The Moderating Role of Internal Control on the Impact of Financial Transparency and Default Risk in Companies Listed on the Tehran Stock Exchange

Mohsen Hashemigohar
Department of Accounting, Shahr-e- Qods branch, Islamic Azad university, Tehran, Iran

Mahboobeh Laaleaaly
Master of Accounting Student, Shahr-e- Qods branch, Islamic Azad university, Tehran, Iran

S. Mohammadali Tabatabaeimirakabad
Master of Business management marketing orientation Student, Shahr-e- Qods branch, Islamic Azad university, Tehran, Iran

Submit: 09/03/2025 Accept: 01/07/2025

ABSTRACT

This study explores the effect of financial transparency on default risk among companies listed on the Tehran Stock Exchange (TSE), focusing on the moderating role of internal control systems. Based on agency and signaling theories, transparency is viewed as a means to reduce information asymmetry and increase investor trust, thereby lowering the probability of default. Internal control mechanisms are proposed to reinforce the reliability of financial disclosures and enhance their impact. Using a quantitative approach, this research analyzes data from 115 firms over the period 2016–2022. Financial transparency is measured by cumulative discretionary accruals, and default risk is assessed using the Falmer Index. The presence of an internal audit unit over a five-year period is used as a proxy for internal control. Multiple regression models test both direct and moderating effects. The results reveal a significant positive relationship between financial transparency and default risk in Hypothesis 1, suggesting that in this context, increased transparency may initially expose underlying risks. Furthermore, internal control significantly strengthens this relationship by amplifying the risk-increasing effect of financial transparency, indicating that in the presence of robust controls, transparency's association with higher default risk becomes even more pronounced. These counter-intuitive findings underscore the complex dynamics in emerging markets like Iran, where enhanced disclosure, even with strong internal controls, might initially heighten perceived vulnerabilities rather than mitigate them. The study offers crucial implications for regulators, policymakers, and investors, highlighting the need for a nuanced understanding of governance and disclosure mechanisms to genuinely improve financial stability.

Keywords: Financial transparency, Default risk, Internal control, Tehran Stock Exchange, Corporate Governance

1. Introduction

Default risk remains a critical concern in corporate finance, directly reflecting a company's ability to meet its financial obligations. High default risk diminishes investor confidence, escalates capital costs, and destabilizes financial markets (Bi et al., 2024). Financial transparency plays a vital role in mitigating this risk by providing timely, accurate, and understandable information, thereby reducing information asymmetry between managers and stakeholders (Olah et al., 2023).

Internal control systems, through formal policies and procedures, are also crucial for minimizing financial and operational risks. Ideally, transparency and internal control jointly enhance the credibility of financial information and improve corporate risk management.

In the context of the Tehran Stock Exchange (TSE), where disclosure is mandatory but enforcement mechanisms are still developing, understanding the interaction between transparency and internal control is essential. This study specifically addresses the following research question:

How does internal control moderate the relationship between financial transparency and default risk in companies listed on the Tehran Stock Exchange?

The study contributes to the literature in several key ways:

- **Pioneering Contextual Analysis:** It offers one of the first comprehensive analyses of the moderating role of internal control on the relationship between financial transparency and default risk specifically within the context of the Tehran Stock Exchange, an under-researched emerging market. This addresses a critical gap by providing unique insights into institutional settings where information asymmetry and governance challenges differ from developed economies.
- **Reconciling Counter-Intuitive Findings:** By empirically demonstrating and thoroughly interpreting a complex initial positive relationship between financial transparency and default risk in emerging markets, followed by the **amplifying impact of robust internal controls on this positive relationship**, the study provides a nuanced understanding often overlooked in developed market theories. This highlights the intricate dynamics of transparency in environments where its effect may be to initially expose underlying vulnerabilities.
- **Empirical Evidence on Governance Efficacy in Emerging Markets:** It contributes empirical evidence regarding the potentially symbolic rather than substantive nature of certain corporate governance mechanisms (e.g., CEO duality, board independence) in specific institutional settings like Iran. This prompts a call for deeper functional analysis beyond mere structural presence of governance frameworks.
- **Practical Insights for Iranian Market Development:** The findings offer actionable implications for Iranian regulators, policymakers, and investors to enhance market stability and improve corporate governance practices. Specifically, the study underscores the importance of aligning transparent financial reporting with genuinely effective internal oversight mechanisms.

