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The Critical Role of Women in Financial Governance: An Empirical Study of Regulatory Violations in the Banking Sector

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Abstract. This study investigates the role of women in financial governance, focusing on how their participation affects regulatory violations in the banking sector. Using data from 24 listed banks in Taiwan from 2021 to 2023, logistic regression and chi-square tests were employed to analyze the impact of the proportions of female board members, executives, and employees on violation risks. Results show that a higher proportion of female board members significantly reduces the likelihood of violations—by 36.2% for every 1% increase. Female executives also show a protective effect, though more modest, while the proportion of female employees has a minimal or slightly adverse effect. The findings suggest that women's involvement in senior governance strengthens oversight and compliance, contributing to sustainable financial governance. Policy recommendations include increasing female board representation, promoting their participation in key risk governance roles, and institutionalizing gender-balanced reforms.

1. INTRODUCTION

According to the definition provided by the United Nations World Commission on Environment and Development, sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, n.d.). The core focus of sustainability encompasses three key dimensions: Environmental, Social, and Economic, which collectively form the widely recognized framework of the Sustainable Development Goals (SDGs).

In the context of the global rise of Environmental, Social, and Governance (ESG) initiatives, corporate social responsibility (CSR) and sustainable management have been integrated as core components of corporate decision-making. Within the ESG framework, the "S"—representing the social dimension—places particular emphasis on gender equality and women's empowerment, both of which are recognized as essential elements for achieving sustainable governance (Women, 2018).

As emphasized by Women (2018), promoting gender equality and enhancing women's empowerment are critical to sustainable development. Women's economic empowerment refers broadly to women's ability to freely participate in market activities, control financial resources, engage in decision-making, and thereby elevate their social and economic status. Within the ESG structure, companies are expected not only to establish gender-equal and inclusive workplace policies but also to implement concrete measures such as equal pay for equal work, maternity protection, and increasing the representation of women in leadership roles, thereby fulfilling their social responsibility for sustainability.

Furthermore, the fifth goal of the United Nations SDGs — "Achieve gender equality and empower all women and girls"—is closely aligned with the social dimension of ESG, making it one of the key indicators in evaluating corporate social performance (Buvinic & Furst-Nichols, 2014; Chen & Tanaka, 2024).

In Taiwan, ESG, CSR, and the SDGs have increasingly shaped both public and private sector agendas, particularly in addressing gender issues. The implementation of ESG principles is encouraged through a combination of regulatory guidance, government incentives, and international investor expectations. Although Taiwan does not yet enforce strict ESG mandates, many Taiwanese firms, especially listed companies, have begun adopting ESG reporting practices and incorporating gender equality goals into their corporate strategies (Hsü, 2024).

Notably, Taiwan has made progress in advancing women's participation in the workforce and leadership positions, including through public policies such as the Gender Equality in Employment Act and maternity protection regulations. However, significant gaps remain in terms of equal pay, work-life balance, and representation in senior management. As such, the alignment between ESG's social dimension and Taiwan's pursuit of SDG Goal 5—Achieve gender equality and empower all women and girls—has become a critical benchmark for evaluating the country's progress in corporate sustainability and inclusive development (Buvinic & Furst-Nichols, 2014; Chen & Tanaka, 2024).

However, despite the widespread emphasis in domestic and international literature on the importance of gender equality and women's empowerment for sustainable development, empirical studies focusing on women's economic empowerment in the banking or financial sectors remain relatively scarce. In particular, within the ESG framework, there is a lack of systematic analysis and in-depth exploration regarding women's leadership participation (such as the proportion of female directors) and decision-making influence in the financial industry.

Some existing studies suggest that women's participation in senior governance roles may contribute to enhancing corporate transparency and stability (Kim et al., 2009; Kristianti, 2024; Klasen, 2017). However, in the context of Taiwan, there is still limited quantitative evidence on the relationship between women's governance indicators and financial institution behaviors, such as the occurrence of corporate violations. Therefore, this study will focus on investigating the relationship between women's participation indicators (including the proportion of female directors1 r, female senior executives, and female employees) and the likelihood of major violation events in the banking sector, aiming to fill this research gap and provide empirical evidence to inform sustainable

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governance and financial regulatory policies.

