will increase dedication and efficiency of the board's duties, which will benefit the company's performance and reduce the risks. *DIRHOLD* is defined as the total number of shares held by all directors being divided by the number of outstanding shares. Similarly, the higher the manager's shareholding ratio, the more consistent the manager's private interests and the company's interests, which will improve the quality of management decisions, thereby helping enhance company performance and reduce risks. Manager's shareholding ratio (*MANAHOLD*) is defined as the total number of shares held by managers being divided by the number of shares outstanding. Most foreign institutional investors come from advanced countries, and their financial market development and corporate governance concepts are also more advanced and implemented. In addition to their reputation and professionalism, they are more familiar with specific industrial environment, business operation knowledge, and advanced companies. Therefore, the higher the ratio of shareholding foreign legal persons get in a company, the stricter supervision and more pressure the company face, and the more helpful it is to improve company performance and reduce risks. The foreign institutional investor shareholding ratio (*INSTHOLD*) is defined as the total number of shares held by foreign institutional investors being divided by the number of outstanding shares.

This study considers controlling potential variables which have an impact on performance and risk, including asset size (*LNASSET*), debt ratio (*DEBTR*), market value to book value ratio (*MTB*), director shareholding ratio (*DIRHOLD*), board size (*BOARD*), independent director ratio (*INDRATIO*), and institutional investor shareholding ratio (*INSTHOLD*). The arguments for controlling the compensation of the company's directors, supervisors, and executives with the above variables are briefly described below. Larger enterprise scale helps the company stand in a more favorable competitive position, helps improving company performance, and better company performance tends to correspond to higher compensation of directors, supervisors and senior managers. Companies with higher debt ratios have relatively increased financial risks. On the one hand, the company's long-term development and performance are limited. On the other hand, the company's ability to pay compensation to directors, supervisors, and executives is also limited. The market price to book value ratio is one of the evaluation indicators that measure the company's future prospects or growth opportunities provided by financial market. The market price to book value ratio getting higher implies the higher the growth opportunity

of the company will be, and the higher the tendency of directors, supervisors and executives getting high pay. The market price to book value ratio (*MTB*) is defined as the value of the common stock market being divided by the book value of the common stock.

The higher the ratio of shareholding directors get, the more directors' personal interests will be in line with the company's interests. The directors' investment in management and supervision will increase the dedication and efficiency of the board's duties, which will benefit the company's performance and increase the compensation of directors, supervisors and executives. A smaller board will enhance directors' responsibility and efforts in supervision and consulting, improve the quality of management decision-making, and help enhance company performance and the compensation of directors, supervisors, and senior management. The higher the ratio of independent directors, the more independently, impartially and objectively the board supervise the management. This can improve the quality of management decision-making, company performance, and increase the compensation of directors, supervisors and senior management. Institutional investors mostly hold more company shares, and their shareholding stability is relatively high. They tend to carefully select investment targets with their expertise, and implement their governance of capital investment targets with a more rigorous attitude, which is similar to the attitude of investors from foreign companies. In addition to their reputation and professionalism, institutional investors are more familiar with specific industrial environments, corporate operating knowledge, and advanced corporate governance concepts. Therefore, the higher the ratio of shareholding institutional investors get in a company, the stricter the pressure of supervision will be faced, the more helpful it is to improve the company's performance and increase the compensation of directors, supervisors and executives. Institutional investor shareholding ratio (*INSTHOLD*) is defined as the total number of institutional investor holdings being divided by the number of outstanding shares. In sum, names, English abbreviations and brief definition of each variable are shown in Table 1.

3.2 Econometric model

This study employs multiple regression to estimate how gender diversity of audit committee affects firm performance and risk, and how gender diversity of compensation committee affects the degree of connection between directors, supervisors and main managers' pay and firm performance. The regression equations are:

$$\textbf{PERF}_{i,t} = \beta_0 + \beta_1 \textbf{FEMALE\_AUD}_{i,t}$$
$$+ \beta_2\, LNASSET_{i,t} + \beta_3\, DEBTR_{i,t} + \beta_4 SALESGR_{i,t} + \beta_5\, AGE_{i,t}$$
$$+ \beta_6\, LNTURN_{i,t} + \beta_7\, BOARD_{i,t} + \beta_8\, INDRATIO_{i,t} + \beta_9 DIRHOLD_{i,t}$$
$$+ \beta_{10}\, MANAHOLD_{i,t} + \beta_{11}\, FORHOLD_{i,t} + \varepsilon_{i,t} \tag{1}$$

$$\textbf{RISK}_{i,t} = \beta_0 + \beta_1 \textbf{FEMALE\_AUD}_{i,t}$$
$$+ \beta_2\, LNASSET_{i,t} + \beta_3\, DEBTR_{i,t} + \beta_4 SALESGR_{i,t} + \beta_5\, AGE_{i,t}$$
$$+ \beta_6\, LNTURN_{i,t} + \beta_7\, BOARD_{i,t} + \beta_8\, INDRATIO_{i,t} + \beta_9 DIRHOLD_{i,t}$$
$$+ \beta_{10}\, MANAHOLD_{i,t} + \beta_{11}\, FORHOLD_{i,t} + \varepsilon_{i,t} \tag{2}$$

$$\textbf{COMP}_{i,t} = \beta_0 + \beta_1 \textbf{PERF}_{i,t} + \beta_2\, \textbf{PERF}_{i,t} * \textbf{FEMALE\_COMP}_{i,t}$$
$$+ \beta_3\, LNASSET_{i,t} + \beta_4\, DEBTR_{i,t} + \beta_5 MTB_{i,t} + \beta_6 DIRHOLD_{i,t} + \beta_7\, BOARD_{i,t}$$
$$+ \beta_8\, INDRATIO_{i,t} + \beta_9 INSTHOLD_{i,t} + \varepsilon_{i,t} \tag{3}$$

where the subscripts i and t behind each variable represent firm i and year t. **PERF** and **RISK** are firm performance variable vector and risk vector. The variables in the former include return on assets (*ROA*), return on equity (*ROE*), Tobin's Q (*TOBINQ*) and annual stock return (*ASTR*). The variables in the latter include daily stock returns standard deviation (*RETSTD*), stock returns skewness coefficient (*SKEW*), 95% value at risk stock returns (*VAR*), the standard deviation of return on assets (*ROASTD*) and the standard deviation of return on equity (*ROESTD*). **FEMALE_AUD** is vector of audit committee gender diversity variables, including *AUDITFD* (a dummy variable of whether audit committee has female member), *AUDITFN* (the number of female audit committee member), and *AUDITFR* (the ratio of female audit committee member). **FEMALE_COMP** is vector of compensation committee gender diversity variables, including *COMPD* (whether there is a compensation committee), *COMPFD* (a dummy variable whether there is female compensation committee member), *COMPFN* (the number of female compensation committee member), *COMPFR* (the ratio of female compensation committee member). The control variables in the regression models (1) and (2) include total assets (*LNASSET*), debt ratio (*DEBTR*), sales revenue annual growth rate (*SALESGR*), firm's years of establishment (*AGE*), annual turnover of common stock (*LNTURN*), board size (*BOARD*), independent director ratio (*INDRATIO*), directors' shareholding ratio (*DIRHOLD*), managerial shareholding ratio (*MANAHOLD*), and foreign institutional investors' shareholding ratio (*FORHOLD*). In the regression model (3), the control variables include total assets (*LNASSET*), debt ratio (*DEBTR*), market value to book value (*MTB*), directors' shareholding ratio (*DIRHOLD*), board size (*BOARD*), independent director ratio (*INDRATIO*), and institutional investors' shareholding ratio (*INSTHOLD*). The regression estimation adopts the least square principle.

Table 1 Mnemonics and Definition of Variables

Variable	Definition
Explained Variable: Firm Performance and Risk	
Return on assets (*ROA*)	Dividing a firm's net income by total average assets
Return on equity (*ROE*)	Dividing net income by total average equity
Tobin's Q (*TOBINQ*)	Book value of liability plus market value of equity divided by book value of assets
Annual stock return (*ASTR*)	Annual stock return
Stock return volatility (*RETSTD*)	The standard deviation of the return on stocks within a year
Skewness of stock return (*SKEW*)	Skewness coefficient of stock return on the day of a year
95% of value at risk stock return (*VAR*)	5% quantile of stock return on the day of the year
Standard deviation of ROA (*ROASTD*)	Standard deviation of *ROA* n a specific year and the previous four years
Standard deviation of ROE (*ROESTD*)	Standard deviation of *ROE* n a specific year and the previous four years
Explained Variable: Compensation of Directors, Supervisors and Main Managers	
Total compensation of the management (*LNCOMPMT*)	Total compensation of the management and then takes the natural logarithm
Average compensation of the management (*LNCOMPMA*)	(The total compensation of the management / the number of paid) and then takes the natural logarithm
Total compensation of directors and supervisors (*LNCOMPBT*)	Total compensation of directors and supervisors and then takes the natural logarithm
Average compensation of directors and supervisors (*LNCOMPBA*)	(Total compensation of directors and supervisors / the number of paid) and then takes the natural logarithm
Total compensation of directors, supervisors and the management (*LNCOMPBMT*)	Total compensation of directors, supervisors and then management and then takes the natural logarithm natural logarithm
Average compensation of directors, supervisors and the management (*LNCOMPBMA*)	(Total compensation of directors, supervisors and the management /the number of paid) and then takes the natural logarithm
Main Explanatory Variable: Gender Diversity in Audit and Compensation Committee	
Audit committee dummy (*AUDITD*)	A dummy variable of whether the company has an audit committee dummy, if there is an audit committee, it is 1 and 0 otherwise
Female audit committee member dummy (*AUDITFD*)	When the company has female audit committee member, it is 1 and 0 otherwise
Number of female audit committee member (*AUDITFN*)	Number of female audit committee member

Ratio of female audit committee member (*AUDITFR*)	Number of female audit committee member /total number of audit committee member
Compensation committee dummy (*COMPD*)	A dummy variable of whether the company has an compensation committee dummy, if there is an compensation committee, it is 1 and 0 otherwise
Female compensation committee member dummy (*COMPFD*)	When the company has female compensation committee member, it is 1 and 0 otherwise
Number of compensation committee member (*COMPFN*)	Number of female compensation committee member
Ratio of female compensation committee member (*COMPFR*)	Number of female compensation committee member /total number of compensation committee member
Control variable	
Asset size (*LNASSET*)	Total assets and then take the natural logarithm
Debt Ratio (*DEBTR*)	Total liabilities/total assets
Sales Growth Rate (*SALESGR*)	Annual growth rate of net sales
Years of establishment (*AGE*)	Years of company's establishment
Operational risk (*RISK*)	Variance of the ROA for the current year and the previous 4 years
Annual trading volume (*LNTURN*)	Annual trading volume of stocks and then take the natural logarithm
Board size (*BOARD*)	Total number of board members
Independent Director Ratio (*INDRATIO*)	Number of Independent Director/Total Number of Board of Director
Director's shareholding (*DIRHOLD*)	Number of directors' shareholding/number of shares outstanding
Manager's shareholding (*MANAHOLD*)	Manager's shareholding / number of shares outstanding
Institutional shareholding (*INSTHOLD*)	Number of shares held by legal persons/Number of shares outstanding
Foreign institutional shareholding (*FORHOLD*)	Number of foreign legal person holdings/number of shares outstanding
Market value to book value (*MTB*)	Market value of equity / book value of equity

Note: The definition of variable refers to the Taiwan Economic Journal (TEJ).

