

# ***The Impact of Female Executives on Corporate Sustainable Growth and Financial Sustainability in the High-Tech Industry***

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**Abstract.** This article takes research data from A-share listed companies from 2015 to 2024 and adopts a two-way fixed effects model, which examines the impact of the percentage of female executives on corporate sustainable growth (CSG) and financial sustainable growth (SGR), and also observes the mediating effect of net profit margin on sales. CSG has a mean of 0.002 and a standard deviation of 0.256, while SGR has a mean of 0.052 with a smaller dispersion, overall showing robust financial growth potential; the proportion of female executives stands at 17.5%, ranging from 0% to 66.7%, reflecting substantial variation in women's representation among top leadership roles across listed firms. And for the most part, the percentage of female CEOs in companies is concentrated between 16% and 18%. The results indicate that the percentage of female CEOs significantly and positively promotes CSG and SGR. Net profit margin on sales exerts a partial mediating effect in this relationship, meaning female senior executives can boost corporate sustainable growth by raising the net profit margin on sales. This study provides empirical evidence for listed companies to optimize the gender structure of senior management teams and improve sustainable development capacity.

**Keywords:** Female Senior Executives, Corporate Sustainable Growth, Financial Sustainable Growth, Net Profit Margin on Sales, Mediating Effect

## **1. Introduction**

Due to the development of modern society, the growing emphasis on gender equality and the implementation of supportive policies have significantly enhanced women to participate in the labor market. An increasing number of women have joined corporate executive teams, gradually reshaping their structural composition and influencing managerial decision-making models [1]. Against the backdrop of deepening digital transformation, examining how executive characteristics affect the development of high-tech enterprises has gained both theoretical and practical significance.

Corporate decision-making and performance are largely influenced by the characteristics of top management. Managers' cognitive frameworks, values, and demographic attributes (including age, educational background, and gender) shape how information is interpreted and decisions are made, thereby influencing corporate performance [2]. Among these factors, gender has attracted growing

scholarly attention [3]. Despite progress in gender equality, structural barriers such as the "glass ceiling" persist, particularly in high-tech industries where female representation in leadership remains relatively low. Women often face greater challenges in reaching the top management of companies, which mainly results in distinctive perspectives, risk preferences, and governance behaviors once they attain leadership roles [4, 5].

Existing research on top management team heterogeneity has mostly focused on explicit characteristics such as team size, educational background, and overseas experience, while studies on gender diversity, especially its governance effects, remain limited. Focusing on the high-tech industry, this paper examines executive actions' impact on improving corporate governance by also considering financial sustainability. By analyzing decision-making, risk management, and corporate social responsibility, the findings are expected to offer practical insights for understanding the theoretical perspectives and empirical practices regarding gender diversity in corporate governance.

## 2. Literature review

From the perspective of female traits, existing studies find that, compared with male executives, female executives generally exhibit a more pronounced inclination toward risk aversion, especially in corporate environments with high uncertainty [6-8]. This difference is generally attributed to the physiological and psychological distinctions between men and women, as well as the differences in their social and cultural contexts.

Based on gender identity theory, many studies suggest that physiological and psychological differences between men and women lead women to be more cautious and conservative in the decision-making process, with a greater tendency to avoid risks. From a physiological perspective, Zuckerman et al. proposed that women exhibit higher risk aversion, which may be because the level of monoamine oxidase—an enzyme affecting risk decision-making—is significantly higher in women than in men [9].

In addition, some physiological studies explain women's risk aversion tendency from factors such as women's childbearing and breastfeeding roles, as well as the stronger activation of the amygdala when exposed to negative emotional information [10].

In addition to differences in risk choices, many studies show that female leaders take a leading role in promoting corporate responsibility. Female leaders do not focus solely on financial gain but also pay attention to social and environmental sustainability. This holistic perspective can guide companies toward innovation and sustainable development, which produces broader societal benefits [11, 12].

Therefore, hypothesis H1 is proposed: Increasing the proportion of women in executive positions may not only support the sustainable growth of the company, but also improve the financial sustainability of the company by increasing the company's net profit margin.

