

Financial Risks and Response Strategies in Corporate Acquisitions: A Case Study of Company B

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Abstract

Taking Boeing's 2024 acquisition of Spirit AeroSystems as the research object, this paper constructs a financial risk evaluation system based on the entropy weight method and efficacy coefficient method. It systematically analyzes the impact of acquisition on the financial risk structure in four dimensions: financing, operation, investment, and cash flow. The research findings indicate that Boeing's comprehensive financial risk is at a "low" level, with a severely excessive asset-liability ratio and a negative shift in operating cash flow as the core risk points. Although strategically necessary, the acquisition was implemented against a backdrop of weak financial fundamentals, which exacerbated the decline in operational efficiency and cash flow pressure in the short term. On the basis of these results, this paper proposes strategies for optimizing the asset-liability structure and ensuring cash flow security, providing a practical guide for risk prevention and control in the vertical integration of supply chains by aerospace manufacturers amid quality crises.

Keywords

financial risk, entropy weight method, efficacy coefficient method, risk prevention and control

1 Introduction

1.1 Research background

As a pivotal engine of modern economic growth and a core means of corporate strategic expansion, corporate acquisitions have increasingly demonstrated their strategic value amid the restructuring of the global industrial chain and the intensification of market competition. As an efficient resource allocation method, corporate acquisitions not only promote the optimization and upgrading of industrial structures and achieve economies of scale and scope but also accelerate technological innovation and market integration, creating synergistic value and competitive advantages for enterprises. According to Dealogic data, despite the impact of global economic fluctuations, the total value of global M&A transactions still reached \$3.2 trillion in 2023, fully demonstrating the resilience and strategic status of acquisition activities throughout economic cycles. In modern business history, from the first wave of acquisitions in the late 19th century to the era of globalized acquisitions in the 21st century, acquisition activities have always been a key driving force behind leaps in corporate development and the reshaping of industrial patterns.

In recent years, with the in-depth advancement of globalization and the vigorous development of the digital economy, corporate acquisition activities have exhibited characteristics such as an expanding scale, diversified fields, and complex cross-border operations. They have become an inevitable strategic consideration for enterprises seeking transformation, market expansion, and value chain upgrading. Particularly in high-tech sectors such as aerospace, biomedicine, and artificial intelligence, acquisitions serve as a strategic shortcut for enterprises to acquire core technologies, shorten R&D cycles, and seize market opportunities. However, the high failure rate of acquisition activities has attracted widespread attention from academia and industry, with inadequate financial risk management identified as one of the core factors leading to failure. Financial risk permeates the entire acquisition process—from valuation and financing arrangements to payment methods and post-merger integration—presenting multidimensional challenges related to financing capacity, operational efficiency, investment returns, and cash flow stability. Scientific identification, accurate assessment, and effective control of financial risk not only determine the success of individual acquisition transactions but also affect enterprises' long-term financial health and sustainable development capabilities. Against this backdrop, in-depth research on the formation mechanisms and response strategies of financial risk in corporate acquisitions holds significant theoretical value and practical significance for improving acquisition quality, optimizing resource allocation efficiency, and driving high-quality economic development. This study, through a case analysis of Boeing's 2024 acquisition of Spirit AeroSystems, aims to provide empirical references and strategic guidance on financial risk management for Chinese enterprises engaging in acquisition activities.

1.2 Research Objectives and Significance

This study aims to identify and analyze potential financial risk in the corporate acquisition process in detail and explore corresponding prevention and control strategies. Through a systematic analysis of the typical case of Boeing's 2024 acquisition of Spirit AeroSystems, a scientific and accurate financial risk assessment system is constructed. At the theoretical level, this research strives to overcome the limitations of single-dimensional analysis in traditional financial risk studies. It integrates four core dimensions—financing risk, operational risk, investment risk, and cash flow risk—to establish a multidimensional and dynamic financial risk assessment framework, thereby enriching the theoretical system of corporate acquisition risk management. In terms of assessment methods, this study combines the entropy weight method with the efficacy coefficient method: the entropy weight method is used to objectively determine the weight of each financial indicator, avoiding biases caused by subjective weighting; subsequently, indicators are screened and calibrated in accordance with the *Standard Values for Enterprise Performance Evaluation* issued by the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council, and the efficacy coefficient method is applied for quantitative assessment. This results in a more scientific and practical risk assessment model, providing new insights for the refinement and quantification of financial risk management theories.

At the practical level, this study conducts a longitudinal comparative analysis of Boeing's financial data from 2021-2024, with a specific focus on the dynamic changes in key financial indicators before and after the acquisition (i.e., 2023 vs. 2024). This analysis accurately identifies the substantive impact of the acquisition on the enterprise's financial structure, operational efficiency, and value creation. Beyond providing targeted recommendations for Boeing to optimize acquisition integration strategies and strengthen financial risk prevention, this empirical analysis also offers a referenceable risk management paradigm for Chinese manufacturing enterprises—especially those in the high-end equipment manufacturing sector—when conducting cross-border acquisitions. Against the backdrop of in-depth adjustments to the global economic structure and accelerated industrial chain restructuring, corporate acquisition activities have become increasingly frequent and complex, with ineffective financial risk management being one of the core causes of acquisition failure. This study helps improve the scientific rigor of corporate acquisition decisions, safeguards enterprise asset security, and holds significant practical implications for advancing the international strategic initiatives of Chinese enterprises. Through dual exploration in theory and practice, this research seeks to establish an effective connection between academic value and application value, contributing forward-looking and practical findings to the field of acquisition financial risk management.

1.3 Literature Review

Corporate acquisitions, as a key means to achieve resource integration, strategic transformation, and scale expansion, remain globally active. However, acquisition practices show that complex potential financial risks

often lag behind high failure rates.[1] These risks permeate the entire acquisition process, become concentrated during the integration phase, and severely hinder the realization of acquisition value. Particularly in capital-intensive industries such as high-end manufacturing and aerospace, acquisitions involve massive capital investment, complex asset structures, and long-term synergy expectations-placing greater demands on the identification and control of financial risk. Therefore, systematically organizing existing research findings and deeply understanding the multidimensional composition and dynamic evolution mechanism of financial risk are highly important for constructing a scientific and effective evaluation system.

This study aims to overcome the limitations of traditional single-dimensional risk analysis and establish a multidimensional, dynamic evaluation framework covering financing risk, operational risk, investment risk, and cash flow risk through theoretical integration and methodological innovation. To this end, on the basis of databases such as CNKI (China National Knowledge Infrastructure) and Web of Science, this paper draws on insights from multiple perspectives, including managerial behavior, integration mechanisms, institutional environments, and evaluation methods. Among these, empirical studies reveal the causes of risk, case analyses illustrate dynamic processes, and methodological research lays the foundation for constructing scientific evaluation models. The following section presents a systematic review of the identification logic, multidimensional structure, evaluation tools, and prevention paths of financial risk, providing theoretical support for subsequent empirical modeling on the basis of the Boeing–Spirit AeroSystems acquisition case.

Traditional financial risk research relies heavily on static accounting indicators such as the asset-liability ratio and current ratio, which struggle to capture the dynamic evolutionary characteristics of risks during acquisitions. In recent years, scholars have gradually shifted to a full-process perspective, emphasizing the differences in risk manifestations and transmission mechanisms across different acquisition stages. Zhang Xianzhi and Du Chunming (2020) noted that managerial capabilities suppress acquisition premiums by reducing information asymmetry and promote performance through improving integration efficiency-indicating that risk control begins prior to decision-making[2]. Li Danmeng et al. (2018) further reported that managerial overconfidence leads to inflated goodwill, and such risks typically become explicit through impairment tests 1–2 years after mergers and acquisitions.[3] This suggests that financial risk is not an isolated event but rather a continuous process embedded in the full acquisition cycle, requiring the establishment of a dynamic identification mechanism.

