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The Effect of Enterprise Risk Management on Capital Structure Agility: The Role of Board Structure

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ABSTRACT

The current study investigates the effect of enterprise risk management (ERM) on the agility of capital structure (CSA) by considering the role of the board's characteristics. The data from 124 publicly listed companies on the Tehran Stock Exchange (TSE) between 2013 and 2022 were collected, and hypotheses were tested using a multivariable regression model. Flannery & Rang's (2006) model, and Aprelia et al. (2022) model were used to evaluate CSA and ERM, respectively. The results provide evidence of the usefulness of employing ERM in adjusting capital structure toward the optimal state, and that ERM mechanisms significantly enhance this agility. Additionally, the board's independence strengthens the impact of using ERM on the CSA. Therefore, it is suggested that companies by forming and strengthening the position of the risk committee could achieve the optimal capital structure and minimize capital costs. Moreover, independent managers will increase the agility of the movement toward the optimal state.

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1. Introduction

Nowadays, companies' operations are growing and becoming increasingly competitive. Companies must deal with several national and international problems and expand activities through new investments to survive (Bugshan & Bakry, 2023). Among various decisions related to capital budgeting, the compositions of financing and capital structure are the main decision-making areas of financial managers (Akbar et al., 2023; Salehi & Hassanzadeh, 2024). Research in capital structure has been going on for more than half a century, and the challenge of influencing the value of financial decisions affects the capital structure (Serrasqueiro et al., 2022). If companies choose an optimal combination of debt and equity in financing methods to minimize financing costs, this action will maximize shareholders interests. In the meantime, it is necessary to pay attention to the discussion of agility in adjusting the capital structure. In a sense, the company adjusts its capital structure reasonably and moves toward the optimal financial leverage it has already targeted and achieved (Lemma & Negash, 2014). In this regard, along with rapid globalization, companies constantly face risks that can affect their ability to achieve the optimal capital structure. Company-specific and market risks can reduce the speed of financial leverage adjustment toward the target leverage (Hegde et al., 2023). If risk management is performed regularly to identify potential issues and find solutions, other processes such as organizing, budgeting, and cost control can be quickly implemented (Darškuvienė et al., 2021). Therefore, is it possible to enhance the agility of the capital structure to reach the optimal structure with risk management?

The final decision regarding the combination of financial leverage is one of the managers' primary duties, and this factor influences the company's expected risk and return (Brooks et al., 2020). Therefore, considering the critical importance of risk management and the role of risks in companies achieving an optimal capital structure, pursuing this objective is of great importance, as are the contributions of the current study. The lack of definitive findings regarding the effects of the board structure and characteristics on the relationship between risk management and capital structure agility in this area is evident, as demonstrated in the current study. Therefore, the study's results in the capital market will help companies know how to have a flexible capital structure by managing the risks and achieving optimal capital structure, high performance and corporate value.

2. Literature Review

Financial managers should plan the capital structure optimally and achieve the optimal structure when each share's market value is maximized (Sardo & Serrasqueiro, 2017; Ahmadi et al., 2023). The optimal capital structure is a combination that is influenced by the correct and targeted use of financial resources and the acquisition of a reasonable and suitable return commensurate with the risks. The speed of movement of economic enterprises towards the optimal ratio depends on various factors, and the cost of adjusting the capital structure is one of the most important factors (Naveed et al., 2015). The most critical issue in the capital structure is the correct estimation of their movement speed toward the target lever. Most economic enterprises deviate from target capital and often act to adjust capital structure when the benefits outweigh the cost, showing the agility of capital structure more clearly (Rashid, 2016). The adjustment speed indicates movement toward the optimal capital structure and clearly shows financing policies (Hegde et al., 2022; Hegde et al, 2023). The importance of optimal capital structure is such that the growth and survival of companies depend on factors such as the expected risk and return of companies. One of the essential factors facing companies in achieving optimal capital structure is internal and external risks (Abdeljawad & Mat Nor, 2017). The nature of risk management in addition to identifying risks, is that risk management systems can be used regularly to identify potential issues, find solutions and quickly complete other processes such as organizing, planning, budgeting, and cost control. Risk management can consider measuring or evaluating risk and, then, designing risk management strategies (Wong, 2014; Meidell & Røsok, 2021). It is expected that with the establishment and use of risk management mechanisms in companies, along with reducing the threats to the business environment, the speed of adjusting the capital structure towards the optimal structure will also increase. As shown by Derakhsan et al. (2024), by controlling the risks facing the company, it is possible to obtain higher financing through commercial credit and reduce the need to keep cash in purchases. Additionally, Fayaz (2018)