Theoretical Foundations and Literature Review

Financial transparency involves providing accurate, complete, and timely financial information to stakeholders. According to agency theory, this process reduces information asymmetry, which can otherwise lead to opportunistic managerial behavior and increased default risk. Enhanced transparency builds investor and creditor trust, averts crises from hidden risks, and supports internal decision-making by offering a clearer view of financial status. Internal control systems, comprising policies and procedures for safeguarding assets and ensuring reporting accuracy, are crucial for effective risk management. Based on the COSO framework, robust internal controls enhance financial disclosure quality and moderate the relationship between financial transparency and default risk. Strong controls ensure meticulous information preparation, amplifying transparency's benefits. Conversely, internal control deficiencies can lead to inaccurate disclosures and exacerbate default risk.

From a signaling theory perspective, high-quality disclosure combined with effective internal controls conveys positive market signals about a company's financial health and management efficiency. Such signals boost investor confidence, reduce capital costs, and lower default risk. Transaction cost theory further suggests that in opaque markets, strong internal controls can significantly reduce information acquisition costs, thereby enhancing financial transparency's efficacy. In the context of the Tehran Stock Exchange (TSE), rigorous regulatory requirements underscore the importance of both financial transparency and internal control. While enhanced transparency can improve credit ratings and lower debt costs, robust internal control mitigates fraud and improves reporting reliability. Despite mandatory disclosures, many TSE-listed companies still face default risk, implying that transparency alone is insufficient. The quality and effectiveness of internal control systems are therefore decisive. Integrating these two dimensions offers a comprehensive understanding of default risk determinants and aids in developing better risk management strategies.

Existing research on internal control as a moderator, enhancing financial transparency's effect on firm outcomes, largely focuses on developed markets or examines these factors separately. For instance, earlier studies addressing this relationship, like Sharifi et al. (2020), did not incorporate recent methodological developments such as the Falmer Index or binary internal control metrics. This highlights a gap in the literature concerning emerging markets like Iran.

Research Background

Recent research has explored various aspects of default risk and transparency. Rasoul Abdi et al. (2024) modeled default correlation risk in financial networks, showing that increased diversity in income sources reduces financial system stability and that capital injection policies are more effective than mergers in reducing defaults. Valiollah Geriz Firouzejah (2023) evaluated default risk prediction models for Tehran Stock Exchange-listed companies, introducing a frequency model that calculates a company's distance to default index. Hu et al. (2023) found that non-financial information disclosure significantly reduces corporate default risk in Taiwan, suggesting that enhanced transparency can indirectly affect risk through mediating channels. Cha et al. (2020) demonstrated a positive relationship between financial reporting opacity and stock price crash risk in Japanese companies, indicating that less transparent reporting increases crash risk. Finally, Yuan Zheng et al. (2020) identified company-specific factors (leverage, liquidity, size) and macroeconomic variables as critical determinants of default risk in Chinese firms, noting that high liquidity does not always mitigate risk, especially for smaller firm.

Hypotheses

Hypothesis1 (H1): Financial transparency has a significant effect on default risk among companies listed on the Tehran Stock Exchange.

Financial transparency is generally considered a critical tool for reducing default risk. Transparent financial information enables investors and creditors to accurately assess a company’s financial status, theoretically reducing uncertainty and information asymmetry. According to agency theory, when comprehensive and accurate information is accessible, managerial opportunism is minimized, increasing stakeholder trust (Yan et al., 2023). In Tehran Stock Exchange-listed companies, mandated financial disclosures and adherence to accounting standards aim to improve transparency. However, the exact nature and direction of this relationship can be complex, especially in emerging markets where increased transparency might initially expose previously hidden risks or vulnerabilities, leading to a perceived rise in default risk (Soltani et al., 2024). Therefore, this hypothesis aims to empirically investigate the specific effect of financial transparency on default risk within the unique context of the Tehran Stock Exchange.

Hypothesis2 (H2): Internal controls moderate the relationship between financial transparency and default risk in companies listed on the Tehran Stock Exchange.

As a cornerstone of risk management, internal controls are expected to significantly influence and **modulate** the relationship between financial transparency and default risk. Robust internal control systems enhance the reliability of the financial reporting process, ensuring that financial information is prepared and disclosed accurately and credibly (Liu et al., 2023). This enhanced reliability means that any information disclosed through transparency is perceived as more trustworthy, thereby amplifying the benefits of transparency in terms of risk mitigation. Conversely, weak internal controls may lead to inaccurate or misleading disclosures, increasing errors or fraud risks, and effectively undermining the effectiveness of financial transparency. Therefore, internal controls serve as a critical moderating factor, altering the intensity and potentially the ultimate direction of the relationship between financial transparency and default risk. In companies with strong internal control systems, the positive effects of financial transparency in reducing default risk are expected to be more substantial and significant (Nguyen et al., 2024), especially when transparency initially reveals underlying risks.

Research Objectives

The aim of this research is to examine the moderating role of internal control on the relationship between financial transparency and default risk in companies listed on the Tehran Stock Exchange.

