# Research on Optimization of Evaluation System of China's Listed Companies' Solvency

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**Abstract:** With the rapid development of social economy, the solvency of enterprises has always been a concern of many stakeholders. When analyzing the solvency, the owners and managers of enterprises need to put forward corresponding solutions based on the financial analysis and operation of enterprises. However, the current financial evaluation system over emphasizes the accrual basis and weakens the cash basis, which cannot truly reflect the company's solvency. Based on this, this paper analyses and optimizes the current indicators of solvency, which provides a basis for future research on the solvency of Listed Companies in China.

## 1. The current theoretical system of solvency evaluation of listed companies and its Defects

Solvency refers to the ability of an enterprise to repay all kinds of debts due. The level of solvency is one of the important issues that any stakeholder is concerned about. At present, the popular financial comprehensive evaluation of Listed Companies in China is mainly based on accrual basis. Using the data from balance sheet and profit statement as the core, design corresponding indicators so as to carry out analysis. This chapter will discuss from three parts: the current short-term solvency evaluation system, the long-term solvency evaluation system and the defects of the current system.

### 1.1 Current theoretical system for short-term solvency evaluation

Short-term solvency, also known as “liquidity”, mainly repays short-term debts due through the liquidity of current assets, which depends on the amount of liquidity assets that can be converted into cash in the short term. It is a key factor in investigating the short-term solvency of a company. The current theoretical system of short-term solvency evaluation is shown in Table 1:

Table 1 Current short-term solvency evaluation theory system

| Indicator project type | Indicator Name | Formula for Calculating Indicators | Indicator Connotation | Indicator conclusion |
|---|---|---|---|---|
| Short-term solvency projects | Rolling ratio | P1= Current assets/current liabilities | It shows how many current assets are used as payment guarantee for each RMB of current liabilities, and reflects the ability of current assets to be used to repay current liabilities when short-term liabilities are due. | It is generally considered that the index should be more than 2. |
| | Quick ratio, | P2= Quick assets/current liabilities | Quick ratio excludes prepaid expenses such as inventory and prepaid accounts, eliminates the impact of current assets items with poor liquidity, such as inventory, and can partly remedy the shortcomings of current ratio index. | It is generally considered that the normal quick ratio is 1. |
| | Conservative quick rate | P3=(Monetary Fund + Trading Financial Assets + Accounts Receivable + Bill Receivable) / Current Liabilities | Quick ratio is a further indicator of liquidity. | It is generally considered that the higher the conservative quick ratio, the better. |

### 1.2 The current theoretical system for long-term solvency evaluation

Long-term solvency refers to the ability of a company to pay its long-term debt due. The debt

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ratio, which reflects the relationship between debt and assets and net assets, is often used to measure the quality of assets and the use of financial leverage, as well as the stability and safety of the financial situation of enterprises. The current theoretical system of long-term solvency evaluation is shown in Table 2:

Table 2 Current Theoretical System of Long-term Solvency Assessment

| Indicator project type | Indicator Name | Formula for Calculating Indicators | Indicator Connotation | Indicator Conclusion |
|---|---|---|---|---|
| Long-term solvency projects | Asset-liability ratio | G1=(Total liabilities/total assets) *100% | The bigger the index is, the heavier the debt burden of the enterprise is, and vice versa. | If the ratio exceeds 100%, it indicates that the enterprise is insolvent and is regarded as reaching the bankruptcy alert line. |
| | Property right ratio | G2=(Total liabilities/shareholder equity) *100% | This index shows the relative relationship between the sources of funds provided by creditors and investors, and reflects whether the basic financial structure of enterprises is sTable. | The standard value set by enterprises is 1:2. |
| | Guaranteed multiple of earned interest | G3=((Total Profit + Interest Disbursement) / Interest Disbursement) *100% | This index reflects the specific relationship between enterprise profit and interest cost. Generally speaking, the higher the index is, the stronger the long-term solvency of the enterprise is., and vice versa. | It is generally considered that the index should be at least greater than 1. |

### 1.3 Defects in the theoretical system of solvency evaluation of listed companies

#### 1.3.1 Defects in the theoretical system of short-term solvency evaluation

Current short-term solvency evaluation theory system. Even though these ratios are simple in calculation and reliable in data sources, we cannot affirm it because of the many advantages of this system. We should fully analyze its advantages and disadvantages and improve the whole system. Most of these ratios have the following problems:

(1) Static indicators are used to measure the solvency of enterprise dynamics with certain time lag: the current three indicators are the stock data in the balance sheet, reflecting the current liquid assets that can be used at a certain point in the enterprise. The ratio of current liabilities, but because the realization of assets and the settlement of debts are dynamic and always in a process of constant change, such static assets are not necessarily related to future capital flows.