demonstrated a relationship between business risk management and company value, and therefore, according to the arguments, the first hypothesis is postulated as follows:

H1: Optimal risk management significantly affects capital structure agility.

The optimal composition and structure of the board and its impact on the companies' performance have been studied in recent years by Li and Roberts (2018), and Faysal et al. (2020). Overall, this indicates the effectiveness of operations and financial indicators of the board composition and structure. The corporate governance system (structural features of the board) includes a set of relationships between the management, the board, shareholders and other interested groups. One of the strong pillars of corporate governance is the separation of the CEO's position from the board's chairman. Studies indicate that in companies where the position of the CEO is separated from the board's chairman, due to the lack of exclusive decision-making and executive power in control of a specific individual, it leads to the improvement of the operational financial indicators. In the current study, it seems that in companies where the CEO's duties and positions are separated from the chairman, the management has a stronger and higher position than others. In that position, business risk management and financing indicators are expected to improve due to the possibility of using different opinions. Therefore, the second hypothesis is postulated as follows:

H2: The strong management position affects the relationship between optimal risk management and capital structure agility.

Finally, it also seems that the presence of non-executives on the board with a focus on monitoring the non-executive directors while increasing the board independence has led to the improvement of the company's operational and financial indicators. The result is reflected in an increase in productivity and profitability by better business risk operating and a reduction in the cost of financing and capital due to enhanced agility in financial resources management. Homayoun et al. (2024) found that intellectual capital and innovative performance can enhance organizational agility.

Finally, the third hypothesis is postulated as follows:

H3: The board's independence affects the relationship between the effect of optimal risk management and capital structure agility.

Rostami et al. (2023) demonstrated that business risk management has a positive effect on debt capacity, and business risk management effect during the recession stages of the life cycle of companies is more dominant. As expected, debt capacity has improved significantly when business risk management mechanisms are better utilized. With the better application of risk management mechanisms, the reliability of loans and creditors increases, and as a result, the debt capacity is also improved. Aref Manesh et al. (2022) stated that risk management has a significant relationship with competitive advantage and performance. Fatheh and Karami Nejad (2022) argued that companies with a financial surplus tend to reduce the debt ratio when the debt ratio is higher than the target debt ratio. Additionally, companies under centralized (less competitive) leverage tend to adjust their debt ratio and increase it. In companies with dynamic leverage, the drive to reduce the debt ratio is stronger and the move towards target leverage occurs faster. Moradi et al. (2022) showed that corporate governance and company performance jointly help to improve the capital structure. Pathak and Chandani (2023) show that profitability, liquidity, and non-debt tax shield have a negative relationship, while company size, growth potential, age, and tangibility negatively affect the capital structure. Jat et al. (2023) showed that the provision of advanced services affects the effectiveness of risk management.