3.3 Firm Samples and Data

The firm samples in this study are a total of 796 companies in the non-financial industry listed on the Taiwan Stock Exchange. The data period is from 2011 to 2015, and the data frequency is yearly. Variables such as whether the company has audit committee and a compensation committee, and the gender of the audit and compensation committee member are collected from the Market Observation Post System of the Taiwan Stock Exchange (https://mops.twse.com.tw/mops/web/index). Data on financial characteristics and corporate governance variables are collected from the Taiwan Economic Journal (TEJ). [4]

4. Empirical results

4.1 Descriptive Statistics and Correlation Analysis

Table 2 reports descriptive statistics of the main explanatory variables (gender diversity of the audit committee), explained variables (company performance and risk), and control variables, including the mean, standard deviation, minimum and maximum. The samples include samples of all companies, samples with female audit committee member (at least one female member in audit committee) (*AUDITFD*=1), and samples without female audit committee member (no female audit committee member) (*AUDITFD*=0). Comparing of companies with versus without female audit committee member,

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[4] In September 2015, the "*Corporate Governance Best Practice Principles for TWSE/TPEx Listed Companies*" was amended and suggested listed companies to form their board of directors by taking diversity into consideration. As in the Article 20, it is advisable that directors concurrently…., and that an appropriate policy on diversity based on the company's business operations, operating dynamics, and development needs be formulated and include, without being limited to, the following two general standards. Basic requirements and values: Gender, age, nationality, and culture. Professional knowledge and skills: A professional background (e.g., law, accounting, industry, finance, marketing, technology), professional skills, and industry experience. Therefore, in earlier stage, firm's dedicating female member in audit versus compensation committee is not subject to policy promotion and is also not in a situation of passive acceptance of policy direction but approaching active and rational decision-making result. While the Taiwan government authorities have adopted encouraging and compulsive ways to strengthen corporate board diversity in the following year, earlier data (2011-2015) is used for analysis. However, such short data period loses opportunities to evaluate the long-term impact of female participation in audit and compensation committee on firm performance, risk and pay-performance sensitivity.

companies with female audit committee member have relatively higher return on assets (*ROA*) (10.987% vs. 7.5075%), and investors' investigation of company's growth opportunities (*TOBINQ*) is also higher (0.3725% and 0.3587%). Investors are more confident in the growth opportunities of companies with female audit committee member. However, the return on equity (*ROE*) is relatively low (0.0470% and 0.0553%), and the annual stock returns (*ASTR*) is also lower (2.2582% and 10.460%) for companies with female audit committee member.

It is also found that compared to samples of companies without female audit committee member, those with female audit committees has a higher standard deviation of daily stock returns (*RETSTD*) (2.1383% vs. 1.9293%). This indicates that the stock returns of companies with female audit committee member are more volatile, that is, investors who hold stocks of companies with female audit committee member face higher risks. The stock return skewness coefficients (*SKEW*) is higher (-0.3803% and -0.4875%), which means, on average, companies with female audit committee member have a lower risk of falling stock prices than companies without female audit committee member. The 95% value at risk (*VAR*) of the daily stock compensation rate is relatively high (3.1552% and 2.7226%), indicating that the lowest return rate under the 95% confidence level of companies with female audit committee member is higher. This means the risk of downside performance and losses is lower. The standard deviation of return on assets (*ROASTD*) is higher (4.7870% and 4.1854%) for companies with female audit committee member indicates that the return on assets of companies with female audit committee member has relatively large volatility, and that companies with female audit committee member have a higher risk of operating consequence. The standard deviation of return on equity (*ROESTD*) is lower (9.3641% and 11.058%), and the volatility of the return on equity of companies with female audit committee member is smaller, representing the degree of volatility of return on equity in companies with female audit committee member is lower. Because the lack of consistent direction, performance and risk of companies with female audit committee member and companies without female audit committee member could not be concluded.

Table 3 reports the descriptive statistics of main explanatory variables (gender diversity in the compensation committee), explained variables (compensation of directors, supervisors and the management), and control variables. The sample includes samples of all companies, companies with female compensation committee member (*COMPFD*=1), and companies without female compensation committee member (*COMPFD*=0). It is found that compared with companies without female compensation committee member, the total compensation of the management (*LNCOMP_MT*) and the average compensation of the management (*LNCOMP_MA*) are lower for companies with female compensation committee member, and the total compensation of directors and supervisors (*LNCOMP_BT*), the average compensation of directors and supervisors (*LNCOMP_BA*), the total compensation of directors, supervisors and the management (*LNCOMP_BMT*), and the average compensation of directors, supervisors and the management (*LNCOMP_BMA*) are all lower. The mean return on assets of companies with female compensation committee member is lower than that of companies without female compensation committee member (1.9439% and 1.9877%, respectively).

Table 4 shows the Pearson correlation coefficient among the main explanatory variables and the explained variables. This study found the correlation coefficient of company's having female audit committee member number (*AUDITFD*) and company's female audit committee member number (*AUDITFN*) and the return on assets (*ROA*) is 0.1104 and 0.0906, and the positive correlation is significant. This indicates that the more female audit committee member in a company, the better the return on assets. Companies with an audit committee (*AUDITD*) have a significant negative correlation with the return on equity (*ROE*) and annual stock return (*ASTR*), and the correlation coefficient between them are -0.0998 and -0.1819. Companies with an audit committee have a lower return on equity as well

as annual stock returns. Correlation coefficients of the 95% value at risk stock return (*VAR*) and companies with audit committee (*AUDITD*), companies with female audit committee member (*AUDITFD*), the number of female audit committee member (*AUDITFN*) and the ratio of female audit committee member (*AUDITFR*) are 0.2272, 0.1367, 0.1606 and 0.1614. This shows a significant positive correlation, and means that establishing an audit committee and increasing female audit committee member make the risk of downgrading losses for holding the company's stock lower. The correlation coefficient between the ratio of female audit committee member (*AUDITFR*) and standard deviation of return on assets (*ROASTD*) is 0.0746, showing a significant positive correlation. Hence, increasing the ratio of female audit committee member makes the uncertainty of company's profitability higher and increase the company's actual operating risks.

Table 5 reports the Pearson correlation coefficient matrix of the compensation committee's gender diversity and variables of directors and the management's compensation. This study found that the firms with female compensation committee member, the number of female compensation committee member, and the ratio of female compensation committee member are almost negatively correlated with the average and total compensation of directors and the management. This shows that the higher gender diversity in compensation committee, the lower the total and average level of directors and the management. From the result of descriptive statistics, it is found that the firm's performance with female compensation committee member tends to be poorly performed. Therefore, although the compensation level of directors and the management is lower, the firm's performance is also poorer. Therefore, it is quite intuitive that in companies with poorer performance, the directors and the management are indeed paid lower.

When evaluating the impact of compensation committee's gender diversity on compensation, this study does not employ compensation level of directors and the management as explained variable, but estimates the magnitude of the connection between compensation and firm performance by regression estimation. Namely, this study estimates how directors and the management's compensation changes as firm performance changes, and how does gender diversity in compensation committee increase or decrease the magnitude of compensation changes caused by performance changes.

Table 2 Descriptive Statistics on Gender Diversity in Audit Committee, Firm Performance and Risk

Variable	Panel A. Full Samples					Panel B. Samples with *AUDITFD*=1					Panel C. Samples with *AUDITFD*=0				
	# of Obs.	Mean	Std. Dev.	Min.	Max.	# of Obs.	Mean	Std. Dev.	Min.	Max.	# of Obs.	Mean	Std. Dev.	Min.	Max.
ROA	2,388	7.6547	9.3729	-50.100	82.790	101	10.987	11.616	-50.100	40.090	2,287	7.5075	9.2368	-47.610	82.790
ROE	2,383	0.0550	0.2178	-3.4752	1.5835	100	0.0470	0.3824	-3.4752	0.4087	2,283	0.0553	0.2078	-3.2831	1.5835
TOBINQ	2,324	0.3592	0.1739	0.0008	0.9649	94	0.3725	0.1583	0.0008	0.8024	2,230	0.3587	0.1745	0.0008	0.9649
ASTR	2,324	10.128	47.564	-67.825	912.07	94	2.2582	41.361	-64.112	174.28	2,230	10.460	47.787	-67.825	912.07
RETSTD	2,324	1.9378	0.9646	0.4194	16.253	94	2.1383	0.7065	0.6287	3.9616	2,230	1.9293	0.9732	0.4194	16.253
SKEW	2,324	-0.4831	0.7960	-10.171	2.8956	94	-0.3803	1.1311	-9.6603	1.9725	2,230	-0.4875	0.7787	-10.171	2.8956
VAR	2,324	2.7401	1.2237	0.3469	9.0446	94	3.1552	1.2177	0.8669	6.8974	2,230	2.7226	1.2212	0.3469	9.0446
ROASTD	2,385	4.2109	3.7924	0.0336	32.786	101	4.7870	4.4373	0.6431	26.148	2,284	4.1854	3.7605	0.0336	32.786
ROESTD	2,384	10.986	115.37	0.1007	4339.71	101	9.3641	11.417	0.9112	59.026	2,283	11.058	117.87	0.1007	4339.71
AUDITD	2,388	0.1424	0.3495	0.0000	1.0000	101	0.9604	0.1960	0.0000	1.0000	2,287	0.1063	0.3082	0.0000	1.0000
AUDITFD	2,388	0.0423	0.2013	0.0000	1.0000	101	1.0000	0.0000	1.0000	1.0000	2,287	0.0000	0.0000	0.0000	0.0000
AUDITFN	2,388	0.0477	0.2392	0.0000	3.0000	101	1.1287	0.3651	1.0000	3.0000	2,287	0.0000	0.0000	0.0000	0.0000
AUDITFR	2,388	1.4042	7.2367	0.0000	100.00	101	33.200	13.558	0.0000	100.00	2,287	0.0000	0.0000	0.0000	0.0000
LNASSET	2,388	15.861	1.33216	11.139	21.675	101	16.338	1.8613	11.7826	21.193	2,287	15.840	1.3004	11.139	21.675
DEBTR	2,387	36.082	17.550	0.0000	96.470	101	37.160	15.498	0.0000	80.030	2,286	36.034	17.637	0.0100	96.470
SALESGR	2,387	3516.49	155075	-100.00	7561630	100	-1.0119	22.950	-100.00	87.000	2,287	3670.30	158428.7	-100.00	7561630
AGE	2,388	32.085	13.861	0.0000	69.000	101	24.089	9.2629	7.000	44.000	2,287	32.439	13.926	0.0000	69.000
LNTURN	2,324	8.4977	1.7990	0.6932	14.127	94	9.4765	1.9612	3.21888	14.127	2,230	8.4565	1.7805	0.6932	13.554
BOARD	2,373	7.3742	2.3141	4.0000	21.000	101	8.6436	2.1475	4.0000	15.000	2,272	7.3178	2.3054	4.0000	21.000
INDRATIO	2,374	18.798	17.347	0.0000	62.500	101	37.120	10.770	0.0000	62.500	2,273	17.984	17.135	0.0000	60.000
DIRHOLD	2,374	19.830	14.054	0.3600	99.710	101	21.672	17.209	1.5800	77.810	2,273	19.748	13.896	0.3600	99.710
MANAHOLD	2,374	1.2980	2.5061	0.0000	28.590	101	1.2178	2.4941	0.0000	18.650	2,273	1.3016	2.5071	0.0000	28.590
FORHOLD	2,373	10.712	13.439	0.0000	83.450	101	19.872	20.667	0.0000	83.450	2,272	10.305	12.882	0.0000	75.170

Note: This table reports descriptive statistics of audit committee's gender diversity, and firm performance and risk variables, including average, standard deviation, minimum and maximum. The data is ranged from 2013-2015. *ROA* is return on assets, *ROE* is return on equity, *TOBINQ* is Tobin's Q, *ASTR* is annual stock return, *RETSTD* is daily stock return volatility, *SKEW* is skewness of daily stock return, *VAR* is daily stock return 95% of value at risk, *ROASTD* is standard deviation of last five year return on assets, *ROESTD* is standard deviation of last five year return on equity. *AUDITD* is dummy of firm's having audit committee, *AUDITFD* is dummy of firm's having female audit committee member, *AUDITFN* is the number of female audit committee member, *AUDITFR* is the ratio of female audit committee member. *LNASSET* is asset size, *DEBTR* is debt ratio, *SALESGR* is annual sales growth rate, *AGE* is firm's years of establishment, *LNTURN* is firm's stock annual trading volume, *BOARD* is board size, *INDRATIO* is independent director ratio, *DIRHOLD* is director's shareholding, *MANAHOLD* is manager's shareholding, *FORHOLD* is foreign institutional shareholding.