## 3. Variable selection and model construction

### 3.1. Sample selection and data source

This paper selects some random samples of Chinese companies related to A-shares from 2015 to 2024 and creates panel data for empirical analysis. To increase the reliability and representativeness of the results, the preparation in this article is carried out as follows: (1) Data from financial institutions are removed to reduce the impact of speculative practices on the results. (2) Data from ST and \*ST companies are removed. (3) Observations with no value for the main accounting years

are removed. (4) To mitigate the influence of outliers on estimation outcomes, all continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

All empirical data are all drawn from two authoritative sources: the WIND Database and the China Stock Market & Accounting Research Database (CSMAR). After the above processing, a total of 227,896 unbalanced panel observations from 2,908 listed companies covering the period 2015 to 2024 are finally obtained.

### 3.2. Variable selection

**Dependent Variable:** The dependent variables of this paper are corporate sustainable growth (CSG) and corporate financial sustainable growth (SGR). The corporate sustainable growth indicator is derived from the corporate sustainable growth rate. To improve the readability of the regression results, the indicator is divided by 10,000. Corporate financial sustainable growth (SGR) is calculated according to the Higgins Sustainable Growth Model, with the formula as follows:

$$SGR = Net\ Profit\ Margin \times Total\ Asset\ Turnover \times Equity\ Multiplier \times Retention\ Ratio \quad (1)$$

**Main explanatory variables:** The main explanatory variable in this study is the proportion of female managers, measured as the number of female members relative to the total number of managers in the top management team.

**Control Variables:** To address potential omitted-variable bias and mitigate endogeneity concerns, the author includes a comprehensive set of firm-level controls (Table 1).

Table 1. Variable description

| Variable Type            | Variable Name                   | Symbol  | Measurement                                                                    |
|--------------------------|---------------------------------|---------|--------------------------------------------------------------------------------|
| Dependent Variable       | Corporate Sustainable Growth    | CSG     | CSMAR sustainable growth index / 10,000                                        |
|                          | Financial Sustainable Growth    | SGR     | Net Profit Margin × Total Asset Turnover × Equity Multiplier × Retention Ratio |
| Key Independent Variable | Proportion of Female Executives | female  | Number of female executives / total number of executives                       |
| Control Variables        | Firm Size                       | Size    | Natural logarithm of total annual assets                                       |
|                          | Leverage Ratio                  | Lev     | Total liabilities at year-end / total assets at year-end                       |
|                          | Return on Assets                | ROA     | Net profit / total assets                                                      |
|                          | Firm Growth                     | Growth  | (Current year operating revenue / previous year operating revenue) – 1         |
|                          | Firm Age                        | FirmAge | ln (current year – year of establishment + 1)                                  |
|                          | Board Size                      | Board   | Natural logarithm of number of board members                                   |
|                          | Independent Director Ratio      | Indep   | Number of independent directors / total number of directors                    |
|                          | Ownership Concentration         | Top1    | Shares held by largest shareholder / total shares                              |

### 3.3. Research methods and model construction

To empirically evaluate the proposed hypotheses, this paper begin by conducting a Hausman specification test on the panel dataset. The test yields a Hausman statistic of 38.01 ( $p= 0.0024$ ), leading to rejection of the null hypothesis favoring the random-effects estimator, indicating that unobserved firm-specific effects are correlated with the regressors. Concurrently,. a F-test for slope homogeneity rejects the pooled OLS specification ( $F = 8.97$ ,  $p < 0.001$ ), confirming the presence of significant cross-sectional heterogeneity. These results jointly justify the adoption of the fixed-effects estimation framework.

Accordingly, the author estimates a two-way fixed-effects model (controlling for both firm-specific and time-invariant unobservables) to assess how the share of female executives influences corporate sustainable growth and financial sustainability. The baseline specification is presented in Equation (1):

$$CSG_{\{i,t\}} = \alpha_0 + \alpha_1 female_{\{i,t\}} + \alpha_{ccontrol_{\{i,t\}}} + \mu_i + \delta_t + \varepsilon_{\{i,t\}} \quad (2)$$

$$SGR_{\{i,t\}} = \varphi_0 + \varphi_1 female_{\{i,t\}} + \varphi_{ccontrol_{\{i,t\}}} + \mu_i + \delta_t + \varepsilon_{\{i,t\}} \quad (3)$$

where  $CSG_{\{i,t\}}$  represents firm  $i$ 's sustainable growth in year  $t$ ;  $female_{\{i,t\}}$  denotes the proportion of female executives;  $ccontrol_{\{i,t\}}$  includes control variables;  $\mu_i$  and  $\delta_t$  are firm and time fixed effects; and  $\varepsilon_{\{i,t\}}$  is the error term.