Providing advanced services strengthens the preventive dimension of risk management. The analysis shows the direct impact of risk management on financial performance. However, proactive risk management indirectly enhances financial performance by supporting reactive risk management. Aprilia et al. (2022) found that leverage has a negative effect, and risk management has a positive and significant impact on company value. Zou and Bai (2022) show that if the company pays low cash dividends, the capital structure adjustment speed is faster, and the behavior of profit distribution conflicts with financing needs. Conversely, if the company pays higher cash dividends, the capital structure adjustment is slower, and a high dividend policy conflicts with market timing financing strategies. In summary, the behavior of earnings distribution significantly affects the speed of capital

structure adjustment, and the conflict between earnings distribution and financing strategy also impactsa the speed of capital structure adjustment. Rostami et al. (2022) showed that management short-sightedness has a negative effect on the speed of adjusting the financial leverage. Ezeani et al. (2023) also showed that the capital structure is compatible with the dynamics of the corporate governance environment, and companies in a stakeholder-oriented corporate governance environment adjust leverage faster than companies in a shareholder environment. Miloud (2022) documented that the quality of the governance system is essential in helping the company achieve the target leverage.

3. Research Methodology

The statistical population of the research includes all the companies listed on the Tehran Stock Exchange. Due to the possibility of fluctuations in the data of a financial period, as in similar studies, the data were collected for ten years, from 2013 to 2022. To make the information comparable, March is considered the end of the financial year. Furthermore, the data related to the variables should be available; banks and financial institutions are excluded from the study. Ultimately, 124 companies were selected as the final sample of the research. Data was analyzed using the multivariable regression model.

3.1. Variables Measurement

3.1.1. The Dependent Variable

The speed of adjusting the capital structure towards the optimal capital structure has been used to measure the degree of capital structure agility. Several studies have used the partial adjustment model to calculate the speed of financial leverage adjustment (Flannery & Rangan, 2006). In the partial adjustment model, the actual and optimal financial leverage must be estimated first; however, the effect of the optimal leverage cannot be calculated directly. The influential factors outside the company are considered estimators' errors, and the optimal leverage is estimated using the following model previously used in the prior studies (Rostami et al., 2022). It is necessary to use the data from the previous five periods to calculate the final variable. To make the calculations easier, the rolling regression features in the software are utilized, resulting in an adjustment rate for each year of the company, which is considered capital structure agility.

$$L^{*}_{it} = \beta' x_{it} + u_{it} \quad (1)$$

Where L^{*}_{it} is optimal leverage; x_{it} is the vector of characteristics of each company related to the income and expenses of the activity under different debt (leverage) ratios; β' is a coefficient of the estimated estimate of the explained vector, and u_{it} is the residual value of the model.

As stated, the characteristics have been selected by variables that have been used numerous times in this field of research (Rostami et al., 2022).

$$L^{*}_{it} = \beta_1 SIZE_{it} + \beta_2 EBIT_{it} + \beta_3 MB_{it} + \beta_4 EV_{it} + \beta_5 AGE_{it} + \beta_6 FA_{it} + \beta_7 FIMB_{it} + u_{it} \quad (2)$$

1. Financial deficit (FIMB): dividends paid + sum of net flow of investment activities + changes in working capital - operating cash / total assets
2. Company growth (MB): The ratio of a capital market value to the book value.
3. Changes in income (EV): The absolute value of the difference between the income of each period and the average income of the company over five periods is divided by the average income over five periods.
4. Profitability ratio (EBIT): dividing the earnings before interest and tax by total assets
5. The ratio of tangible fixed assets (FA): the ratio of property, machinery, and equipment to total assets
6. Company size (SIZE): the natural logarithm of total assets at the end of the period.
7. Age of the company: the natural logarithm of the difference between the current year and the year of establishment of the company.

By placing the variables in the first model, the optimal leverage is calculated using the second model, in which L^{*}_{it} is the optimal leverage and u_{it} is the model's residual.

The partial adjustment model mentioned above, used to calculate the optimal leverage adjustment speed, is the partial adjustment model of Fama and French (2002), combined with the following model, and its theoretical model is as follows:

$$\Delta L_{it} = \lambda\left(L^{*}_{it} - L_{it-1}\right) + v_{it} \quad (3)$$

Where in; ΔL_{it} is the result of subtracting the real leverage of period t from the real leverage of period t-1; L^{*}_{it}, is the optimal leverage; $L\_(_{it-1})$, denotes the real leverage of period t-1; λ represents the speed of adjustment; and v_{it}, specifies the specification of the one-way residuals, which are subject to the fixed effects of each company's characteristics (u_{it} model 2).