Therefore, the purpose of this study is to investigate whether the level of women's participation—measured by the proportion of female board directors, senior executives, and general employees—is significantly associated with the occurrence of major violation events in the banking sector.

The research framework of this study is organized into five main sections. The first section, Introduction, presents the background, research motivation, and objectives of the study. The second section, Literature Review, critically examines existing theories and empirical studies related to the topic, identifying research gaps and justifying the study's significance. The third section, Methodology, details the research design, data sources, variables, and analytical methods employed. The fourth section, Research Analysis, presents the empirical results, including data interpretation and discussion in relation to the research questions. Finally, the fifth section, Conclusions and Recommendations, summarizes key findings, discusses practical implications, and offers suggestions for future research and policy-making.

2. LITERATURE REVIEW INTEGRATION

In modern corporate governance systems, the board of directors is regarded as the core of governance structure. It serves two primary functions: providing strategic direction and managerial guidance to the executive team, and overseeing management on behalf of shareholders to ensure alignment with long-term interests and regulatory compliance. As the board operates under a collegial decision-making mechanism, its composition not only influences the dynamics between the board and management but also has a direct impact on firm performance (Kim et al., 2009).

International studies have shown that women often possess stronger empathy and prosocial tendencies (Eagly et al., 2003), and are more inclined to listen to the perspectives of various stakeholders (Zhang et al., 2013). Consequently, greater participation of women—particularly female directors—in corporate governance can enhance the inclusiveness of decision-making, especially in addressing environmental and social issues, thereby promoting corporate sustainability and reputation.

In recent years, to strengthen gender diversity and reform board governance, Taiwan's Financial Supervisory Commission (FSC, 2024) launched an eight-year "Sustainable Development Action Plan for Listed Companies" in 2023, with a strong emphasis on increasing female board representation. Key measures include: requiring newly listed companies to appoint at least one director of a different gender; encouraging existing listed companies to appoint at least one director of a different gender during board re-elections; and mandating that if either gender holds fewer than one-third of board seats, the company must disclose the reasons and improvement strategies in its annual report.

However, some scholars have raised concerns about the oversimplification of gender equality indices. Klasen (2017), Liebowitz and Zwingel (2014), and Sharma et al. (2021) argue that such indices often fail to capture the complex interplay of cultural, institutional, and structural factors. As a result, they may inadequately reflect the realities of gender (in)equality in countries where policy implementation is weak or gender disparities remain severe, thus diminishing the true meaning and purpose of such metrics.

According to Wu (2023), sixteen Taiwanese companies were included in the 2023 Bloomberg Gender-Equality Index (GEI), encompassing major financial and technology institutions such as Bank of Taiwan, King's Town Bank, AU Optronics, Fubon Financial, Cathay Financial, E.SUN Financial, Yuanta Financial, Taishin Financial, Shin Kong Financial, SinoPac Financial, CTBC Financial, First Financial, Sinbon Electronics, and Taiwan Cooperative Financial Holding. These companies demonstrated relatively well-established institutional frameworks and practical initiatives across five key areas: female leadership and talent pipeline, equal pay and gender pay parity, inclusive culture, anti-sexual harassment policies, and external brand and transparency.

This trend not only reflects the growing importance of gender equality in corporate values, but also highlights how gender governance has become an essential component of corporate sustainability and social responsibility. By participating in and being evaluated under the GEI, companies enhance the visibility and accountability of their gender-related policies. This participation signals a genuine commitment to creating equitable and inclusive work environments, sending a positive message to investors and stakeholders, and potentially improving overall ESG performance (Wu, 2023).

In summary, the reviewed literature suggests that gender-related indicators have become a critical trend in corporate sustainability and governance. Both the SDGs and the GEI aim to monitor and promote the implementation of gender equality through corporate policies, representation, and transparency, thereby advancing diversity and inclusion within organizations.

However, few empirical studies have systematically examined whether the adoption of these indicators leads to substantive improvements in corporate operations—particularly in terms of their effectiveness in disclosing and preventing major violations, such as regulatory breaches within the banking sector.

Accordingly, this study focuses on the banking industry to examine whether the integration of gender-related indicators—such as those outlined in the SDGs and GEI—has a tangible impact on the occurrence of major regulatory violations. Through empirical analysis, this research aims to assess the effectiveness of these sustainability and gender governance mechanisms in mitigating misconduct risk, enhancing corporate governance, and improving transparency within financial institutions.

