

Enterprise risk management, ESG disclosure and firm performance: evidence from the manufacturing sector in Vietnam

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Abstract

Purpose – This study examines the relationship between enterprise risk management, firm performance and ESG disclosure in Vietnam's manufacturing sector. Understanding how these governance mechanisms interact is important for firms operating in high-risk and sustainability-driven environments.

Design/methodology/approach – Using panel data from 200 manufacturing firms listed on HOSE and HNX from 2017 to 2022, we construct a COSO 2017-based enterprise risk management index and an ESG disclosure index derived from the S&P Global framework. A two-stage regression with a control function approach is applied to address endogeneity and estimate both direct and moderating effects on Tobin's Q and return on assets.

Findings – The results reveal a clear temporal distinction. Enterprise risk management increases market-based firm value (Tobin's Q) but reduces short-term accounting profitability (ROA). ESG disclosure significantly moderates these relationships: firms with stronger ESG disclosure amplify the positive impact of enterprise risk management on firm value and mitigate its negative effect on profitability. These findings indicate that enterprise risk management should be viewed as a long-term strategic investment rather than a short-term profitability tool.

Research limitations/implications – This study makes a timely contribution to the literature by demonstrating how ESG-aligned risk management improves financial performance and supports sustainable value creation in emerging economies. It underscores the strategic importance of integrating ESG into enterprise-wide risk frameworks to balance long-term resilience with short-term performance, providing actionable insights for policymakers, investors and corporate leaders.

Originality/value – This study offers new evidence from an emerging economy by jointly analyzing enterprise risk management, ESG disclosure and firm performance while explicitly addressing endogeneity. It highlights the complementary role of ESG disclosure in strengthening the effectiveness of enterprise risk management.

Keywords ERM, Tobin's Q, ROA, ESG disclosure

Paper type Research article

1. Introduction

The collapse of big names like Enron, WorldCom, and Lehman Brothers, along with the struggles that businesses faced worldwide in the repercussions of the COVID-19 pandemic, has heightened the concern about effective risk management practices (Bendell, 2023). Furthermore, prestigious credit rating agencies, namely Standard and Poor's and Moody's, have straitened their risk management criteria when evaluating companies' creditworthiness (Standard & Poor's, 2008).

Worldwide studies on the value of Enterprise Risk Management (ERM) have increasingly garnered widespread attention. The findings remain inconsistent in research analyzing ERM's impact on corporate performance. Some studies indicate that ERM enhances firm value, such

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as Hoyt and Liebenberg (2011), Farrell and Gallagher (2015), and Grace *et al.* (2015). In contrast, a few studies report adverse effects (Kommunuri *et al.*, 2015), and some other studies reveal no significant impact, as seen in Pagach and Warr (2011) and McShane *et al.* (2011). This inconsistency is particularly pronounced in developing countries where ERM implementation is still immature or mainly limited to large enterprises or industries subject to strict risk management regulations, such as finance, banking, and insurance.

On the other hand, regarding international standards for ERM, since 2017, COSO has introduced a new ERM framework emphasizing the integration of risk management into both strategic governance and operational activities of businesses, effectively combining strategic and operational risk management within organizations (Pierce and Goldstein, 2018). These features address the shortcomings of the earlier COSO 2004 framework, prompting managers and scholars to adopt a more cohesive and forward-looking approach to risk management.

In Vietnam, since the issuance of Circular 155/2015/TT-BTC on the disclosure of listed companies, the requirement to disclose information on ERM and ESG practices in the annual reports has been in effect. Besides, the manufacturing industry has long been a cornerstone of Vietnam's economy, contributing approximately 34–35% of the GDP as of 2023. This sector is vital for exports, especially electronics, which account for more than 75% of Vietnam's total export value. It is also essential for job creation and the modernization of the economy. However, its reliance on intricate supply chains and logistics makes it vulnerable to risks such as supply disruptions, price fluctuations, and changes in trade policies, highlighting the necessity of ERM. ERM helps mitigate these risks and address market variations, financial uncertainties, and competitive challenges. Moreover, due to the sector's significant energy consumption and environmental impact, implementing ESG (Environmental, Social, and Governance) principles is vital for sustainable growth. By integrating ERM with ESG, manufacturers can align their risk management strategies with sustainability objectives, ensuring operational resilience while tackling social and environmental issues.

This research addresses several important gaps in the existing literature. Firstly, although ERM has been widely studied, empirical findings on its impact on corporate performance remain inconsistent, particularly in emerging markets where ERM adoption is uneven and institutional environments differ markedly from developed economies. Secondly, very few studies examine ERM within the manufacturing sector of developing countries, despite this sector's high exposure to supply chain disruptions, energy volatility, environmental risks, and policy uncertainty. Thirdly, although ERM and ESG represent two crucial pillars of corporate resilience, current research rarely investigates their interplay, leaving a limited understanding of how ESG may moderate or reinforce the effectiveness of ERM in enhancing firm value or profitability. Fourthly, methodological limitations persist as most prior studies rely on outdated ERM frameworks or simplified proxies rather than comprehensive measures aligned with COSO, 2017, the most advanced ERM guideline to date.

To address these research gaps, this study focuses on Vietnam's manufacturing sector, an industry highly sensitive to operational, financial, and sustainability-related risks. By constructing an ERM index based on COSO, 2017 and measuring ESG performance using the S&P Global Corporate Sustainability Assessment (CSA), this study provides an updated and context-relevant evaluation of ERM effectiveness. It also offers empirical evidence on how ERM influences both firm value and profitability, and whether ESG serves as a mediating mechanism that strengthens ERM's effect on corporate outcomes. Guided by these gaps, this study seeks to answer the following research questions.

- RQ1. How does Enterprise Risk Management (ERM), measured in accordance with the COSO, 2017 framework, affect firm value and profitability in Vietnam's manufacturing sector?
- RQ2. Does ESG performance moderate the relationship between ERM and corporate performance, thereby enhancing the effectiveness of ERM?

Overall, by addressing these critical gaps and examining the strategic interplay between ERM and ESG in a high-risk, fast-growing emerging market, this study contributes to a deeper understanding of how modern risk management frameworks create value and enhance resilience. The findings are expected to provide meaningful implications for scholars, practitioners, and policymakers seeking to strengthen corporate governance and sustainability practices in developing economies. To build on these motivations, the next section reviews the relevant theoretical foundations and empirical literature.