This model allows the company to reduce the gap between its actual and target leverage by one unit every year. The range of the coefficient 1 is between zero and one, and a value close to one indicates a higher adjustment speed and vice versa. For the final calculation of the adjustment speed of the above two patterns, the following formula is obtained by merging (Rostami et al., 2022).

$$L_{it} = \varnothing_1 SIZE_{it} + \varnothing_2 EBIT_{it} + \varnothing_3 GROW_{it} + \varnothing_4 EV_{it} + \varnothing_5 AGE_{it} + \beta\varnothing_6 FA_{it} + \varnothing_7 FIMB_{it} + (1-\lambda)L_{it-1} + v_{it} \quad (4)$$

where in; ∅_1 to ∅_7 is equal to λ β^'; λ is the rate of adjustment, and L_(it-1) represents the real leverage of period t-1. The rest of the components are according to the above model, which introduced the characteristics of each company earlier.

The presented model generally indicates that companies always seek to make decisions that reduce the distance between the two actual leverage levers and the target, and to achieve the optimal leverage, while companies move towards the optimal lever at the same speed. Optimal financial strategies are on the move (Fama & French, 2002). Finally, the leverage adjustment speed was calculated by subtracting the estimated coefficient for $L\_(_{it-1})$ from one.

capital structure adjustment speed = 1-(1-λ)

3.1.2. Independent Variable: Enterprise Risk Management (ERM)

Based on Gordon et al. (2009), the following comprehensive model was used to operationalize risk management. These factors are identified based on the ability to achieve the objectives set by the companies as follows:

$$ERMI_{i,t} = \beta_0 + \beta_1 EU_{it} + \beta_2 CI_{it} + \beta_3 FS_{it} + \beta_4 FC_{it} + \beta_5 MBD_{it} + \varepsilon_{it}$$

ERMI denotes risk management components according to the COSO model; EU specifies environmental uncertainty factor; CI represents the level of competition in industries; FS is firm size;, FC signifies firm complexity, and MBD is supervisory role of the board. In the introduced model, Ɛ is the residual of the model; the lower the residual component of the model, the higher the company's risk management, and the higher the residual component of the model, the lower the risk management. Therefore, the absolute value of the residual multiplied by -1 indicates risk management and the introduction of each indicator is discussed in the following section. The reliability and validity of the present model in the country under study have been confirmed by previous studies (Qadri & Tarivardi, 2019; Rostami et al., 2022; 2023).

Risk Management Components (ERMI)

The model introduced by COSO to measure risk management is as follows:

$$ERM_I = \sum_{k=1}^{2} Strategy + \sum_{k=1}^{2} Operation + \sum_{k=1}^{2} reporting + \sum_{k=1}^{2} Compliance$$

Strategy

Strategy refers to maintaining market competition. Companies operating in a specific industry try to make the most of the sales opportunities that arise to maintain a competitive advantage. Sales that are higher than the industry average indicate a successful competitive strategy, and maintaining the company's position is measured using the following relationship (Gordon et al., 2009).

$$Strategy_1 = \frac{Sales_{it} - \mu Sales}{\sigma Sales}$$

Productivity

Productivity is operationalized by the relationship between business inputs and outputs while starting a business. If the output exceeds the inputs, it demonstrates high performance and productivity. To operationalize productivity, two models can be used as follows:

$$Operation_1 = \frac{Sales}{Total\ Assets}$$

$$Operation_2 = \frac{Sales}{Number\ of\ \ Employees}$$

Financial Reporting Risk Management

Disclosing fraud-free and transparent reports can guarantee the company's survival and reduce financial risk. To operationalize this factor, the Jones-adjusted model was used, followed by the subsequent model (Gordon et al., 2009).