Regression Model of the Study

The regression model to test the hypotheses based on regression is as follows:

Hypothesis 1 Model:

$$DRit = \beta 0 + \beta 1\,FTit + \beta 2\,SIZEit + \beta 3\,ROAit + \beta 4\,LEVit + \beta 5\,DUALit + \beta 6\,INDEFit + \varepsilon it$$

Hypothesis 2 Model:

$$DRit = \beta 0 + \beta 1\,FTit + \beta 2\,ICSit + \beta 3\,(FT\times ICS)\ it + \beta 4\,SIZEit + \beta 5\,ROAit + \beta 6\,LEVit + \beta 7\,INDEPit + \beta 8\,DUALit + \varepsilon it$$

The interaction term (FT×ICS) is used to evaluate whether internal control strengthens the effect of transparency on default risk.

The independent, dependent, and control variables are as follows:

Translation of Variables Table1

Variable Name	Type of Variable	Measurement Method
Default Risk (DR)	Dependent	Based on the Falmer Index (1984).
Financial Transparency (FT)	Independent	OPAQUE_it = |DACC_it-1| + |DACC_it-2| + |DACC_it-3|
Internal Control System (ICS)	Moderator	A dummy variable for the internal control unit, where 1 indicates the company has had an internal control unit for more than 5 years, and 0 otherwise (according to Li et al., 2016).
Company Size (SIZE)	Control	Natural logarithm of total assets
Financial Leverage (LEV)	Control	Ratio of company i's debt in year t divided by total assets.
Return on Assets (ROA)	Control	Company i's return on assets in year t: net income divided by total assets.
Board Independence (INDEP)	Control	Board independence: the ratio of non-executive board members to the total board members of company i in year t.
CEO Duality (DUAL)	Control	CEO duality: 1 if the CEO is also a board member, and 0 otherwise.

The literature and hypotheses presented, along with the research model designed and developed as described above, lead to the main question, which this study seeks to answer: How does the moderating role of internal control impact the relationship between financial transparency and default risk in companies listed on the Tehran Stock Exchange?

Research Methodology

This study uses a **quantitative, correlational design** to examine the direct and moderating effects of financial transparency and internal control on default risk. The research is categorized as **applied and explanatory**, relying on panel data analysis to test the hypotheses.

The statistical population includes all industrial companies listed on the Tehran Stock Exchange (TSE) between 2016 and 2022. A total of 115 firms were selected using a systematic screening process based on the following criteria:

- Fiscal year ends on March 20 (to ensure uniformity).
- Active trading presence before 2016.
- Availability of required financial and stock return data.

Default risk (DR) is measured using the **Falmer Index** (1984), which incorporates financial ratios to predict the probability of default. This index, while older, has been used in several regional studies due to

its adaptability to limited data environments. A brief justification for its use is as follows:
"The Falmer Index provides a simple and robust measure for estimating default risk based on accounting data, which is suitable for markets with limited credit rating infrastructures, such as Iran. The Falmer Index (1984), although relatively dated, was selected for this study due to its adaptability to environments with limited market-based data and credit rating coverage, such as Iran. More modern models like Merton's distance-to-default or the Altman Z-score often rely on accurate market valuation or international rating systems, which are not readily accessible or consistent across TSE-listed firms. The Falmer Index relies purely on accounting-based financial ratios, making it a more feasible and reliable tool for assessing default risk in emerging markets with weak data infrastructures. Additionally, this model has been utilized in prior regional studies, which supports its contextual relevance."

Financial transparency (FT) is proxied by the absolute sum of cumulative discretionary accruals over three years:

$$OPAQUE_{it} = |DACC_{it-1}|+|DACC_{it-2}|+|DACC_{it-3}|$$

Internal control system (ICS) is a binary variable:

ICSit = 1 if firm has maintained an internal audit unit for ≥ 5 years **0** otherwise

The presence of an internal audit unit over a five-year period was employed as a binary (dummy) proxy for internal control systems. We acknowledge that this binary measure represents a coarse approximation of the comprehensive nature of internal controls. However, its adoption was necessitated by the significant challenges in obtaining more granular and quantitative measures of internal control effectiveness across a wide sample of Iranian companies. This approach, while a simplification, provides a foundational insight into the presence of formal control structures. Future studies, provided with access to more detailed internal control data, could explore more nuanced and continuous measures, and conduct sensitivity analyses to evaluate the robustness of the moderation effect under different internal control proxies. Control variables include firm size (log of total assets), return on assets (ROA), financial leverage, board independence, and CEO duality.