## 4. Results

### 4.1. Descriptive analysis of main variables

Table 2. Summary statistics of main variables

| Variable | N     | Mean    | SD     | Min     | p50     | Max   |
|----------|-------|---------|--------|---------|---------|-------|
| CSG      | 22789 | 0.00200 | 0.256  | -2.111  | 0.00100 | 1.829 |
| SGR      | 22789 | 0.0520  | 0.0380 | -0.0270 | 0.0470  | 0.233 |
| female   | 22789 | 0.175   | 0.160  | 0       | 0.167   | 0.667 |
| Size     | 22789 | 22.38   | 1.279  | 20.00   | 22.16   | 26.40 |
| Lev      | 22789 | 0.389   | 0.182  | 0.0540  | 0.381   | 0.855 |
| ROA      | 22789 | 0.0490  | 0.0370 | 0       | 0.0410  | 0.194 |
| Growth   | 22789 | 0.145   | 0.296  | -0.537  | 0.0980  | 1.680 |
| FirmAge  | 22789 | 3.019   | 0.290  | 2.197   | 3.045   | 3.638 |
| Board    | 22789 | 2.103   | 0.192  | 1.609   | 2.197   | 2.565 |
| Indep    | 22789 | 0.378   | 0.0530 | 0.333   | 0.364   | 0.571 |
| Top1     | 22789 | 0.336   | 0.146  | 0.0820  | 0.314   | 0.740 |

Overall, the sample in Table 2 exhibits considerable variation in both CSG and SGR, indicating heterogeneous development performance among firms. While the average level of CSG is close to zero with a relatively large standard deviation, SGR shows a more stable distribution with moderate dispersion, suggesting that more firms maintain relatively steady financial growth capacity.

For the key independent variable, the share of female has a mean value of 0.175, with substantial variation across firms. This indicates that female participation in top management differs significantly, albeit predominantly at modest level.

As for control variables, firm size and board characteristics are relatively stable across the sample, while firm growth displays higher variability, reflecting differences in development potential among firms. Leverage and profitability indicators fall within reasonable ranges, suggesting no abnormal financial conditions in the sample. Ownership concentration also varies across firms, indicating differences in governance structures.

Overall, the distribution of all variables are reasonable, without obvious outliers.

## 4.2. Correlation analysis

The analysis of the coefficients in this article is presented in Table 3. A higher share of female leaders is significantly associated—both economically and statistically—with enhanced corporate sustainable growth and improved financial sustainability, as evidenced by 1% significance levels. These findings suggest that greater gender diversity in leadership fosters robust operational expansion and stronger financial resilience. The conclusion of this article is provisionally verified, but for further verification, specific experimental results are still needed.

Table 3. Correlation analysis

| Variable<br>s | CSG           | SGR           | female        | Size          | Lev           | ROA           | Growth        | FirmAge       | Board         | Indep        | Top1      |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|-----------|
| CSG           | 1.000         |               |               |               |               |               |               |               |               |              |           |
| SGR           | 0.014**       | 1.000         |               |               |               |               |               |               |               |              |           |
| female        | 0.043***      | 0.119***      | 1.000         |               |               |               |               |               |               |              |           |
| Size          | -0.048**<br>* | 0.106***      | -0.121**<br>* | 1.000         |               |               |               |               |               |              |           |
| Lev           | -0.053**<br>* | 0.009         | -0.101**<br>* | 0.552**<br>*  | 1.000         |               |               |               |               |              |           |
| ROA           | 0.041***      | 0.729***      | 0.123***      | -0.118**<br>* | -0.427**<br>* | 1.000         |               |               |               |              |           |
| Growth        | 0.024***      | 0.256***      | 0.017***      | -0.008        | 0.057***      | 0.168***      | 1.000         |               |               |              |           |
| FirmAge       | -0.039**<br>* | -0.058**<br>* | 0.015***      | 0.198**<br>*  | 0.144***      | -0.086**<br>* | -0.122**<br>* | 1.000         |               |              |           |
| Board         | -0.029**<br>* | -0.001        | -0.108**<br>* | 0.267**<br>*  | 0.142***      | -0.037**<br>* | -0.006        | 0.105***      | 1.000         |              |           |
| Indep         | 0.026***      | 0.014**       | 0.059***      | -0.004        | -0.009*       | 0.007*        | -0.009*       | -0.023**<br>* | -0.586**<br>* | 1.000        |           |
| Top1          | -0.007        | 0.029***      | -0.018**<br>* | 0.168**<br>*  | 0.044***      | 0.089***      | -0.031**<br>* | -0.037**<br>* | -0.008*       | 0.053**<br>* | 1.00<br>0 |