The remainder of this paper is organized as follows. [Section 2](#) reviews the relevant theoretical foundations and prior literature and develops the research hypotheses. [Section 3](#) describes the data, variables, and econometric methodology. [Section 4](#) presents the empirical results and discussion. The final section concludes with implications, limitations, and directions for future research.

2. Literature review

2.1 ERM and ESG disclosure

[COSO \(2004\)](#) defines ERM as “a process, effected by an entity’s board of directors, management, and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events . . . and provide reasonable assurance regarding the achievement of entity objectives”. Building on this foundation, recent studies emphasize that ERM should not be viewed solely as a tool for mitigating threats but also as a strategic mechanism for identifying opportunities that enhance long-term competitiveness ([Lundqvist, 2015](#); [Ogutu et al., 2018](#)). This view represents a shift from traditional risk-averse practices to a more balanced and proactive approach that fosters innovation, value creation, and strategic resilience. Through integrated risk thinking and the cultivation of a risk-conscious organizational culture, ERM supports long-term stability in an increasingly volatile business environment ([Frigo and Anderson, 2011](#)).

Environmental, Social, and Governance (ESG) practices, formally introduced by the UN Global Compact in 2004, have become a central component of corporate sustainability. ESG disclosure requires firms to communicate information about environmental performance, social responsibility, and governance quality. Investors rely on ESG disclosure to assess non-financial risks, evaluate long-term viability, and identify firms with strong sustainability and governance practices. Prior evidence shows that firms with robust ESG reporting benefit from enhanced legitimacy, improved stakeholder trust, and better access to resources ([Friede et al., 2015](#); [Aouadi and Marsat, 2018](#)).

A growing body of research highlights the complementary nature of ERM and ESG. ERM provides a structured approach to risk oversight, while ESG introduces transparency and accountability mechanisms that reduce information asymmetry. When integrated, ERM and ESG can reinforce each other and improve firm performance through stronger governance, better risk anticipation, and improved stakeholder engagement ([Callahan and Soileau, 2017](#); [Chairani and Siregar, 2021](#)). However, the extent to which these benefits materialize varies across institutional environments, and emerging markets such as Vietnam remain understudied.

2.2 Hypotheses development

The impact of ERM on a company’s business performance can be explained by agency theory ([Jensen and Meckling, 1976](#)). This theory emphasizes the link between the owners (principals) and managers (agents), highlighting that managers tend to make decisions based on personal interests rather than maximizing shareholder value. By integrating and monitoring risks across the organization, ERM increases transparency, reduces conflicts of interest, and improves governance effectiveness, enhancing firm performance. Numerous studies demonstrate that effective ERM strategies improve financial ratios such as Return on Assets (ROA) and Tobin’s

Q across various industries and markets, both advanced and emerging markets (Gordon *et al.*, 2009; Hoyt and Liebenberg, 2011; Anton and Nucu, 2020).

However, alternative theoretical lenses suggest that ERM may also impose costs that adversely affect short-term profitability. Resource-based theory posits that firms must carefully allocate and manage their limited resources to sustain competitive advantage (Barney, 1991). Implementing ERM requires substantial investments in systems, personnel, training, and compliance structures, resources that may otherwise be used for revenue-generating activities. This diversion of resources can dilute operational efficiency, especially in firms with tight margins or immature governance systems.

Additionally, organizational inertia theory (Hannan and Freeman, 1984) suggests that formalized risk management frameworks like ERM may reduce organizational flexibility. Excessive risk aversion and procedural rigidity introduced by ERM can hinder innovation, delay decision-making, and suppress responsiveness to market changes, negatively impacting operational performance indicators like ROA. Therefore, while ERM can enhance long-term strategic positioning and firm value, its impact on accounting-based measures of performance such as ROA may be neutral or even negative in the short term, particularly in developing economies like Vietnam, where ERM maturity remains low and implementation costs are relatively high.

Vietnam provides a unique institutional and market environment that shapes the ERM-performance relationship. ERM practices in Vietnam remain uneven, with many firms adopting ERM primarily for compliance rather than strategic integration. Corporate governance structures are still developing, information disclosure practices remain inconsistent, and investor protection is relatively weak. The manufacturing sector, characterized by deep exposure to supply chain disruptions, volatile energy costs, environmental challenges, and increasing ESG-related pressures from export markets, faces heightened operational risks. These factors suggest that firms with more mature ERM systems may achieve superior performance through improved governance, enhanced risk mitigation, and better alignment with strategic objectives.

H1. ERM has a positive impact on firm performance

The moderating effect of ESG in the relationship between ERM and firm performance can also be explained using agency theory (Jensen and Meckling, 1976). ESG is a transparency tool that helps businesses manage non-financial risks (environmental, social, and governance) and build stakeholder trust. Combining ERM with ESG helps reduce conflicts of interest, optimize decision-making, and enhance business performance.

According to the stakeholder theory (Freeman, 1984), businesses are not solely focused on maximizing shareholder wealth. Still, they also meet the expectations of other stakeholders. ESG is a core element in managing relationships with these stakeholders. A robust ERM system, coupled with ESG, can increase stakeholder satisfaction, thereby improving a company's reputation and leading to better performance outcomes. Furthermore, based on the resource-based view theory (Barney, 1991), we propose that ERM is not only about risk mitigation but also fosters strategic decision-making, allowing firms to align their risk management practices with long-term objectives and innovation, ultimately serving as competitive advantages. As ESG includes internal factors (governance structures and ethical policies) and external factors (environmental impact and societal expectations), firms with more ESG disclosure may find it easier to transform the ERM efforts into improved financial and non-financial outcomes.

Chairani and Siregar (2021) document that firms in ASEAN-5 countries with more advanced ERM frameworks integrated with ESG practices tend to achieve higher profitability (ROA) and firm value (Tobin's Q), suggesting a complementary role of ERM and ESG in enhancing corporate performance. However, their analysis does not fully address potential endogeneity issues, which may bias the estimated effects. In a related vein, Callahan and Soileau (2017) argue that ESG-oriented ERM practices can improve operational efficiency,

reduce waste, and enhance regulatory compliance, thereby lowering costs and positively affecting firms' financial outcomes. [Karina et al. \(2023\)](#) report more nuanced evidence, showing that the moderating effect of ESG on the ERM-financial performance relationship is significantly negative, while the corresponding effect on firm value is statistically insignificant. Taken together, these mixed findings indicate that the performance implications of ESG-integrated ERM are context-dependent and sensitive to methodological choices, thereby motivating further investigation in emerging markets using more rigorous econometric techniques. More recently, [Resende et al. \(2024\)](#) find that ERM exerts a significant impact on firm performance both directly and indirectly through the firm's corporate social responsibility (CSR) strategy, highlighting the importance of sustainability-related mechanisms in translating risk management into performance gains. However, their analysis is confined to firms operating in the European Union, where institutional quality, regulatory enforcement, and ESG maturity are substantially higher than in emerging economies.