Furthermore, the heterogeneity of acquisition motives further complicates risk identification. Zhou Shaoni and Wen Haitao (2013) proposed that performance evaluation should follow the logical chain of “industrial evolution – motives – indicators.”[4] Ignoring strategic intentions and judging risks solely on the basis of short-term financial data may easily lead to misjudgement. Lin Jihong and Liu Ying (2013) also confirmed that overseas acquisitions for resource purposes exhibit poor short-term financial performance but outperform other industries in long-term performance.[5] These studies collectively suggest that effective risk identification must integrate industrial characteristics and strategic goals, distinguish between strategic losses and substantive financial crises, and avoid simplistically classifying all high-investment or high-leverage cases as “high risk”. “

Existing studies have gradually moved beyond the single-dimensional focus on financing capacity to explore multidimensional risk structures. As early as 2008, Ge Jiashu and Zhan Meisong emphasized in their financial report analysis framework that five dimensions-liquidity, financial flexibility, expected cash flow, profitability, and market risk-should be examined simultaneously, laying the foundation for a multidimensional risk perspective.[6] Hou Xuhua and Peng Juan (2019), in their research on early warnings of risk for internet insurance companies, comprehensively considered indicators such as asset liquidity, premium income stability, and the expense ratio, reflecting the integration of operational and cash flow risks.[7] This approach is highly consistent with the “financing – operation – investment – cash flow” four-dimensional framework proposed in this study.

Specifically, financing risk manifests as an enterprise’s debt burden and solvency, often measured by indicators such as the asset–liability ratio and interest coverage ratio; operational risk reflects asset utilization efficiency and cost control capabilities, involving inventory turnover, accounts receivable management, etc.; investment risk is associated with the rationality of acquisition premiums, the goodwill scale, and the possibility of asset impairment; and cash flow risk focuses on the ability to generate free cash flow and the degree of financing constraints, serving as the lifeline for an enterprise’s sustainable operations. Liu Ruizhi et

al. (2014) reported that strategic integration has the greatest impact on financial performance, whereas cultural integration affects market reactions-indirectly indicating that different integration dimensions correspond to different types of financial risk.[8] Hu Haiqing et al. (2016) verified the synergistic effect of Geely Volvo's merger via the EVA (economic value added) model, which also implicitly involves a comprehensive evaluation of investment returns and cash flow creation capabilities.[9] These studies demonstrate that multidimensional risk structures not only have theoretical rationality but also practical operability.

In terms of evaluation methods, early studies mostly relied on expert scoring or simple weighting, which suffer from significant subjective biases. In recent years, scholars have focused on introducing more objective and systematic quantitative tools. Hou Xuhua and Peng Juan (2019) combined the entropy weight method with the efficacy coefficient method for early risk warning in internet insurance companies: the former was used to objectively determine indicator weights, whereas the latter standardized scores-effectively improving the scientific rigor of evaluation.[7] Gong Xiaofeng (2013) also applied the efficacy coefficient method to evaluate the integration performance of cross-border acquisitions, integrating qualitative and quantitative indicators to enhance model applicability.[10] These methodological explorations provide direct references for the construction of a combined "entropy weight method + efficacy coefficient method" model.

Notably, the authority and industry adaptability of indicator selection are crucial. The *Standard Values for Enterprise Performance Evaluation* issued by SASAC (State-owned Assets Supervision and Administration Commission of the State Council) is widely recognized as a domestic industry benchmark and has been extensively applied in enterprise performance and risk evaluation. Although the provided literature does not directly cite this standard, Hou Xuhua et al. (2019) emphasized "adjusting thresholds on the basis of industry characteristics" in indicator calibration,[7] and Zhang Jide and Zheng Lina (2012) also suggested that risk management frameworks should "start with environmental analysis"-both implicitly reflecting the need for standardized and context-specific indicator systems.[11] Therefore, combining the objective weighting advantages of the entropy weight method with the industry adaptability of authoritative standard values can effectively enhance the practicality and comparability of the evaluation model.

In the face of multidimensional financial risk, prevention and control strategies also need to be systematic. Zhang Jide and Zheng Lina (2012) proposed a three-dimensional financial risk management framework for group enterprises, including the target layer, management layer, and foundation layer, emphasizing top-down systematic risk prevention.[11] From a strategic management perspective, Li Weian and Dai Wentao (2013) constructed a relational framework among corporate governance, internal control, and risk management, noting that the synergy of these three elements is the foundation of risk prevention.[12] These studies collectively indicate that effective risk prevention cannot rely solely on post hoc remedies but must be embedded in an enterprise's strategic and governance systems.

At the operational level, Cai Long (2018) suggested in his research on mergers and acquisitions in the general aviation manufacturing industry that phased integration strategies should be developed on the basis of SWOT analysis, with particular attention to technological synergy and supply chain stability.[13] Li Yongjia (2014) also emphasized that acquisitions in the aerospace manufacturing industry require high attention to core technology retention and capital structure optimization.[14] These industry-specific recommendations highlight the need for deep integration between general risk management principles and industrial characteristics. Additionally, Wang Jing and Tian Manwen (2010) noted that acquisition integration must "prioritize tasks and proceed step by step," with different risk priorities focused on in different stages-providing practical insights for constructing dynamic risk evaluation and response mechanisms.[15]

In cross-border acquisitions, institutional and cultural differences further amplify financial risk. Through an analysis of the Geely Volvo case, Du Jian et al. (2021) reported that after enterprises are acquired in developed countries, firms from emerging markets need to dynamically switch between different institutional logics to achieve integration performance.[16] Institutions such as Shanghai International Studies University (2019) also confirmed that language distance significantly reduces acquisition performance through cultural effects.[17] These studies illustrate that financial risk originates not only from financial statement items but also from institutional frictions and cultural conflicts, which may indirectly erode financial value through channels such as reduced synergy efficiency and talent loss.

Political connections also constitute a localized risk source. Zhang Wen et al. (2013) reported that enterprises with political connections conduct more acquisitions but achieve poorer performance, reflecting

resource misallocation caused by nonmarket mechanisms.[18] Wang Jing and Tian Manwen (2010) noted that government intervention has a dual effect on the integration efficiency of state-owned listed companies.[15] These conclusions indicate that in the Chinese context, financial risk evaluation must incorporate variables such as ownership nature and governance structure to avoid ignoring the interference of institutional distortions on financial decisions.

In summary, existing studies have revealed the complexity of financial risk in corporate acquisitions from multiple dimensions, revealing an evolutionary trend from static to dynamic, from single-dimensional to multidimensional, and from subjective to objective. In particular, substantial achievements have been made in risk structure identification, evaluation method innovation, and prevention system construction, providing a solid foundation for this study. However, several gaps remain: first, although multidimensional risk frameworks are advocated, they lack a unified operational definition and indicator system; second, while the entropy weight method and efficacy coefficient method have been applied, they have not been systematically integrated with authoritative industry standards (such as SASAC's standard values); third, dynamic risk evaluation models for specific industries such as high-end manufacturing remain absent. Against this backdrop, this study intends to take Boeing's 2024 acquisition of Spirit AeroSystems as a case, integrate the four risk dimensions of financing, operation, investment, and cash flow, construct a dynamic evaluation model that uses the entropy weight method for objective weighting, refers to SASAC's standard values for calibration, and applies the efficacy coefficient method for quantification. This effort not only addresses the shortcomings of existing research in terms of methodological refinement and industry adaptability but also aims to provide a new paradigm for financial risk management in corporate acquisitions that combines theoretical depth and practical value.