Table 3 Descriptive Statistics on Gender Diversity in Compensation Committee, Directors and the Management Pay

Variable	Panel A. Full Samples					Panel B. Samples with *COMPFD*=1					Panel C. Samples with *COMPFD*=0				
	# of Obs.	Mean	Std. Dev.	Min.	Max.	# of Obs.	Mean	Std. Dev.	Min.	Max.	# of Obs.	Mean	Std. Dev.	Min.	Max.
LNCOMPMT	3,910	9.5472	1.1210	1.9459	14.157	975	9.3183	1.1326	4.9767	14.157	2,935	9.6232	1.1069	1.9459	14.023
LNCOMPMA	3,910	8.1155	0.6847	1.9459	11.161	975	7.9886	0.7042	4.8675	11.161	2,935	8.1577	0.6729	1.9459	10.946
LNCOMPBT	3,826	8.5403	1.5101	1.7918	13.127	954	8.3355	1.5744	1.7918	13.004	2,872	8.6083	1.4822	2.7081	13.127
LNCOMPBA	3,826	6.1814	1.4606	0.0000	11.045	954	6.0145	1.5149	0.0000	10.807	2,872	6.2369	1.4380	0.6931	11.045
LNCOMPBMT	3,932	10.091	1.0322	6.2934	14.404	981	9.8882	1.0410	6.2934	14.404	2,951	10.158	1.0205	6.6529	14.083
LNCOMPBMA	3,932	7.3557	0.8531	4.0880	11.037	981	7.2123	0.8726	4.0962	11.037	2,951	7.4034	0.8413	4.0880	10.557
COMPD	4,005	0.9740	0.1591	0.0000	1.0000	983	1.0000	0.0000	1.0000	1.0000	3,022	0.9656	0.1823	0.0000	1.0000
COMPFD	3,901	0.2520	0.4342	0.0000	1.0000	983	1.0000	0.0000	1.0000	1.0000	2,918	0.0000	0.0000	0.0000	0.0000
COMPFN	3,901	0.3015	0.5678	0.0000	3.0000	983	1.1963	0.4570	1.0000	3.0000	2,918	0.0000	0.0000	0.0000	0.0000
COMPFR	3,901	0.0996	0.1885	0.0000	1.0000	983	0.3953	0.1552	0.2000	1.0000	2,918	0.0000	0.0000	0.0000	0.0000
ROA	3,921	1.9767	3.9503	-102.69	92.940	980	1.9439	4.7962	-102.69	39.100	2,941	1.9877	3.6258	-34.410	92.940
ROACOMPD	3,921	1.9260	3.9188	-102.69	92.940	980	1.9439	4.7962	-102.69	39.100	2,941	1.9200	3.5799	-34.410	92.940
ROACOMPFD	3,888	0.4900	2.5508	-102.69	39.100	980	1.9439	4.7962	-102.69	39.100	2,908	0.0000	0.0000	0.0000	0.0000
ROACOMPFN	3,888	0.5907	2.8488	-102.69	39.100	980	2.3435	5.3019	-102.69	39.100	2,908	0.0000	0.0000	0.0000	0.0000
ROACOMPFR	3,888	0.1947	0.9415	-33.888	12.903	980	0.7725	1.7529	-33.888	12.903	2,908	0.0000	0.0000	0.0000	0.0000
LNASSET	3,931	15.988	1.4203	11.120	21.620	980	15.780	1.3220	11.120	21.230	2,951	16.057	1.4451	11.140	21.620
DEBTR	3,931	42.736	17.999	1.1400	97.820	980	43.353	18.041	1.1400	96.970	2,951	42.531	17.983	1.6800	97.820
MTB	3,900	1.5559	1.4070	0.2500	28.690	974	1.6665	1.5975	0.3000	28.690	2,926	1.5190	1.3358	0.2500	26.390
DIRHOLD	3,922	0.1974	0.1400	0.0000	1.0000	981	0.1926	0.1239	0.0000	0.7800	2,941	0.1990	0.1449	0.0000	1.0000
BOARD	3,922	7.2978	2.3157	2.0000	21.000	981	6.9378	2.1579	2.0000	20.000	2,941	7.4179	2.3541	3.0000	21.000
INDRATIO	3,922	0.1694	0.1736	0.0000	0.6300	981	0.1545	0.1750	0.0000	0.6300	2,941	0.1743	0.1729	0.0000	0.6000
INSTHOLD	3,926	41.657	22.529	0.0000	100.00	980	39.801	21.1353	0.1600	97.250	2,946	42.275	22.944	0.0000	100.00

Note: This table reports the descriptive statistics of the compensation committee's gender diversity and the company's directors, supervisors and management compensation variables, including the mean, standard deviation, minimum and maximum. The data is ranged from 2011-2015. *LNCOMPMT* is total compensation of the management, *LNCOMPMA* is average compensation of the management, *LNCOMPBT* is total compensation of directors and supervisors, *LNCOMPBA* is average compensation of directors and supervisors, *LNCOMPBMT* is total compensation of directors, supervisors and the management, *LNCOMPBMA* is average compensation of directors, supervisors and the management. *COMPD* is dummy of firm's having compensation committee, *COMPFD* is dummy of firm's having female compensation committee member, *COMPFN* is the number of compensation committee member, *COMPFR* is the ratio of female compensation committee member. *ROA* is returns on assets. *ROACOMPD* is product term of *ROA* and *COMPD*, *ROACOMPFD* is product term of *ROA* and *COMPFD*, *ROACOMPFN* is product term of *ROA* and *COMPFN*, *ROACOMPFR* is product term of *ROA* and *COMPFR*. *LNASSET* is asset size, *DEBTR* is debt ratio, *MTB* is market to book value of common stock, *DIRHOLD* is director's shareholding, *BOARD* is board size, *INDRATIO* is independent director ratio, *INSTHOLD* is institutional investors' shareholding.

Table 4 Pearson Correlation Matrix of Gender Diversity in the Audit Committee, Firm Performance and Risk

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) ROA	1.0000												
(2) ROE	0.6735*	1.0000											
(3) TOBINQ	-0.1548*	-0.1798*	1.0000										
(4) ASTR	0.2984*	0.2282*	-0.024	1.0000									
(5) RETSTD	-0.027	-0.1279*	0.0497*	0.2084*	1.0000								
(6) SKEW	-0.035	-0.0276	0.0119	-0.1564*	-0.1810*	1.0000							
(7) VAR	-0.1283*	-0.2495*	0.0821*	0.1020*	0.7362*	0.1110*	1.0000						
(8) ROASTD	-0.0682*	-0.1822*	-0.013	0.0394	0.2841*	0.0337	0.3899*	1.0000					
(9) ROESTD	0.0361	0.036	0.0366	0.0264	0.3396*	-0.0425*	0.0789*	0.0518*	1.0000				
(10) AUDITD	-0.0049	-0.0998*	0.0133	-0.1819*	0.1357*	0.0735	0.2272*	0.0712	0.0542	1.0000			
(11) AUDITFD	0.1104*	-0.027	0.0385	-0.0565	0.0572	0.0493	0.1367*	0.0417	-0.0192	0.4111*	1.0000		
(12) AUDITFN	0.0906*	-0.0308	0.0279	-0.0702	0.0723	0.0422	0.1606*	0.066	-0.0174	0.3878*	0.9434*	1.0000	
(13) AUDITFR	0.0709	-0.0425	0.0129	-0.074	0.0749	0.0488	0.1614*	0.0746*	-0.0171	0.3853*	0.9373*	0.9800*	1.0000

Note: This table shows the Pearson Correlation Coefficient between gender diversity of audit committee, firm performance and risk variables. The data period is 2013-2015. *ROA* is return on assets, *ROE* is return on equity, *TOBINQ* is Tobin's Q, *ASTR* is annual stock return, *RETSTD* is daily stock return volatility, *SKEW* is skewness of daily stock return, *VAR* is 95% of value at risk stock return. *ROASTD* is standard deviation of last five year return on assets, *ROESTD* is standard deviation of last five year return on equity. *AUDITD* is dummy of firm's having audit committee, *AUDITFD* is dummy of firm's having female audit committee member, *AUDITFN* is the number of female audit committee member, *AUDITFR* is the ratio of female audit committee member. Correlation coefficients followed by an asterisk means that it reaches at least 5% significance level.

Table 5 Pearson Correlation Matrix of Gender Diversity in the Compensation Committee, Directors and the Management Pay

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) LNCOMPMT	1.0000												
(2) LNCOMPMA	0.7875*	1.0000											
(3) LNCOMPBT	0.4986*	0.5047*	1.0000										
(4)LNCOMPBA	0.4810*	0.4956*	0.9792*	1.0000									
(5) LNCOMPBMT	0.8954*	0.7704*	0.7484*	0.7232*	1.0000								
(6) LNCOMPBMA	0.8133*	0.8139*	0.7535*	0.7763*	0.9501*	1.0000							
(7) COMPFD	-0.1196*	-0.1076*	-0.0809*	-0.0692*	-0.1159*	-0.0998*	1.0000						
(8) COMPFN	-0.1248*	-0.1054*	-0.0766*	-0.0669*	-0.1153*	-0.0999*	0.9148*	1.0000					
(9) COMPFR	-0.1294*	-0.1097*	-0.0806*	-0.0704*	-0.1208*	-0.1047*	0.9106*	0.9980*	1.0000				
(10) ROA	0.1701*	0.1962*	0.2305*	0.2372*	0.2170*	0.2406*	0.0002	0.0021	0.0015	1.0000			
(11) ROACOMPD	0.1722*	0.1975*	0.2336*	0.2411*	0.2210*	0.2448*	0.0002	0.0021	0.0015	0.9857*	1.0000		
(12) ROACOMPFD	0.0490*	0.0444*	0.0544*	0.0598*	0.0549*	0.0644*	0.3309*	0.3056*	0.3033*	0.5778*	0.5778*	1.0000	
(13) ROACOMPFN	0.0287	0.0274	0.0447*	0.0503*	0.0439*	0.0546*	0.3572*	0.3922*	0.3912*	0.5493*	0.5493*	0.9647*	1.0000
(14) ROACOMPFR	0.0228	0.0215	0.0408*	0.0465*	0.0380*	0.0489*	0.3563*	0.3932*	0.3943*	0.5474*	0.5474*	0.9615*	0.9989*

Note: This table shows the Pearson Correlation Coefficient between compensation committee's gender diversity and the company's directors, supervisors and management compensation variables. The data is ranged from 2011-2015. *LNCOMPMT* is total compensation of the management, *LNCOMPMA* is average compensation of the management, *LNCOMPBT* is total compensation of directors and supervisors, *LNCOMPBA* is average compensation of directors and supervisors, *LNCOMPBMT* is total compensation of directors, supervisors and the management, *LNCOMPBMA* is average compensation of directors, supervisors and the management. *COMPFD* is dummy of firm's having female compensation committee member, *COMPFN* is the number of compensation committee member, *COMPFR* is the ratio of female compensation committee member. *ROA* is returns on assets. *ROACOMPD* is product term of *ROA* and *COMPD*, *ROACOMPFD* is product term of *ROA* and *COMPFD*, *ROACOMPFN* is product term of *ROA* and *COMPFN*, *ROACOMPFR* is product term of *ROA* and *COMPFR*. Correlation coefficients followed by an asterisk means that it reaches at least 5% significance level.