3. METHODOLOGY

This study employs quantitative research methods to explore whether female participation can effectively mitigate corporate governance risks (referring to the occurrence of financial compliance incidents). To this end, this section is divided into three parts: first, an introduction to logistic regression analysis; second, an explanation of the Chi-square Test; and finally, an introduction to the relevant background of the research subjects.

3.1. Logistic Regression Model

Logistic regression model (LRM) analysis is a statistical method used to handle binary outcome variables (i.e., the dependent variable has only two possible outcomes, such as "yes/no" or "success/failure"). It estimates the impact of independent variables on the probability of an event occurring by establishing a relational model between independent and dependent variables (Hosmer Jr et al., 2013).

The core of the LRM lies in expressing the probability of the dependent variable using log-odds, which linearizes its relationship with independent variables, and solving parameters through maximum likelihood estimation. The results are typically presented as an Odds Ratio (OR), indicating the multiple change in the probability of an event occurring relative to the probability

of it not occurring when the independent variable changes by one unit (Bishop, 2006; Hastie et al., 2019).

This method is widely used in fields such as social sciences, medicine, and economics to explore the impact of various factors on specific binary outcomes, serving as an important tool for examining the association between risk factors and outcomes. The basic form of its model is as follows:

The LRM is a statistical method used to model the relationship between one or more independent variables and a binary dependent variable, where the outcome is typically coded as 0 or 1 (e.g., event does not occur vs. event occurs).

The LRM model estimates the probability P that the dependent variable equals 1, given the independent variables $\boldsymbol{X_1, X_2, \ldots, X_k}$. The model is expressed as (1):

$$\mathbf{logit}\,(\mathbf{P}) = \mathbf{ln}\left(\frac{\mathbf{P}}{\mathbf{1-P}}\right) = \boldsymbol{\beta_0} + \boldsymbol{\beta_1}\boldsymbol{X_1} + \cdots + \boldsymbol{\beta_k}\boldsymbol{X_k} \quad (1)$$

Where:

P is the probability that the event occurs (i.e., Y=1),

β_0 is the intercept,

β_1, β_2, ... X_k are the coefficients associated with the independent variables.

To convert the logit to a probability, the following transformation is used (2):

$$\mathrm{P} = \frac{1}{1+e^{(\beta_0+\beta_1 X_1+\cdots+\beta_k X_k)}} \quad (2)$$

ach coefficient *βi* can be interpreted using the OR, calculated as (3):

$$\mathrm{OR} = e^{\beta_i} \quad (3)$$

An odds ratio greater than 1 indicates that an increase in the corresponding independent variable increases the likelihood of the event occurring, while an odds ratio less than 1 suggests a decrease in that likelihood.

The LRM is widely used in the fields of social sciences, medicine, and economics. It is particularly suitable for analyzing the impact of multiple factors on binary outcomes and controlling for confounding variables. In this study, it serves as a key tool to assess whether female participation acts as a mitigating factor in corporate governance risks.

On the other hand, to ensure the stability and explanatory power of the LRM or linear regression analysis, a sufficient sample size is essential. An insufficient number of observations may lead to unstable estimation results or prevent meaningful inferences. Therefore, this study adopts the bootstrap method, which enhances the robustness of model estimation through repeated random resampling. This approach effectively reduces bias caused by sample variability and improves the reliability of statistical inference.

3.2. Chi-Square Test

The Chi-square test (χ^2 test) is a commonly used statistical method for examining whether there is a significant association between two categorical variables. The core idea is to compare the observed frequencies with the expected frequencies under the null hypothesis, which assumes that the two variables are independent. The Chi-square statistic is calculated using the following formula (4) (Turhan, 2020, Rana & Singhal, 2015).:

$$\chi^2 = \sum \frac{(O_{ij}-E_{ij})^2}{E_{ij}} \quad (4)$$

Where:

O_{ij}: Represents the observed frequency in the *i* th row and *j* th column.

E_{ij}: Represents the expected frequency under the null hypothesis in the same cell.

χ^2: Is the Chi-square statistic, which follows a Chi-square distribution.