2 Concept Definition and Theoretical Basis

2.1 Concept of Corporate Acquisition

2.1.1 Definition of Acquisition

Acquisition refers to a business activity in which one enterprise obtains control or management rights over another enterprise by purchasing equity or assets. From a legal perspective, the core feature of acquisition is the transfer of control rights rather than the disappearance of the corporate legal personality, and the acquired party usually retains its independent legal subject status after the transaction. From a financial perspective, acquisition is an important decision for corporate capital allocation, involving significant capital expenditure, restructuring of the asset-liability structure, and redistribution of future cash flows. Unlike mergers, in acquisition activities, the acquirer maintains its own integrity, while the acquired party becomes its subsidiary or business unit. This characteristic makes the transmission of financial risk in the acquisition process more hierarchical and complex.

2.1.2 Motives and Objectives of Corporate Acquisitions

The motives and goals of corporate acquisitions constitute the internal driving force and value orientation of acquisition decisions, directly determining the design of acquisition plans, resource integration paths, and characteristics of financial risk. From a theoretical perspective, acquisition motives can be categorized into three core dimensions: strategic motives, financial motives, and agency motives. Strategic motives stem from enterprises' need to pursue long-term competitive advantages, manifested in their ability to acquire synergies, expand their market share, or obtain core technologies and critical resources; financial motives focus on optimizing capital allocation efficiency, including leveraging tax advantages, realizing asset revaluation, diversifying operational risks, or improving capital structure; and agency motives, by contrast, relate to managers' self-interested behaviors-such as expanding enterprise scale to enhance personal reputation or compensation levels. These motives are often intertwined, collectively shaping acquisition decisions.

At the specific goal level, modern corporate acquisitions typically establish a multitiered goal system: at the market level, they aim to expand market share, penetrate regional markets, or extend customer bases; at the technology level, they pursue core patents, R&D teams, or innovation capabilities to shorten the technology catch-up cycle; at the operational level, they seek vertical supply chain integration, production scale optimization, or management experience sharing; and at the financial level, they focus on improving

profitability, optimizing asset turnover efficiency, or enhancing cash flow stability. Notably, the quality of acquisition goal setting directly affects the subsequent level of financial risk, as overly aggressive or diversified goals often lead to the accumulation of risk.

2.2 The Concept of Financial Risk

2.2.1 Definition and Types of Financial Risk

Financial risk refers to the possibility that an enterprise may experience deteriorated financial conditions, losses in financial performance, or deviations from financial goals due to uncertainties in internal and external environments during its business and financial activities. In the context of corporate acquisitions, financial risks exhibit characteristics of amplification, transmission, and lag, resulting from the profound changes that acquisition activities bring to the asset-liability structure, cash flow patterns, and resource allocation efficiency. On the basis of the risk formation mechanism and manifestation dimensions, this study systematically classifies acquisition-related financial risk into four core types: financing risk, operational risk, investment risk, and cash flow risk.

Financing risk refers to the risk that an enterprise fails to fulfill its debt obligations on time because of an unbalanced debt structure or insufficient solvency. In the acquisition context, it manifests as a surge in the asset-liability ratio, increased interest burden, and debt maturity mismatch caused by acquisition financing. The key evaluation indicators include the asset-liability ratio, current ratio, quick ratio, and interest coverage ratio, among which an asset-liability ratio exceeding 70% is generally regarded as a high-risk threshold. After Boeing's acquisition of Spirit AeroSystems, the expansion of the debt scale may significantly exacerbate its already strained financing pressure.

Operational risk arises from the decline in enterprise operational efficiency and the weakening of asset management effectiveness, manifested as slower asset turnover, increased occupation of working capital, and unmet expectations of operational synergy. During the acquisition integration period, problems such as asset idleness, inventory overstocking, and prolonged accounts receivable collection cycles are common. The core measurement indicators include the accounts receivable turnover rate, inventory turnover rate, and total asset turnover rate; the continuous decline of these indicators often signals the aggravation of operational risk.

Investment risk refers to the risk of the inefficient allocation of acquisition capital and unfulfilled expected returns. It specifically manifests as excessive acquisition premiums, distorted asset valuations, and extended investment payback periods, which directly erode shareholder value. The evaluation indicators include return on equity (ROE) and return on total assets (ROA); the negative changes in these indicators after the acquisition reflect the actual occurrence of investment risk.

Cash flow risk is the concentrated manifestation of acquisition financial risk, referring to a liquidity crisis where an enterprise's cash inflows are insufficient to support its cash outflow needs. Acquisition activities often lead to large-scale cash outflows and fluctuations in operating cash flows; if the expected synergy fails to be achieved, it triggers a chain reaction, such as the deterioration of free cash flow and a shortage of financing funds. The cash flow ratio, free cash flow, and cash flow interest coverage ratio are core monitoring indicators, among which consecutive negative free cash flow is a high-risk signal.

2.2.2 Theoretical Basis

Financial risk research is rooted in three core theories: risk management theory, principal-agent theory, and information asymmetry theory. Risk management theory provides a systematic framework for enterprise financial risk prevention and control, emphasizing the control of risks within an acceptable range through closed-loop management of risk identification, assessment, monitoring, and response. In the context of acquisitions, this theory guides enterprises to establish a forward-looking risk early warning mechanism and dynamic adjustment strategies to achieve the optimal balance between risks and benefits.

Principal-agent theory reveals the endogenous root of acquisition financial risk. Owing to the separation of ownership and control, management may drive inefficient acquisitions for personal interests (such as expanding the enterprise scale and enhancing personal reputation), leading to financial risks such as excessive debt and resource mismatch. When considering the decision-making process of Boeing's acquisition of Bishi,

it is necessary to be vigilant against irrational financial behavior caused by management overconfidence or short-term performance pressure.

The theory of information asymmetry explains the formation mechanism of acquisition valuation bias. There exists an information gap between the acquirer and the target company, with the seller typically possessing more internal information, which can easily lead to adverse selection and moral hazard. In technology-intensive industries such as aviation manufacturing, differences in judgments between acquirers and targets regarding asset quality, technological value, and integration difficulties often lead to financial risks such as overvaluation and underestimation of synergistic effects. Together, these three theories form the theoretical cornerstone for analyzing the formation mechanism and transmission path of acquisition financial risk, providing academic support for risk identification and the design of prevention and control strategies.

3 Case Analysis of Company B

3.1 Research Methods

The research adopted a combination of a single-case study and quantitative analysis, with Boeing Company as the subject of study. It emphasizes the application of financial indicator analysis, selecting highly representative financial indicators from four aspects, financing, investment, financing, and cash flow risk, to analyze the trend of changes in Boeing's financial indicators over the past four years and identify the impact of acquisition activities on the company's financial risk. The entropy weight method and efficacy coefficient method are combined to assess Boe's financial risk and to systematically evaluate the scoring results. By integrating financial indicator analysis with quantitative analysis, this study provides a deeper and more precise analysis of various financial risks triggered by Boeing's acquisition activities.

3.2 Case Overview

3.2.1 Overview of the Acquisition and Acquisition Strategies

3.2.1.1 Introduction to the Boeing Company

Founded in 1916, the Boeing Company stands as one of the global leaders in the aerospace industry and is the largest aviation manufacturing enterprise in the United States. As one of the world's two major civil aircraft manufacturers, Boeing's business spans multiple sectors, including commercial aircraft, defense, space and security systems, and global services. The company's product line encompasses various commercial aircraft series, such as 737, 747, 777, and 787, along with diverse military aircraft, satellites, and missile defense systems. By the end of 2023, Boeing employed approximately 170,000 individuals globally, with operations spanning over 150 countries and regions and generating annual revenue of approximately \$68 billion. Within the aviation manufacturing industry chain, Boeing holds a pivotal integrator position, coordinating thousands of suppliers through a complex global supply chain network, with the strategic role of primary airframe structure suppliers being particularly crucial. In early 2024, Boeing found itself embroiled in a production quality crisis. On January 5, 2024, an Alaskan Airlines Boeing 737-9 passenger aircraft experienced door detachment in mid-air shortly after takeoff, revealing issues with its production quality control. The Federal Aviation Administration subsequently conducted an audit of the production of the Boeing 737 MAX series aircraft, with 33 out of 89 audit items failing to meet standards. This series of events severely damaged Boeing's market reputation and customer trust, necessitating urgent and fundamental measures to rebuild its quality control system. In this context, Boeing sought to reshape its supply chain management and control capabilities through vertical integration.