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 4.3. Multicollinearity test and direct effect analysis

Table 4. Multicollinearity test

| Variable | VIF   | 1/VIF |
|----------|-------|-------|
| Lev      | 1.830 | 0.546 |
| Board    | 1.720 | 0.583 |
| Size     | 1.690 | 0.592 |
| Indep    | 1.590 | 0.630 |
| ROA      | 1.350 | 0.742 |
| Growth   | 1.080 | 0.928 |
| FirmAge  | 1.070 | 0.933 |
| Top1     | 1.050 | 0.950 |
| female   | 1.040 | 0.964 |
| Mean     | 1.380 |       |

Table 4 reports the VIF diagnostics; all VIF values fall below 10, confirming the absence of substantial multicollinearity among the explanatory variables. Table 5 presents the baseline and robustness regression estimates linking the share of female executives to both corporate sustainable growth and financial sustainability. Across all specifications—including models with and without control variables, the coefficient on FemaleExec remains positive and statistically significant at the 1% level. These consistent results support the proposition that greater female representation in executive leadership positively drives long-term corporate and financial sustainability, thereby empirically validating Hypothesis H1.

Table 5. Regression results

|         | (1) CSG              | (2) SGR              | (3) CSG             | (4) SGR                |
|---------|----------------------|----------------------|---------------------|------------------------|
| female  | 0.0494***<br>(2.781) | 0.0197***<br>(6.210) | 0.0488**<br>(2.530) | 0.0045***<br>(3.248)   |
| Size    |                      |                      | 0.0022<br>(0.266)   | 0.0008<br>(1.495)      |
| Lev     |                      |                      | -0.0251<br>(-0.899) | 0.0927***<br>(43.240)  |
| ROA     |                      |                      | 0.0374<br>(0.429)   | 1.1110***<br>(141.437) |
| Growth  |                      |                      | 0.0202**<br>(2.356) | 0.0022***<br>(4.534)   |
| FirmAge |                      |                      | -0.0357<br>(-0.656) | 0.0012<br>(0.308)      |
| Board   |                      |                      | 0.0002<br>(0.008)   | -0.0010<br>(-0.530)    |
| Indep   |                      |                      | 0.0191<br>(0.248)   | 0.0100*<br>(1.822)     |

Table 5. (continued)

|               |                       |                       |                     |                        |
|---------------|-----------------------|-----------------------|---------------------|------------------------|
| Top1          |                       |                       | -0.0096<br>(-0.172) | -0.0144***<br>(-4.273) |
| _cons         | -0.0067**<br>(-2.151) | 0.0486***<br>(87.675) | 0.0526<br>(0.208)   | -0.0577***<br>(-3.429) |
| Individual FE | Yes                   | Yes                   | Yes                 | Yes                    |
| Year FE       | Yes                   | Yes                   | Yes                 | Yes                    |
| N             | 22789                 | 22789                 | 22789               | 22789                  |
| R2            | 0.215                 | 0.501                 | 0.215               | 0.857                  |
| Adj. R2       | 0.037                 | 0.389                 | 0.037               | 0.824                  |
| F             | 7.735                 | 38.561                | 1.639               | 2493.714               |

Notes: Statistical significance is denoted by \*\*\*, \*\*, and \* at the 1%, 5%, and 10% levels, respectively; robust t-statistics (clustered at the firm level) are reported in parentheses. This convention applies to all subsequent tables.

#### 4.4. Mediating effect analysis

This study employs a mediation framework to explore the underlying mechanism linking female executive representation to corporate sustainable growth and financial sustainability, specifically testing whether net profit margin (NetProfit) mediates these relationships.

$$NetProfit_{I,t} = \beta_0 + \beta_1 female_{I,t} + \beta_c control_{I,t} + \mu_i + \delta_t + \epsilon_{I,t} \quad (4)$$

$$CSG_{I,t} = \gamma_0 + \gamma_1 female_{I,t} + \gamma_2 NetProfit_{I,t} + \gamma_c control_{I,t} + \mu_i + \delta_t + \epsilon_{I,t} \quad (5)$$

$$SGR_{I,t} = \delta_0 + \delta_1 female_{I,t} + \delta_2 NetProfit_{I,t} + \delta_c control_{I,t} + \mu_i + \delta_t + \epsilon_{I,t} \quad (6)$$

Models 2 and 3 show the company's net profit percentage. The results of the multiple regression are presented in Table 6. Based on the main statistical regression results, when taking the net profit percentage (net profit) as the dependent variable, the coefficient of the percentage of female directors (female) is positive at the 1% level, indicating that an increase in the percentage of female directors leads to an increase in the company's net profit percentage.