$$Reporting\,1 = \frac{non-accrual\ accrual\ of\ \ absolute value\ items}{optional\ non-accrual\ of\ \ absolute value\ items + optional\ accrual\ of\ \ absolute value\ items}$$

This model calculates the total accrual items: the result is net profit minus operating cash. Additionally, all non-discretionary accrual items were obtained through the following model:

$$TA_{i,t}\ /A_{i,t-1} = \alpha_1(1/A_{i,t-1})+\alpha_2(\Delta REV_{i,t} - \Delta REC_{i,t})\ /A_{i,t-1} +\alpha_3(PPE_{i,t}/A_{i,t-1})+\varepsilon_{i,t}$$

In the above model, TA is total accruals; $\Delta REV_{i,t}$ specifies changes in income in t compared to t-1; $\Delta REC_{i,t}$ signifies changes in accounts receivable in t compared to t-1; $PPE_{i,t}$ represents gross fixed assets; $A_{i,t-1}$ denotes the book value of assets in t-1, and $\varepsilon_{i,t}$ is the residual of the model. After calculating alpha coefficients in the above model, non-discretionary accrual items (NDA) have been calculated using the following model:

$$NDA_{i,t} = \alpha_1(1/A_{i,t-1})+\alpha_2(\Delta REV_{i,t} - \Delta REC_{i,t})\ /A_{i,t-1} +\alpha_3(PPE_{i,t}/A_{i,t-1})+\varepsilon_{i,t}$$

Discretionary accruals (DA), after determining the NDA, have been operationalized with the following model, which is equal to the residual of the model:

$$DA_{i,t} = (DA_{i,t}\ /A_{i,t-1}) - NDA_{i,t}$$

$$\text{Reporting 2} = (\text{Material Weakness}) + (\text{Auditor Opinion}) + (\text{Restatement})$$

Compliance

The following model is used to operationalize compliance. Increasing compliance with laws and regulations reduces risk and increases company value. According to Gordon et al. (2009), the following two relationships have been used to measure compliance (audit fees are extracted from the profit and loss statements of companies):

$$\text{Compliance} = \frac{\text{audit fees}}{\text{Total clients assets}}$$

Environmental Uncertainty Factor (EU)

Environmental uncertainty is an increase in unpredictable future events (Gordon et al., 2009). Risk management, as a subset of the management control system, aims to identify and manage an uncertain future. Therefore, environmental uncertainty can influence risk management (Gordon et al., 2009). The following coefficients are considered: a) Coefficients of changes in income ((Sit)CN); b) coefficients of changes in capital cost; c) coefficients of changes in net profit before tax ((Iit)CV), where Iit represents the net profit before tax in the current period.

$$a)\ EU = Log\ (\sum_{k=1}^{3} CV\ (X_k))$$

$$b)\ CV\ (X_k) = \frac{\sqrt{\frac{\sum_{t=1}^{11}(Z_{k,t} - \bar{Z}_k)}{n}}}{\left|\bar{Z}_k\right|}$$

In the above model, CV(Xk) is the coefficient of uncertainty changes; t signifies periods under study; Xkt represents uncertainty k in the current period; and Zk is average changes of uncertainty k during n years.

K = 1, 2, and 3 for uncertainty: 1) the coefficient of changes in income, 2) the coefficient of changes in capital cost, and 3) the coefficient of changes in net profit before tax.

The cost of capital is also derived from the following model:

$$WACC = \left(\left(\frac{E_M}{E_M + D_M} \right) K_S + \left(\frac{D_M}{E_M + D_M} \right) K_D \right)$$

In the above model D_M is book value of liabilities; E_M is market value of equity; KD represents minimum expected interest rate; KS denotes cost of equity, and expected cost rate of common stock from Gordon et al. (2009) is used in the following:

$$K_S = \frac{D_0(1+g)}{P_0} + g$$

In the model, D_0 is cash dividend for the t; P_0 is the first price of the stock period; and g signifies growth rate of the dividend, where g is calculated according to the following pattern:

$$g_t = ROE * [(1-(DPS_t / EPS_t)]$$

Where: DPSt is cash dividend paid per share; Pt-1 represents share price at the beginning of the year; gt is profit growth rate; ROE denotes return on equity; and EPS represents earnings per share.