3.2.1.2 Introduction to Spirit AeroSystems Holdings, Inc.

Spirit AeroSystems Holdings, Inc. was founded in 2005 through the divestiture and restructuring of certain assets from Boeing's Commercial Airplanes division, with its headquarters located in Wichita, Kansas, USA. As a leading global manufacturer of aviation structural components, Spirit AeroSystems specializes in designing and manufacturing key structural parts such as aircraft fuselages, wings, and thrust reversers. Its major clients include aviation giants such as Boeing and Airbus. The company employs over 16,000 individuals and operates multiple production bases across the United States, Europe, and Asia. Prior to the

divestiture, Spirit AeroSystems served as the core fuselage supplier for the Boeing 737 program; following the divestiture, 70% of its revenue still comes from Boeing and 23% from Airbus, forming a business model heavily reliant on its major clients. This deeply tied supply relationship has closely linked Spirit AeroSystems' operational stability to Boeing's strategic objectives amidst the Boeing 737 MAX crisis and subsequent frequent quality issues and has also set the stage for potential future acquisitions.

3.2.2 Acquisition Process

After the incident on January 5, 2024, when a door latch fell off from an Alaskan Airlines Boeing 737-9 aircraft, the Federal Aviation Administration of the United States strengthened its regulatory review of Boeing's supply chain. As the manufacturer of the door latch component, Biwei initiated an investigation by the Attorney General of Texas on March 28, 2024. These external pressures further accelerated the acquisition process.

On April 23, 2024, Boeing and Iberia reached a financial assistance agreement worth \$425 million, aimed at alleviating the inventory backlog and cash flow pressure faced by Iberia. This arrangement is considered a key prerequisite for acquisition negotiations.

On July 1, 2024, Boeing officially announced that it had reached a definitive acquisition agreement with BAE Systems. According to the announcement, the transaction will be paid in full stock, with an equity valuation of approximately \$4.7 billion for BAE Systems, equivalent to \$37.25 per share. After including BAE systems' reported net debt, the total transaction value is approximately \$8.3 billion. The transaction structure design has significant industry characteristics: Boeing will acquire almost all BAE systems' commercial business related to Boeing, as well as other commercial, defense, and after-sales businesses; meanwhile, Airbus will acquire BAE systems' business units related to its aircraft. This arrangement aims to address potential antitrust concerns.

Between May and October 2024, Bishi Rui implemented multiple rounds of production adjustments, including laying off approximately 450 workers in May and imposing a 21-day mandatory leave on 700 employees in October, reflecting production uncertainty during the transition period.

On June 26, 2025, the UK Competition and Markets Authority (CMA) issued a preliminary statement to assess whether the transaction constituted a "relevant merger situation" as defined in the Enterprise Act 2002 and whether it would result in a "substantial lessening of competition in any market for goods or services in the UK." On June 30, 2025, the CMA officially launched the first phase of its merger investigation, focusing on the impact of the transaction on the competitive landscape of the global aviation manufacturing industry, particularly the potential impact on Airbus' competitive position, given that Bishi Rui also supplies key fuselage sections for some Airbus aircraft models. The CMA set August 28, 2025, as the deadline for its first-phase decision. On August 29, 2025, the CMA issued a decision approving the acquisition, determining that no further investigation was necessary in the second phase.

Focusing on the case of Boeing's acquisition of Iridian Systems, its motivation bears distinct industry characteristics. First, as an upgrade of long-term supply chain relationships, it aims to strengthen control over key airframe and structural components and mitigate supply chain security risks. Second, in the wake of the 737 MAX crisis, there is an urgent need to regain market trust, and vertical integration is used to enhance quality control capabilities and delivery reliability. Third, facing competitive pressure from Airbus, integrating Iridian's composite material technology is essential to accelerate the development of next-generation aircraft. These strategic motivations are translated into specific goals: restoring production stability in the short term, optimizing the cost structure in the medium term, and building technological barriers in the long term. However, such large-scale strategic acquisitions often involve significant financial risk, especially when strategic goals do not align with financial affordability, which can easily lead to issues such as excessive debt burden, integration cost overruns, and increased cash flow pressure. Therefore, accurately identifying acquisition motivations and goals is the logical starting point for assessing the formation mechanism of financial risk and designing prevention and control strategies.

3.3 Qualitative Identification of Financial Risk in Case Enterprises

The acquisition behavior of enterprises significantly alters their financial structure. This study identifies the financial risk of Boeing Company in four dimensions: financing, operating, investment, and cash flow risk.

3.3.1 Fundraising Risk

Table 1: Fundraising activity indicators of the Boeing Company from 2021-2024

Year	2024	2023	2022	2021
Working capital (in millions of US dollars)	30920.00	13448.00	19471.00	26674.00
Current ratio	1.32	1.14	1.22	1.33
Quick ratio	0.42	0.31	0.35	0.36
Cash ratio	0.27	0.17	0.16	0.20
Debt-to-asset ratio	1.025	113	1.12	1.11

Data source: Annual reports of the Boeing Company from 2021-2024

3.3.1.1 Serious Imbalance in Capital Structure

Boeing's asset-to-liability ratio has been above the warning threshold for four consecutive years. From 2021-2023, it remained in the range of 1.11-1.13. Although it slightly decreased to 1.025 in 2024, it was still significantly higher than the safety threshold of 1.0, indicating that the company continued to be insolvent. This abnormal capital structure reflects that Boeing failed to effectively repair its balance sheet after the 737 MAX crisis, and the \$8.3 billion acquisition of Iridium in 2024 (including net debt) further tested its financial carrying capacity. Notably, the decrease in the asset-to-liability ratio in 2024 may be due to the asset revaluation effect brought about by the acquisition rather than fundamental financial repair, masking potential long-term debt repayment pressure.

3.3.1.2 Significant Fluctuations in Short-Term Debt-Paying Ability

The current ratio exhibited a V-shaped trend, decreasing from 1.33 in 2021 to 1.14 in 2023 and then rising to 1.32 in 2024, indicating significant adjustments in short-term liquidity management strategies before and after the acquisition. However, the quick ratio and cash ratio reveal deeper risks: the quick ratio continued to decline from 2021-2023 (0.36→0.31), and although it improved to 0.42 in 2024, it was still far below the healthy standard of 1.0; the cash ratio decreased from 0.20-0.17 during the same period and then rose to 0.27 in 2024, indicating the company's high dependence on nonquick assets such as inventory. This contradiction of "abundant liquidity on paper but weak actual payment ability" highlights the asset liquidity dilemma faced by Boeing as an aviation manufacturing enterprise, where many funds are tied up in work-in-process and finished products with long production cycles and difficult liquidation.

3.3.1.3 Deterioration in Working Capital Management Efficiency

From 2021 to 2023, working capital decreased sharply from \$26,674 million to \$13,448 million, a decrease of 49.6%, reflecting a significant decline in a company's working capital management efficiency in response to the impacts of the 737 MAX grounding and quality crisis. In 2024, working capital rebounded significantly to \$30,920 million, mainly due to cash inflows from financing activities brought about by the acquisition of Iberia Airlines (with \$425 million in advance payments and subsequent acquisition financing), rather than improvements in operating cash flow. Although this exogenous capital injection alleviated short-term pressure, it did not address the fundamental issue of weakened endogenous working capital creation capacity.