Moreover, in Table 5 columns (3) (4), when the proportion of female leaders (female) and net profit margin (NetProfit) were included, the net profit margin coefficients (NetProfit) were significantly positive at the 5% and 1% levels. The coefficient and significance level of the proportion of female leaders (female) decreased compared to the baseline regression. This indicates that the company's net profit flow acts as an intermediary variable between the proportion of female executives and corporate sustainable growth and corporate financial sustainable growth. Increasing the share of female executives can enhance the company's net profit flow, thereby encouraging both corporate sustainable growth and corporate financial sustainable growth.

Table 6. Mediating effect

|        | (1) NetProfit        | (2) CSG              | (3) SGR             |
|--------|----------------------|----------------------|---------------------|
| female | 0.0097***<br>(3.268) | 0.0476***<br>(2.689) | 0.0039**<br>(2.460) |

Table 6. (continued)

|                         |            |          |            |
|-------------------------|------------|----------|------------|
| NetProfit               |            | 0.1306** | 0.0548***  |
|                         |            | (2.384)  | (8.793)    |
| Size                    | 0.0209***  | -0.0005  | -0.0003    |
|                         | (15.512)   | (-0.073) | (-0.501)   |
| Lev                     | -0.0378*** | -0.0202  | 0.0948***  |
|                         | (-8.358)   | (-0.794) | (37.056)   |
| ROA                     | 1.7349***  | -0.1893  | 1.0160***  |
|                         | (67.767)   | (-1.386) | (64.122)   |
| Growth                  | -0.0129*** | 0.0218** | 0.0029***  |
|                         | (-9.415)   | (2.541)  | (5.777)    |
| FirmAge                 | -0.0471*** | -0.0296  | 0.0037     |
|                         | (-5.714)   | (-0.584) | (0.734)    |
| Board                   | -0.0039    | 0.0007   | -0.0008    |
|                         | (-1.007)   | (0.032)  | (-0.337)   |
| Indep                   | -0.0050    | 0.0198   | 0.0103     |
|                         | (-0.476)   | (0.282)  | (1.521)    |
| Top1                    | 0.0071     | -0.0105  | -0.0148*** |
|                         | (0.991)    | (-0.230) | (-3.414)   |
| _cons                   | -0.2843*** | 0.0897   | -0.0422**  |
|                         | (-7.531)   | (0.413)  | (-1.968)   |
| Individual FE / Year FE | Yes        | Yes      | Yes        |
| N                       | 22789      | 22789    | 22789      |
| R2                      | 0.904      | 0.215    | 0.859      |
| Adj. R2                 | 0.882      | 0.038    | 0.827      |
| F                       | 701.415    | 2.237    | 1321.522   |

## 5. Conclusion

This paper investigates the impact of female executive representation on CSG and SGR using 22,789 observations from 2,908 China A-share listed firms (2015-2024), excluding financial and ST/\*ST firms. The findings show that a higher proportion of female executives significantly promotes both CSG and SGR, confirming Hypothesis H1. Mechanism analysis further indicates that net profit margin partially mediates this relationship, suggesting that female executives contribute to sustainable growth not only directly through strategic decision-making but also indirectly by enhancing profitability.

The results underscore that gender-diverse executive leadership is a critical driver of firms' long-term strategic resilience and sustainable performance. Practically, listed firms can optimize executive selection to increase female representation, leveraging their strengths in risk management, operational efficiency, and profitability. Additionally, regulators and capital markets may consider these insights to guide corporate governance reforms, encourage diverse leadership, and support high-quality market development.



This study has limitations. Future research could examine heterogeneity across industries, firm ownership, and regional marketization, as well as explore additional mediating or moderating variables, such as innovation, internal controls, and market dynamics. Employing advanced methodologies to address endogeneity would further enhance the robustness and generalizability of the findings. Overall, the study provides empirical evidence that female executives play a key role in fostering corporate sustainable growth, offering both theoretical and practical implications for governance and management strategies.

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