The steps of the Chi-square test include: first, setting the null hypothesis (H_0), which assumes the two variables are independent; then, calculating the expected frequencies and the Chi-square statistic; finally, comparing the result with the critical value based on the degrees of freedom and significance level, or checking the p-value. If the result is statistically significant, it indicates a significant association between the two variables (Turhan, 2020, Rana & Singhal, 2015).

Therefore, the Chi-square test is particularly suitable for contingency table analysis. In this study, it is used to examine whether there is a statistically significant association between female participation—including the presence and proportion of women on the board of directors and in managerial positions—and the occurrence of financial violations.

3.3. Description of Research Samples

This study covers an analysis period from 2021 to 2023, spanning three years. The research focuses on Taiwan's publicly listed banks, with a total sample of 24 banks whose names and abbreviations are listed in Table 1.

In addition, this study focuses on the participation of women on corporate boards and in management positions, and confirms that such involvement can effectively reduce the likelihood of regulatory violations in the banking industry. The data were collected from the official website of the Financial Supervisory Commission (FSC), covering a three-year period (2021–2023). Information on major regulatory violations and their frequencies was gathered, including details such as the timing of penalties, the parties involved, the legal basis for sanctions, the reasons for the violations, and the final outcomes. These data serve as the foundation for the subsequent empirical analysis. The relevant statistics are summarized in Table 2.

Table 1: Sample size of FHCs.

No.	Company name	English abbreviation
1	Hua Nan Financial Holdings Co., Ltd.	HNFHC
2	Fubon Financial Holding Co., Ltd.	Fubon FHC
3	Cathay Financial Holding Co., Ltd.	Cathay FHC
4	China Development Financial Holding Corp.	CDFHC
5	E.Sun Financial Holding Co., Ltd.	E.Sun FHC
6	Yuanta Financial Holdings	Yuanta FHC
7	Mega Financial Holding Company Ltd.	Mega FHC
8	Taishin Financial Holding Co., Ltd.	Taishin FHC
9	Shin Kong Financial Holding Co., Ltd.	Shin Kong FHC
10	IBF Financial Holdings Co., Ltd.	Waterland FHC
11	Chinatrust Financial Holding Co., Ltd.	CTBC
12	SinoPac Financial Holdings Co., Ltd	SinoPac FHC
13	First Financial Holding Co., Ltd.	First FHC
14	Taiwan Cooperative Financial Holdings	TCFHC
15	Chang Hwa Commercial Bank	CHB
16	King's Town Bank	KTB
17	Taichung Commercial Bank	T.C.C.B.
18	Taiwan Business Bank	TBB
19	Bank of Kaohsiung	B.O.K
20	Union Bank of Taiwan	UBOT
21	Far Eastern International Bank	FEIB
22	EnTie Commercial Bank	EnTie Bank
23	O-Bank Co., Ltd.	O-Bank
24	The Shanghai Commercial & Savings Bank	SCSB

As shown in Table 2 and Figure 1, regulatory violations in the financial industry fluctuated over the three-year period from 2021 to 2023. In 2021, five companies were involved in a total of five violations. The number increased in 2022, with eight companies accounting for ten incidents—the highest frequency of violations during the three-year span. By 2023, the number dropped to four companies and four incidents, indicating a slight overall improvement in regulatory compliance.

Across the three years, a total of nine financial institutions experienced at least one regulatory violation, suggesting that certain institutions still face potential risks in corporate governance and legal compliance systems. Of particular concern is Taishin Financial Holding, which was the only company to report violations in all three consecutive years (2021–2023), reflecting the possibility of persistent or structural issues in its internal control and compliance mechanisms.

Table 2: Number of companies involved and incident frequencies by year.

Year	Number of companies with incidents	Total number of incidents
2021	5	5
2022	8	10
2023	4	4