3.3.1.4 Concerns about the Structure of Acquisition Financing

Boeing's all-stock acquisition of Iridium (with an equity value of \$4.7 billion) has avoided directly increasing its debt burden, but it may trigger three financing risks: first, dilution of equity leads to a decrease in earnings per share, affecting shareholder value; second, the market has doubts about the integration effect of the acquisition. After the door seal fell off incident in January 2024, the company's stock price volatility intensified, increasing the uncertainty of equity financing. Third, the Iridium's original \$4.1 billion in liabilities were included in the consolidated statements, further increasing Boeing's overall debt burden. According to the "Standard Values for Enterprise Performance Evaluation" issued by the State-owned Assets Supervision and Administration Commission, the excellent value of the asset-liability ratio in the aviation manufacturing industry should be lower than 0.60, whereas Boeing's ratio should be continuously higher than 1.0, with a financial leverage risk rating of "serious".

3.3.1.5 Prominent Disadvantages in Industry Comparison

Compared with its main competitor, Airbus, Boeing lags behind in all financing risk indicators. Airbus's asset-liability ratio in 2023 was 0.89, and its current ratio was 1.42, which was significantly better than Boeing's values of 1.13 and 1.14 for the same period. Given the industry characteristics of high fixed costs and long research and development cycles in aviation manufacturing, this gap will limit Boeing's future investment capabilities and strategic flexibility.

3.3.2 Operational Risk

Table 2: Operating Activity Indicators of the Boeing Company from 2021-2024

Year	2024	2023	2022	2021
Inventory turnover rate (times/year)	0.80	0.89	0.80	0.74
Accounts receivable turnover rate (times/year)	25.20	30.12	25.83	27.10
Current asset turnover ratio (times/year)	0.56	0.71	0.61	0.54
Fixed asset turnover rate (times/year)	6.03	7.33	6.21	5.48
Total asset turnover ratio (times/year)	0.45	0.57	0.48	0.43
Cost-to-income ratio	1.20	0.90	0.99	0.95
Net Profit Margin	-0.18	-0.03	-0.07	-0.07
Net cash flow from operating activities (in millions of US dollars)	-12080.00	5960.00	3512.00	-3416.00

Data source: 2021-2024 Boeing Company Annual Reports

3.3.2.1 Comprehensive Pressure on Asset Operation Efficiency

After Iberia was acquired in 2024, Boeing's asset turnover rates generally declined. The inventory turnover rate decreased from 0.89 times in 2023 to 0.80 times, reflecting the intensified inventory backlog during the supply chain integration process. The accounts receivable turnover rate decreased from 30.12 times to 25.20 times, indicating a longer payment collection cycle and increased pressure on customer credit management. The turnover rates of current assets and total assets fell from 0.71 times and 0.57 times, respectively, to 0.56 times and 0.45 times, indicating that acquisition integration significantly reduced efficiency in asset utilization. Although the turnover rate of fixed assets remained relatively high at 6.03 times, it was significantly lower than the 7.33 times in 2023, indicating that capacity utilization was impacted by both the 737-9 door jamming incident and the acquisition integration.

3.3.2.2 The Cost Control Capability Has Deteriorated Sharply

The cost-to-income ratio soared from 0.90 in 2023 to 1.20 in 2024, hitting a four-year high, indicating that every dollar of sales revenue generated requires a cost of \$1.20. This outlier far exceeds the good level of 0.85 for the aviation manufacturing industry in the "Standard Values for Enterprise Performance Evaluation" issued by the State-owned Assets Supervision and Administration Commission, revealing significant nonrecurring expenses incurred from quality rectification, legal compensation, and acquisition integration. Correspondingly, the net profit margin on sales deteriorated from -0.03-0.18, with the loss margin expanding fivefold, and the operating loss situation significantly worsened.

3.3.2.3 Cash Flow Crisis Has Become Increasingly Prominent

The net cash flow from operating activities shifted dramatically from a positive inflow of \$596 billion in 2023 to a negative outflow of \$120.8 billion in 2024, indicating a steep decline in cash flow generation. This change is closely related to the large-scale recall and rectification, customer compensation, and inevitable integration expenses following the 737-9 door detachment incident, indicating that the company's core business profitability has been severely damaged.

3.3.3 Significant Transmission Effect of Operational Risk

Although the acquisition of Iberia is aimed at addressing supply chain quality issues, it exacerbates the decline in operational efficiency in the short term due to increased integration costs and management complexity. The deterioration of operating cash flow further limits the ability to invest in R&D and upgrade production capacity, weakening long-term competitiveness. Compared with Airbus, Boeing's total asset turnover rate in 2024 (0.45) is lower than the industry benchmark (0.62), and the gap in net profit margin on

sales widened to 8 percentage points, indicating a continued expansion of operational disadvantages. Overall, Boeing’s operational risks have evolved from cyclical fluctuations to structural difficulties, and fundamental improvements in operational efficiency through lean management, process reengineering, and strategic focus are urgently needed.

3.3.4 Investment Risk

Table 3: Investment risk indicators of the Boeing Company from 2021-2024

year	2024	2023	2022	2021
Return on Assets (ROA)	-0.0807	-0.0162	-0.0358	-0.0105
Return on Equity (ROE)	1.119	0.1344	0.3215	-0.97
Operating Profit Margin	-0.1609	-0.0099	-0.0533	-0.0466
Cost-to-income Ratio	-0.15	-0.03	-0.05	-0.08
Return on Capital	-0.08	0.04	-0.04	-0.03

Data source: Annual reports of the Boeing Company from 2021-2024

3.3.4.1 Sustained Deterioration in Core Profitability

The return on assets (ROA) has been negative for four consecutive years, further worsening to -8.07% in 2024—nearly five times the decline of 2023 (-1.62%) and far below the “excellent” ROA benchmark of 4.5% for the aerospace manufacturing industry specified in SASAC’s *Standard Values for Enterprise Performance Evaluation*. Notably, return on equity (ROE) had an abnormal value of 1.119 in 2024. Given the company’s insolvent status (asset–liability ratio > 1) and ongoing losses, this indicator may reflect data anomalies or special accounting treatments, and the actual return on equity capital remains unoptimistic. The operating profit margin plummeted from -0.99% in 2023 to -16.09% in 2024, whereas the cost–profit ratio deteriorated to -15% simultaneously, revealing severe damage to the company’s core business value creation capacity and a continuous decline in investment efficiency.

3.3.4.2 Significant Decline in Capital Allocation Efficiency

The return on capital shifted from 4% in 2023 to -8% in 2024, indicating a severe imbalance between the company’s capital input and output. This trend is directly related to the \$8.3 billion strategic investment in acquiring Spirit AeroSystems. Although the acquisition aimed to address supply chain quality issues exposed by the 737-9 plug door incident, the massive capital expenditure failed to translate into corresponding returns in the short term; instead, it intensified investment return pressure due to increased integration costs and quality rectification expenses. Analysis via the entropy weight method reveals that investment risk indicators account for approximately 20% of the weight in Boeing’s overall financial risk system and that their deterioration has a significant effect on the overall risk level.

3.3.4.3 Unmet Expectations for Strategic Investment Synergy

Boeing’s acquisition of Spirit AeroSystems is essentially a strategic investment intended to enhance quality control capabilities and supply chain stability through vertical integration. However, 2024 financial data show that while working capital increased significantly to 12.08 billion, ROA declined further. This indicates that strategic synergy effects have not yet materialized; instead, “negative synergy” has emerged due to increased integration costs and management complexity. Compared with Airbus, Boeing’s 2024 ROA (-8.07%) was significantly lower than the industry benchmark (2.3%), and the gap in investment efficiency continued to widen.

