

Research on Risk Control Strategies for Corporate R&D Expenditures Based on the Development Needs of New Quality Productivity

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Abstract: The cultivation and development of new-quality productive forces impose higher demands on corporate technological innovation. As the primary funding source for such innovation, the level of risk control in R&D expenditure directly impacts the quality of new-quality productive forces formation within enterprises. Grounded in Marx's political economy theory that production relations must adapt to the development of productive forces, this paper analyzes the risks associated with corporate R&D expenditures in the context of new-quality productive forces and proposes institutional optimization-based risk control strategies. These strategies involve integrating risk management throughout the entire process of R&D investment, utilization, and technology commercialization, thereby leveraging institutional innovation to eliminate systemic barriers hindering the advancement of new-quality productive forces.

Keywords: New quality productivity; R&D expenditure; Risk control

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1. Introduction

New-type productive forces represent an advanced form of productivity driven primarily by technological innovation, whose formation and development rely heavily on sustained and efficient R&D investments by enterprises. In 2024, China's total R&D expenditure reached 3,632.68 billion yuan, marking an 8.9% year-on-year increase, with the R&D investment intensity rising to 2.69%, of which over 75% came from corporate sources. The high-cost, long-term, and risk-intensive nature of R&D activities, combined with overlapping regulatory requirements from taxation, science and technology authorities, and capital markets, has elevated R&D expenditure risk management from a mere "financial compliance issue" to a critical matter concerning corporate strategic survival and development. Insufficient R&D investment may hinder technological breakthroughs and the enhancement of new-type productive forces; conversely, inadequate risk control measures could prevent even substantial R&D expenditures from translating into tangible innovations due to

inefficient resource allocation or chaotic management processes ^[1]. Therefore, establishing a comprehensive risk control framework for R&D expenditures that spans the entire process is a vital practical step toward implementing the strategic requirement of “aligning production relations with productive forces.”

2. Challenges posed by the development of new-quality productive forces to risk control in corporate R&D expenditures

2.1. The difficulty in identifying R&D expenditure risks and compliance risks has become increasingly prominent

Studies indicate that there is typically a 1 to 3-year lag between R&D investment and its outcomes, which significantly complicates risk identification and dynamic management ^[2]. Breakthroughs in core technologies and the development of cutting-edge innovations require substantial, long-term R&D investments characterized by high sunk costs. Companies often need to make investment decisions early in the R&D phase, yet verifying technical feasibility and commercializing research outcomes typically takes several years. This time mismatch makes traditional risk control approaches—based on post-event evaluation—ineffective, as substantial resources are already invested by the time risks become apparent. Additionally, Chinese enterprises face three distinct frameworks for R&D expense accounting: accounting standards, high-tech enterprise certification requirements, and tax deduction policies, each with notable differences in scope, recognition criteria, and disclosure obligations. Companies thus face a dilemma: being overly conservative may prevent them from fully benefiting from policy incentives, while excessive aggressiveness could trigger tax risks ^[3]. Research further shows that while the R&D expense deduction policy significantly stimulates the development of new productive forces, compliance costs and associated risks associated with its implementation continue to rise ^[1].

2.2. The disconnect between business operations and financial management, coupled with escalating risks associated with the commercialization of research outcomes

Under the traditional R&D expenditure management model, significant information barriers exist between the finance department and the R&D department. Financial personnel lack understanding of the technical rationale and progress status of R&D projects and can only perform accounting entries based on post-event documentation; R&D personnel are unfamiliar with financial accounting rules and struggle to provide required supporting materials ^[4]. This disconnect between operations and finance not only compromises the accuracy and timeliness of R&D expenditure accounting but, more critically, deprives enterprises of the ability to identify and address risks during the R&D process dynamically. Furthermore, the transition from technological breakthroughs to market application is fraught with uncertainties—factors such as insufficient technology maturity, lower-than-expected market acceptance, or uncontrolled costs in large-scale production can all prevent R&D investments from yielding tangible outcomes ^[1].

3. Analysis of major risk types and causes of corporate R&D expenditures

3.1. Risk of strategic and resource misallocation

Strategic misallocation risk refers to the deviation between R&D investment directions and a company’s strategic objectives or market demands. It specifically manifests as: inadequate systematic evaluation of

technical feasibility and market potential in R&D project selection, blind pursuit of technological hotspots; disconnect between R&D budget allocation and strategic planning, resulting in inefficient resource distribution; an imbalance between R&D investment intensity and the company's developmental stage—insufficient funding leads to stagnant innovation, while excessive spending diverts resources from core operations. Resource misallocation risk concerns the efficiency and effectiveness of R&D fund utilization, primarily characterized by: lack of dynamic monitoring during budget execution, failure to identify and address budget overruns or deficits promptly; unscientific allocation of resources across projects, with low-value initiatives consuming excessive resources; and superficial R&D approaches that fail to concentrate efforts on breakthroughs in key core technologies.