Competition (CI): Industry competition shows concentration in industries, where low concentration means high competition operationalized by the following model:

$$CI = 1 - \sum_{i=1}^{n} \left(\frac{S_{it}}{TotalS_{st}} \right)^2$$

In the presented model, CI is the share of each company in the given industry; Sit represents the amount of sales of companies during the current period; and Sst denotes the total amount of sales of the industry during the current period (Gordon et al., 2009).

Firm size (FS) is the natural logarithm of total assets.

Firm Complexity (FC): The firm complexity can lead to weakness in internal control; thus, to reduce the complexity, it is obtained from the correlation coefficient of income and profit equal to -1, according to the following relationship:

FC =-1* CORREL (revenues & earnings)

Monitoring of the Board (MBD): Considering the minimum number of board members, which is five, having managers with diverse experiences, expertise, and thoughts can be beneficial to increase performance. The ratio of the board members divided by the logarithm of the sales revenue is used.

The moderator variables: board's structural characteristics

Management Position: To measure the management position, we use a dummy variable; if the CEO is also the chairman, it is considered to indicate management with a strong position, assigned a value of 1; otherwise, it is assigned a value of 0 (Li & Roberts, 2018).

Managers' independence: The ratio of non-executive directors to total board members has been used (Li & Roberts, 2018).

3.1.3. Research Control Variables

According to prior studies (Rostami et al., 2022), the following variables have been applied to control variables.

Return on assets (ROA): net profit divided by total assets.

Political connection (SATE): If the largest shareholder is a government or government-affiliated company, it equals 1; otherwise, it is zero.

Firm size (SIZE): natural logarithm of total assets.

Growth: The current sales minus the previous sales divided by the previous sales.

Cash: the ratio of operating cash to total assets.

Firm value (Tobin's Q): ratio of debt value and equity market value to assets.

3.2. Regression Model

$$CS\ Agility = \beta_0 + \beta_1 ERM_{it} + \beta_2 MP_{it} + \beta_3 ERM_{it} \times MP_{it} + \beta_4 MIND_{it} + \beta_5 ERM_{it} \times MIND_{it} + \beta_6 STATE_{it} + \beta_7 ROA_{it} + \beta_8 SIZE_{it} + \beta_9 CASH_{it} + \beta_{10} Growth_{it} + \beta_{11} Qtobin_{it} + \varepsilon_{it}$$

4. The Findings

4.1. Descriptive Statistics of Research Variables

The research findings include descriptive and inferential statistics. Table 1 shows the descriptive statistics of the variables.

Table 1. Descriptive statistics of research variables

Variable	Sign	Mean	Maximum	Minimum	S.D	Skewness	Kurtosis
Agility of capital structure	CS_Agility	0.522	0.988	0.017	0.277	-0.171	1.910
Risk management	ERM	-0.616	-0.013	-1.780	0.456	-0.732	2.730
Independence of managers	MIND	0.653	1.000	0.200	0.179	-0.069	2.830
Firm value	Qtobin	2.517	13.060	1.000	2.044	2.722	11.910
Cash holding	Cash	0.046	0.227	0.002	0.046	1.820	6.240
Sales growth	Growth	0.344	1.547	-0.389	0.410	0.760	3.530
Return on assets	ROA	0.144	0.559	-0.246	0.154	0.596	3.410
Firm size	SIZE	14.720	19.770	11.300	1.534	0.798	3.880

The average capital structure adjustment speed variable equals 0.52, which shows that most of the data are concentrated around this point and that, on average, companies annually compensate for 52% of the gap created between the actual and optimal capital structure. The average sales growth is about 34%, indicating that companies experience sales growth of this amount on average. The average cash holding are 0.046, which shows the lowest standard deviation. Additionally, the highest value of capital structure adjustment speed is 0.98, indicating that some companies have agile and flexible capital structures and compensate for the gap between actual and optimal capital structures at a high speed.