Integrating ESG into enterprise risk management is particularly pertinent in Vietnam. Vietnam's economy, characterized by a high proportion of state-owned enterprises (SOEs) and vulnerability to regulatory changes, natural disasters, and social challenges, can significantly benefit from ESG-driven ERM practices. For manufacturing firms with substantial environmental footprints, integrating ESG into ERM enhances the firm's ability to manage ecological and social risks, reduce compliance costs, and strengthen operational resilience. Prior evidence in the Vietnamese context provides partial support for this argument. For instance, [Anh and Hoa \(2021\)](#) show that enterprise risk management positively affects sustainability performance and business outcomes among listed firms in Vietnam. However, their study primarily examines the direct impact of ERM and sustainability reporting on firm performance and does not explore the moderating role of ESG disclosure in strengthening or altering the ERM-performance relationship. As such, the interactive effect between ERM and ESG remains underexplored in the Vietnamese context. By explicitly testing ESG disclosure as a moderating mechanism, this study extends prior domestic evidence and provides a more nuanced understanding of how sustainability-oriented governance enhances the effectiveness of enterprise-wide risk management.

Given this context, the second hypothesis is established as follows.

H2. ESG strengthens the positive relationship between ERM and firm performance.

3. Research methodology

3.1 Sample selection

The sample includes 200 listed companies operating in Vietnam's manufacturing sector from 2017 to 2022. There are 572 firms in the manufacturing sector listed on the stock exchanges in Vietnam (HOSE, HNX, and UPCOM). Several criteria were applied to refine the sample to ensure data quality and consistency.

Manufacturing companies with inadequate information were excluded from the sample. Firms that went public after the 2018 fiscal year were removed to reduce distortions stemming from listing age and fluctuations in financial performance. Firms with variable values exceeding the 5th or 95th percentiles were also left out. The final sample includes 200 companies, yielding 1,200 observations from 2017 to 2022.

3.2 Variables measurement

Measuring the level of Enterprise Risk Management (ERM) implementation has long posed a methodological challenge due to the multi-dimensional nature of ERM, which encompasses strategic governance and operational risk processes. Previous studies have utilized various approaches: structured surveys ([Beasley et al., 2005](#); [Soileau, 2010](#)), proxy indicators such as

the appointment of a Chief Risk Officer (Beasley *et al.*, 2008; Pagach and Warr, 2011), keyword-based content analysis (Hoyt and Liebenberg, 2011), and S&P ERM quality rankings (Florio and Leoni, 2017; McShane *et al.*, 2011; Baxter *et al.*, 2013). In addition, several studies have employed index-based methods similar to the approach in this paper, such as constructing an ERM index derived from the COSO framework to measure ERM effectiveness and disclosure levels (Gordon *et al.*, 2009; Lundqvist, 2015; Kanu, 2021; Tontiset, 2025; Stasse *et al.*, 2025). However, these methods are often limited by subjectivity, sector-specific constraints, or inconsistencies in disclosure language.

Building upon the index-based approaches in prior studies, such as Gordon *et al.* (2009) who employed the earlier COSO, 2004 framework to measure ERM quality, this study advances the methodology by constructing an ERM Index based on 16 criteria explicitly derived from the updated COSO, 2017 standards, which represent the most advanced and widely accepted global guideline for enterprise risk management, and which have also gained increasing relevance within the Vietnamese regulatory context. These 16 criteria capture two essential dimensions of ERM maturity: the ERM environment and ERM implementation. The ERM environment reflects whether a firm has formally established the governance foundation needed for risk management, such as the presence of a risk strategy, clear communication of risk messages, the appointment of a Chief Risk Officer, the existence of a risk committee, the establishment of a risk governance structure, a defined risk appetite, and efforts to cultivate a risk-aware culture. Meanwhile, the ERM implementation dimension assesses how risk management is operationalized across the organization, including the extent to which risks are identified, assessed, prioritized, mitigated, and formally monitored and reported.

All information is manually extracted from firms' annual reports, in accordance with Circular 155/2015/TT-BTC, which mandates the disclosure of governance and risk management practices for listed firms in Vietnam. Each criterion is coded as a dummy variable equal to 1 if the relevant information is disclosed and 0 otherwise. The ERM Index is then computed as the average score across all 16 criteria (Supplementary Table 1). To enhance reliability, the coding procedure was independently conducted by two trained coders, and discrepancies were resolved through discussion.

The moderating variable ESG disclosure is measured using the Corporate Sustainability Assessment (CSA) framework developed by S&P Global (2023). Based on this framework, the study constructs 23 binary indicators that collectively capture the extent of environmental, social, and governance reporting by firms. The ESG score comprises 8 environmental criteria, 6 social criteria, and 9 governance criteria, all extracted from firms' annual reports and sustainability reports where available. Each criterion is assigned a value of 1 if disclosed and 0 otherwise, and the ESG Index is calculated as the average score across the 23 items (Supplementary Table 2). This binary scoring approach enhances transparency, replicability, and alignment with prior narrative-based ESG studies. Similar to the ERM index, the ESG coding process is double-checked through independent coding to ensure consistency and minimize subjectivity.

Several control variables are encompassed to account for factors that might influence firm performance. Modigliani and Miller (1958) and Jensen (1986) propose that profitable firms use leverage to signal quality, reinforcing a positive link between leverage and profitability. Regarding firm size, Azeez (2015) argue that larger firms can use economies of scale to operate more efficiently and profitably. Conversely, Klapper and Love (2004) find that larger companies may experience inefficiencies that negatively impact performance as they encounter bureaucratic challenges, communication issues, and slower decision-making processes, potentially impairing overall performance. In terms of firm age, Guo and Zhang (2007) argue that older firms tend to have a more stable capital structure, more excellent social resources, and experience, allowing them to invest more consistently in R&D, which can enhance competitiveness and long-term value. As per the liquidity, Dahiyat (2016) observes that liquidity significantly negatively affects profitability. Excessive liquidity can indicate that a firm holds large cash reserves or efficiently liquid assets that are not effectively invested in

growth opportunities. Conversely, [Opler et al. \(1999\)](#) demonstrate that adequate liquidity can enhance firm performance by providing stability, reducing costs, and enabling proactive, strategic investments.