3.2. Compliance risks and the risk of accounting distortion

Compliance risk refers to risks arising from non-compliance in the accounting and management of R&D expenditures with relevant regulatory and policy requirements. Specific manifestations include: unclear definition of R&D activities, including expenses for non-R&D activities (such as routine product improvements or technical support) within R&D costs; inaccurate expense classification, failing to implement detailed accounting by project or expense type; arbitrary differentiation between capitalization and expense recognition that violates the five criteria for capitalizing development-stage expenditures under accounting standards; incomplete retained documentation that fails to substantiate the authenticity of R&D activities and the reasonableness of expenditures during tax audits. These compliance risks often stem from corporate tendencies toward prioritizing reporting over management, coupled with deficiencies or superficiality in internal control systems. Compliance issues may lead to distorted R&D accounting, which not only misleads internal decision-making but also raises concerns from external regulators.

3.3. Risks associated with the commercialization of research outcomes

The risk associated with technology commercialization revolves around whether R&D investments can be effectively translated into corporate value. Technical risks include failure to meet project technical specifications or setbacks in developing key technologies; market risks involve low product acceptance, excessively long commercialization timelines, and pricing that fails to cover costs; financial risks manifest as low efficiency in converting R&D investments into returns or underperformance of expected ROI. These commercialization risks exhibit significant latency, often becoming apparent only after project completion or even later, yet their root causes are closely linked to early-stage technological validation and mid-term process control during the R&D phase.

4. Risk control approaches for R&D expenditures based on the development needs of new quality productivity

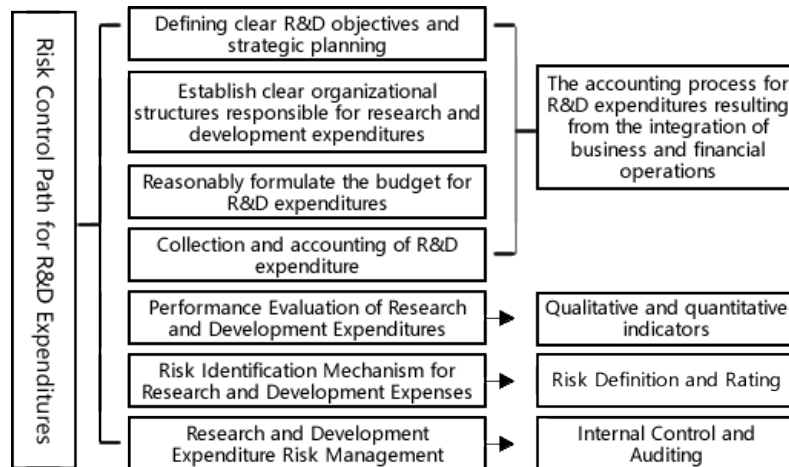


Figure 1. Risk control pathway for R&D expenditures.

4.1. An integrated R&D expenditure accounting process that combines design and financial aspects within the industry

The core of business-finance integration lies in embedding financial control throughout the entire lifecycle of R&D activities, creating a synergistic closed loop between business decisions and financial regulations across four key stages: strategic planning, organizational division of labor, budget preparation, and accounting consolidation. At the strategic level, finance departments should participate in technical feasibility assessments and market analysis during project initiation phases, assisting in determining R&D investment priorities and timelines from a funding allocation perspective to mitigate strategic misalignment risks. Organizationally, clear delineation of responsibilities among R&D, human resources, asset management, and finance departments is essential to ensure unified data flow into the financial system, preventing operational-discovery gaps caused by information silos. In budgeting, finance professionals must engage in technical route evaluations and resource requirement calculations for projects, establish dynamic tracking mechanisms for project records, set budget execution thresholds, and require reapproval for cost overruns or significant changes to prevent resource misallocation. For accounting consolidation, a dual-dimensional system of “project– expense category” accounting should be implemented, with separate accounts maintained for non-deductible expenses, while business transactions must strictly comply with accounting standards and tax regulations to avoid compliance risks and accounting inaccuracies ^[5]. Through seamless integration across these four stages, R&D expenditures establish a standardized information pathway from occurrence to financial recording, making financial rules an integral component of both proactive guidance and real-time monitoring.