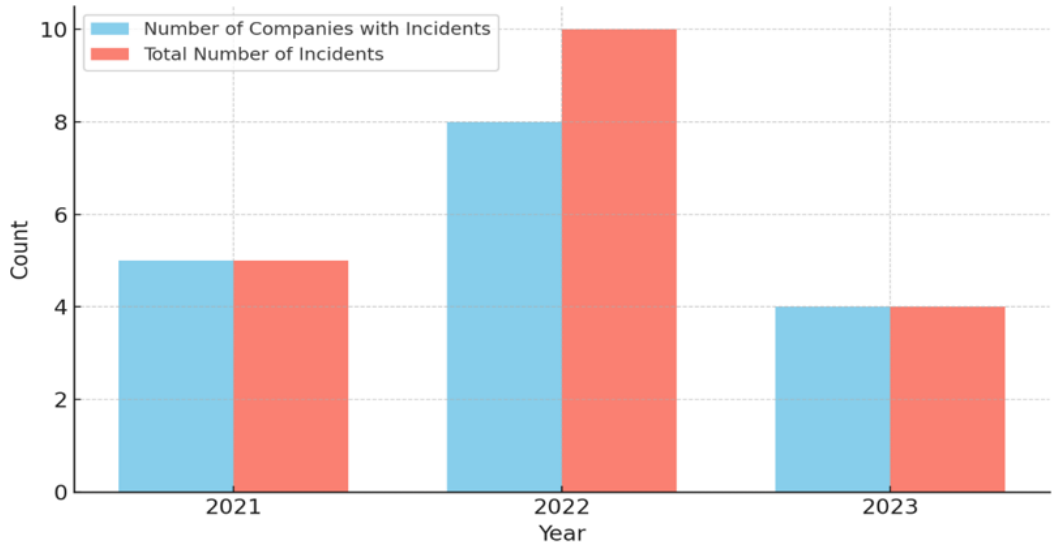

Figure 1: The violation situation of Taiwan's financial industry from 2021 to 2023.

4. RESULTS AND ANALYSIS

This section is divided into three parts: first, basic statistical analysis; second, the LRM model analysis; and third, Chi-square test analysis.

4.1. Definition of Basic Variables and Statistical Analysis

4.1.1. Definition of Basic Variables

This study focuses on gender diversity, which has been recognized as an important indicator for enhancing corporate governance quality. Female participation in the board of directors and management levels is believed to potentially reduce moral hazard and improve risk management capabilities. The following provides the standard definitions and explanations for female-related indicators and risk management capabilities:

A. Explanation of Female-related indicators

In this study, female-related indicators refer to measurable proportions of women's participation within an organization's governance and workforce. Specifically, these indicators include:

1. Female board ratio (FBR) (%): The proportion of female directors on the company's board, reflecting gender diversity at the highest decision-making level.
2. Female management percentage (FMP) (%): The proportion of women in management positions, representing female presence in leadership and decision-making roles.
3. Female employee percentage (FEP) (%): The percentage of female employees across the entire workforce, indicating overall gender representation.

These indicators are adopted in accordance with corporate governance principles and standards such as the GEI, which emphasize the importance of gender diversity in enhancing organizational performance and risk management.

B. Explanation of risk management capabilities

Risk management capabilities refer to a company's overall effectiveness in preventing, identifying, and addressing risks, with a particular focus on reducing moral hazard and compliance risks during governance processes. Effective risk management helps minimize violations and enhances the stability and credibility of business operations.

This study measures risk management capabilities using the following two indicators:

1. Number of violation events (VE): The count of violations committed by the company during the observation period. A lower number indicates better risk management capabilities.
2. Occurrence of event (O): A binary variable indicating whether the company has experienced any violation event, where 0 means no event occurred and 1 means an event occurred. This indicator is used to assess the probability of violations.

4.1.2. Statistical Analysis

The variables used in this study are sourced from the 2021 to 2023 sustainability reports of various banks, including female-related indicators, while risk management capabilities data are obtained from publicly available information on the website of the Financial Supervisory Commission (FSC, 2025). The purpose is to investigate the relationship between gender diversity indicators and corporate risk management capabilities.

Therefore, descriptive statistical analysis was conducted to examine the basic characteristics of each variable, including sample size, mean, standard deviation, maximum, and minimum values, in order to understand the data distribution and variability. The results are shown in Table 3.

This study analyzes the trends in female participation indicators and violation incidents from 2021 to 2023. The results show a steady increase in the ratio of female directors, reaching an average of 0.22 in 2023, with First Financial Holding showing the most significant growth. The female employee ratio remained stable at around 0.61, with Shin Kong Financial Holding consistently maintaining a high proportion. The female management ratio also remained steady, with KGI Securities showing a notable increase, reaching 0.663 in 2023. Regarding violations, the number of incidents increased each year since 2021, reaching 8 cases in 2023, with CTBC Financial Holding reporting the most violations. Overall, the rising level of female participation appears to be observably associated with corporate risk events.