3.3.5 Complexification of the Investment Risk Transmission Mechanism

Boeing investment risk has formed a risk transmission chain: “strategic decision-making → capital expenditure → profit deterioration → credit decline → rising financing costs.” Conducting a large-scale acquisition while insolvent (asset-liability ratio > 1) has further compressed the company’s financial buffer space; the decline in operational efficiency (total asset turnover ratio falling from 0.57 to 0.45) has restricted the ability to realize investment returns; and sustained losses have weakened internal financing capacity, increasing reliance on external financing—creating a vicious cycle among investment risk, financing risk, and operational risk. In particular, in the aerospace manufacturing industry, which is characterized by high capital intensity and long investment payback periods, the financial consequences of Boeing’s investment decision-

making errors have been significantly amplified, and the investment risk prevention and control system urgently needs to be restructured.

3.3.6 Cash Flow Risk

Table 4: Cash flow risk indicators of the Boeing Company from 2021-2024

year	2024	2023	2022	2021
Operating cash ratio	-0.18	0.062	0.04	-0.042
Cash recovery rate of all assets	-0.08	0.04	0.03	-0.02
Net operating cash flow per share (in millions of US dollars)	-18.68	9.83	5.90	-5.81
Net income operating index	1.10	-2.68	-0.71	0.81

Data source: Annual reports of the Boeing Company from 2021-2024

3.3.6.1 Cash Generation Capacity Issue

The core indicators all turned significantly negative in 2024, and the operating cash ratio plummeted from 0.062 in 2023 to -0.18, indicating a net cash outflow of 0.18 US dollars for every 1 US dollar of operating income achieved. The cash recovery rate of all assets synchronously decreased from 0.04 to -0.08, indicating a serious impairment of asset cash generation ability. The net cash flow per share deteriorated from \$9.83 million to -\$18.68 million, indicating a reversal in shareholder value creation ability. The deterioration of these indicators far exceeds the range of industry fluctuations. The State Ownery Assets Supervision and Administration Commission's "Enterprise Performance Evaluation Standard Values" stipulate that the good operating cash ratio of the aviation manufacturing industry should not be less than 0.08, whereas Boeing's 2024 indicator is only -225% of the standard value.

3.3.6.2 Structural Imbalance Between Cash and Profit Quality

Although the net operating income index rebounded to 1.10 in 2024 (-2.68 in 2023), this "improvement" was due to a nonbenign combination of expanding losses and increasing cash outflows. On the basis of the analysis of the net profit margin (-18%) and operating cash flow (-12.08 billion US dollars), the company presents a dual crisis of "intensified losses+cash depletion", far exceeding the normal range of "profit cash flow" synergistic fluctuations for healthy enterprises. The entropy method evaluation reveals that the weight of the cash flow risk indicators accounts for 25%, which is the most threatening dimension in Boeing's financial risk system.

3.3.6.3 Acquisition and Integration Exacerbate Liquidity Pressure

The \$8.3 billion acquisition is bound to be strategically necessary, but its implementation on the fragile financial basis of the company's insolvency (debt-to-asset ratio > 1) and negative operating cash flow significantly amplifies cash flow risk. In 2024, the net operating cash flow was -12.08 billion US dollars, far exceeding the historical low of -3.416 billion US dollars in 2021, reflecting the combined effect of acquisition and integration costs, compensation expenses for the 737-9 gate blockage incident, and daily operating capital needs. Moreover, although the current ratio has increased to 1.32, the quick ratio (0.42) and cash ratio (0.27) are still at a dangerous level, and short-term liquidity is highly dependent on inventory realization. Given the long-term characteristics of the aviation manufacturing industry, this structure has difficulty supporting sudden funding needs.

3.3.6.4 Risk Transmission and Industry-Comparative Disadvantages

Boeing's cash flow risk has formed a vicious cycle of "operating losses → cash depletion → external financing → debt accumulation → credit downgrade". Moody's downgraded Boeing's credit rating to Ba1 (junk level) in 2024, further eroding cash reserves due to rising financing costs. Compared with Airbus, Boeing's operating cash ratio in 2024 (-0.18) is much lower than Airbus's industry level of 0.11, with a difference of \$28.51 million in operating cash flow per share, and the liquidity safety margin continues to narrow. Under the characteristics of high fixed costs and long R&D cycles in the aviation manufacturing industry, insufficient cash reserves severely constrain the R&D and delivery capabilities of key aircraft models such as the 787X and 777X, weakening long-term competitiveness.

4 Quantitative Assessment of Financial Risk in Case Enterprises

4.1 Analysis of Financial Indicators via the Entropy Weight Method

The entropy method is based on the objective weighting principle and is used to accurately measure and evaluate the degree of dispersion of specific indicators. To eliminate individual differences effectively and ensure the comparability of various indicators, when the entropy method is used, it is necessary to first standardize and normalize all indicators to minimize the influence of human factors on weight setting and enhance the objectivity and accuracy of the weight results.

Table 5: Preliminary Financial Risk Assessment Indicators for Boeing Company

	year	2024	2023	2022	2021
Fundraising risk	Operating capital (in millions of US dollars)	30920.00	13448.00	19471.00	26674.00
	Current ratio	1.32	1.14	1.22	1.33
	Quick ratio	0.42	0.3	0.35	0.36
	Cash ratio	0.27	0.17	0.16	0.20
	Debt-to-asset ratio	1.025	1.13	1.12	1.11
Operational risk	Inventory turnover rate (times/year)	0.80	0.89	0.80	0.74
	Accounts receivable turnover rate (times/year)	25.20	30.12	25.83	27.10
	Current asset turnover rate (times/year)	0.56	0.71	0.61	0.54
	Fixed asset turnover rate (times/year)	6.03	7.33	6.21	5.48
	Total asset turnover rate (times/year)	0.45	0.57	0.48	0.43
	Cost expense ratio	1.20	0.90	0.99	0.95
	Net Profit Margin	-0.18	-0.03	-0.07	-0.07
	Net cash flows from operating activities (in millions of US dollars)	-12080.00	5960.00	3512.00	-3416.00
Investment risk	Return on Assets (ROA)	-0.08	-0.02	-0.04	-0.01
	Return on Equity (ROE)	1.12	0.13	0.32	-0.97
	Operating profit margin	-0.16	-0.01	-0.05	-0.05
	Cost expense profit margin	-0.15	-0.03	-0.05	-0.08
	Capital return rate	-0.08	0.04	-0.04	-0.03
Cash flow risk	Operating cash ratio	-0.18	0.06	0.04	-0.04
	Cash recovery rate of all assets	-0.08	0.04	0.03	-0.02
	Net operating cash flow per share (in millions of US dollars)	-18.68	9.83	5.90	-5.81
	Net Revenue Operating Index	1.10	-2.68	-0.71	0.81

Data source: Boeing Company Annual Report 2021-2024

4.1.1 Establishing an Evaluation Matrix

When the indicator matrix is constructed, a set of evaluation objects and b evaluation indicators is set. x_{ij} represents the specific data value of the j th evaluation indicator corresponding to the i -th evaluation object, where the value range of i is 1, 2, ..., m and the value range of j is 1, 2, ..., n . Based on this setting, the original data matrix is formed as follows:

$$X_{ij} = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} & \cdots & x_{mn} \end{bmatrix}$$

4.1.2 Data Standardization Processing

Considering that various indicators may have an impact on the calculation results, to ensure the accuracy and credibility of the calculation results, eliminating the role of dimensional factors and standardizing the data involved before conducting specific calculations are necessary. The detailed processing steps are as follows:

To process the positive indicators, the calculation formula is as follows:

$$y_{ij} = \frac{x_{ij} - \min(x_j)}{\max(x_j) - \min(x_j)}$$

The calculation formula for processing negative indicators is as follows:

$$y_{ij} = \frac{\max(x_j) - x_{ij}}{\max(x_j) - \min(x_j)}$$

To ensure the validity of the standardized data, 0.0001 is added to the final calculation result.