3.3 Research model

These models incorporate ERM as the primary independent variable and control variables representing firm characteristics.

Model (1) investigates the direct impact of ERM on Enterprise Performance:

$$ROA_{it} (\text{Tobin's } Q_{it}) = \beta_0 + \beta_1 ERM_{it} + \beta_2 Lev_{it} + \beta_3 LnAge_{it} + \beta_4 LnSales_{it} + \beta_5 Liquid_{it} + e_{it} \quad (1)$$

Model (1) examines the direct impact of enterprise risk management on firm performance, measured alternatively by return on assets (ROA) and Tobin's Q. Specifically, ROA is calculated as net profit divided by total assets and captures accounting-based profitability ([Nguyen et al., 2025](#)), while Tobin's Q is computed as the market value of equity plus the book value of debt divided by the book value of total assets, reflecting market-based firm value ([Tobin, 1969](#)). All financial data are obtained from audited financial statements. The main explanatory variable is enterprise risk management (ERM), measured using the constructed ERM index. Several firm-level control variables are included to account for financial and structural characteristics. Leverage (Lev) is measured as total debt divided by total equity, representing the firm's capital structure ([Tran and Nguyen, 2025](#)). Firm age (LnAge) is proxied by the natural logarithm of the number of years since establishment, capturing firm maturity and experience effects ([Guo and Zhang, 2007](#)). Firm size (LnSales) is measured as the natural logarithm of total revenue to control for scale-related influences ([Azeez, 2015](#)). Liquidity (Liquid) is calculated as current assets divided by current liabilities and reflects short-term financial stability ([Dahiyat, 2016](#)).

Model (2) retains all variables from **Model (1)** and additionally includes ESG disclosure and an interaction term between enterprise risk management and ESG ($ERM \times ESG$), constructed by multiplying the ERM index with the ESG disclosure index, to examine whether ESG moderates the impact of enterprise risk management on firm performance:

$$ROA_{it} (\text{Tobin's } Q_{it}) = \beta_0 + \beta_1 ERM_{it} + \beta_2 ESG_{it} + \beta_3 ERM_{it} * ESG_{it} + \beta_4 Lev_{it} + \beta_5 LnAge_{it} + \beta_6 LnSales_{it} + \beta_7 Liquid_{it} + e_{it} \quad (2)$$

3.4 Research method

To examine the relationship between ERM, ESG, and firm performance, the study employs a two-step regression framework that explicitly accounts for potential endogeneity in ERM and its interaction with ESG. Endogeneity may arise because firms with certain governance structures, industry characteristics, or information environments may simultaneously choose higher levels of ERM and experience better performance. To correct for this bias, we apply the control function approach, a widely used technique for handling endogeneity in nonlinear and interaction-effect models.

To address the endogeneity problem, the study employs a two-step regression approach. [Hoyt and Liebenberg \(2011\)](#) pointed out that business risk depends on the environment. We use environmental uncertainty, Board monitoring, and the average ERM of the industry as the instruments for ERM. The relevance of these instruments is supported by [Wang et al. \(2018\)](#), who demonstrated their strong correlation between environmental uncertainty and board monitoring with ERM practices. Moreover, we add one new instrumental variable as the average ERM of the industry with the underlying reason that firms often adopt risk

management practices based on industry norms, benchmarks, or regulatory pressures, making this variable a strong predictor of a firm's ERM adoption level. Their homogeneity is theoretically justified by the assumption that these instruments influence firm performance only indirectly through their impact on ERM implementation, thus satisfying the exclusion restriction.

The instrumental variables are constructed as follows. Environmental uncertainty (EU_{it}) is measured as the aggregate of three components capturing market, technological, and income volatility. Specifically, market uncertainty is proxied by the coefficient of variation of sales; technological uncertainty is measured by the coefficient of variation of capital expenditures scaled by total assets; and income uncertainty is calculated as the coefficient of variation of net income before taxes. For each component, the coefficient of variation is computed as the standard deviation divided by the mean over a five-year rolling window, following Wang *et al.* (2018). Board monitoring ($Boardm_{it}$) is measured as the ratio of the number of board members to the natural logarithm of total assets, reflecting the intensity of board oversight relative to firm size. In addition, industry-level ERM adoption (ERM_aver_{it}) is calculated as the average ERM score of firms within the same sub-industry, defined according to the Level 3 (L3) classification of the Fingroup industry system. This variable captures industry norms and peer effects in ERM implementation.

Endogeneity occurs not only with ERM but also with the interaction of ERM and ESG. Then, we use the control function method to address the endogeneity of the mediator variable ESGERM (the interaction between ESG and ERM) by explicitly modelling and incorporating the endogeneity into the analysis. We run regression Model (3) to estimate the ERM error by taking the difference between the fitted value of ERM in Model (3) and the scored ERM.

$$ERM_{it} = \beta_0 + \beta_1 EU_{it} + \beta_2 Boardm_{it} + \beta_3 ERM_aver_{it} + \beta_4 Lev_{it} + \beta_5 LnAge_{it} + \beta_6 LnSales_{it} + \beta_7 Liquid_{it} + \beta_8 ESG_{it} + e_{it} \quad (3)$$

Then we run regression Model (4) to find the impact of ERM, ESG, and the interaction of ERM and ESG on Tobin's Q after controlling the endogeneity by adding variables of ERM_resi and ESGERM_resi ($ESGERM_resi = ESG * ERM_{resi}$)

$$Tobin's\ Q_{it} = \beta_0 + \beta_1 ERM_{it} + \beta_2 Lev_{it} + \beta_3 LnAge_{it} + \beta_4 LnSales_{it} + \beta_5 Liquid_{it} + \beta_6 ESG_{it} + \beta_7 ESGERM_{it} + \beta_8 ERM_resi_{it} + \beta_9 ESGERM_resi_{it} + e_{it} \quad (4)$$