Overall, there appears to be an observable association between the improvement in female participation and corporate risk events.

Table 3: Descriptive Statistics of Variables (2021–2023).

Variable	N	Min.	Max.	Mean	SE	SD
FBR (%)	72	0	0.57	0.18096	0.01624	0.13779
FMP (%)	72	0.3097	66.3	33.3811	2.87797	24.4204
FEP (%)	72	0.5	71.6	39.8154	3.32681	28.2289
VE	72	0	3	0.29	0.073	0.615
OE	72	0	1	0.22	0.049	0.419

4.2. Logistic Regression Model Analysis

This study employs the LRM model to analyze the impact of female participation—measured by the proportion of female board members, female managers, and female employees—on the occurrence of banking regulatory violations. The violation data are examined on two levels: (1) whether a violation occurred (binary classification: 0 = no, 1 = yes), and (2) the number of violations, which is used for descriptive and heterogeneity analyses.

For model estimation, the maximum likelihood estimation (MLE) method is used to estimate the parameters and assess the effect of each variable on the probability of violation occurrence. However, due to the relatively small sample size (72 observations over three years), the study further incorporates a bootstrapping approach to improve the robustness of parameter inference and mitigate potential small-sample biases. The bootstrapping procedure allows for reliable estimation of standard errors, biases, significance levels, and confidence intervals under limited sample conditions. All analyses are based on the bootstrap-adjusted results, and the odds ratios of key variables are interpreted to provide empirical evidence with policy relevance.

This study employs the LRM to analyze the occurrence of bank regulatory violations. The key results are:

1. Female Board Ratio (FBR%): B = -0.45, Odds Ratio (OR) = 0.638. This indicates that a one percentage point increase in the female board ratio is associated with a 36.2% decrease in the odds of violations. The result is highly significant ($p < .001$) with zero standard error and tight confidence intervals, indicating stable estimates.
2. Female Management Percentage (FMP%): B = -0.007, OR = 0.993. A one percentage point increase in female

management ratio corresponds to a slight 0.7% reduction in violation odds, also significant and stable.

3. Female Employee Percentage (FEP%): B = 0.001, OR = 1.001. Each one percentage point increase in female employees is associated with a marginal 0.1% increase in the odds of violations, with statistical significance.

Constant: B = -1.54, OR = 0.214, indicating the baseline odds of violation occurrence when all predictors are zero is approximately 21.4%.

As shown in Table 4, the female board ratio and female management percentage have a significant negative impact on bank regulatory violations, indicating that the higher the proportion of women in the board of directors and management, the lower the risk of violations, demonstrating a clear protective effect. In contrast, the proportion of female employees has a negligible and slightly positive effect on violations, suggesting that the contribution of female frontline employees to reducing violation risks is limited. Overall, increasing the participation of women in the board and management levels may help strengthen banks' internal governance and risk control, thereby reducing the likelihood of regulatory violations.

Table 4: Regression Results of Female Participation on Bank Violations.

Variable	B	OR(Exp(B))	Std. Error	p-value	95% CI Lower	95% CI Upper
FBR (%)	-0.45	0.638	0	< 0.001	-0.45	-0.45
FMP (%)	-0.007	0.993	0	< 0.001	-0.007	-0.007
FEP (%)	0.001	1.001	0	< 0.001	0.001	0.001
Constant	-1.54	0.214	0	< 0.001	-1.54	-1.54

Note: Bootstrap estimation was performed using stratified sampling with 1,000 resamples. The confidence level was set at 95%, and percentile confidence intervals were used. The stratification variables included female board ratio, female management percentage, and female employee percentage to ensure balanced representation across strata and improve the robustness of the estimates.

4.3. Chi-Square Test Analysis

This study further employs the chi-square test (χ^2 test) to thoroughly examine the impact of female participation ratios on the occurrence of regulatory violations in banks, specifically focusing on three indicators: the proportion of female directors, female employees, and female management. Through statistical analysis, this research evaluates whether the degree of female involvement is significantly associated with the presence or absence of regulatory violations in banks, thereby exploring the potential moderating role and practical implications of gender diversity in banking governance and compliance risk management.