4.1.3 Defining Standardized Values

The proportion of the nth indicator for each evaluation object is calculated via the following formula:

$$P_{ij} = \frac{y_{ij}}{\sum_{i=1}^m y_{ij}}$$

4.1.4 Calculating the Entropy Value

The calculation formula is as follows:

$$e_j = -\frac{1}{\ln n} \sum_{i=1}^n P_{ij} \ln P_{ij}$$

4.1.5 Calculating the Degree of Variation of Indicators

The degree of variation of the jth indicator is calculated via the following formula:

$$g_j = 1 - e_j$$

4.1.6 Calculating the Indicator Weights

The weight of the jth indicator is calculated via the following formula:

$$W_j = \frac{g_j}{\sum_{i=1}^m g_j}$$

4.1.7 Calculating the Comprehensive Score

The calculation formula is as follows:

$$Z_{ij} = W_j * X_{ij}$$

4.2 Selection of Indicators

The indicator data provided by the “Enterprise Performance Evaluation Standard Values” formulated by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) serve as an important reference basis. On the basis of the characteristics of the aerospace industry and the financial situation it faces, seven indicators that can effectively reflect Boeing’s financial situation are retained, as shown in Table 6:

Table 6: Weights of the risk assessment indicators for the Boeing Company

	Entropy Value	Coefficient of Difference	Weight
Quick Ratio	0.720	0.280	13.38%
debt-to-asset ratio	0.485	0.515	24.60%
Current asset turnover rate (times/year)	0.598	0.402	19.19%
Return on Assets (ROA)	0.780	0.220	10.48%
Return on Equity (ROE)	0.765	0.235	11.24%
Operating profit margin	0.785	0.215	10.29%
Operating cash ratio	0.774	0.226	10.81%

4.3 Financial Risk Assessment Based on the Efficiency Coefficient Method

The efficacy coefficient method is a quantitative evaluation tool that is based on the financial data of the enterprise itself and references industry benchmarks. It can systematically evaluate the overall financial risk level of the enterprise and effectively identify which indicators have a significant effect on the financial risk

of the enterprise. This method provides a more objective and targeted basis for risk assessment by combining a company’s own situation with the general industry situation.

4.3.1 Determining the Evaluation Criteria

The criteria for dividing the evaluation standards of the efficacy coefficient method are shown in Table 8:

Table 7: Criteria for dividing the evaluation criteria of the efficacy coefficient method

Rating Level	Rating Level	Excellent	Good	Pass	Poor	Very Poor
Evaluation Criteria	Evaluation Criteria	1.0	0.8	0.6	0.4	0.2

- (1) Calculate the basic score of this file: indicator weight × standard coefficient of this file
- (2) Calculate the upper-level basic score: indicator weight × upper-level standard coefficient
- (3) Calculate the efficacy coefficient: “actual value of the indicator - standard value of this level”/”upper level standard value - standard value of this level”.
- (4) Calculate the adjustment score: single efficacy coefficient x (upper-level basic score - current-level basic score)
- (5) Obtain scores for individual basic indicators: basic score for this level+adjusted score
- (6) Calculate the comprehensive score: (∑ single indicator score value)/(∑ single indicator weight)

This standard value refers to the standard value corresponding to the lower level when the indicator value is in the adjacent range of two levels. If the value of a certain indicator is higher than the optimal value, the score of that indicator is recorded as 1, and its weight is itself; if the value of a certain indicator is lower than the worst value, the score of that indicator is recorded as 0.

4.3.2 Classification of Risk Levels

According to the Implementation Rules for Comprehensive Performance Evaluation of Central Enterprises issued and implemented by the State-Owned Assets Supervision and Administration Commission, the financial risk of enterprises is divided into 5 levels, and the specific division is shown in Table 8.

Table 8: Classification of risk levels

Risk level	Index interval	Risk situation description
Minimal risk (A)	0.85 ≤ Index ≤ 1	The financial condition of the enterprise is healthy and unlikely to cause financial risks
Minor risk (B)	0.70 ≤ Index < 0.85	The financial condition of the enterprise is good, and the probability of financial risks occurring is low
Significant risk (C)	0.5 ≤ Index < 0.7	The financial situation of the enterprise is average, and there is a high possibility of financial risks occurring
Major risk (D)	0.4 ≤ Index < 0.5	The financial condition of the enterprise is poor, and the probability of facing financial risks has significantly increased
Major risk (E)	0 ≤ Index < 0.4	The financial situation of the enterprise is extremely poor, and the probability of financial risks is extremely high

4.4 Comprehensive Evaluation Results of Financial Risk

Table 9: Financial risk indicator ratings for 2024

Indicator Rating Table											
indicator	Weight	Actual value	This standard coefficient	Upper standard coefficient	This standard value	Upper standard value	Efficiency coefficient	Basic points of this file	Upper level basic score	Adjusted score	Single indicator score
Quick ratio (%)	0.1566	0.42	0.2	0.4	0.4	0.8	0.05	0.0313	0.0626	0.0016	0.0329
Asset liability ratio (%)	0.1174	102.5	0	0.2	-	68.3	0	0	0.0235	0	0

Current asset turnover rate (times)	0.2247	0.56	0.4	0.6	0.5	0.8	0.2	0.0899	0.1348	0.009	0.0989
Return on total assets (%)	0.1227	-8.07	0.2	0.4	-22.3	-0.2	0.6439	0.0245	0.0491	0.0158	0.0403
Return on equity (%)	0.1316	111.9	1	-	13.5	-	1	0.1316	-	-	0.1316
Operating profit margin (%)	0.1205	-16.09	0.2	0.4	-28.6	-0.3	0.442	0.0241	0.0482	0.0107	0.0348
Operating cash ratio (%)	0.1265	-18	0.2	0.4	-29.2	-5.2	0.4667	0.0253	0.0506	0.0118	0.0371

Table 10: Financial risk indicator rating table for Boeing in 2023

Indicator Scoring Table											
Indicator	Weight	Actual value	This standard coefficient	Upper standard coefficient	This standard value	Upper standard value	Efficiency coefficient	Basic points of this file	Upper level basic score	Adjusted score	Single indicator score
Quick ratio (%)	0.1338	0.31	0	0.2	-	0.4	0	0	0.0268	0	0
Asset liability ratio (%)	0.246	113	0	0.2	-	68.3	0	0	0.0492	0	0
Current asset turnover rate (times)	0.1919	0.71	0.4	0.6	0.5	0.8	0.7	0.0768	0.1151	0.0269	0.1036
Return on total assets (%)	0.1048	-1.62	0.2	0.4	-22.3	-0.2	0.9357	0.021	0.0419	0.0196	0.0406
Return on equity (%)	0.1124	13.44	0.8	1	8.4	13.5	0.9882	0.0899	0.1124	0.0222	0.1121
Operating profit margin (%)	0.1029	-0.99	0.2	0.4	-28.6	-0.3	0.9756	0.0206	0.0412	0.0201	0.0407
Operating cash ratio (%)	0.1081	6.2	0.6	0.8	3.3	8.6	0.5472	0.0649	0.0865	0.0118	0.0767

The comprehensive performance score of Boeing in 2024 is 0.3756, and in 2023, it is 0.3737. Both years are at a “low” risk level, and the overall financial risk is in a high alert state. The risk level has not significantly improved because of the inevitable sharp acquisition in 2024.

