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Discussion on the Establishment of Financial Early Warning System in Non-financial Corporate

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Abstract: The establishment of a financial early warning system (FEWS) in non-financial corporations is critical to mitigating risks arising from internal factors such as poor management, excessive debt, and resource misallocation. Drawing on Ulrich Beck's risk society theory, this study emphasizes the alignment of risk and return to prevent systemic crises, particularly in industries like China's real estate sector, where capital chain fragility highlights the urgency of robust risk control. The proposed FEWS integrates financial statements, business plans, and analytical tools such as cash flow analysis, financial ratios, and Edward Altman's Z-score model. Key indicators include cash flow sufficiency, debt repayment capacity (e.g., interest coverage ratio, asset-liability ratio), profitability (ROE), and operational efficiency metrics. The Z-score model, incorporating liquidity, profitability, and leverage indicators, quantifies bankruptcy risk and categorizes firms into stable, grey, or high-risk zones. Budget management is underscored for its role in resource allocation, risk identification, and process control, ensuring liquidity and operational stability. Principles such as integration, timeliness, comprehensiveness, and risk-return balance guide system implementation, emphasizing governance structures, stress testing, and risk-oriented strategies. By embedding risk management into strategic decision-making and operational workflows, corporations can enhance value creation while safeguarding against financial instability. This framework provides actionable insights for enterprises to navigate uncertainties and sustain long-term growth in volatile economic environments.

1. Introduction

German scholar Ulrich Beck, in his book Risk Society(1992)[1], once discussed in detail: "The matching of risk and return is the rule that the business system can harmonize with countless micro-entities and then continue to operate. If there is a mismatch, it will plant hidden risks, and if this mismatch accumulates to a certain extent, it will induce economic crisis."

At present, the capital chain of China's real estate industry is compromised, and the corporate that have the behavior of borrowing from the real estate are not spared. These painful lessons are caused by the misallocation of social resources, the disorderly expansion of corporate and the weak capability of risk control. Such results are often caused by internal reasons of corporate (such as poor management, decision-making errors, risk appetite, excessive debt burden, etc.). Risks brought by internal reasons of corporate are more worthy of our research into risk avoidance, and an analytical early warning mechanism is needed.

Studies by Zheng Wei. (2006)[2] illustrate a simplified process of Financial Early Warning System establishment. Zou Huiping et al.(2007)[3] discuss the practical implementation of financial early warning mechanisms in enterprises, highlighting strategies for integrating risk monitoring tools (e.g., cash flow analysis, debt ratios) into daily operations to proactively prevent financial crises caused by debt overload or resource mismanagement. Management Accounting Application Guideline No.700[4] provides standardized principles and methodologies for applying risk management practices within management accounting. It outlines procedures for risk identification, assessment, and control, emphasizing alignment with corporate governance and strategic objectives.

Guidance on Management for Financial Institutions[5] document establishes a framework for systemic risk management in banking institutions. It mandates rigorous stress testing, liquidity management, and capital adequacy requirements to ensure stability and resilience against financial shocks. While Li Yao[6] explores theoretical and practical aspects of mergers, acquisitions, and corporate restructuring. It addresses risk management challenges in M&A processes, including valuation risks, integration issues, and post-merger financial stability. Corporate Strategy and Risk Management[7] requires risk management into corporate strategic planning, advocating for embedding risk assessment into decision-making processes to balance growth objectives with risk tolerance, covering topics like strategic alignment, risk appetite frameworks, and crisis management.

2. Application Analysis of Financial Indicators in Financial Early Warning System

First, the corporate financial early warning system is mainly based on tools like financial statements, business plans and medium and long-term planning,the mechanism also utilizes accounting standards, investment, financing and financial management, marketing strategy and other theories for reasoning, applying index analysis, mathematical model and other methods to determine the early warning indicators and their corresponding standards, in order to find the risks existing in the corporate and warn the operators. The risk early warning system should reflect the capital turnover index, debt early warning index and benefit early warning index of the corporate:

2.1 Application in cash flow

Cash flow is the most sensitive nerve in the financial early warning system

Once the corporate is short of funds, there will be operating disorders, will cause a variety of discomfort symptoms, to mobilize all resources to raise money to fix the shortage, this is the symbol of the corporate financial problems, as well as the most intuitive and effective method through analyzing the cash flow to judge the corporate financial early warning. The cash flow of an corporate usually consists of three parts: the cash flow generated by operational activities, the cash flow generated by investment activities and the cash flow generated by financing activities. In each development stage of the corporate life cycle, the activity of each cash flow is also different.