According to Table 2, 187 observations, equivalent to 15.08%, have managers with dual duties, and 530 observations, equivalent to 74/ 42% of companies, have political connections.

Table 2. Frequency distribution of qualitative (discrete) research variables

Variable	Sign	Description	Frequency	Frequency percentage
The duality of duties	MP	1	187	15.080
The political relations	STATE	1	530	42.740

4.2. The Results of Hypothesis Testing

Table 3. The results of preliminary tests of classical regression assumptions

Test	Test statistic	Significance level	Results
Variance heterogeneity test	120.310	0.025	Existence of heterogeneity of variance
Serial autocorrelation test	1.107	0.574	Absence of serial autocorrelation
F-Limer test	1.640	0.000	Adoption of the panel data
Hausman test	24.944	0.023	Fixed effects pattern width from origin
Normalization of model residuals	39.606	0.000	Normal distribution

According to Table 3, the results of White's test indicate the existence of variance heterogeneity. Furthermore, the results of the serial autocorrelation test models indicate the absence of serial autocorrelation in the models. The results of the F-Limer indicate the heterogeneity of the distribution, and the results of the Hausman test also indicate the acceptance of the non-homogeneous data model with fixed effects. The Jarque-Bera results indicate that the models' error terms are not typical due to the large sample size and period in the pooled data. The following Levin, Lin, and Chu (2002) tests are used before testing the hypotheses.

Table 4. The result of the hypotheses testing

$$CS\ Agility = \beta_0 + \beta_1 ERM_{it} + \beta_2 MP_{it} + \beta_3 ERM_{it} \times MP_{it} + \beta_4 MIND_{it} + \beta_5 ERM_{it} \times MIND_{it} + \beta_6 STATE_{it} + \beta_7 ROA_{it} + \beta_8 SIZE_{it} + \beta_9 CASH_{it} + \beta_{10} Growth_{it} + \beta_{11} Qtobin_{it} + \varepsilon_{it}$$

Dependent variable: flexibility of capital structure						
Variable	**Sign**	**Coefficients**	**Standard error**	**t statistic**	**Sig.**	**VIF**
Risk management	ERM	0.059	0.018	3.230	0.001	2.320
Management position	MP	0.013	0.023	0.580	0.560	2.730
The interaction of the position of management and risk management	ERM* MP	0.053	0.027	1.970	0.048	2.810
Independence of management	MIND	0.150	0.053	2.930	0.003	2.920
The interaction of manager independence and risk management	ERM* MIND	0.230	0.020	11.490	0.000	2.810
Political relations	STATE	-0.054	0.019	-2.750	0.005	1.050
Return on assets	ROA	0.130	0.070	1.880	0.060	1.520
Firm size	SIZE	-0.030	0.008	-4.060	0.000	1.160
Cash holding	CASH	-0.330	0.140	-2.350	0.018	1.130
Sales growth	Growth	-0.010	0.014	-0.070	0.480	1.270
Firm value	Qtobin	0.005	0.003	1.610	0.100	1.290
Intercept		0.990	0/12	7/93	0.0000	-
The coefficient of determination			0.640			
Durbin-Watson			2.230			
F statistic			14.433			
Significance level			0.000			

Table 4 indicates that risk management, with a positive coefficient of 0.059 and a significance level of less than 5%, has a direct relationship with the agility of the capital structure. Therefore, the first hypothesis is accepted. Moreover, the interaction of management position and company risk management, with a positive coefficient of 0.053 and a significant level of 0.048, affects the agility of the capital structure. Therefore, the second hypothesis is accepted even at the 5% error level. Additionally, the interaction of management independence and risk management, with a positive coefficient of 0.23 and a significant level of 0.0000, influences the agility of the capital structure. Therefore, the third hypothesis does not reach the 5% error level. The coefficient of determination indicates that the independent and control variables have explained 64% of the changes in the dependent variable. Furthermore, the value of Durbin Watson is 2.23, and between 1.50 and 2.50.