4.2. Establish a multi-dimensional performance evaluation system for R&D expenditures

R&D expenditure is not always better when higher. In an environment that strongly advocates innovation, it is essential to maintain adequate R&D investment intensity while preventing potential resource waste from excessive funding. Establishing a scientific performance evaluation system serves as a critical tool for guiding efficient allocation of R&D resources and identifying risks of misallocation. Quantitative indicators

may include technology commercialization rates, proportion of new product sales revenue, and project completion rates. The technology commercialization rate, which measures the efficiency of transforming R&D outcomes into marketable products, acts as a key link between research and development and market needs. Given the lagged impact of R&D activities on operational performance, relying solely on current quantitative metrics fails to reflect the true effectiveness of R&D expenditures fully. The evaluation system should also incorporate qualitative indicators to assess innovation capability development: whether R&D spending effectively motivates researchers, provides substantial support for sustained corporate innovation, or enhances market reputation and social recognition through technological breakthroughs. Evaluation results should be linked to budget planning, resource allocation, and compensation for managers and core R&D personnel, creating a closed-loop mechanism of “evaluation → feedback → improvement.”

4.3. Establishing a dynamic early-warning system for R&D expenditure risks

New-type productive forces are characterized by digitalization and intelligence, and risk control must fully leverage modern information technologies to enhance effectiveness. Enterprises can employ big data analytics and other technologies to establish a dynamic risk early-warning system covering the entire lifecycle, utilizing a closed-loop mechanism of “evaluation–feedback–improvement” to identify two types of risks: resource misallocation and achievement transformation gaps, thereby directing R&D resources toward high-value areas. First, establish a risk indicator framework inspired by the COSO Internal Control Framework, identifying key risk points across three dimensions: operations, reporting, and compliance. The operations dimension assesses whether R&D expenditures impact sustainable corporate development and deliver tangible benefits; the compliance dimension examines adherence to relevant policies and regulations in R&D expenditure accounting; the reporting dimension ensures accuracy and completeness of R&D expenditure disclosures (as shown in the figure). Specific metrics include R&D cost overruns, delays in critical milestone completion, competitive patent growth rates, and fluctuations in R&D investment intensity. Second, implement dynamic risk monitoring by building a surveillance system integrating financial and operational data to provide real-time visual tracking of core risk indicators. When thresholds are exceeded, automated alerts are triggered and sent to responsible parties. Additionally, digital tools can simulate financial stress scenarios—including policy changes, technical standard shifts, or supply chain disruptions—to enable proactive contingency planning.

Table 1. Dynamic early warning system for expenditure risks in operational management dimensions

Risk Category	Metric Definition	Dimension
Stable Operations Management	Does R&D expenditure affect a company’s sustainable development? (Both excessive and insufficient R&D spending are detrimental to businesses.)	Operational Objective
cost efficiency	Performance Evaluation of Research and Development Expenditures	Operational Objective
Abnormal expense	Are there any abnormal expenditures within the research and development budget?	Report Objective
Legal Compliance	Does the accounting for research and development expenditures comply with relevant policies and regulations?	Compliance Objective

4.4. Improve the internal control and audit mechanisms for R&D expenditures

Effective internal control serves as the fundamental safeguard against R&D expenditure risks. Enterprises should establish comprehensive internal control systems tailored to R&D activities in compliance with

the “Basic Standards for Enterprise Internal Control” and its supporting guidelines. Regarding the control environment, responsibilities of the board of directors and management in R&D expenditure risk management must be clearly defined, with risk management incorporated into performance evaluations for both R&D and finance departments. For control activities, standardized measures should be implemented across critical processes—including project approval, budget execution, expense reimbursement, and project closure—to ensure proper separation of incompatible duties, authorization procedures, and accounting controls. In terms of information and communication, a coordinated mechanism should be established among departments to ensure timely, accurate, and complete data transmission. The internal audit department should regularly assess the effectiveness of R&D expenditure management and promptly address identified issues. For companies planning or already listed on stock exchanges, particular attention must be paid to regulatory requirements regarding R&D expense verification, focusing on the rationality of personnel assignments, authenticity of material requisitions, accuracy of expense allocation, and justification for discrepancies in R&D expenditure figures across different calculation methods.

5. Conclusion

The development of new-quality productive forces imposes higher demands on corporate R&D innovation and presents new challenges for risk control capabilities in R&D expenditures. Research indicates that R&D expenditure risks exhibit multi-source characteristics, transmissibility, and lagging effects; the traditional model centered on accounting recording and post-event control is no longer adequate to meet the needs of this evolving landscape. Establishing a risk control system for R&D expenditures aligned with new-quality productive forces requires coordinated efforts across four dimensions—business-finance integration, performance orientation, risk identification, and risk management—by embedding risk control throughout the entire R&D expenditure process, achieving deep integration between business operations and financial management, and leveraging digital tools to enhance risk identification and response capabilities.

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