The control function approach is particularly suitable for this study for two reasons. First, unlike traditional two-stage least squares (2SLS), which corrects endogeneity only in the main endogenous regressor, the control function method can simultaneously address endogeneity in nonlinear settings and in models that contain interaction terms such as ESGERM. Conventional 2SLS does not directly correct the endogeneity of an interaction variable, because the product of fitted values from the first stage remains correlated with the original error term whenever one of its components is endogenous. By contrast, the control function approach explicitly incorporates the first-stage residuals and their interaction with ESG into the second-stage model, thereby purging endogeneity from both ERM and the ESGERM interaction term. Second, the control function method offers greater flexibility by allowing the functional form of the second-stage equation to remain linear while still capturing complex unobserved heterogeneity that may bias the ERM-performance relationship. This feature is particularly valuable in emerging-market contexts, such as Vietnam, where firms face diverse and unobservable managerial, institutional, and risk-governance characteristics that may

simultaneously drive ERM adoption and firm performance. By modelling the endogenous component directly through the residuals, the control function approach provides consistent and unbiased estimates, preserves interpretability, and improves efficiency relative to standard IV estimation.

4. Empirical results and discussion

4.1 Descriptive statistics

[Supplementary Table 3](#) reports descriptive statistics of the main variables based on data from 2017 to 2022. The data includes 1,200 observations of Vietnamese manufacturing firms, with various metrics collected for analysis.

ROA has a mean of 4.6%. Tobin's Q, representing market firm value, has a mean of 0.91 and varies between 0.4 and 1.9 times. This suggests that, on average, the market values of are lower than their book value, with a wide range reflecting different market perceptions and performance levels. ERM (ERM) scores average 14.5%. This low average suggests limited adoption of ERM practices among the firms. The ESG scores average 20.6%, indicating moderate engagement in sustainable practices. Other variables, namely state ownership, leverage, firm age, sales, and liquidity, display diverse ranges, providing a comprehensive view of the sample characteristics.

The Pearson correlation ([Supplementary Table 4](#)) results show that all the coefficients of independent variables do not exceed 0.5, so there is no risk of multicollinearity in the regression models.

4.2 Regression results

[Supplementary Table 5](#) presents the regression results using the control function approach with Tobin's Q as the dependent variable.

From [Supplementary Table 5, Model \(1\)](#) reports the baseline estimation, showing that enterprise risk management (ERM) has a positive and statistically significant impact on firm value ($\beta = 0.718, p < 0.01$), indicating that firms with stronger risk management frameworks are rewarded by the market. In [Model \(2\)](#), ESG disclosure and the interaction term ($ERM \times ESG$) are introduced. ERM remains positive though smaller in magnitude ($\beta = 0.121, p < 0.10$), while ESG exhibits a strong positive effect ($\beta = 1.961, p < 0.01$). The interaction term is also positive and significant ($\beta = 0.352, p < 0.10$), providing preliminary evidence that ESG strengthens the value-enhancing effect of ERM. [Model \(3\)](#) reports the first-stage regression for ERM, confirming the relevance of the instrumental variables. Board monitoring negatively affects ERM adoption ($\beta = -0.226, p < 0.05$), while the industry-average ERM score is strongly positive ($\beta = 0.813, p < 0.01$), supporting the presence of peer effects in risk management practices.

The regression results of [Model \(4\)](#) show the impact of ERM, ESG, and the interaction on Tobin's Q. ERM positively impacts Tobin's Q ($\beta = 0.557, p < 0.01$), confirming its value-enhancing role. The ESG-ERM interaction is significantly positive ($\beta = 1.230, p < 0.01$), highlighting that integrating ESG and ERM practices creates a synergy that enhances firm value. The ESG also has a positive coefficient ($\beta = 1.602, p < 0.01$), reinforcing the value of robust ESG practices for firm performance.

All control variables are statistically significant and align with expectations. LnSales has a negative coefficient of -0.035 , reflecting scale-related diminishing returns. The positive coefficient (0.022) of leverage indicates that firms with higher debt levels benefit from disciplined capital allocation. The positive coefficient (0.048) of LnAge shows that older firms have more stable operations. Liquid has a positive coefficient (0.009), displaying the importance of cash management for firm performance.

We also ran the control function model with the dependent variable ROA and found a captivating fact. As shown in [Supplementary Table 6](#), ERM shows a negative and statistically

significant impact on ROA at the 1% level. It suggests that while ERM implementation may contribute to risk mitigation, it imposes costs or inefficiencies that negatively affect short-term profitability. The interaction term between ERM and ESG has a positive and significant effect on ROA at the 10% level, with a coefficient of 0.198. This suggests that ESG practices can enhance the effectiveness of ERM, potentially offsetting some of its adverse impacts on profitability. Firms integrating robust ESG practices into risk management frameworks may achieve improved financial outcomes. ESG practices significantly enhance profitability directly and by moderating the adverse effects of ERM. While beneficial for managing risks, ERM may reduce short-term financial performance due to implementation costs. Therefore, firms that strategically align ESG practices with ERM are better positioned to achieve financial gains, highlighting the synergistic potential of these frameworks.

4.3 Discussion

The regression results in [Supplementary Table 5](#) and [Supplementary Table 6](#) provide clear evidence on the relationship between ERM, ESG, and firm performance. The two-step regression and control function approach confirms the presence of endogeneity, but the chosen instruments, environmental uncertainty, board monitoring, and industry-level ERM averages, prove valid and sufficiently strong, reinforcing the reliability of the findings.

The results from [Model \(4\)](#) in [Supplementary Table 5](#) show that ERM has a positive and significant effect on Tobin's Q ($\beta = 0.557, p < 0.01$), consistent with prior studies showing that ERM enhances firm value through improved governance, transparency, and risk oversight ([Hoyt and Liebenberg, 2011](#); [Farrell and Gallagher, 2015](#); [Anton and Nucu, 2020](#)). The positive ESG-ERM interaction ($\beta = 1.230, p < 0.01$) and the positive ESG coefficient ($\beta = 1.602, p < 0.01$) further confirm evidence from [Chairani and Siregar \(2021\)](#) and [Friede et al. \(2015\)](#) that ESG strengthens the performance benefits of ERM by improving stakeholder trust and reducing non-financial risks.