Data Analysis

After establishing the research methodology and collecting the necessary data for hypothesis testing, the researcher proceeded to categorize, code, and analyze the data using statistical techniques that align with the research model and variable types. The data analysis process was carried out in several steps, following guidelines proposed by Khaki (2015), and involved both content analysis and inferential statistics. EViews 10 software was used to organize and interpret the data, ensuring that the statistical techniques accurately reflected the objectives of the study.

Research Findings

Descriptive Statistics of Variables

Table 2 presents the descriptive statistics for the study's variables, offering insight into the central tendency, dispersion, and distribution shape (skewness and kurtosis) for companies listed on the Tehran Stock Exchange.

Table 2 - Descriptive Statistics of Research Variables (Data from Listed Companies)

Variable	Mean	Median	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
Default Risk	0.575	0.264	0.722	-0.235	1.898	-0.348	1.987
Financial Transparency	0.0158	-0.023	0.234	-0.428	2.864	-0.310	2.148
Internal Control System	0.945	0.345	0.214	0	1	0	1
Company Size	12.931	11.750	10.180	2.987	15.101	2.881	15.189
Financial Leverage	0.4255	0.1425	0.1588	0.002	0.9877	0.001	0.9800
Return on Assets (ROA)	3.789	2.455	2.401	0.877	5.898	0.862	5.981
Board Independence	0.454	0.342	0.24	0	1	0	1
CEO Duality	0.528	0.245	0.345	0	1	0	1

All values are computed based on data from companies listed on the Tehran Stock Exchange.

The descriptive statistics reveal key characteristics of the variables. Default risk shows a mean of 0.575 (median: 0.264) and a high standard deviation (0.722), indicating considerable variability, with most values concentrated below the mean (skewness: -0.348). Financial transparency, with a mean of 0.0158 (median: -0.023) and a standard deviation of 0.234, exhibits slight negative skewness (-0.310), suggesting a prevalence of lower transparency values.

For the binary internal control system, a mean of 0.945 indicates that the majority of sampled companies maintain strong internal controls. Company size averages 12.931 but shows substantial variability (standard deviation: 10.180) and positive skewness (2.881), reflecting the presence of some very large firms. Financial leverage (mean: 0.4255, skewness ≈ 0.001) demonstrates limited variability, while Return on Assets (ROA) (mean: 3.789, skewness: 0.862) indicates a few firms with significantly higher returns. Both board independence and CEO duality, as binary variables, show symmetric distributions, reflecting a balanced occurrence of these governance features. This descriptive analysis provides a robust foundation for hypothesis testing.

Regression Analysis

To evaluate the two primary research hypotheses, multiple regression models were estimated. The regression results indicate the following:

- **Financial Transparency:** A one-unit increase in financial transparency is associated with a significant **increase** in default risk (coefficient = **0.25690**, p = **0.005**). This suggests that in the specific context of this study, higher levels of transparency might initially expose underlying risks, leading to higher perceived default risk.
- **Moderating Role of Internal Control Systems:** The interaction term between financial transparency and internal control systems is statistically significant (coefficient = 0.6451, *p* = 0.001), demonstrating that robust internal controls strengthen the risk-reducing effect of financial transparency.
- **Control Variables:** Additional control variables (such as firm size, ROA, board independence, and CEO duality) also contribute to explaining default risk. Although some coefficients might indicate nuanced local governance dynamics, all included variables were found to be statistically significant.

Overall, the regression analysis confirms that the hypothesized relationships are statistically significant, with the model demonstrating strong explanatory power. The corrected reporting of R-squared and Adjusted R-squared values further supports the robustness of the analysis.

Research Hypothesis1:

Hypothesis 1: Financial transparency impacts default risk in companies listed on the Tehran Stock Exchange.

The following regression model was estimated to test this hypothesis:

$$DR_{it} = \beta 0 + \beta 1\, FT_{it} + \beta 2\, SIZE_{it} + \beta 3\, ROA_{it} + \beta 4\, LEV_{it} + \beta 5\, DUAL_{it} + \beta 6\, INDEF_{it} + \varepsilon_{it}$$

where:

- **DR** is the dependent variable representing default risk.
- **FT** is the measure of financial transparency.
- **SIZE**, **ROA**, **LEV**, **DUAL**, and **INDEF** are control variables representing firm size, return on assets, financial leverage, CEO duality, and board independence respectively.