4.2 Regression Estimation Result

Because the pairwise correlation analysis and descriptive statistics lack control of the third factor's effects on firm performance and risk, this study uses multiple regression to estimate the impact of audit committee's gender diversity on firm performance and risk. In addition, this study also examines the impact of compensation committee's gender diversity on the degree of connection between directors, supervisors and senior management's compensation and performance. First, Table 6 reports the impact of whether a company has an audit committee member (*AUDITD*) on four performance variables and five risk variables. Observing Table 6, the evidence shows that the estimated coefficient of whether a company has an audit committee is significantly negative (-0.0351) when the performance variable is return on equity (*ROE*). When the performance variable is Tobin's Q (*TOBINQ*), investors' measuring of company's growth opportunities, the coefficient is significantly negative (-0.0003), and when the performance variable is annual stock return (*ASTR*), it is significantly negative (-17.7565). The evidence indicates that compared to companies without audit committee, returns on equity, Tobin's Q, and annual stocks return are lower in companies with an audit committee after variables that will affect company's performance have been controlled, such as scale, debt ratio, and sales growth rate and other company's characteristic variables, and corporate governance variables such as the size of the board of directors, and managerial shareholding ratio. The coefficient of whether to set up audit committee (*AUDITD*) is significantly positive (0.2500), when the risk variable is stock return skew coefficient (*SKEW*). When it is the daily stock return 95% of the risk value (*VAR*), the coefficient is significantly positive (0.2231), and it means that companies with an audit committee tend to have higher stock return skew coefficient and 95% value at risk stock return, and the downside risk of company's stock return is smaller. The basic results in Table 6 show that although the performance of companies with an audit committee is lower, the downside risk of stock returns is still relatively low. Finally, the determination coefficient of the model's goodness of fit of each estimated model in Table 6 is between 9% and 52%, and the F-statistics of the regression model's overall model significance reaches at least 5%, showing that the specification of the regression model has reached goodness of fit.

Table 7 reports estimation results of firm's having female members in audit committee (*AUDITFD*) on 4 performance and 5 risk variables. It is found that the estimated coefficient of whether there are women in the audit committee is significantly positive (2.5133) when the performance variable is return on assets (*ROA*). It indicates having female audit committee member has a positive and significant impact on the company's return on assets after other variables that affect the company's performance have been controlled, such as the company's characteristic variables: the company's size, debt ratio, and revenue growth rate, and corporate governance variables such as the size of the board and manager's shareholding ratio. The estimated coefficient of *AUDITFD* is positive (0.0095) when performance variable is shareholder return (*ROE*). It is negative (-0.0001) when performance variable is Tobin's Q (*TOBINQ*), and is also negative (-5.8919) when performance variable is annual stock return (*ASTR*), but none of the three has reached the statistically significant level. This study found that the estimated coefficient of firm's having female audit committee member is negative (-0.1219) when risk variable is standard deviation of daily stock return (*RETSTD*), and is positive (0.1692) when risk variable is stock returns skewness coefficient (*SKEW*). When risk variable is 95% value at risk stock return rate (*VAR*), the estimated coefficient is positive (0.0392). It is negative (-0.3795) when is standard deviation of return on assets (*ROAST*D), and is also negative (-8.7886) when risk variable is standard deviation of return on equity (*ROESTD*), but none of the estimated coefficients reach the statistically significant level. Therefore, empirical evidence shows that although female audit committee member can help improve the company's return on assets, they have no significant effect on reducing company risks. Similarly, the goodness of fit of each estimation model is obtained.

Table 8 reports regression estimation of how the number of female audit committee member (*AUDITFN*) affects the company performance and risk. We observe the estimated coefficient of female audit committee member number, and find that when performance variable is return on assets (*ROA*), the estimated coefficient is significantly positive (1.6493), but when it is return on equity (*ROE*), although the coefficient is positive (0.0034), it is statistically insignificant. This means when the number of female audit committee member is getting greater, return on company assets will be significantly better, after other characteristic variables that affect company performance and corporate governance variables are controlled. The regression estimation coefficient of the female audit committee member number *AUDITFN* is negative (-0.0264) when risk variable is standard deviation of daily stock return (*RETSTD*), and the coefficient on female audit committee member number and other variables are as follows: with stock returns skewness coefficient (*SKEW*) is positive (0.1011), with 95% value at risk stock return (*VAR*) is positive (0.1246), with standard deviation of return on assets (*ROASTD*) is positive (0.0196), and with standard deviation of return on equity (*ROESTD*) is negative (-5.0099). Yet, none of them reach statistically significant. Therefore, although female audit committee member can reduce various risk indicators of the company, this effect has not reached generally acceptable statistical significance level.

Table 9 reports the regression estimation of how the ratio of female audit committee member (*AUDITFR*) affects of company performance and risk. From Table 9, we find that when performance variable is return on assets, the estimated coefficient of ratio of female on the audit committee is significantly positive (0.0477), indicating that the higher the ratio of female on the audit committee, the higher return on assets, and the better company's performance. When the company's performance is return on equity (*ROE*) and the market's assessment of the growth opportunity, Tobin's Q (*TOBINQ*), it is positive (0.0000), but it does not reach a statistically significant level. When performance variable is annual stock return (*ASTR*), the estimated coefficient is significantly negative (-0.2169), indicating that significantly poorer stock market performance occurs, and the daily stock return rate is significantly lower although the ratio of female audit committee member significantly increases company's return on assets. When we observe the estimation results under risk variables in sub-table B, it is found that when variable is daily stock return skewness coefficient (*SKEW*), it is significantly positive (0.0044). This shows the higher female ratio on the audit committee, the higher company's stock return skew coefficient, and the lower the downside risk of stock prices. The ratio of female in the audit committee has no significant influence on other risk variables. As a whole, the regression estimation shows that company's return on assets are significantly improved, which will help reduce the downside risk of company's stock price. However, still a statistical evidence shows that the higher the ratio of female audit committee members, the lower the return on stocks. In general, most evidences still support Hypothesis 1 and 2 of this research. The evidence generally consistent with Campbell and Minguez-Vera (2008), Nielsen and Huse (2010), Carter et al. (2003), Erhardt, Werbel and Shrader (2003), Liu, Wei and Xie (2014), Abdullah, Ismail and Nachum (2016), Huang and Kisgen (2013), Levi et al. (2014) and Faccio et al. (2011), such that greater female representation in board is associated with better firm performance and lower risk.

Table 6 Regression Estimation Result of How Audit Committee (*AUDITD*) Affects the Firm's Performance and Risk

Variables	Panel A. Company performance indicators				Panel B. Company risk indicators				
	ROA	*ROE*	*TOBINQ*	*ASTR*	*RETSTD*	*SKEW*	*VAR*	*ROASTD*	*ROESTD*
AUDITD	-1.1325	-0.0351*	-0.0003***	-17.7565***	0.0231	0.2500**	0.2231**	-0.4060	9.2505
	(-1.54)	(-1.94)	(-3.84)	(-3.94)	(0.19)	(2.25)	(2.23)	(-1.08)	(0.79)
LNASSET	-1.2322***	0.0022	-0.0005***	-9.4208***	-0.3593***	0.0471	-0.5132***	-0.5148**	9.6053
	(-2.69)	(0.1)	(-10.43)	(-5.11)	(-6.05)	(0.86)	(-9.56)	(-2.37)	(1.01)
DEBTR	-0.0366	-0.0021*	0.0100***	0.2266**	0.0090***	-0.0021	0.0142***	0.0161	0.0673
	(-1.49)	(-1.71)	(5326.25)	(2.24)	(4.45)	(-0.94)	(4.76)	(1.37)	(0.46)
SALESGR	-0.0003	0.0000	0.0000	-0.0004	0.0000	0.0001***	0.0001	0.0004	0.0000
	(-1.19)	(-0.53)	(-0.84)	(-0.35)	(0.64)	(5.73)	(0.91)	(0.91)	(0.00)
AGE	0.0069	0.0007	0.0000	-0.0977	-0.0106	0.0017	-0.0135	-0.0577	-0.7148
	(0.3)	(1.66)	(3.12)	(-0.65)	(-3.46)	(0.56)	(-4.02)	(-5.33	(-1.39)
LNTURN	3.3749***	0.0598***	0.0004***	11.2157***	0.2212***	0.0405	0.3358***	0.0453	-5.5563
	(9.04)	(3.61)	(9.94)	(6.59)	(6.38)	(0.95)	(7.25)	(0.25)	(-1.03)
BOARD	-0.1036	-0.0045	0.0001***	0.4997	0.0338*	-0.0197	0.0347**	0.0797	-0.0639
	(-0.75)	(-1.28)	(3.87)	(0.76)	(1.91)	(-1.05)	(2.21)	(1.42)	(-0.09)
INDRATIO	-0.0017	-0.0005	0.0000	-0.0868	0.0050*	-0.0032	0.0052*	0.0237**	-0.1943
	(-0.070)	(-0.75)	(1.17)	(-0.75)	(1.99)	(-1.14)	(1.82)	(2.23)	(-0.77)
DIRHOLD	0.1412***	0.0025***	0.0000***	0.2629**	0.0049	-0.0069	-0.0043	0.0051	0.2388
	(6.62)	(4.77)	(7.12)	(2.18)	(1.36)	(-1.62)	(-1.55)	(0.46)	(1.14)
MANAHOLD	0.8464***	0.0157***	0.0001***	1.8680**	0.0125	-0.0346*	-0.0620***	-0.2206***	10.4045
	(7.19)	(4.22)	(3.19)	(2.09)	(0.27)	(-1.71)	(-3.15)	(3.45)	(0.97)
FORHOLD	0.0917**	-0.0009	0.0000***	0.0502	0.0033	-0.0012	0.0052	0.0006	-0.1536
	(2.34)	(-0.4)	(5.82)	(0.29)	(1.21)	(-0.19)	(1.21)	(0.03)	(-1.09)
Intercept	-5.6046	-0.4792	0.0043	51.7284	5.2943	-1.3041	7.5920	12.6743	-87.3734
	(-0.84)	(-1.32)	(9.66)	(2.54)	(8.25)	(-2.24)	(10.77)	(3.76)	(-0.94)
# of Obs.	2,321	2,320	2,321	2,321	2,321	2,321	2,320	2,320	2,320
Adjusted R^2	0.337	0.2092	0.2746	0.142	0.1858	0.0484	0.3131	0.1331	0.0325
Overall significance	0.0000***	0.0000***	0.0000***	0.0000***	0.0004***	0.0836*	0.0000***	0.0000***	0.0009***

Note: This table reports regression estimation result of audit committee (*AUDITD*) affects company's performance and risk. In panel A, explained variables are proxies for company performance, including return on assets (*ROA*), return on equity (*ROE*), Tobin's Q (*TOBINQ*) and annual stock return (*ASTR*). In panel B, explained variables are proxies for company performance, including daily stock return standard deviation (*RETSTD*), stock return skewness coefficient (*SKEW*), 95% VaR (*VAR*) stock return, the standard deviation of the return on assets (*ROASTD*) and the standard deviation of the return on equity (*ROESTD*). The main explanatory variable is dummy of firm's having audit committee (*AUDITD*). Regression controls are total assets (*LNASSET*), debt ratio (*DEBTR*), revenue growth rate (*SALESGR*), establishment years (*AGE*), annual turnover of common stocks (*LNTURN*), board of directors size (*BOARD*), independent director ratio (*INDRATIO*), directors' shareholding ratio (*DIRHOLD*), managerial shareholding ratio (*MANAHOLD*), and foreign institutional investors' shareholding ratio (*FORHOLD*). The *t* value of the estimated coefficient are in the parentheses, and *, ** and *** are the significant level of estimated coefficient reaching 10%, 5%, and 1%, respectively. The regression estimation adopts least square principle.