In contrast, the results from [Model \(4\)](#) in [Supplementary Table 6](#) illustrate that ERM negatively affects ROA ($\beta = -0.162, p < 0.01$), diverging from some earlier studies ([Gordon et al., 2009](#)) but aligning with [Kommunuri et al. \(2015\)](#). This suggests that ERM imposes substantial short-term costs, systems investment, process formalization, and increased administrative requirements, that may reduce operational efficiency. This effect is particularly pronounced in Vietnam, where manufacturing firms often face limited managerial capacity and high implementation costs, making ERM more of a long-term strategic investment than an immediate source of profitability. Crucially, the interaction term between ESG and ERM (ESGERM) in [Model \(4\)](#) is positive and statistically significant ($\beta = 0.198, p < 0.10$), indicating a meaningful moderating effect of ESG. This result implies that ESG practices mitigate the negative impact of ERM on ROA. In other words, while ERM alone may reduce short-term profitability, firms with stronger ESG disclosure are better able to absorb or offset these costs.

Taken together, ESG significantly strengthens the effect of ERM on both Tobin's Q and ROA, though at different significance levels, showing that ESG provides an enabling environment for ERM to translate into improved outcomes. The results reinforce international evidence while extending it to an emerging-market setting with weaker institutions and higher volatility, where ESG plays a particularly important role in enhancing transparency and reducing information asymmetry [Karina et al. \(2023\)](#), [Resende et al. \(2024\)](#). The Tobin's Q and ROA results highlight a temporal trade-off. ERM increases long-term firm value, as reflected in the market's forward-looking assessment, but may suppress short-term profitability due to implementation costs. This distinction is consistent with dynamic capability theory, which views ERM and ESG as long-term capability-building investments that initially require resources but eventually yield resilience, lower earnings volatility, and greater strategic flexibility. The Vietnamese manufacturing context, with its exposure to environmental and supply-chain risks, further illustrates how these long-term benefits outweigh short-term performance pressures.

5. Conclusion

This study examines the relationship between Enterprise Risk Management (ERM) and firm performance, measured through Tobin's Q and ROA, for Vietnamese manufacturing enterprises during 2017–2022, while also considering the moderating role of ESG practices. The findings reveal a nuanced and temporally differentiated impact of ERM on business outcomes.

First, ERM is found to have a strong and statistically significant positive effect on Tobin's Q, indicating that investors in Vietnam perceive ERM as a credible signal of improved governance quality and long-term resilience. This result aligns with the findings of [Gordon et al. \(2009\)](#), [Hoyt and Liebenberg \(2011\)](#), and [Anton and Nucu \(2020\)](#), who similarly document ERM's value-enhancing effect in various international contexts. In an environment characterized by supply-chain disruption, regulatory volatility, and environmental risks, ERM appears to strengthen strategic preparedness, thereby increasing market confidence and firm valuation.

However, the effect of ERM on ROA tells a contrasting story. ERM negatively affects short-term profitability, suggesting that firms implementing structured risk management systems may experience efficiency losses or resource constraints during the early stages of ERM adoption. This is consistent with arguments from the resource-based view ([Barney, 1991](#)) and empirical findings by [Kommunuri et al. \(2015\)](#), which highlight the upfront costs, capability-building demands, and organizational adjustments required for ERM implementation. These results underscore a temporal trade-off: ERM enhances long-term value (as reflected in Tobin's Q) but may reduce short-term accounting performance due to implementation costs, administrative burdens, and operational rigidities.

The introduction of ESG as a moderating variable enriches this analysis. The interaction between ESG and ERM exhibits positive and significant effects for both Tobin's Q and ROA, demonstrating that ESG practices amplify the benefits of ERM. This synergy can be attributed to stronger transparency mechanisms, improved stakeholder relations, and enhanced alignment with regulatory and societal expectations. Firms with robust ESG disclosure are better equipped to translate ERM structures into tangible operational and strategic advantages. The use of the control function approach further strengthens the credibility of these findings by mitigating endogeneity concerns and validating the complementary nature of ERM and ESG.

Beyond empirical results, the study makes several theoretical contributions. From a theoretical perspective, these findings generate important implications for the agency theory and the resource-based view (RBV). First, in line with agency theory ([Jensen and Meckling, 1976](#)), the positive effect of ERM on market-based performance supports the argument that ERM functions as an internal governance mechanism that mitigates agency conflicts between managers and shareholders. By enhancing risk transparency, strengthening oversight, and constraining managerial opportunism, ERM reduces information asymmetry and agency costs, which are promptly recognized by capital markets. However, the negative short-term effect of ERM on accounting-based performance suggests that agency-driven governance improvements may not immediately translate into operational efficiency, particularly in emerging markets where governance reforms often require substantial organizational adjustments. This nuance refines agency theory by highlighting that governance mechanisms such as ERM may yield asymmetric effects across performance dimensions and time horizons.

Second, the findings contribute to the RBV literature by conceptualizing ERM and ESG as complementary strategic capabilities rather than purely compliance-oriented practices. When ERM is integrated with ESG practices, firms are better able to embed risk management into organizational routines, innovation processes, and stakeholder engagement strategies. ESG thus enhances the value, inimitability, and effectiveness of ERM by enabling firms to convert risk governance into resilience, reputational capital, and long-term competitive advantage. This interaction-based evidence extends RBV by demonstrating that the performance value of

ERM depends critically on its integration with complementary sustainability-oriented capabilities.

In terms of practical implications, the findings suggest that managers and boards should view ERM not as a short-term cost but as a strategic investment in long-term resilience. However, firms should also anticipate the possibility of short-term declines in profitability during the implementation phase. Integrating ESG into ERM frameworks can mitigate such adverse effects, strengthen legitimacy, and generate additional value. Policymakers should consider promoting disclosure standards aligned with COSO, 2017 and international ESG reporting frameworks to enhance transparency and market discipline. Investors may likewise use ERM-ESG information as a tool for assessing risk management maturity and sustainability performance in emerging markets.

Despite these contributions, the study acknowledges several limitations. ERM and ESG disclosures are measured based on publicly available narrative information, which may not fully capture internal practices. The sample is limited to manufacturing firms, which may restrict generalizability. Future research should extend the analysis to multiple sectors and countries, apply alternative ERM/ESG measurement techniques (including machine learning-based textual analytics), and incorporate additional performance dimensions such as risk-adjusted returns, innovation outcomes, and long-term volatility reduction.

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Supplementary material

The supplementary material for this article can be found online.