The cash flow generated by the operational activities of an corporate with a healthy financial condition is for the corporate to continue to self-develop, to meet the investment in fixed assets, to repay the maturing loans in time, to improve production efficiency, to expand the scale of operation, to improve the level of profitability and debt repayment ability.

A corporate with healthy financial status should control the feasibility of the project when investing, and ensure that the project funds are in place in time and the principal and interest of maturing loans can be returned in time during the investment period, so as not to affect the development of normal operations. The feasibility analysis tool of the investment project should be used in practice to predict the investment progress, capital sources and income of the project, but also to produce synergistic benefits with the main business operation and ensure the adaptation of resources.

In the return of cash flow generated by operational activities, financial leverage can be appropriately added and direct investment can be absorbed to enlarge the scale of business and improve market competitiveness. Often investment and financing is a double-edged sword, not good use will appear cash flow imbalance.

No matter operating activities or investment activities need appropriate financial leverage. Compared with the corporate own funds, debt has interest tax offset effect, that is to say, the interest on debt can be deducted from the pre-tax profit, so as to reduce the taxable income of the corporate. When the amount of debt of an corporate is larger, the interest tax offset effect is greater, which is more beneficial to the increase of the value of the corporate. Financial leverage belongs to the after-tax effect, because no matter what kind of income, corporate need to pay corporate income tax, so the higher the profit rate of capital, the greater the comprehensive effect of financial leverage. Therefore, most corporate prefer to use less registered capital. In order to control insufficient investment or prevent capital weakening, the law stipulates the ratio of debt investment to equity investment: financial corporate (5:1), other corporate (2:1). However, the profitability of financial institutions such as banks will stimulate the expansion of entrepreneurs, which is extremely risky.

The calculation and analysis of cash flow in actual operation should cover the future cash flows of assets and liabilities as well as the potential cash flows of contingent assets and contingent liabilities. At the same time, long-term and short-term funds should be used in a scientific and reasonable manner, and short-term debt and long-term investment should be avoided to eschew capital chain breakage and bankrupt halfway.

2.2 Application in financial ratio

The financial ratio can directly express the ability to repay debt and perceive the warning line touched. Through several quantitative and qualitative key indicators of corporate solvency, profitability, operating efficiency and equity ratio:

2.2.1 Indicators reflecting the solvency of corporate

(1) Cash debt protection ratio = cash income/total debt. Reflects the ability of the company's cash income to repay the company's debt. Generally speaking, the higher the ratio, the more stable the business operation of the company. Cash income/total rigid redeemed debt ≥ 1.

(2) Interest cover multiple = EBIT/interest expense. Reflects the ability of an corporate to pay debt interest with operating income, and generally its minimum is 1 times.

(3) Asset-liability ratio = total liabilities/total assets. Reflecting the long-term debt paying ability of corporate, the level of asset-liability ratio suitable for each corporate varies with different industries, but in general, the upper limit of this indicator is 2/3.

(4) Fund security ratio = asset realization ratio* - asset liability ratio. It is mainly used to measure the size of the remaining coefficient after the realization of the total assets of the corporate to repay the debt. The larger the coefficient, the safer the asset and the smaller the financial risk.

Note: Asset realization rate = asset realization amount/asset carrying amount

2.2.2 An indicator that reflects the profitability of the corporate

ROE= net profit/net assets. Return on equity (ROE) refers to the ratio of a company's net profit to its net assets, and is an important indicator reflecting the company's ability to obtain profits and the efficiency of capital utilization.

2.2.3 An indicator that reflects a company's operating ability

For example, the accounts receivable turnover rate and inventory turnover rate should be matched with the corporate own operating capital adequacy ratio and the ability to obtain working capital loans in time.

The establishment of corporate financial risk early warning mechanism has profound significance for corporate financial risk management and non-financial risk management. corporate should combine their own conditions, based on the content and focus of financial management, select basic financial indicators, assign appropriate weights to specific ratios, and establish a whole financial early warning mechanism.

2.2.4 Z model

This early-warning system is a model proposed by Edward Altman, a professor at New York University in the United States, in the 1960s to measure the likelihood of corporate bankruptcy[8]. He selected five indicators reflecting the business status of the corporate, and according to the relationship between the value of each indicator and the financial risk of the corporate, coupled with the empirical data, gave the weight of the bankruptcy risk of each indicator, and then calculated the statistic that comprehensively reflected the financial crisis of the corporate, called the Z-value, the model is as follows:

$$Z=1.2X1+1.4X2+3.3X3+0.6X4+0.99X5$$

Among them, X1 to X5 represent 5 financial indicators, which are:

X1- working capital ratio, equal to working capital/total assets;

X2 - retained earnings ratio, equal to retained earnings/total assets;

X3 - return on assets, equal to EBIT/total assets;

X4 - equity-liability ratio, equal to the market value of owners' equity/the book value of liabilities;

X5 -- total asset turnover, equal to sales revenue/total assets.