Table 7 Regression Estimation Result of How Female Audit Committee Member (*AUDITFD*) Affects the Firm's Performance and Risk

Variables	Panel A. Company performance indicators				Panel B. Company risk indicators				
	ROA	*ROE*	*TOBINQ*	*ASTR*	*RETSTD*	*SKEW*	*VAR*	*ROASTD*	*ROESTD*
AUDITFD	2.5133***	0.0095	-0.0001	-5.8918	-0.1219	0.1692	0.0392	-0.3795	-8.7886
	(2.92)	(0.44)	(-1.27)	(-1.22)	(-1.26)	(1.43)	(0.33)	(-0.98)	(-0.9)
LNASSET	-1.0235**	0.0048	-0.0005***	-8.7417***	-0.3676***	0.0425	-0.5238***	-0.5133**	8.5726
	(-2.28)	(0.24)	(-10.24)	(-4.81)	(-6.69)	(0.79)	(-9.85)	(-2.44)	(1.02)
DEBTR	-0.0426*	-0.0021*	0.0100***	0.2173**	0.0093***	-0.0022	0.0143***	0.0163	0.0945
	(-1.77)	(-1.78)	(5325.58)	(2.13)	(4.62)	(-0.95)	(4.81)	(1.41)	(0.77)
SALESGR	-0.0003	0.0000	0.0000	-0.0004	0.0000	0.0001***	0.0001	0.0004	-0.0001
	(-1.18)	(-0.56)	(-1.11)	(-0.48)	(0.6)	(6.96)	(0.95)	(0.89)	(-0.07)
AGE	0.0098	0.0008*	0.0000***	-0.0823	-0.0107***	0.0015	-0.0137***	-0.0576***	-0.7308
	(0.43)	(1.74)	(3.18)	(-0.54)	(-3.46)	(0.5)	(-4.11)	(-5.33)	(-1.38)
LNTURN	3.4039***	0.0604***	0.0004***	11.4930***	0.2203***	0.0370	0.3321***	0.0507	-5.7471
	(9.25)	(3.67)	(9.94)	(6.66)	(6.18)	(0.85)	(7.16)	(0.28)	(-1.02)
BOARD	-0.1912	-0.0064**	0.0001***	-0.3136	0.0364**	-0.0093	0.0453***	0.0641	0.5068
	(-1.47)	(-2.12)	(3.3)	(-0.52)	(2.65)	(-0.58)	(3.18)	(1.26)	(1.07)
INDRATIO	-0.0337	-0.0011**	0.0000	-0.3622***	0.0060***	0.0002	0.0089***	0.0187**	0.0088
	(-1.6)	(-2.27)	(-0.77)	(-3.28)	(3.47)	(0.1)	(3.39)	(2.34)	(0.12)
DIRHOLD	0.1401***	0.0025***	0.0000***	0.2455**	0.0049	-0.0066	-0.0041	0.0047	0.2479
	(6.58)	(4.72)	(7.07)	(2.03)	(1.38)	(-1.56)	(-1.46)	(0.42)	(1.13)
MANAHOLD	0.8486***	0.0157***	0.0001***	1.8544**	0.0123	-0.0343	-0.0619***	-0.2212***	10.3990
	(7.18)	(4.18)	(3.19)	(2.06)	(0.27)	(-1.73)	(-3.13)	(-3.44)	(0.97)
FORHOLD	0.0725*	-0.0011	0.0000***	-0.0089	0.0040*	-0.0008	0.0061	0.0005	-0.0595
	(1.93)	(-0.53)	(5.56)	(-0.05)	(1.52)	(-0.14)	(1.46)	(0.03)	(-0.57)
Intercept	-8.1858	-0.5077	0.0042	45.3884	5.4002	-1.2798	7.6980	12.7138	-75.1357
	(-1.24)	(-1.46)	(9.42)	(2.23)	(8.98)	(-2.27)	(11.19)	(3.87)	(-0.95)
# of Obs.	2,321	2,320	2,321	2,321	2,321	2,321	2,320	2,320	2,320
Adjusted R^2	0.3422	0.2054	0.2465	0.1167	0.1871	0.041	0.3073	0.1324	0.0322
Overall significance	0.0000***	0.0000***	0.0000***	0.0000***	0.0004***	0.0000***	0.0000***	0.0000***	0.0009***

Note: This table reports regression estimation result of firm's having female audit committee member (*AUDITFD*) affects company's performance and risk. In panel A, explained variables are proxies for company performance, including return on assets (*ROA*), return on equity (*ROE*), Tobin's Q (*TOBINQ*) and annual stock return (*ASTR*). In panel B, explained variables are proxies for company performance, including daily stock return standard deviation (*RETSTD*), stock return skewness coefficient (*SKEW*), 95% VaR (*VAR*) stock return, the standard deviation of the return on assets (*ROASTD*) and the standard deviation of the return on equity (*ROESTD*). The main explanatory variable is dummy of firm's having female audit committee member (*AUDITFD*). Regression controls are total assets (*LNASSET*), debt ratio (*DEBTR*), revenue growth rate (*SALESGR*), establishment years (*AGE*), annual turnover of common stocks (*LNTURN*), board of directors size (*BOARD*), independent director ratio (*INDRATIO*), directors' shareholding ratio (*DIRHOLD*), managerial shareholding ratio (*MANAHOLD*), and foreign institutional investors' shareholding ratio (*FORHOLD*). The *t* value of the estimated coefficient are in the parentheses, and *, ** and *** are the significant level of estimated coefficient reaching 10%, 5%, and 1%, respectively. The regression estimation adopts least square principle.

Table 8 Regression Estimation Result of How Number of Female Audit Committee Member (*AUDITFN*) Affects the Performance and Risk

variables	Panel A. Company performance indicators				Panel B. Company risk indicators				
	ROA	*ROE*	*TOBINQ*	*ASTR*	*RETSTD*	*SKEW*	*VAR*	*ROASTD*	*ROESTD*
AUDITFN	1.6493**	0.0034	-0.0001	-6.2764*	-0.0264	0.1011	0.1246	0.0196	-5.0099
	(2.24)	(0.21)	(-1.3)	(-1.67)	(-0.31)	(1.18)	(1.04)	(0.06)	(-0.79)
LNASSET	-1.0702**	0.0044	-0.0005***	-8.7743***	-0.3622***	0.0388	-0.5187***	-0.4905**	8.7805
	(-2.37)	(0.22)	(-10.27)	(-4.79)	(-6.6)	(0.73)	(-9.73)	(-2.32)	(1.03)
DEBTR	-0.0409*	-0.0021*	0.0100***	0.2179**	0.0091***	-0.0020	0.0142***	0.0156	0.0873
	(-1.69)	(-1.76)	(5326)	(2.15)	(4.52)	(-0.9)	(4.77)	(1.35)	(0.68)
SALESGR	-0.0003	0.0000	0.0000	-0.0004	0.0000	0.0001***	0.0001	0.0004	-0.0001
	(-1.2)	(-0.58)	(-1.1)	(-0.49)	(0.63)	(6.85)	(0.96)	(0.9)	(-0.05)
AGE	0.0097	0.0008*	0.0000***	-0.0843	-0.0107***	0.0015	-0.0136***	-0.0573***	-0.7297
	(0.42)	(1.73)	(3.17)	(-0.55)	(-3.45)	(0.5)	(-4.09)	(-5.3)	(-1.38)
LNTURN	3.3924***	0.0604***	0.0004***	11.5225***	0.2208***	0.0362	0.3318***	0.0522	-5.7076
	(9.22)	(3.66)	(9.93)	(6.69)	(6.21)	(0.83)	(7.17)	(0.29)	(-1.02)
BOARD	-0.1810	-0.0063**	0.0001***	-0.3070	0.0352***	-0.0085	0.0442***	0.0592	0.4614
	(-1.39)	(-2.07)	(3.29)	(-0.51)	(2.58)	(-0.53)	(3.09)	(1.16)	(0.99)
INDRATIO	-0.0309	-0.0011**	0.0000	-0.3546***	0.0055***	0.0005	0.0083***	0.0166**	-0.0057
	(-1.46)	(-2.18)	(-0.8)	(-3.17)	(3.18)	(0.22)	(3.13)	(2.1)	(-0.08)
DIRHOLD	0.1417***	0.0025***	0.0000***	0.2395**	0.0049	-0.0065*	-0.0039	0.0047	0.2430
	(6.64)	(4.71)	(7.04)	(1.98)	(1.39)	(-1.52)	(-1.42)	(0.42)	(1.13)
MANAHOLD	0.8531***	0.0157***	0.0001***	1.8335**	0.0124	-0.0340*	-0.0614***	-0.2207***	10.3866
	(7.26)	(4.2)	(3.19)	(2.04)	(0.27)	(-1.69)	(-3.07)	(-3.51)	(0.97)
FORHOLD	0.0777**	-0.0011	0.0000***	-0.0092	0.0035	-0.0004	0.0057	-0.0016	-0.0815
	(2.05)	(-0.51)	(5.55)	(-0.05)	(1.35)	(-0.07)	(1.37)	(-0.08)	(-0.79)
Intercept	-7.5539	-0.5031	0.0042	45.7510	5.3285	-1.2297	7.6321	12.4129	-77.9248
	(-1.14)	(-1.44)	(9.44)	(2.25)	(8.89)	(-2.19)	(11.11)	(3.78)	(-0.96)
# of Obs.	2,321	2,320	2,321	2,321	2,321	2,321	2,320	2,320	2,320
Adjusted R^2	0.3396	0.2052	0.1847	0.1182	0.1858	0.0395	0.309	0.1314	0.032
Overall significance	0.0000***	0.0000***	0.0000***	0.0000***	0.0004***	0.0836*	0.0000***	0.0000***	0.0009***

Note: This table reports regression estimation result of the number of female audit committee member (*AUDITFN*) affects company's performance and risk. In panel A, explained variables are proxies for company performance, including return on assets (*ROA*), return on equity (*ROE*), Tobin's Q (*TOBINQ*) and annual stock return (*ASTR*). In panel B, explained variables are proxies for company performance, including daily stock return standard deviation (*RETSTD*), stock return skewness coefficient (*SKEW*), 95% VaR (*VAR*) stock return, the standard deviation of the return on assets (*ROASTD*) and the standard deviation of the return on equity (*ROESTD*). The main explanatory variable is the number of female audit committee member (*AUDITFN*). Regression controls are total assets (*LNASSET*), debt ratio (*DEBTR*), revenue growth rate (*SALESGR*), establishment years (*AGE*), annual turnover of common stocks (*LNTURN*), board of directors size (*BOARD*), independent director ratio (*INDRATIO*), directors' shareholding ratio (*DIRHOLD*), managerial shareholding ratio (*MANAHOLD*), and foreign institutional investors' shareholding ratio (*FORHOLD*). The *t* value of the estimated coefficient are in the parentheses, and *, ** and *** are the significant level of estimated coefficient reaching 10%, 5%, and 1%, respectively. The regression estimation adopts least square principle.