The findings align with Nazimi and Zare (2015), which showed a significant direct relationship between the ratio of non-executive directors and the speed of capital structure adjustment; with an increase in board independence, the speed of capital structure adjustment also increased.

5. Discussion and Conclusion

The study aimed to investigate the effect of risk management on capital structure agility by considering the role of the structural characteristics of the board. The optimal capital structure is a combination affected by the correct and targeted use of financial resources and the acquisition of a reasonable return while managing the risks. The speed of movement of companies towards the optimal ratio depends on various factors. The cost of adjusting the capital structure is one of the most critical factors. The findings indicate that risk management measures can bring the capital structure closer to the optimal capital structure faster. In general, it enhances the capital structure agility. This finding is in accordance with the past findings of Fayaz (2018), which showed a meaningful relation between the use of enterprise risk management and increasing firm value, and with the findings of Derakhsan et al. (2024) in the same direction. Further, this result is in accordance with the past findings of Khan et al. (2023), which showed that the board of directors' structure significantly impacts capital structure decisions. However, due to the rapid changes in dynamics and complexities of the current business environment and the increasing uncertainty of activities in the current economic condition, various risks threaten business operations and affect their performance. Therefore, the management of these uncertainties, which enables companies to make more confident and informed decisions, must incorporate and activate a strong risk management department. The risk management system will

bring many benefits to companies, such as facilitating the achievement of the company's strategic goals, determining and promoting regular and continuous performance standards at different organizational levels, creating the necessary grounds for support and effective coverage of effective decisions through the timely determining of future risks, creating a suitable environment for timely and effective achievement of operational performance goals through the continuation of low-cost and effective procedures.

In light of our results, several practical implications can be derived from the study. It is especially recommended that regulatory institutions, such as the Tehran Stock Exchange Organization, make arrangements for the following items that companies consider. In the first stage, it is essential to obtain reasonable assurance of creating and promoting the necessary awareness regarding the importance of identifying, managing, and dealing with such risks at the company level. Following this, a proposal should be made to hold training courses related to risk management and other necessary topics for the executive directors and related stuff, ensuring that these courses are conducted regularly in the future. In the next step, the formation of special risk management committees in companies should be pursued, which will involve holding several meetings per month and providing continuous reports on the status of identifying the types of key risks associated with the company's activities, including financial, credit, legal, strategic, commercial, and operational risks. Finally, while creating continuous links with the executive directors, it is necessary to obtain assurance of the efficiency of the company's integrated risk management system and ensure that the risk management system aligns with operational and financial strategies. Additionally, the provisions of the risk management charter and the risk management system should be evaluated annually. One of the evident results of these measures is the transition to a dynamic capital structure that is closer to the optimal capital structure. It is also suggested that companies be ranked based on the efficiency of their risk management committees, and presenting related information to investors and other shareholders is beneficial in this regard. Finally, appointing non-executive directors to the board can further strengthen risk management programs and ultimately accelerate the speed of financial adjustment. The non-executive directors support the interests of all stakeholders, create maximum value for shareholders, and provide the basis for the effective elimination of risks and the enhancement of wealth for small and large shareholders by monitoring and examining all aspects of management decisions. This approach aims to increase the company's value by achieving the optimal capital structure while reducing capital costs and enhancing investment efficiency. To increase the company by achieving the optimal capital structure and reducing capital cost and investment efficiency. Therefore, it is suggested for practical use that the regulators strengthen the position of the risk committee and implement the strategic written plans already written in the risk management statutes to empower the managers to accelerate the movement towards the optimal capital structure. As a result, they will maximize the value and wealth of the shareholders.

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