The model is actually through 5 variables, will reflect the corporate debt paying ability index (X1,X4), profitability index (X2,X3) and operating ability index (X5) organically linked, so as to comprehensively evaluate the risk of financial failure of the corporate.

The lower the Z value, the greater the possibility of bankruptcy of the corporate. In this system model, Altman also put forward the critical value to judge the bankruptcy of the corporate: if the Z-value of the corporate is greater than 2.99, it indicates that the financial condition of the corporate is good and the possibility of bankruptcy is small; If the Z-value is less than 1.81, it indicates that the corporate has a great risk of bankruptcy; If the Z-value is between 1.81 and 2.99, it indicates that the company has entered a "grey zone" of financial instability.

Companies can use this model to build their own financial failure warning system. Generally speaking, X1 to X5 can be calculated directly according to the data analysis provided by the corporate year-end financial statements. Of course, corporate can also choose more suitable for their own financial indicators according to the characteristics of scale, industry, region, country, etc., according to the actual situation to give the corporate own financial indicators risk weight, set the appropriate Z value interval, so as to establish their own financial early warning system.

2.3 Application of budget management

The implementation of budget management by corporate plays a role in the identification, verification and process management of the financial early warning system.

Forewarning makes good, and failure to forewarn makes waste. Budget management is the

financial evaluation and economic responsibility constraint basis of the corporate business ideas, business objectives and business decisions for a certain period in the future, and it is the specific arrangement of the resource allocation and business activities of the corporate in the production and business activities, with the purpose of better formulating and implementing the strategic objectives of the corporate and enhancing the economic value of the corporate.

Budget management can promote the corporate project investment to better follow up and implementation, for the project investment to achieve the expected income to provide a reasonable guarantee. Budget management plays an important role in the identification and response to financial risks in financial evaluation and economic responsibility, which is conducive to the overall arrangement of funds for corporate, the prevention of loss and waste, the guarantee of sufficient cash flow for corporate, and the reasonable arrangement of business operations, so as to ensure the stable and orderly development of corporate. The role of budget management on financial early warning system is mainly manifested in the following aspects:

One is the function of planning. To achieve this, it is essential to create a reasonable budget through careful planning, effectively allocate and utilize corporate resources, and propose suggestions for the development of the organization, as well as for the realization of its objectives, strategies, policies, and plans. The corporate shall, according to the scale, nature, complexity and risk status of the business, use appropriate methods and models to analyze and monitor the maturity mismatch of assets and liabilities, the diversification and stability of financing sources, and high-quality liquid assets in different time periods in the future under normal and stress scenarios.

Second, the communication and coordination function. That is, corporate should improve communication within the organization, coordinate the implementation of the corporate financial early warning system, and promote the various departments included in the budget to achieve clear goals, mutual understanding, and consistent action.

Third, the role of monitoring and performance evaluation. In order to achieve dynamic monitoring, it can monitor the degree of realization of strategic objectives and operating conditions of corporate, discover and clarify financial risks in operation through the budget and deal with them in time. At the same time, the financial risk early warning mechanism promotes the value growth of corporate. The relationship between corporate risk management and performance is strengthened, and how to identify and evaluate various risks affecting performance in corporate risk management is discussed.

3. Principles to establish the Financial Early Warning System

Secondly, corporate to establish financial early warning system, generally should follow the following principles:

3.1 The principle of integration

The establishment of financial early warning system should be combined with the corporate strategy setting, operation management and business process.It is essential to clearly integrate risk management into the corporate decision-making process. This should include evaluating strategic objectives, setting business and performance goals, and developing plans for resource allocation. A supportive culture, strong capabilities, and effective practices are vital for managing risk while creating, retaining, and realizing value in alignment with strategy formulation and execution. The establishment of a financial early warning system should be integrated with corporate strategy formulation, operational management, and business processes. It requires explicitly incorporating risk management into enterprise decision-making procedures, particularly in areas such as strategic objective selection, operational and performance target setting, and resource allocation planning. Throughout the value creation, preservation, and realization processes, this system should align with

strategic development and implementation, while being supported by the organizational culture, capabilities, and practices for risk management.

3.2 The principle of timeliness

The criteria and financial indicators selected for the analysis of the prediction model of the establishment of the financial early warning system need to be closely linked to the overall development of the current manufacturing industry, rather than simply relying on early data or indicators.