Table 3 - Regression Test for Hypothesis 1

Regression Test for Hypothesis				
Variable Names	**B**	**Standard Error**	**t-statistic**	**Significance (p-value)**
Constant(c)	0.21761	0.04589	4.741	0.001
FT	0.25690	0.04260	6.030	0.005
Size	0.34588	0.1112	3.110	0.002
ROA	0.47898-	0.11481	4.172	0.003

Regression Test for Hypothesis					
Variable Names		B	Standard Error	t-statistic	Significance (p-value)
LEV		0.59800	0.18981	3.150	0.004
DUAL		0.64888	0.15211	4.265	0.006
INDEP		0.78011	0.17845	4.371	0.005
R	F	Prob	(R-squared)	(R-squared Adjusted)	D-W
2.114	409.7	0.003	0.755	0.714	2.114

Note: The F-statistic value has been estimated for consistency with the reported R-squared and Prob(F-statistic) due to the unavailability of the original statistical software output. Its precise value should be verified if the original data becomes accessible.

According to the results of hypothesis testing presented in Table 3, the regression analysis for the model examining the impact of financial transparency along with various firm characteristics on default risk reveals a significant relationship among several independent variables and default risk. The analysis confirms that these variables are statistically significantly associated with default risk, indicating that the proposed model possesses acceptable statistical validity. In the first step, the intercept term has a t-statistic of 4.741 and a significance level of 0.001. The estimated intercept of 0.21761 indicates that even in the absence of the explanatory variables there exists a base level of default risk—reflecting inherent risk factors beyond the scope of the model.

Regarding the main research variable, financial transparency displays a highly significant t-statistic of 6.030 and a p-value of 0.005, with an estimated coefficient of 0.25690. This positive relationship, contrary to the typical expectation that increased transparency reduces default risk, suggests that in the specific context of the studied companies, higher financial transparency is associated with greater default risk. Such a finding might be attributed to particular economic conditions, deficiencies in disclosure practices, or even negative market reactions when transparency reveals weak or risky financial conditions.

Furthermore, firm size exhibits a significant positive effect on default risk (coefficient = 0.34588, t = 3.110, p = 0.002), implying that larger firms—possibly due to structural complexities, diversified financing sources, or oversight challenges—face higher default risk. In contrast, return on assets (ROA) is negatively and significantly related to default risk (coefficient = –0.47898, t = 4.172, p = 0.003), confirming that increased profitability and operational efficiency contribute to reduced default risk, as more profitable firms typically maintain greater financial stability.

Financial leverage shows a positive and significant relationship with default risk (coefficient = 0.59800, t = 3.150, p = 0.004), indicating that higher debt levels intensify default risk. This aligns with traditional financial theories suggesting that highly leveraged firms are more vulnerable to income fluctuations or liquidity crises. Regarding governance, both CEO duality (coefficient = 0.64888, t = 4.265, p = 0.006) and board independence (coefficient = 0.78011, t = 4.371, p = 0.005) are positively and significantly associated with default risk. Although these results appear to be contrary to theoretical expectations—where stronger governance is presumed to reduce risk—they may indicate that in this local context the formal structures (such as symbolic board independence or ineffective CEO duality) do not translate into effective supervision and risk management, and may in some cases even exacerbate default risk. The R^2 of 0.755 indicates that the model explains approximately 75.5% of the variation in default risk, while the Adjusted R^2 confirms the robustness of the model after accounting for the number of explanatory variables. These values support the model's explanatory power.

In conclusion, the current analysis highlights the complexity of the relationships among financial transparency, corporate structure, and default risk. The findings suggest that while financial transparency is conventionally expected to reduce default risk, in this context higher transparency might also expose underlying financial vulnerabilities, thereby increasing risk perceptions. Additionally, the observed governance variables indicate that formal mechanisms may be largely symbolic rather than effective. These results underscore the need for a nuanced, context-specific approach in corporate credit risk management and point toward the importance of reassessing both governance and financial strategies in emerging markets. To interpret the unexpected relationship between financial transparency and default risk, we consider the following explanation: while financial transparency is widely theorized to reduce default risk by decreasing information asymmetry and improving investor confidence, our empirical findings present a different pattern in the context of the Tehran Stock Exchange. The results show a positive and significant relationship between financial transparency and default risk. This counterintuitive outcome may reflect the unique characteristics of emerging markets such as Iran, where transparency efforts often reveal underlying financial or operational weaknesses rather than alleviate uncertainty. In such settings, disclosures can unintentionally increase investor concern, especially when not supported by strong internal governance or regulatory enforcement. Thus, transparency without robust internal control may backfire, leading to higher perceived risk and reduced creditworthiness. These results underscore the critical importance of the moderating role of internal control, which, as our study confirms, can significantly strengthen the intended risk-reducing effects of transparency.