According to the results of the chi-square tests, there is a significant association between the FBR and the occurrence of regulatory violations in banks: the Pearson chi-square (PCS) test yielded a p-value of 0.014 (< 0.05), and the likelihood ratio (LR) test showed a p-value of 0.005 (< 0.01), both reaching statistical significance.

In contrast, the female management proportion (FMP) and female employee proportion (FEP) showed no significant relationship with regulatory violations, with all test p-values exceeding 0.05 (FMP: PCS test = 0.474, LR test = 0.333, linear-by-linear (LBL) association = 0.600; FEP: PCS test = 0.575, LR test = 0.406, LBL association = 0.618).

Overall, the female board ratio has a statistically significant impact on the occurrence of regulatory violations in banks, while the proportions of female management and employees show no significant correlation. The related test results are summarized in Tables 5, 6, and 7.

Table 5: Chi-square test results for female board ratio (FBR).

Test items	Value	df	Asymptotic Significance (2sided)
PCS	53.196*	33	0.014*
LR	57.549	33	0.005*
LBL	0.081	1	0.777

Note: *p < 0.05, statistically significant.

Table 6: Chi-square test results for FMP.

Test items	Value	df	Asymptotic Significance (2sided)
PCS	69.107	69	0.474
LR	73.505	69	0.333
LBL	.275	1	0.600

Table 7: Chi-square test results for FEP.

Test items	Value	df	Asymptotic Significance (2sided)
PCS	59.271	62	0.575
LR	64.002	62	0.406
LBL	0.248	1	0.618

5. CONCLUSION AND POLICY IMPLICATIONS

The conclusion of this study is organized into two parts: Conclusion and Policy Implications, aiming to systematically summarize the research findings and provide practical recommendations.

5.1. Conclusion

The representation of female executives plays a significant protective role against regulatory violations in the banking sector. Research shows that increasing the proportion of female directors can substantially reduce the risk of misconduct, indicating that including women on the board enhances oversight mechanisms and improves decision-making quality. In comparison, while a higher proportion of female managers also contributes to lowering violation risks, the effect is relatively modest; the influence of female employees at the operational level appears to be even more limited.

Further statistical tests confirm this trend: there is a significant correlation between the proportion of female directors and the occurrence of banking violations. However, no statistically significant association is found between the proportions of female managers or female employees and regulatory violations.

In summary, increasing female representation on bank boards not only helps prevent regulatory misconduct but also serves as an important strategy for strengthening institutional governance and enhancing organizational transparency.

5.2. Policy Implications

The research findings highlight that the representation of women in senior governance roles within banks has a substantial protective effect against regulatory violations. An increase in the proportion of female directors is associated with a marked decrease in the risk of penalties and misconduct, suggesting that their presence enhances oversight, accountability, and risk awareness, thereby improving decision-making quality and corporate governance. As noted by Harvard Business Review, this trend could save banks tens of millions of dollars annually in violation-related costs (ResearchGate.net).

While female representation in management positions also contributes to lowering the likelihood of violations, its effect appears more limited—likely due to lower decision-making authority. Meanwhile, female representation at the staff level, though important for promoting diversity, shows minimal impact on the organization's overall risk control structure.

Further statistical analyses support the following observations:

1. The proportion of female directors is significantly correlated with lower rates of regulatory violations, confirming their preventive role in governance.
2. However, the proportions of female managers and female employees are not statistically associated with violation risks, indicating a relatively limited influence.

Based on these findings, the following policy recommendations are proposed:

1. Prioritize increasing female representation on corporate boards – This should go beyond symbolic diversity to ensure women hold influential roles and participate meaningfully in decision-making.
2. Encourage women's involvement in key governance functions – Including positions on audit and risk committees, where their ethical judgment and sensitivity to risk can have the most impact.
3. Institutionalize gender-balanced governance reforms – Such as setting up gender parity targets and transparent performance evaluation systems, to further leverage the positive impact of female leadership on governance effectiveness.

Last but not least, the findings and implications presented in this study are based on rigorous research methods, actual data, and empirical model setups. Therefore, when applying the empirical results of this study, it is important to carefully consider the spatiotemporal context and policy changes in Taiwan's financial holding company market during the study period, so as to enable more flexible and appropriate application in practical situations.

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