3.3 The principle of comprehensiveness

The establishment of financial early warning system should cover all risk types, business processes, operation links and management levels and links of the corporate.Corporate should integrate risk management into all business processes, from the establishment of strategic objectives to the formation of operational goals, and through the execution process to the completion of performance metrics. It is essential to adhere to the principles and requirements of risk management consistently, encompassing the identification, measurement, assessment, monitoring, reporting, control or mitigation of various risks, as well as the methods and procedures for risk aggregation.

3.4 Materiality principle

The establishment of a financial early warning system should evaluate risks, determine the risks that need to be managed in a key way, and implement targeted monitoring of key risks to identify and respond to them in a timely manner. For example, risk assessment of new products, major business and institutional changes, stress testing arrangements for important risks, contingency plans and recovery plans for the implementation of important projects, and assessment of capital and liquidity adequacy.

3.5 Principle of balance

The establishment of financial early warning system should weigh the relationship between risk and return, cost and income. The relationship between risk and value is emphasized, pointing out that corporate risk management is no longer focused on reducing risk to an acceptable level, but on creating, maintaining and realizing value.

In order to accurately position and do a good job in the financial early warning system, in addition to the traditional knowledge system of risk management, corporate must be familiar with the overall management operation mode and value creation process. The financial early warning system will provide the most effective scientific methods and tools for corporate to manage uncertainty.

4. Elements to establish the Financial Early Warning System

Thirdly, the establishment of financial early warning system elements:

4.1 Governance structure

The company shall establish a comprehensive financial early warning system with a sound organizational structure and clearly defined responsibilities. This involves clarifying the division of risk management duties among the Board of Directors, Board of Supervisors, management, business departments, and risk management responsible departments. Additionally, an operational mechanism

must be developed to ensure that financial early warning functions – including decision-making, implementation, oversight, and evaluation – remain **separated and balanced** to prevent conflicts of interest, yet well-coordinated to maintain operational efficiency. This framework emphasizes both accountability alignment and systematic collaboration across governance tiers.

4.2 Management strategy, risk preference and risk limit

In order to reconcile the total amount of risk the corporate is willing to assume to achieve its strategic objectives and business plans, corporate should take risk acceptance, risk avoidance, risk transfer, risk sharing, risk conversion, risk hedging, risk compensation, risk reduction and other strategies for risks that have occurred or have exceeded the critical value of monitoring and early warning, so as to control risks within the risk tolerance.

Strict management of external guarantees, corporate with property rights to provide guarantees according to the proportion of shares, in principle, do not provide guarantees to corporate without property rights. We will strictly control bundled financing activities such as mutual guarantees between corporate to prevent cross-transmission of debt risks. We will standardize the investment and financing management of major projects of platform companies, and strictly control financing in disguised form that lacks transaction substance.

We will strictly control off-balance sheet and off-balance sheet financing, and guide corporate to make rational use of equity financing tools. We will determine the scale of investment in accordance with their financial affordability, prevent debt risks at the source, and strengthen control over corporate hidden debts.

4.3 Management policies and procedures

The culture, capabilities, and practices through which an enterprise manages risks, integrated with its strategy formulation and execution, to create, preserve, and realize value throughout its value lifecycle. Corporate shall establish a sound risk isolation system, regulate internal transactions, and prevent risk transmission.

The corporate shall, based on its internal conditions and external environment and aligned with its strategic development objectives, establish its risk appetite, risk tolerance, and risk management effectiveness criteria. It will then select appropriate risk management strategies and tools, such as risk acceptance, avoidance, transfer, conversion, hedging, compensation, and control, and determine the allocation of required human, financial, and other resources for risk management operations.

4.4 Stress test control mechanism

Corporate should establish a stress test system, and clarify the governance structure, policy documents, methods and processes, scenario design, guarantee and support, verification and evaluation, and application of stress test results. The stress test should cover all kinds of risks and major business areas inside and outside the balance sheet, and consider the interaction between all kinds of risks.

The results of the stress test should be used in the financial early warning system and in all operational management decisions.

4.5 Risk-oriented management philosophy

Corporate should change the concept of over-reliance on debt investment for large-scale development. Corporate governance, corporate culture, strategic management, excellent performance,

crisis management and efficient communication are common in financial early warning systems, and the risk-based management concept permeates into all aspects of corporate management. The purpose of establishing the financial early warning system is to realize value and achieve performance, and to support the realization of the main mission, vision and core value.

5. Conclusion

The establishment of financial early warning system is to support management activities such as effective identification, evaluation, early warning and response to corporate risks. The implementation of the risk-oriented management concept should be formulated according to the time and the format of the business, and should not be too rigid. In the wave of rapid development of science and technology, we should be good at adapting, seizing opportunities and managing risks well.

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