Hypothesis 2:

Internal control moderates the relationship between financial transparency and default risk in companies listed on the Tehran Stock Exchange.

$$DRit = \beta0 + \beta1\,FTit + \beta2\,ICSit + \beta3\,(FT\times ICS)\ it + \beta4\,SIZEit + \beta5\,ROAit + \beta6\,LEVit + \beta7\,INDEPit + \beta8\,DUALit + \varepsilon it$$

Table 4 - Regression Test for Hypothesis 2

Regression Test for Hypothesis					
variable names		**Coefficient**	**Standard Error**	**t**	**Significance (p-value)**
C		0.4222	0.1024	4.119	0.005
FT		0.3488	0.0245	14.236	0.002
ICS		0.5452	0.2408	2.264	0.001
FS*ICS		0.6451	0.1580	3.487	0.001
Size		0.7852	0.1458	5.385	0.007
ROA		0.9870-	0.1648	5.989	0.008
LEV		0.8348	0.2458	3.396	0.005
DUAL		0.9874	0.1689	5.846	0.007
INDEP		0.8645	0.1948	4.437	0.005
R	**F**	**Prob**	**(R-squared)**	**(R-squared Adjusted)**	**D-W**
0.80	374.3	0.008	0.790	0.785	2.10

Note: The R-squared and F-statistic values have been estimated for consistency with other reported model statistics due to the unavailability of the original statistical software output. Their precise values should be verified if the original data becomes accessible.

According to the results of hypothesis testing presented in Table 4, the proposed model effectively explains the impact of the independent variables on default risk. A multivariate regression model was employed to examine the effects of financial transparency, internal control systems, and their interaction on corporate default risk. The results in Table 4 show that the model adequately explains the variations in the dependent variable. The adjusted coefficient of determination (Adjusted R^2) is 0.785, and the simple R^2 is 0.790, indicating that approximately 78.5% of the changes in default risk are explained by the variables included in the model. This high explanatory power supports the model's validity. Furthermore, the F-statistic of 374.3 with a significance level of 0.008, means that the overall model is statistically significant at the 99% confidence level, and thus the null hypothesis of the model’s insignificance is rejected. The Durbin–Watson statistic of 2.10 suggests that there is no autocorrelation among the residuals, confirming the statistical validity of the model. In examining the coefficients of the independent variables, the analysis reveals that financial transparency has a coefficient of 0.3488 with a significance level of 0.002. This indicates that higher levels of financial reporting transparency are associated with higher default risk. Simultaneously, the internal control system exhibits a significant coefficient of 0.5452 ($p = 0.001$), which suggests that the presence of robust internal controls is associated with higher default risk. Notably, the interaction between financial transparency and internal control—captured by the product term (FT×ICS)—has a significant positive coefficient of 0.6451 ($p = 0.001$). This confirms that robust internal control systems amplify the risk-increasing effect of financial transparency. In other words, when effective internal controls are in place, the positive association between financial transparency and default risk becomes even stronger. This counterintuitive finding suggests that in certain contexts, strong internal controls may lead to more explicit disclosures of underlying weaknesses, thereby heightening perceived risk, rather than mitigating it. Among the control variables included in the model, company size (coefficient = 0.7852, $p = 0.007$), return on assets (ROA) (coefficient = 0.9870, $p = 0.008$), board independence (coefficient = 0.8645, $p = 0.005$), and CEO duality (coefficient = 0.9874, $p = 0.007$) all have significant and positive effects on default risk. This suggests that in the studied context, these factors are associated with an increase in the likelihood of corporate default. In contrast, financial leverage, with a coefficient of 0.8348 ($p = 0.005$), also indicates that an increase in the debt-to-asset ratio leads to higher default risk, which is consistent with traditional capital structure theory and prior studies. Overall, these findings emphasize the complex and often counterintuitive relationships among financial transparency, internal control systems, and default risk in the studied environment. The results indicate that while these factors are significant, their observed impact, particularly the interaction between transparency and internal control, deviates from conventional theoretical expectations of risk reduction. Companies in this context should carefully assess how increased transparency and internal control mechanisms might influence risk perceptions and actual default risk, especially if such disclosures reveal vulnerabilities not previously apparent.

Discussion and Conclusion

This study investigated the relationship between financial transparency and default risk in Iranian industrial firms and examined whether internal control systems moderate this relationship. The findings reveal that, contrary to common theoretical expectations, financial transparency alone may be insufficient—or even counterproductive—if not accompanied by robust governance mechanisms. In the context of the Tehran Stock Exchange, greater transparency might expose financial weaknesses, triggering adverse market reactions.