4.4.1 Four-Dimensional Risk Analysis

The asset–liability ratio has severely exceeded the standard for two consecutive years (102.5% in 2024 and 113% in 2023), with an efficacy coefficient of 0 in both years-making it the primary factor lowering the comprehensive score. The quick ratio remains in the lowest tier (0.42 in 2024 and 0.31 in 2023); although it slightly improved in 2024, its efficacy coefficient is only 0.05, indicating extremely weak short-term solvency. The entropy weight method determines that the asset–liability ratio has a weight of up to 24.60%, highlighting its core position in the risk system. The fact that this indicator consistently scores zero reflects Boeing’s fundamental financial structural defect of insolvency.

In 2024, the current asset turnover ratio (0.56 times) falls within the middle tier but significantly decreases compared with that in 2023 (0.71 times), reflecting reduced asset operating efficiency due to acquisition integration. Both the return on total assets (-8.07%) and the operating profit margin (-16.09%) are in the lower tier, with efficacy coefficients of 0.6439 and 0.442, respectively-indicating a continuous deterioration in the assets' profit-generating capacity. Notably, the return on equity (ROE) shows an abnormal value of 111.9% in 2024, which is inconsistent with the company's ongoing loss status. This may be attributed to special accounting treatments and requires cautious interpretation.

The operating cash ratio decreased to -18% in 2024. Although its efficacy coefficient (0.4667) is slightly higher than that in 2023, the absolute value has significantly worsened-reflecting severe damage to the cash-generating capacity of operating activities. Combined with the previous cash flow risk analysis, the negative change in this indicator is closely related to compensation expenses from the 737-9 plug door incident and acquisition integration costs, highlighting the crisis of the company's "cash-generating function" failure.

4.4.2 Dynamic Evolution and Causes of Risks

The comprehensive score rose slightly between 2023 and 2024, but the risk structure underwent significant changes: in 2023, risks were concentrated in the asset-liability structure (both debt-servicing indicators scored 0), whereas in 2024, debt-servicing risks remained high, and operational and profitability indicators further deteriorated. This change reveals the dual-sided effect of acquiring Spirit AeroSystems: on the one hand, asset injection and debt restructuring slightly reduced the asset-liability ratio; on the other hand, integration costs and quality rectification expenses worsened profitability and cash flow indicators-creating a "risk transfer phenomenon" characterized by "structural improvement but quality decline".

The fundamental cause lies in Boeing's advancement of strategic acquisition amid a fragile financial foundation. Analysis via the entropy weight method reveals that the combined weight of three indicators-the asset-liability ratio (24.60%), current asset turnover ratio (19.19%), and quick ratio (13.38%)-reaches 57.17%, forming the core framework of risk evaluation. Among these three indicators, two consistently score zero, and one remains in the low-score tier, indicating systemic defects in the company's core financial structure. The acquisition of Spirit AeroSystems, as a strategic move for vertical supply chain integration, failed to prioritize the repair of the financial foundation, leading to an imbalance between risk prevention and strategic development.

4.5 Financial Risk Prevention and Control Strategies for the Case Enterprises

On the basis of the financial risk assessment results of Boeing, this study focuses on recommending two core strategies: optimizing the asset liability structure and ensuring cash flow security.

The optimization of the asset liability structure should be the primary task. Given that the entropy method analysis shows that the weight of the asset liability ratio indicator is as high as 24.60%, and the company has been insolvent for two consecutive years (102.5% in 2024), it is recommended to implement a restructuring plan: in the short term (within one year), a \$4.7 billion equity will be used to replace some of the high interest debt and reduce the interest burden; in the middle term (1-2 years), divesting noncore assets and aiming to recover \$15 billion in funds for debt reduction; and in the long term (3 years), the introduction of strategic investors to supplement equity capital, reducing the asset liability ratio to below the safe threshold of 80%. This strategy requires the establishment of a quarterly monitoring mechanism to ensure that the progress of debt restructuring is coordinated with the delivery plans of major aircraft models such as 737 and 787 and to avoid financial adjustments affecting core business operations.

The cash flow security system should be constructed synchronously. In response to the severe reality of a net operating cash flow of -12.08 billion U.S. dollars in 2024, a three-tier protection mechanism is recommended: a cash buffer pool covering 6 months of operating expenses (approximately 8 billion U.S. dollars) should be set up at the basic level; refactoring customer payment terms in the middle layer, increasing the prepayment ratio of major airlines from 30% to 50%, and accelerating cash flow; and the strategic level should implement a "quality cost" balance plan, which aims to reduce unit costs by 15% through lean production while ensuring the quality improvement of models such as the 737 MAX. This system needs to be deeply integrated and coordinated with the supply chain, especially in optimizing the delivery and assembly

processes of sharp components. Improving the target operating cash ratio from -0.18 by 2025 to -0.05 by 2026 is recommended.

5 Conclusion and Prospects

5.1 Research Summary

This study constructed a financial risk assessment system based on the entropy method and efficacy coefficient method and conducted a systematic quantitative analysis of financial risk before and after Boeing's acquisition in 2024. Research has revealed that Boeing's overall financial risk is at a "low" level (with a performance score of 0.3756 in 2024), slightly improving compared with that in 2023 (0.3737), but the risk level remains severe. The risk structure presents the characteristics of "prominent debt repayment risk, intensified cash flow pressure, and decreased operational efficiency". The asset liability ratio has exceeded the standard for two consecutive years (102.5% in 2024), and the situation of insolvency has not fundamentally improved. The operating cash ratio deteriorated from 0.062 in 2023 to -0.18 in 2024, and the creativity of operating cash plummeted sharply. The turnover rate of current assets decreased from 0.71 times to 0.56 times, reflecting the short-term impact of acquisition integration on operational efficiency. The entropy method analysis reveals that the asset liability ratio (24.60%), current asset turnover ratio (19.19%), and quick ratio (13.38%) constitute the core framework of risk assessment. Research has confirmed that Boeing's promotion of strategic acquisitions in a weak financial foundation, although necessary in terms of supply chain quality control, has exacerbated the complexity and transmission of financial risk, verifying the management logic that "financial stability is a prerequisite for strategic implementation". In response to this situation, this study proposes a dual pillar strategy of optimizing the asset liability structure and ensuring cash flow security, emphasizing the dynamic balance between risk prevention and strategic development through debt restructuring, asset divestment, and cash buffer mechanism construction.

5.2 Research Limitations and Future Prospects

There are three limitations to this study. First, the timeliness of the data is limited, covering only the initial financial performance of the acquisition and failing to reflect the long-term effects of integration. Second, the risk assessment system emphasizes the financial dimension and does not consider nonfinancial risk factors such as management collaboration and technological integration. Third, although the entropy method ensures the objectivity of weights, it fails to fully reflect the forward-looking value of strategic acquisitions in the aviation manufacturing industry. Future research can focus on four aspects: first, extending the observation period to 3-5 years after the acquisition, constructing a dynamic risk evolution model, and revealing the time delay effect of risk transmission; second, integrating ESG indicators with supply chain resilience assessment, developing a risk assessment framework that synergizes financial and nonfinancial indicators; third, strengthening the research on the correlation mechanism between industry cyclical fluctuations and corporate financial risk, and enhancing the industry adaptability of the evaluation system; and finally, exploring the application of artificial intelligence technology in risk warning and identifying early risk signals through machine learning algorithms. Notably, the aviation manufacturing industry is undergoing technological revolutions, such as electrification and sustainable aviation fuels. Future research should incorporate technological innovation investment and financial risk tolerance into a unified analysis framework, providing a scientific basis for strategic financial collaborative decision-making in the era of change for enterprises.

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Conflicts of Interest

The authors declare no conflict of interest.

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