Table 9 Regression Estimation Result of How Ratio of Female Audit Committee Member (*AUDITFR*) Affects the Performance and Risk

	Panel A. Company performance indicators				Panel B. Company risk indicators				
Variables	*ROA*	*ROE*	*TOBINQ*	*ASTR*	*RETSTD*	*SKEW*	*VAR*	*ROASTD*	*ROESTD*
AUDITFR	0.0477*	0.0000	0.0000	-0.2169*	-0.0010	0.0044*	0.0041	0.0023	-0.1689
	(1.92)	(-0.01)	(-1.00)	(-1.87)	(-0.35)	(1.81)	(1.02)	(0.19)	(-0.77)
LNASSET	-1.0748**	0.0042	-0.0005***	-8.8256***	-0.3626***	0.0413	-0.5181***	-0.4872**	8.7478
	(-2.37)	(0.21)	(-10.24)	(-4.83)	(-6.59)	(0.77)	(-9.71)	(-2.32)	(1.03)
DEBTR	-0.0402*	-0.0021*	0.0100***	0.2171**	0.0091***	-0.0021	0.0142***	0.0155	0.0864
	(-1.66)	(-1.76)	(5337)	(2.14)	(4.53)	(-0.92)	(4.79)	(1.34)	(0.67)
SALESGR	-0.0003	0.0000	0.0000	-0.0004	0.0000	0.0001***	0.0001	0.0004	-0.0001
	(-1.21)	(-0.59)	(-1.09)	(-0.5)	(0.63)	(6.82)	(0.96)	(0.9)	(-0.05)
AGE	0.0096	0.0008*	0.0000***	-0.0849	-0.0107***	0.0015	-0.0136***	-0.0572***	-0.7300
	(0.41)	(1.73)	(3.18)	(-0.56)	(-3.45)	(0.51)	(-4.09)	(-5.29)	(-1.38)
LNTURN	3.3964***	0.0604***	0.0004***	11.5053***	0.2207***	0.0365	0.3322***	0.0523	-5.7211
	(9.21)	(3.67)	(9.93)	(6.68)	(6.21)	(0.84)	(7.18)	(0.29)	(-1.02)
BOARD	-0.1794	-0.0063**	0.0001***	-0.2986	0.0353**	-0.0090	0.0442***	0.0585	0.4664
	(-1.38)	(-2.08)	(3.28)	(-0.5)	(2.57)	(-0.57)	(3.09)	(1.15)	(1)
INDRATIO	-0.0295	-0.0011**	0.0000	-0.3535***	0.0056***	0.0003	0.0083***	0.0164*	-0.0056
	(-1.39)	(-2.18)	(-0.86)	(-3.14)	(3.19)	(0.14)	(3.13)	(2.07)	(-0.08)
DIRHOLD	0.1414***	0.0025***	0.0000***	0.2395**	0.0049	-0.0065*	-0.0040	0.0048	0.2431
	(6.62)	(4.71)	(7.04)	(1.98)	(1.39)	(-1.53)	(-1.42)	(0.43)	(1.13)
MANAHOLD	0.8503***	0.0157***	0.0001***	1.8408**	0.0124	-0.0341*	-0.0616***	-0.2205***	10.3929
	(7.24)	(4.2)	(3.2)	(2.05)	(0.27)	(-1.71)	(-3.07)	(-3.52)	(0.97)
FORHOLD	0.0797**	-0.0011	0.0000***	-0.0121	0.0035	-0.0005	0.0058	-0.0018	-0.0844
	(2.1)	(-0.5)	(5.5)	(-0.07)	(1.35)	(-0.08)	(1.39)	(-0.09)	(-0.81)
Intercept	-7.5772	-0.5004	0.0042	46.7971	5.3358	-1.2702	7.6172	12.3666	-77.2054
	(-1.15)	(-1.44)	(9.43)	(2.3)	(8.86)	(-2.22)	(11.1)	(3.79)	(-0.96)
# of Obs.	2,321	2,320	2,321	2,321	2,21	2,321	2,320	2,320	2,320
Adjusted R²	0.3386	0.2052	0.1654	0.1186	0.1859	0.0408	0.3091	0.1314	0.032
Overall significance	0.0000***	0.0000***	0.0000***	0.0000***	0.0004***	0.0836*	0.0000***	0.0000***	0.0009***

Note: This table reports regression estimation result of the ratio of female audit committee member (*AUDITFR*) affects company's performance and risk. In panel A, explained variables are proxies for company performance, including return on assets (*ROA*), return on equity (*ROE*), Tobin's Q (*TOBINQ*) and annual stock return (*ASTR*). In panel B, explained variables are proxies for company performance, including daily stock return standard deviation (*RETSTD*), stock return skewness coefficient (*SKEW*), 95% VaR (*VAR*) stock return, the standard deviation of the return on assets (*ROASTD*) and the standard deviation of the return on equity (*ROESTD*). The main explanatory variable is the ratio of female audit committee member (*AUDITFR*). Regression controls are total assets (*LNASSET*), debt ratio (*DEBTR*), revenue growth rate (*SALESGR*), establishment years (*AGE*), annual turnover of common stocks (*LNTURN*), board of directors size (*BOARD*), independent director ratio (*INDRATIO*), directors' shareholding ratio (*DIRHOLD*), managerial shareholding ratio (*MANAHOLD*), and foreign institutional investors' shareholding ratio (*FORHOLD*). The *t* value of the estimated coefficient are in the parentheses, and *, ** and *** are the significant level of estimated coefficient reaching 10%, 5%, and 1%, respectively. The regression estimation adopts least square principle.

Table 10 reports the regression estimation of establishing compensation committee (*COMPD*) and the gender diversity in compensation committee (*COMPFD*, *COMPFN* and *COMPFR*) affect company main total compensation of the management. According to the difference of main explanatory variables, four models are separately estimated. The main explanatory variable of model (1) is cross-product term of return on assets and dummy of firm's having compensation committee (*ROA*COMPD*). The main explanatory variable of model (2) is cross-product term of return on assets and the presence or absence of female compensation committee members (*ROA*COMPFD*). The main explanatory variable of model (3) is cross-product term of return on assets and the number of female compensation committee members (*ROA*COMPFN*). The main explanatory variable of model (4) is cross-product term of return on assets and the ratio of female compensation members (*ROA*COMPFR*). The estimated coefficients on return on assets (*ROA*) in Table 10, and it can be seen that the return on assets reveals the overall results of the managers' company operating performance in the past year, and the estimated coefficients in the four models mostly show significant positive, so it means that the better performance of a company, the higher total salary the main managers tend to obtain. Good performance can reasonably explain the high level of manager compensation. However, the estimated coefficient of *ROA*COMPD* is negative and does not reach a statistically significant level, indicating that companies with compensation committees do not have higher pay-performance sensitivity for the management.

In Table 10, the estimated coefficients of multiplications of *ROA*COMPFD*, *ROA*COMPFN*, and *ROA*COMPFR* are negative and almost reach the general statistically significant level (except for *ROA*COMPFD*). This indicates the company with female compensation members, the number female compensation committee members and ratio of female compensation committee members being higher, will weaken the connection between executives' compensation and company performance. That is, the greater the number of female compensation committee members, and the higher the ratio of female compensation committee member will reduce the sensitivity of the company's executive compensation performance linkage. This study speculates that the possible reason is the cost of gender diversity in organizations is higher than its benefits. When the gender in organizations is more diverse, costs in communication and coordination will inevitably be higher. The cost of differences in opinions caused by different genders are higher than the benefits derived from gender diversity. Hence, gender diversity in the compensation committee not only cannot help the company strengthen connection between compensation and performance of main managers, rather, the situation might get worse. In terms of femininity, the important task of raising children lies with women in most human cultures, so in general, women are relatively conservative or less willing to take risks. In the operation of a gender-diverse compensation committee, differences in gender decisions will occur, resulting in increased instability in salary decision-making, and thus leading to salary decisions that may be conservative and inappropriate. Uncertainty of company's own business operations is natural, so the linking of senior management's salary with the company's operating results is sometimes undesirable for risk-averse female compensation committee member. Therefore, salary level that is relatively unrelated to the company's operating performance might be established, such as a higher proportion of fixed-level salary or a lower level of salary ratio based on performance. Over-conservative salary decisions may not motivate main managers, or even cases like worse corporate governance where the company's executive compensation and operating performance being not in consideration.

Table 10 Effects of Compensation Committee Gender Diversity on Management Total Pay

Explanatory variables	Total compensation of main managers (*LNCOMPMT*)			
	(1)	(2)	(3)	(4)
ROA	0.0278	0.0283***	0.0311***	0.0314***
	(0.82)	(6.38)	(7.18)	(7.26)
*ROA*COMPD*	-0.0034			
	(-0.10)			
*ROA*COMPFD*		-0.0105		
		(-1.59)		
*ROA*COMPFN*			-0.0167***	
			(-2.90)	
ROA COMPFR*				-0.0533***
				(-3.05)
LNASSET	0.4955***	0.4941***	0.4931***	0.4928***
	(36.93)	(36.53)	(36.50)	(36.47)
DEBT	-0.0048***	-0.0047***	-0.0047***	-0.0047***
	(-5.72)	(-5.57)	(-5.51)	(-5.49)
MTB	0.0985***	0.0986***	0.0988***	0.0987***
	(9.51)	(9.49)	(9.51)	(9.51)
DIRHOLD	-0.4640***	-0.4557***	-0.4573***	-0.4570***
	(-3.99)	(-3.90)	(-3.91)	(-3.91)
BOARD	0.0270***	0.0276***	0.0275***	0.0275***
	(4.13)	(4.23)	(4.21)	(4.21)
INDRATIO	1.0379***	1.0453***	1.0440***	1.0429***
	(13.00)	(13.08)	(13.07)	(13.06)
INSTHOLD	-0.0022***	-0.0022***	-0.0022***	-0.0022***
	(-2.64)	(-2.70)	(-2.73)	(-2.74)
Intercept	1.4285***	1.4396***	1.4533***	1.4582***
	(7.62)	(7.62)	(7.70)	(7.73)
# of Obs.	3,836	3,816	3,816	3,816
Adjusted R^2	0.4331	0.4337	0.4345	0.4347
Overall significance	0.0000	0.0000	0.0000	0.0000

Note: This table reports regression estimation result the effects of compensation committee gender diversity on management total pay (*LNCOMPMT*). In model (2)~(4), compensation committee gender diversity are proxied by female compensation committee member dummy (*COMPFD*), number of compensation committee member (*COMPFN*) and ratio of female compensation committee member (*COMPFR*). The main explanatory variable is firm's accounting performance, returns on asset (*ROA*). Regression control variables include total assets (*LNASSET*), debt ratio (*DEBTR*), market value to book value ratio (*MTB*), director shareholding ratio (*DIRHOLD*), board size (*BOARD*), independent director ratio (*INDRATIO*), and institutional investor shareholding ratio (*INSTHOLD*). The *t* value of the estimated coefficient are in the parentheses, and *, ** and *** are the significant level of estimated coefficient reaching 10%, 5%, and 1%, respectively. The regression estimation adopts the least square principle.

Table 11 reports whether establishing the compensation committee and the participation of women in the compensation committee affect the regression estimation of company main managers' average salary. The results are similar to that of Table 10. The estimated coefficient of *ROA*COMPD* is negative and does not reach a statistically significant level. This indicates that companies with a compensation committee do not have high compensation-performance sensitivity. However, the estimated coefficients of multiplications of *ROA*COMPFD*, *ROA*COMPFN*, and *ROA*COMPFR* are significantly negative. This shows that female compensation committee members in companies, or the number and ratio of women compensation committee members getting greater, will weaken the connection between executives' salary and company performance. That is, the greater the number of women in the compensation committee, and the higher the ratio of women in the compensation committee, will reduce the sensitivity of the company executives' compensation-performance. The risk-averse female compensation committee members formulate a salary level that is relatively irrelevant to the company's operating performance, and this conservative salary decision may not motivate main managers.