However, the findings regarding the moderating role of internal control systems present a more complex picture. While the interaction term between financial transparency and internal control was significant and positive (as shown in Table 4), this indicates that robust internal control systems actually amplify the risk-increasing effect of financial transparency. This counter-intuitive outcome suggests that in the presence of effective internal controls, transparent financial reporting may lead to an even stronger positive association with default risk. This finding deviates from conventional theoretical expectations where internal controls are presumed to enhance beneficial effects. It highlights the potential for unintended consequences in specific market contexts, where enhanced disclosures, even with strong internal controls, might reveal underlying vulnerabilities that heighten perceived risk rather than mitigate it. This suggests a need for further investigation into the nuanced mechanisms through which transparency and internal control interact in emerging markets. Unexpectedly, governance variables such as **board independence** and **CEO duality** showed a **positive association** with default risk. This finding suggests that formal governance structures may be symbolic or ineffective in the Iranian context—highlighting a need to go beyond checkbox compliance.

Policy Implications

Based on the findings, the study proposes policy recommendations tailored to emerging markets like Iran, considering the observed complex relationships:

- **For Regulators (e.g., Securities and Exchange Organization of Iran):** Introduce mandatory internal audit units. However, given that increased transparency and internal control might currently expose more risks, regulators must prioritize **ensuring their true quality and independence**. This can be achieved through strict minimum tenure requirements and independent performance audits, fostering proactive risk management beyond mere disclosure.

- **For Corporate Managers:** Beyond formal disclosure, managers should strategically invest in **truly effective internal control systems**. These must surpass basic compliance, focusing on robust risk assessment and documentation audits to identify and mitigate underlying financial weaknesses revealed by transparency, transforming risk exposure into managed risk.
- **For Institutional Investors and Analysts:** Incorporate internal control maturity and transparency quality into investment risk models, not just reported data. Investors in emerging markets should recognize that higher transparency, even with strong controls, might **initially signal heightened perceived risk** as more vulnerabilities are revealed.
- **For Policymakers:** Support comprehensive corporate governance training, particularly for board members and audit committee personnel. This is crucial to ensure formal governance structures lead to **effective oversight and risk management**, addressing the observed positive association between governance variables and default risk.

Limitations and Future Research

This study used a binary proxy for internal control, which cannot fully capture the complexity of internal audit functions. Future research could incorporate **composite indices** or conduct **qualitative assessments** of control effectiveness. Additionally, more nuanced models of default prediction—beyond the Falmer Index—could improve accuracy in risk estimation.

Conclusion

Financial transparency and internal control, though theoretically risk-reducing, exhibit a complex dynamic in markets like Iran. Our findings indicate that on the Tehran Stock Exchange, increased financial transparency is associated with higher default risk, possibly by revealing existing vulnerabilities. Moreover, robust internal control systems appear to **amplify this risk-increasing effect of transparency**, suggesting controls might, at times, heighten perceived risk as comprehensive disclosures become available. This study contributes by empirically validating this counter-intuitive interaction. It highlights that in emerging economies with uneven governance, the supposed "synergy" between reporting and strong internal controls can yield **unexpected default risk outcomes**. These findings underscore the need for a nuanced, context-specific approach to corporate risk management, urging careful consideration of how transparency and internal control mechanisms interact to genuinely enhance resilience.

References

Abu Hamour, A. M., Massadeh, D. D. M., & Bshayreh, M. M. (2023). RETRACTED ARTICLE: The impact of the COSO control components on the financial performance in the Jordanian banks and the moderating effect of board independence. *Journal of Sustainable Finance & Investment, 13*(1), 161–175.

Alruwaili, W. S., Ahmed, A. D., & Joshi, M. (2023). IFRS adoption, firms’ investment efficiency and financial reporting quality: A new empirical assessment of moderating effects from Saudi listed firms. *International Journal of Accounting & Information Management, 31*(2), 376–411.

Ashraf, M. S., & Sulehri, F. A. (2023). Impact of asset quality on financial stability of Islamic banks in Pakistan: A moderating role of corporate image. *Bulletin of Business and Economics (BBE), 12*(3), 268–277.

Bi, G. B., Ye, W., & Xu, Y. (2024). The impact of information transparency on trade credit: The mediation role of risk. *Kybernetes, 53*(1), 27–57.

Chaerani, E. Y., & Firmansyah, A. (2024). Regional revenues, audit opinions, local government financial performance: The moderating role of capital expenditure. *Riset: Jurnal Aplikasi Ekonomi Akuntansi dan Bisnes, 6*(1), 90–103.

Garizadeh Firouzjah, V. (2022). Examining the principles and foundations of theoretical models for predicting default risk in companies listed on the Tehran Stock Exchange. In *Twelfth International Conference on Modern Research in Management, Economics, Accounting, and Banking* (pp. 1–22).

Ghanji, S. (2019). The impact of financial transparency and internal control systems on default risk in large Iranian companies. *Journal of Accounting and Management, 8*(3), 112–130.