(2) Accounts receivable affects the objectivity of the indicator: the size of the company's accounts receivable is affected by the sales policy and credit conditions of the enterprise, and different management methods will affect the size and degree of liquidation of accounts receivable. The objectivity of the index calculation is affected, which easily leads to errors in the calculation results.

#### 1.3.2 Defects in the Theory System of Long-term Solvency Assessment

1) Single source of funds: After the generation of debt, the main capital that enterprises can use to repay debt is assets. In fact, there are many sources of funds for debt repayment, not only through the realization of assets, but also in the process of operation to obtain capital flows. Most of the analysis of the solvency of enterprises is about how to protect the rights and interests of creditors, which cannot truly reflect the solvency of enterprises.

2) Selected indicators are not accurate enough: there may be some assets in the total assets that cannot be used to repay debts, such as patent rights, goodwill and so on. Compared with tangible

assets, these intangible assets are not flexible and lack of frequency in market transactions, so whether they can be used to repay debts still exists uncertainties. With great uncertainty, it is bound to overestimate solvency as a guarantee of debt repayment.

3) Foundations designed by indicators are idealized: the indicators selected for the analysis of long-term solvency of enterprises in the past are idealized and do not conform to the actual situation. In the current theory system of long-term solvency evaluation, most of them are based on bankruptcy liquidation, not sustainable operation, such as property right ratio and asset-liability ratio. Although they have some significance, they do not conform to the characteristics of enterprise operation. The main purpose of the existence of an enterprise is to gain profits. Its premise is continuous operation, and the creditor's right to use the transitional funds is not to obtain the value of the liquidation of the enterprise, but to obtain the principal and interest after maturity. Therefore, the analysis of the solvency of enterprises should be based on continuous operation rather than bankruptcy liquidation.

## 2. Optimizing the Theoretical System of Financial Analysis Indicators for Debt Solvency

### 2.1 Optimizing the Financial Analysis Index System of Short-term Solvency

Under the new economic situation, there are some new economic phenomena. However, the analysis and evaluation of short-term solvency of enterprises, which are mainly based on the analysis of liquidity ratio, quick ratio and cash ratio, cannot meet the new requirements. There are more and more obvious limitations in financial evaluation, such as vague evaluation focus, over broad evaluation points and single evaluation content. Therefore, a dynamic (short-term) solvency analysis system is proposed.

#### 2.1.1 Definition of dynamic (short-term) solvency

Dynamic (short-term) solvency is calculated on the date of balance sheet, based on the assumption of continuing operation, and without considering the use of long-term financing tools to enhance short-term solvency, using the stock currency funds, investment current assets and the assets of the listed company on the consolidated the date of balance sheet and the net cash flow of the business activities in the next year to offset the cash surplus of the stock investment current liabilities, exogenous current liabilities and derivatives of exogenous financing on the balance sheet date and the interest paid on the exogenous debt of Listed Companies in the next year.

#### 2.1.2 Formula of Dynamic (Short-term) Debt Solvency Index

The dynamic (short-term) Solvency Index is illustrated as the percentage of the long-term financing assets in stock on the date of balance sheet . Dynamic (short-term) Solvency Index (%)= (date of balance sheet stock investment liquidity assets + date of balance sheet stock currency funds + net cash flow expectation of operating activities for the next year after the date of balance sheet - date of balance sheet stock investment liquidity liabilities - date of balance sheet stock exogenous liquidity liabilities and exogenous liquidity Financing Derivatives - Cash Interest Expectations for the Next Year after the Date of Balance Sheet ) / Stock Long-term Financing Assets.