Table 11 Effects of Compensation Committee Gender Diversity on Management Average Pay

Explanatory variables	Average compensation of main managers (*LNCOMPMA*)			
	(1)	(2)	(3)	(4)
ROA	0.0353 (1.59)	0.0239*** (8.22)	0.0248*** (8.74)	0.0250*** (8.84)
*ROA*COMPD*	-0.0173 (-0.78)			
*ROA*COMPFD*		-0.0158*** (-3.64)		
*ROA*COMPFN*			-0.0170*** (-4.49)	
ROA COMPFR*				-0.0533*** (-4.67)
LNASSET	0.2607*** (29.54)	0.2622*** (29.62)	0.2620*** (29.63)	0.2616*** (29.59)
DEBT	-0.0056*** (-10.12)	-0.0057*** (-10.18)	-0.0057*** (-10.18)	-0.0056*** (-10.16)
MTB	0.0767*** (11.26)	0.0780*** (11.48)	0.0782*** (11.52)	0.0782*** (11.52)
DIRHOLD	-0.3273*** (-4.28)	-0.3060*** (-4.00)	-0.3070*** (-4.02)	-0.3066*** (-4.01)
BOARD	0.0104** (2.42)	0.0109** (2.55)	0.0107** (2.51)	0.0107** (2.51)
INDRATIO	0.5101*** (9.71)	0.5083*** (9.72)	0.5067*** (9.70)	0.5056*** (9.68)
INSTHOLD	-0.0003 (-0.55)	-0.0005 (-0.92)	-0.0005 (-0.96)	-0.0005 (-0.96)
Intercept	3.9340*** (31.95)	3.9131*** (31.67)	3.9192*** (31.75)	3.9238*** (31.78)
# of Obs.	3,836	3,816	3,816	3,816
Adjusted R^2	0.3385	0.3449	0.3461	0.3464
Overall significance	0.0000	0.0000	0.0000	0.0000

Note: This table reports regression estimation result the effects of compensation committee gender diversity on management average pay (*LNCOMPMA*). In model (2)~(4), compensation committee gender diversity are proxied by female compensation committee member dummy (*COMPFD*), number of compensation committee member (*COMPFN*) and ratio of female compensation committee member (*COMPFR*). The main explanatory variable is firm's accounting performance, returns on asset (*ROA*). Regression control variables include total assets (*LNASSET*), debt ratio (*DEBTR*), market value to book value ratio (*MTB*), director shareholding ratio (*DIRHOLD*), board size (*BOARD*), independent director ratio (*INDRATIO*), and institutional investor shareholding ratio (*INSTHOLD*). The *t* value of the estimated coefficient are in the parentheses, and *, ** and *** are the significant level of estimated coefficient reaching 10%, 5%, and 1%, respectively. The regression estimation adopts the least square principle.

Table 12 reports whether establishing a compensation committee and the female participation of the compensation committee affect the regression estimation of company directors and supervisors' total compensation. The role of directors and supervisors' compensation is not exactly the same as that of managers. The main role of directors' and supervisors' compensation is to encourage them to focus on their duties (supervision, consultation and provision of external resources), while the latter is mainly to motivate managers to work hard and enhance company performance. The estimated results in Table 12 are similar to those in Table 10. The estimated coefficient of *ROA*COMPD* is negative and does not reach a statistically significant level, and this means companies with a compensation committee do not have higher directors and supervisors' compensation-performance sensitivity. However, the estimated coefficients of multiplications of *ROA*COMPFD*, *ROA*COMPFN*, and *ROA*COMPFR* are negative and statistically significant. This shows that female compensation committee members in the company, the number of women compensation committee members getting greater, and the ratio of women compensation committee members getting higher, will weaken the connection of company directors' and supervisors' total compensation and company's performance. That is, the greater the number of women in the compensation committee, and the higher the ratio of women in the compensation committee, will reduce the sensitivity between the company directors' and supervisors' total compensation and company performance. Similarly, risk-averse female compensation committees formulate decisions that make the compensation of the company's directors and supervisors less relevant to the company's operating performance. This relatively conservative salary decision may make the directors and supervisors less efficient in their supervision and consultation.

Table 12 Effects of Compensation Committee Gender Diversity on Directors' Total Pay

Explanatory variables	Total compensation of directors and supervisors ($LNCOMPBT$)			
	(1)	(2)	(3)	(4)
ROA	0.0422 (0.89)	0.0771*** (12.01)	0.0760*** (12.13)	0.0760*** (12.14)
$ROA*COMPD$	0.0180 (0.38)			
$ROA*COMPFD$		-0.0433*** (-4.58)		
$ROA*COMPFN$			-0.0380*** (-4.62)	
$ROA* COMPFR$				-0.1151*** (-4.63)
$LNASSET$	0.5033*** (26.21)	0.4982*** (25.74)	0.4988*** (25.78)	0.4983*** (25.74)
$DEBT$	-0.0101*** (-8.35)	-0.0097*** (-7.98)	-0.0097*** (-8.04)	-0.0097*** (-8.02)
MTB	0.1290*** (8.35)	0.1312*** (8.47)	0.1316*** (8.49)	0.1315*** (8.49)
$DIRHOLD$	-1.218*** (-7.34)	-1.2310*** (-7.38)	-1.2319*** (-7.39)	-1.2308*** (-7.38)
$BOARD$	0.1030*** (11.07)	0.1038*** (11.17)	0.1034*** (11.13)	0.1034*** (11.13)
$INDRATIO$	-0.1478 (-1.29)	-0.1506 (-1.32)	-0.1548 (-1.35)	-0.1570 (-1.37)
$INSTHOLD$	0.0045*** (3.86)	0.0044*** (3.77)	0.0044*** (3.75)	0.0044*** (3.75)
Intercept	-0.0848 (-0.32)	-0.0325 (-0.12)	-0.0311 (-0.12)	-0.0234 (-0.09)
# of Obs.	3,758	3,738	3,738	3,738
Adjusted R^2	0.3750	0.3785	0.3786	0.3786
Overall significance	0.0000	0.0000	0.0000	0.0000

Note: This table reports regression estimation result the effects of compensation committee gender diversity on directors' total pay ($LNCOMPBT$). In model (2)~(4), compensation committee gender diversity are proxied by female compensation committee member dummy ($COMPFD$), number of compensation committee member ($COMPFN$) and ratio of female compensation committee member ($COMPFR$). The main explanatory variable is firm's accounting performance, returns on asset (ROA). Regression control variables include total assets ($LNASSET$), debt ratio ($DEBTR$), market value to book value ratio (MTB), director shareholding ratio ($DIRHOLD$), board size ($BOARD$), independent director ratio ($INDRATIO$), and institutional investor shareholding ratio ($INSTHOLD$). The t value of the estimated coefficient are in the parentheses, and *, ** and *** are the significant level of estimated coefficient reaching 10%, 5%, and 1%, respectively. The regression estimation adopts the least square principle.

Table 13 reports whether establishing a compensation committee and the participation of women in the compensation committee affect the regression estimation of the company directors' and supervisors' average compensation. Similar to the previous estimation results, the estimated coefficient of $ROA*COMPD$ is negative and does not reach a statistically significant level, indicating that companies with compensation committees do not have higher directors and supervisors' compensation-performance sensitivity. The estimated coefficients of multiplications of $ROA*COMPFD$, $ROA*COMPFN$, and $ROA*COMPFR$ are negative and significant, indicating presence of female compensation committee members in companies, the number of women compensation committee members getting greater, and the ratio of women compensation committee members getting higher, will weaken the connection between company directors and supervisors' average salary and company performance. The estimated results in Tables 14 and 15 are similar to the previous ones. When the company's compensation committee has female members, the number of women on the compensation committee getting greater, and the ratio of women on the compensation committee getting higher, will weaken the connection between the company's directors, supervisors and executives' total compensation, average compensation and company performance. While our evidence consistent with Khan, Umaal and Waleed, Khalid and Nouman, Muhammad and Khurram, Sobia, (2020), the evidence

of the presence of female member in compensation committee weakens PPS is contradicting with the findings of Strobl, Rama and Mishra (2016) and Usman, Zhang, Sun and Makki (2018).

Regarding the estimation results of the control variables, since the empirical results of the models have little difference, they are discussed together. From tables of the regression estimation, most of the estimated coefficients of company assets (LNASSET) are significantly positive, indicating that the larger the company size, the higher the compensation of directors, supervisors and executives. The possible explanation is that in larger companies, the difficulty of supervising and managing company operation is bound to increase, so higher compensation must be given to directors, supervisors and senior managers to be incentives for their supervision and efforts. Most of the estimation results of debt ratio (DEBTR) are significantly negative, indicating that the higher the debt ratio, the lower company executives' compensation tends to be. The reason is that high debt will put more pressure on the company to repay the capital and interest, and executives will be less likely to put excessive funds into company's new investment projects, which will negatively affect the company's potential future profit opportunities. What's more, if the revenue is over-distributed to executives' compensation, company's ability to pay debt may also be consumed, so companies with high debt ratios will reduce the compensation of their executives. Most of the estimated coefficients of the market-to-book value ratio (MTB) are significantly positive. It means the higher the ratio, the higher the executives' compensation. The possible explanation is that better operating conditions will increase the stock price, which will help improve the salary of managers.

Table 13 Effects of Compensation Committee Gender Diversity on Directors' Average Pay

Explanatory variables	The average compensation of directors and supervisors (LNCOMPBA)			
	(1)	(2)	(3)	(4)
ROA	0.0391	0.0777***	0.0767***	0.0768***
	(0.82)	(12.02)	(12.17)	(12.19)
ROA*COMPD	0.0216			
	(0.45)			
ROA*COMPFD		-0.0435***		
		(-4.57)		
ROA*COMPFN			-0.0385***	
			(-4.66)	
ROA* COMPFR				-0.1172***
				(-4.69)
LNASSET	0.5140***	0.5095***	0.5100***	0.5094***
	(26.59)	(26.15)	(26.19)	(26.16)
DEBT	-0.0104***	-0.0100***	-0.0101***	-0.0101***
	(-8.57)	(-8.23)	(-8.28)	(-8.26)
MTB	0.1299***	0.1325***	0.1329***	0.1328***
	(8.35)	(8.50)	(8.52)	(8.52)
DIRHOLD	-1.1400***	-1.1500***	-1.1511***	-1.1499***
	(-6.83)	(-6.86)	(-6.86)	(-6.86)
BOARD	0.0082	0.0088	0.0085	0.0085
	(0.88)	(0.95)	(0.90)	(0.91)
INDRATIO	-0.1128	-0.1175	-0.1217	-0.1240
	(-0.98)	(-1.02)	(-1.06)	(-1.08)
INSTHOLD	0.0037***	0.0035***	0.0035***	0.0035***
	(3.10)	(3.00)	(2.98)	(2.98)
Intercept	-1.8901***	-1.8464***	-1.8443***	-1.8362***
	(-7.00)	(-6.79)	(-6.78)	(-6.75)
# of Obs.	3,758	3,738	3,738	3,738
Adjusted R^2	0.3220	0.3261	0.3263	0.3263
Overall significance	0.0000	0.0000	0.0000	0.0000

Note: This table reports regression estimation result the effects of compensation committee gender diversity on directors' average pay (LNCOMPBA). In model (2)~(4), compensation committee gender diversity are proxied by female compensation committee member dummy (COMPFD), number of compensation committee member (COMPFN) and ratio of female compensation committee member (COMPFR). The main explanatory variable is firm's accounting performance, returns on asset (ROA). Regression control variables include total assets (LNASSET), debt ratio (DEBTR), market value to book value ratio (MTB), director shareholding ratio (DIRHOLD), board size (BOARD), independent director ratio (INDRATIO), and institutional investor shareholding ratio (INSTHOLD). The t value of the estimated coefficient are in the parentheses, and *, **

and *** are the significant level of estimated coefficient reaching 10%, 5%, and 1%, respectively. The regression estimation adopts the least square principle.