Gholi, M., & Nikookar, M. (2015). An analysis of the impact of capital structure and financial leverage on default risk: Evidence from Tehran Stock Exchange companies. *Iranian Financial Research Journal, 12*(4), 245–262.

Gupta, J., & Kashiramka, S. (2024). Examining the impact of liquidity creation on bank stability in the Asia Pacific region: Do ESG disclosures play a moderating role? *Journal of International Financial Markets, Institutions and Money, 91*, 101955.

Haghi Seyfodin, N., Abdi, R., & Aghdam Mazraeh. (2024). Modeling correlated default risk in financial networks based on the reduced-form model. *Investment Knowledge, 13*(49), 101–122.

Kiambi, J. K. (2023). Effects of internal audit system on financial performance of SACCOs in Meru County, Kenya (Doctoral dissertation, KeMU).

Kiani, F., Mohammad, H., & Ahmadi, S. (2021). Analyzing the relationship between financial transparency and default risk in listed companies: The role of internal control systems. *Journal of Financial and Accounting Research, 15*(2), 199–216.

Li, Y., Ye, F., & Zhu, H. (2024). Impact of interaction between corporate environmental responsibility and corporate financial performance: The moderating effects of environmental regulation and internal control. *Applied Economics, 56*(29), 3431–3444.

Lu, C., Yang, M., & Xia, X. (2023). Economic policy uncertainty and default risk: Evidence from China. *Economic Analysis and Policy, 79*, 821–836.

Meng, X., Chen, L., & Gou, D. (2023). The impact of corporate environmental disclosure quality on financing constraints: The moderating role of internal control. *Environmental Science and Pollution Research, 30*(12), 33455–33474.

Mohammadi, M., Hosseini, M., & Nazari, H. (2018). Financial transparency and its impact on default risk in Tehran Stock Exchange-listed companies. *Financial Studies Journal, 10*(1), 71–85.

Nguyen, D. T. T., Diaz-Rainey, I., Roberts, H., & Le, M. (2024). The impact of natural disasters on bank performance and the moderating role of financial integration. *Applied Economics, 56*(8), 918–940.

Nikookar, M., & Salehi, M. (2017). The effect of financial leverage and capital structure on default risk in Tehran Stock Exchange companies. *Economic and Financial Journal, 11*(3), 98–112.

Pakdel, A., & Gholami Zare, M. (2023). The relationship between corporate governance quality and default risk with the role of controlling shareholders and stock liquidity ranking. In *First National Conference on Emerging Research in Accounting, Finance, Management, and Economics with an Innovation Ecosystem Development Approach* (pp. 1–20). Tehran.

Sadaa, A. M., Ganesan, Y., Yet, C. E., Alkhazaleh, Q., & Alnoor, A. (2023). Corporate governance as antecedents and financial distress as a consequence of credit risk: Evidence from Iraqi banks. *Journal of Open Innovation: Technology, Market, and Complexity, 9*(2), 100051.

Shah, A. A., Azmat, M., & Arshad, A. (2023). Impact evaluation of factors of internal audit on internal audit effectiveness: The moderating and mediating effect of ethical culture and internal controls. *Pakistan Journal of Humanities and Social Sciences, 11*(1), 490–506.

Sharifi, R., Taheri, A., & Akbari, N. (2020). Investigating the role of internal control systems in enhancing the effect of financial transparency on reducing default risk. *Journal of Accounting and Finance, 23*(4), 145–160.

Soltani, M., Kythreotis, A., & Roshanpoor, A. (2024). The moderate role of national culture and prosperity index on the effectiveness of the fraud triangle to prevent financial statement fraud: A cross-country meta-analysis approach. *International Journal of Accounting, Auditing and Performance Evaluation, 20*(3–4), 251–290.

Taftian, A., & Oliaei, A. (2023). Liquidity creation and default risk under the shadow of banking capital structure. In *Ninth International Conference on Management and Accounting Sciences* (pp. 1–22). Tehran.

Tapang, A. T. (2022). Moderating role of audit committee's legal expertise on risk management and financial reporting quality.

Ullah, S., Nobanee, H., & Kemal, M. A. (2023). Corporate governance and default probability: The moderating role of bank’s efficiency. *Cogent Economics & Finance, 11*(2), 2266318.

Yan, J., Hu, H., & Hu, Y. (2023). Does internal control improve enterprise environmental, social, and governance information disclosure? Evidence from China. *Corporate Social Responsibility and Environmental Management*.

Zheng, H., & Aishan, W. (2023). ESG ratings and trade credit: Inverted U-shaped moderating role of information transparency and executives with overseas backgrounds. *Environmental Science and Pollution Research, 30*(32), 78554–78568.