References

- Anh, N.T. and Hoa, T.P. (2021), "The impact of enterprise risk management and sustainability reporting on business performance of listed enterprises on Vietnam stock market", *VNU Journal of Economics and Business*, Vol. 1 No. 4, doi: [10.57110/jeb.v1i5.4664](https://doi.org/10.57110/jeb.v1i5.4664), available at: <https://js.vnu.edu.vn/EAB/article/view/4664>
- Anton, S.G. and Nucu, A.E.A. (2020), "Enterprise risk management: a literature review and agenda for future research", *Journal of Risk and Financial Management*, Vol. 13 No. 11, p. 281, doi: [10.3390/jrfm13110281](https://doi.org/10.3390/jrfm13110281).
- Aouadi, A. and Marsat, S. (2018), "Do ESG controversies matter for firm value? Evidence from international data", *Journal of Business Ethics*, Vol. 151 No. 4, pp. 1027-1047, doi: [10.1007/s10551-016-3213-8](https://doi.org/10.1007/s10551-016-3213-8).
- Azeez, A.A. (2015), "Corporate governance and firm performance: evidence from Sri Lanka", *Journal of Finance and Bank Management*, Vol. 3 No. 1, pp. 180-189, doi: [10.15640/jfbm.v3n1a16](https://doi.org/10.15640/jfbm.v3n1a16).
- Barney, J.B. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120, doi: [10.1177/014920639101700108](https://doi.org/10.1177/014920639101700108).
- Baxter, R., Bedard, J.C., Hoitash, R. and Yezegel, A. (2013), "Enterprise risk management program quality: determinants, value relevance, and the financial crisis", *Contemporary Accounting Research*, Vol. 30 No. 4, pp. 1264-1295.
- Beasley, M.S., Clune, R. and Hermanson, D.R. (2005), "Enterprise risk management: an empirical analysis of factors associated with the extent of implementation", *Journal of Accounting and Public Policy*, Vol. 24 No. 6, pp. 521-531, doi: [10.1016/j.jaccpubpol.2005.10.001](https://doi.org/10.1016/j.jaccpubpol.2005.10.001).
- Beasley, M., Pagach, D. and Warr, R. (2008), "Information conveyed in hiring announcements of senior executives overseeing enterprise-wide risk management processes", *Journal of*

- Accounting, Auditing and Finance*, Vol. 23 No. 3, pp. 311-332, doi: [10.1177/0148558X0802300303](https://doi.org/10.1177/0148558X0802300303).
- Bendell, T. (2023), *Time to Rethink Risk Management: Surviving Future Global Crises*, World Scientific Publishing, Singapore.
- Callahan, C.M. and Soileau, J.S. (2017), "Does enterprise risk management enhance operating performance?", *Advances in Accounting*, Vol. 37, pp. 122-139, doi: [10.1016/j.adiac.2017.01.001](https://doi.org/10.1016/j.adiac.2017.01.001).
- Chairani, C. and Siregar, S.V. (2021), "The effect of enterprise risk management on financial performance and firm value: the role of environmental, social and governance performance", *Meditari Accountancy Research*, Vol. 29 No. 3, pp. 647-670, doi: [10.1108/MEDAR-09-2019-0549](https://doi.org/10.1108/MEDAR-09-2019-0549).
- Committee of Sponsoring Organizations of the Treadway Commission (COSO) (2004), "Enterprise risk management—integrated framework", *Executive Summary*, available at: https://efgroe.olemiss.edu/aicpa_assoc/38/
- Committee of Sponsoring Organizations of the Treadway Commission (2017), "Enterprise risk management—Integrating with strategy and performance (executive summary)", available at: <https://www.coso.org/Shared%20Documents/2017-COSO-ERM-Integrating-with-Strategy-and-Performance-Executive-Summary.pdf>
- Dahiyat, A. (2016), "Does liquidity and solvency affect banks profitability? Evidence from listed banks in Jordan", *International Journal of Academic Research in Accounting, Finance and Management Sciences*, Vol. 6 No. 1.
- Farrell, M. and Gallagher, R. (2015), "The valuation implications of enterprise risk management maturity", *Journal of Risk and Insurance*, Vol. 82 No. 3, pp. 625-657, doi: [10.1111/jori.12035](https://doi.org/10.1111/jori.12035).
- Florio, C. and Leoni, G. (2017), "Enterprise risk management and firm performance: the Italian case", *The British Accounting Review*, Vol. 49 No. 1, pp. 56-74, doi: [10.1016/j.bar.2016.08.003](https://doi.org/10.1016/j.bar.2016.08.003).
- Freeman, R.B. (1984), "Longitudinal analyses of the effects of trade unions", *Journal of Labor Economics*, Vol. 2 No. 1, pp. 1-26.
- Friede, G., Busch, T. and Bassen, A. (2015), "ESG and financial performance: aggregated evidence from more than 2000 empirical studies", *Journal of Sustainable Finance and Investment*, Vol. 5 No. 4, pp. 210-233, doi: [10.1080/20430795.2015.1118917](https://doi.org/10.1080/20430795.2015.1118917).
- Frigo, M.L. and Anderson, R.J. (2011), "Strategic risk management: a foundation for improving enterprise risk management and governance", *Journal of Corporate Accounting and Finance*, Vol. 22 No. 3, pp. 81-88, doi: [10.1002/jcaf.20677](https://doi.org/10.1002/jcaf.20677).
- Gordon, L.A., Loeb, M.P. and Tseng, C.-Y. (2009), "Enterprise risk management and firm performance: a contingency perspective", *Journal of Accounting and Public Policy*, Vol. 28 No. 4, pp. 301-327, doi: [10.1016/j.jaccpubpol.2009.06.006](https://doi.org/10.1016/j.jaccpubpol.2009.06.006).
- Grace, M.F., Leverty, J.T., Phillips, R.D. and Shimpi, P. (2015), "The value of investing in enterprise risk management", *Journal of Risk and Insurance*, Vol. 82 No. 2, pp. 289-316, doi: [10.1111/jori.12022](https://doi.org/10.1111/jori.12022).
- Guo, M. and Zhang, P. (2007), "Empirical research on enterprise age, R&D investment and performance—evidence from empirical data of a-share listed companies in Zhejiang province", *Communication of Finance and Accounting*, Vol. 36.
- Hannan, M.T. and Freeman, J. (1984), "Structural inertia and organizational change", *American Sociological Review*, Vol. 49 No. 2, pp. 149-164, doi: [10.2307/2095567](https://doi.org/10.2307/2095567).
- Hoyt, R.E. and Liebenberg, A.P. (2011), "The value of enterprise risk management", *Journal of Risk and Insurance*, Vol. 78 No. 4, pp. 795-822, doi: [10.1111/j.1539-6975.2011.01413.x](https://doi.org/10.1111/j.1539-6975.2011.01413.x).
- Jensen, M.C. (1986), "Agency costs of free cash flow, corporate finance, and takeovers", *The American Economic Review*, Vol. 76 No. 2, pp. 323-329.
- Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360, doi: [10.1016/0304-405x\(76\)90026-x](https://doi.org/10.1016/0304-405x(76)90026-x).