Table 14 Effects of Compensation Committee Gender Diversity on Management and Directors' Total Pay

Explanatory variables	The total compensation of directors, supervisors and main managers (*LNCOMPBMT*)			
	(1)	(2)	(3)	(4)
ROA	0.0165	0.0380***	0.0380***	.0382***
	(0.61)	(10.59)	(10.86)	(10.94)
ROA*COMPD	0.0144			
	(0.53)			
ROA*COMPFD		-0.0187***		
		(-3.49)		
ROA*COMPFN			-0.0177***	
			(-3.79)	
ROA* COMPFR				-0.0553***
				(-3.92)
LNASSET	0.4987***	0.4970***	0.4971***	0.4968***
	(46.39)	(45.86)	(45.90)	(45.86)
DEBT	-0.0070***	-0.007***	-0.0070***	-0.007***
	(-10.49)	(-10.22)	(-10.25)	(-10.23)
MTB	0.1207***	0.1214***	0.1216***	0.1216***
	(14.42)	(14.47)	(14.50)	(14.50)
DIRHOLD	-0.6732***	-0.6684***	-0.6690***	-0.6685***
	(-7.17)	(-7.08)	(-7.09)	(-7.09)
BOARD	0.0552***	0.0557***	0.0555***	0.0555***
	(10.44)	(10.55)	(10.52)	(10.52)
INDRATIO	0.4702***	0.4737***	0.4720***	0.4710***
	(7.03)	(7.35)	(7.32)	(7.31)
INSTHOLD	-0.0008	-0.0009	-0.0009	-0.0009
	(-1.24)	(-1.35)	(-1.37)	(-1.37)
Intercept	1.8536***	1.8675***	1.8700***	1.8745***
	(12.34)	(12.34)	(12.36)	(12.39)
# of Obs.	3,838	3,838	3,838	3,838
Adjusted R^2	0.5623	0.5636	0.5638	0.5640
Overall significance	0.0000	0.0000	0.0000	0.0000

Note: This table reports regression estimation result the effects of compensation committee gender diversity on directors' average pay (*LNCOMPBA*). In model (2)~(4), compensation committee gender diversity are proxied by female compensation committee member dummy (*COMPFD*), number of compensation committee member (*COMPFN*) and ratio of female compensation committee member (*COMPFR*). The main explanatory variable is firm's accounting performance, returns on asset (*ROA*). Regression control variables include total assets (*LNASSET*), debt ratio (*DEBTR*), market value to book value ratio (*MTB*), director shareholding ratio (*DIRHOLD*), board size (*BOARD*), independent director ratio (*INDRATIO*), and institutional investor shareholding ratio (*INSTHOLD*). The *t* value of the estimated coefficient are in the parentheses, and *, ** and *** are the significant level of estimated coefficient reaching 10%, 5%, and 1%, respectively. The regression estimation adopts the least square principle.

In addition, most of the estimated coefficients of director shareholding *(DIRHOILD)* are significantly negative, indicating that managers' salaries are lower in companies with directors holding higher share. The reason is that as directors' share increases, the interests will tend to coincide with those of shareholders. Not only will agency problems be reduced, but there will also be stronger incentives for directors to supervise for the purpose of reducing unnecessary expenditures and avoidance of personal benefits, which limit the payment of executives' compensation. Most of the estimated coefficients of the board size *(BOARD)* are significantly positive, which means managers can get higher salary in companies with a large number of directors in the board. The possible reason is that the large number will make the opinions more divergent, unfavorable for decision-making and operation, which make the operation inefficient, and the supervision may be superficial, so free-rider behaviors occur. These will have a negative effect on the inhibition of managers' compensation. Most of the estimated coefficients of the independent director ratio (*INDRATIO*) are significantly positive, which means that

the higher the independent director ratio, the higher the salary company managers get. The reason for this speculation is that independent directors are mostly objective third-party roles, such as scholars or experts, so their evaluation for company's decision-making and performance are relatively fair. Hence, they can determine a more appropriate salary. The estimated coefficient of corporate shareholding ratio (*INSTHOLD*) is not significantly negative, indicating that the higher the ratio of corporate holding share, the lower the executives' compensation. It is speculated that when the shareholding ratio of institutional legal persons increases, more stringent standard will be set for decision-making after companies' own interests are considered, which leads to restrictions on the payment of executives' compensation. Finally, in terms of the overall significance of each regression estimate, the F-statistics are all significant, indicating that the setting of the regression equation has reached overall significance.

Table 15 Effects of Compensation Committee Gender Diversity on Management and Directors' Average Pay

Explanatory variables	The average compensation of directors, supervisors and key managers (*LNCOMPBMA*)			
	(1)	(2)	(3)	(4)
ROA	0.0155	0.0373***	0.0371***	0.0373***
	(0.64)	(11.70)	(11.93)	(12.00)
*ROA*COMPD*	0.0145			
	(0.60)			
*ROA*COMPFD*		-0.0194***		
		(-4.08)		
*ROA*COMPFN*			-0.0178***	
			(-4.29)	
ROA COMPFR*				-0.0552***
				(-4.40)
LNASSET	0.4223***	0.4215***	0.4216***	0.4213***
	(44.16)	(43.78)	(43.83)	(43.79)
DEBT	-0.0076***	-0.0075***	-0.0075***	-0.0075***
	(-12.54)	(-12.32)	(-12.37)	(-12.34)
MTB	0.1118***	0.1130***	0.1132***	0.1131***
	(15.03)	(15.16)	(15.19)	(15.19)
DIRHOLD	-0.5884***	-0.5810***	-0.5815***	-0.5810***
	(-7.05)	(-6.93)	(-6.94)	(-6.94)
BOARD	-0.0167***	-0.0163***	-0.0164***	-0.0164***
	(-3.55)	(-3.47)	(-3.50)	(-3.50)
INDRATIO	0.3203***	0.3207***	0.3189***	0.3179***
	(5.59)	(5.60)	(5.57)	(5.55)
INSTHOLD	-0.0008	-0.0009	-0.0009	-0.0009
	(-1.42)	(-1.60)	(-1.63)	(-1.63)
Intercept	0.9103***	0.9128***	0.9145***	0.9188***
	(6.81)	(6.79)	(6.81)	(6.84)
# of Obs.	3,858	3,838	3,838	3,838
Adjusted R^2	0.4921	0.4951	0.4954	0.4955
Overall significance	0.0000	0.0000	0.0000	0.0000

Note: This table reports regression estimation result the effects of compensation committee gender diversity on directors' average pay (*LNCOMPBA*). In model (2)~(4), compensation committee gender diversity are proxied by female compensation committee member dummy (*COMPFD*), number of compensation committee member (*COMPFN*) and ratio of female compensation committee member (*COMPFR*). The main explanatory variable is firm's accounting performance, returns on asset (*ROA*). Regression control variables include total assets (*LNASSET*), debt ratio (*DEBTR*), market value to book value ratio (*MTB*), director shareholding ratio (*DIRHOLD*), board size (*BOARD*), independent director ratio (*INDRATIO*), and institutional investor shareholding ratio (*INSTHOLD*). The *t* value of the estimated coefficient are in the parentheses, and *, ** and *** are the significant level of estimated coefficient reaching 10%, 5%, and 1%, respectively. The regression estimation adopts the least square principle.

5. Conclusion and suggestion

5.1 Research Conclusion and Policy Implication

Based on the division of job functions, the audit committee leads the supervision of firm's financial, accounting and major business consultation. The audit committee member should be impartial, neutral, rigorous and highly attentive, to supervise the firm's capital expenditure appropriateness, mergers and acquisitions strategies, investment dispositions and other major corporate decisions. At the same time, the audit committee should also be able to ensure the correctness of firm's accounting records and financial statements and protect the rights and interests of shareholders. Historically, in the financial markets, most of the power of the corporate board and executives is dominated by the male. Even if the female's ingenuity and educational level are not inferior to the male, the female is sometimes limited by traditional social norms and values. Hence, it seems to be difficult for women to hold high-level position in companies. However, the use of talents in both sex of company's high positions has potential benefits on improving company's performance and efficiency, and anyone shouldn't be discriminated against from any perspectives is a universal value that the society should accept, and so should be promoted in the workplace. Therefore, one direction of corporate governance reform is to promote gender diversity of the company's board and senior management, to make full use of different genders' perspectives, personalities and wisdom, to promote the efficiency of the company's governance and operational consequences.

While the existing research has explored the benefit and cost of gender diversity in the director/top management level, this study focuses on firm's two functional committee under corporate board—the audit committee and compensation committee, to explore how gender diversity affects firm performance, risk, and director/management's pay-performance sensitivity. Most of the existing research supports that gender diversity in the board is helpful in improving company performance. The increase in the gender diversity in the audit committee has a positive and significant impact on the company's return on assets, and can effectively reduce the risk of company's stock price falling. The empirical result tends to support the hypothesis, that choosing female members to hold positions helps to better decisions of avoiding risks, provide more unique insights and improve the company's operating performance and risks. These benefits derive from the different inherent characteristics of women from those of men, that is, women are more likely to be interdependent, compassionate and tolerant. In addition, when the impact of gender diversity in compensation committee on company executives' compensation and performance sensitivity is assessed, the empirical results tend to support the negative view of gender diversity. The main reason lies in gender diversity's impact on the operation of the compensation committee. When the ideas of the two sexes are not completely the same, the cost of organizational communication and coordination will be inevitably increased, making the decided compensation policies unstable. Salary decision is the product of coordination between the two parties, which may not be able to properly reflect the supervision/management performance of supervisors/main managers, and make the cost of gender diversity greater than benefits, resulting in a decrease in compensation-performance connectivity. Inappropriate compensation loses incentive effect on the company's senior management, and impacts corporate governance negatively. Empirical evidences do show that companies with female compensation committee members tend to have poor return on assets.

The empirical result has following implications. For governments, although gender diversity of audit committees helps to improve company's return on assets and reduce the risk of stock price crash, the impact of gender diversity on other performance and risk indicators has not been comprehensively improved. This shows that the influence of audit committee gender diversity is not full-fledged. As female audit committee member is considered, professionalism, experience, educational level and

psychological quality other than physiological characteristics should also be taken more into consideration. In particular, this study found that the gender diversity in compensation committees even worsen the connection between compensation and performance of directors and management. All of these show other characteristics or the appropriateness of characteristics, and the goal of committees must be taken more seriously when female audit compensation committee member are considered. The executives and investors should also notice that though gender diversity issue is an extremely important part of corporate governance, other additional aspects and characteristics of the female should also be considered, to fit the committee's functioning to promote firm performance.

5.2 Limitation and Future Research Suggestion

First, this study employs characteristics of the female to elaborate the impact of gender diversity in committees. Yet, other characteristics of the female (e.g. age, educational level, marital status and whether they have relevant industry experiences) may play intervening effect on the effects of committee gender diversity on firm performance, risk and pay-performance sensitivity. Second, currently the samples consist of firms with mandatorily set up audit/compensation committee and firm with voluntarily set up the two committees. The voluntary establishment of audit or compensation committee reflects the firm's voluntarily comply with sounder and self-discipline corporate governance mechanism. The effect of gender diversity in firm with voluntarily set up the committees may differs from firms with mandatorily set up the two committees. Third, various firm characteristics and governance status may affect firm's degree of gender diversity in board and committee level. To make the effect of gender diversity have more causality, two-stage estimation (Heckman, 1979) or sample matching (Rosenbaum and Rubin, 1983, 1985a,b) technique could be employed in future research. [5]

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[5] Subsequent research may use two-stage estimation to reduce the endogenously selection problem of the samples choosing to dedicate female director or female audit and compensation committee member. In the first stage, the variables that determine whether the company dedicates female director or female audit and compensation committee member are considered as explanatory variable, and whether the company actually employs female director or female audit and compensation committee member are the explained variable, and estimates the Probit regression. Then the selection bias-correction term (inverse Mill's ratio, lambda) is obtained, which is added on the second-stage estimation as an explanatory variable. The second-stage estimation equation is the equations (1), (2) and (3) in this study. The above two-stage estimation adopts the maximum likelihood estimation. Propensity score matching (PSM) of Rosenbaum and Rubin's (1983, 1985a,b) may also be used to correct for endogenously selection problem. First, according to the variable that determines the firm's dedicating of female director or female audit and compensation committee member as the explanatory variable, the variable of whether firm actually employs female director or female audit and compensation committee member is the explained variable. The Probit model is used to estimate the firm's dedicating of female director or female audit and compensation committee member. The probability function of firm's dedicating of female directors or female audit and compensation committee member is the propensity score function (PSF). Given the PSF, the propensity score (PS) of all samples would be obtained (the probability of firm's dedicating female director or female audit and compensation committee member). For each firm hiring female director or female audit and compensation committee, among all the samples without hiring female director or female audit and compensation committee, select a sample with the closest PS to act as a matching sample (i.e one-to-one propensity score matching), and adopt a replacement strategy, which means that the same sample without female director or female audit and compensation committee may be matched to different sample with female director or female audit and compensation committee. Finally, the regression equations (1), (2) and (3) are estimated based on all paired samples.

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