- Kanu, M.S. (2021), "A theoretical framework for enterprise risk management and organizational performance", *International Business Research*, Vol. 14 No. 5, pp. 63-77, doi: [10.5539/ibr.v14n5p63](https://doi.org/10.5539/ibr.v14n5p63).
- Karina, R., Lestari, F. and Ivone, I. (2023), "The effect of enterprise risk management on financial performance and firm value: the role of environmental, social and governance performance", *Global Financial Accounting Journal*, Vol. 7 No. 2, pp. 213-229, doi: [10.37253/gfa.v7i2.8706](https://doi.org/10.37253/gfa.v7i2.8706).
- Kommunuri, J., Narayan, A., Wheaton, M. and Jandug, L. (2015), "Enterprise risk management and firm performance empirical evidence from Vietnam".
- Lundqvist, S.A. (2015), "Why firms implement risk governance - stepping beyond traditional risk management to enterprise risk management", *Journal of Accounting and Public Policy*, Vol. 34 No. 5, pp. 441-466, doi: [10.1016/j.jaccpubpol.2015.05.002](https://doi.org/10.1016/j.jaccpubpol.2015.05.002).
- McShane, M.K., Nair, A. and Rustambekov, E. (2011), "Does enterprise risk management increase firm value?", *Journal of Accounting, Auditing and Finance*, Vol. 26 No. 4, pp. 641-658, doi: [10.1177/0148558X11409160](https://doi.org/10.1177/0148558X11409160).
- Modigliani, F. and Miller, M. (1958), "The cost of capital, corporation finance and the theory of investment", *American Economic Review*, Vol. 48, pp. 261-297.
- Nguyen, Q.D., Nguyen, H.T., Vu, O.T.K., Tran, T.V. and Nguyen, H.T.T. (2025), "What drives firms towards digital transformation adoption: evidence from Vietnam", *Journal of International Economics and Management*, Vol. 25 No. 3, pp. 184-201, doi: [10.1108/JIEM-05-2025-0028](https://doi.org/10.1108/JIEM-05-2025-0028).
- Ogutu, J., Bennett, M.R. and Olawoyin, R. (2018), "Closing the gap: between traditional and enterprise risk management systems", *Professional Safety*, Vol. 63 No. 04, pp. 42-47.
- Opler, T., Pinkowitz, L., Stulz, R. and Williamson, R. (1999), "The determinants and implications of corporate cash holdings", *Journal of Financial Economics*, Vol. 52 No. 1, pp. 3-46, doi: [10.1016/S0304-405X\(99\)00003-3](https://doi.org/10.1016/S0304-405X(99)00003-3).
- Pagach, D. and Warr, R. (2011), "The characteristics of firms that hire chief risk officers: chief risk officers", *Journal of Risk and Insurance*, Vol. 78 No. 1, pp. 185-211, doi: [10.1111/j.1539-6975.2010.01378.x](https://doi.org/10.1111/j.1539-6975.2010.01378.x).
- Pierce, E.M. and Goldstein, J. (2018), "ERM and strategic planning: a change in paradigm", *International Journal of Disclosure and Governance*, Vol. 15 No. 1, pp. 51-59, doi: [10.1057/s41310-018-0033-3](https://doi.org/10.1057/s41310-018-0033-3).
- Resende, S., Monje-Amor, A. and Calvo, N. (2024), "Enterprise risk management and firm performance: the mediating role of corporate social responsibility in the European Union region", *Corporate Social Responsibility and Environmental Management*, Vol. 31 No. 4, pp. 2852-2864, doi: [10.1002/csr.2719](https://doi.org/10.1002/csr.2719).
- S&P Global (2023), *Corporate Sustainability Assessment (CSA) Handbook*, S&P Global, available at: <https://www.spglobal.com>
- Standard & Poor's (2008), "Enterprise risk management: Standard & Poor's to apply enterprise risk analysis to corporate ratings", New York: Standard & Poor's Ratings Services, available at: https://www.logicmanager.com/pdf/ERM_for_corporate_ratings.pdf (accessed 2 April 2026).
- Stasse, L.J.A., Hilhorst, C.A.R. and Rouwelaar, J.A.ten. (2025), "Enterprise risk management revisited: a study to identify the elements of ERM", *Journal of Risk Research*, Vol. 28 No. 7, pp. 768-793, doi: [10.1080/13669877.2025.2553846](https://doi.org/10.1080/13669877.2025.2553846).
- Tobin, J. (1969), "A general equilibrium approach to monetary theory", *Journal of Money, Credit, and Banking*, Vol. 1 No. 1, pp. 15-29, doi: [10.2307/1991374](https://doi.org/10.2307/1991374).
- Tontiset, N. (2025), "The study of factors affecting on COSO ERM success and its consequences: an empirical research of Thai-listed companies", *Business: Theory and Practice*, Vol. 26 No. 1, pp. 241-253, doi: [10.3846/btp.2025.17142](https://doi.org/10.3846/btp.2025.17142).
- Tran, D.T.T. and Nguyen, A.T. (2025), "The impact of institutional quality on firms cash holdings: evidence from an emerging market", *Journal of International Economics and Management*, Vol. 25 No. 3, pp. 216-230, doi: [10.1108/JIEM-04-2025-0025](https://doi.org/10.1108/JIEM-04-2025-0025).

Wang, T.S., Lin, Y.M., Werner, E.M. and Chang, H. (2018), "The relationship between external financing activities and earnings management: evidence from enterprise risk management", *International Review of Economics and Finance*, Vol. 58, pp. 312-329, doi: [10.1016/j.iref.2018.04.003](https://doi.org/10.1016/j.iref.2018.04.003).

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