#### 2.1.3 The Influence of Dynamic (Short-term) Debt Solvency Indicators

Negative index shows that listed companies need to replace the stock of exogenous current liabilities with exogenous current liabilities to maintain their sustainable operation without using exogenous non-current liabilities and equity financing to supplement their working capital; while positive index means listed companies will face dividend issuance and external long-term investment and pressure to invest or advance repayment of external long-term liabilities.

#### 2.1.4 Value analysis of dynamic (short-term) solvency formula

##### 2.1.4.1 The source of index value.

The stock of investment current assets, monetary funds, investment current liabilities, exogenous

current liabilities and derivatives of exogenous financing on the date of balance sheet are taken from the consolidated balance sheet of listed companies.

### 2.1.4.2 Expectation of interest payment for the next year after the date of balance sheet.

This index depends on the interest on debt and the flow of debt in the next year after the date of balance sheet, which is difficult to predict. Therefore, in order to facilitate the operation, I advocate the calculation of current interest expenditure.

### 2.1.5 Advantages of Dynamic (Short-term) Debt Solvency Index

(1) Dynamic (short-term) solvency is based on the assumption of continuous operation rather than liquidation. Emphasis is placed on the "automatic" liquidity of operating current assets under the assumption of going concern and the "automatic" solvency of operating current liabilities. (2) To forecast the net cash flow of operating activities in the next year after the date of balance sheet, instead of the tedious workload of determining the liquidity of operating current assets and the solvency of operating current liabilities out of monetary funds one by one, is more comprehensive and does not adhere to the liquidation liquidity analysis of specific projects. (3) The dynamic (short-term) solvency is less than zero, which is the sign of the dynamic (short-term) solvency of listed companies entering the period of (short) loan repayment (short) loan, which is more accurate than the empirical reference value of liquidity ratio and quick-moving ratio.

After optimization, the information content of financial index evaluation system of listed companies has increased significantly, and the effectiveness of decision-making has also been enhanced. As shown in Table 3:

Table 3

| Computation sheet of dynamic solvency | | | |
|---|---|---|---|
| Project | Source of Data | years | percentage |
| Long-term financing assets | Total Assets - Total Current Liabilities | | 100% |
| Cash flows from operating activities: | | | |
| Net cash flow from operating activities | Net cash flow emerged from operating activities | | |
| Cash flows from financing activities: | | | |
| Distribution of dividends or payment of interest in cash | Statement of Cash Flow: Cash paid for distributing dividends, profits or interest payments | | |
| Dividend Distribution Cash | Statement of changes in owner's equity: distribution to owner | | |
| Current assets: | | | |
| Total current assets | | | |
| Among them: | | | |
| Investment liquidity assets | Financial Assets Measured at Fair Value and Their Changes Included in Current Profits and Losses+ Interest Receivable+ Dividend Receivable+ Buying Resale Financial Assets+ Non- Current Assets maturing within One Year | | |
| Monetary funds | Monetary funds | | |
| Other Operational Current Assets | Bill Receivable + Accounts Receivable + Prepaid Accounts + Other Receivables + Inventory + Other Current Assets | | |
| The Impact of Other Operating Current Assets on Operating Cash Flow | Current (Other) Operational Current Assets of the Year - (Other) Operational Current Assets of last year | | |
| Current liabilities: | | | |
| Total current liabilities | | | |
| Among them: | | | |
| Investment current liabilities | Derivative Financial Liabilities + Selling and Repurchasing Financial Assets | | |
| Exogenous current liabilities and derivatives of exogenous financing | Short-term loan + accrued profits + dividend payable + non-current liabilities due within one year | | |
| Other Operational Current Liabilities | Bill payable + accounts payable + accounts receivable + salaries payable + taxes payable + other accounts payable + other current liabilities | | |
| The Impact of Other Operational Current Liabilities on Operational Cash Flow | Operational Current Liabilities for the Year (Other) - Operational Current Liabilities for the Year (Other) | | |
| Dynamic solvency | | | |

Note: The calculated data can be obtained from the annual reports of listed companies.

## 2.2 Optimizing the Financial Analysis Index System of Long-term Solvency

At present, the indicators set by the evaluation system of solvency are not detailed enough, the information provided is not comprehensive enough, and the information capacity is not large enough. The selected index data are not accurate enough and the information capacity is not large enough. Asset size, profitability and cash flow should be analyzed from three perspectives in order to provide more detailed information and richer quality connotations, as shown in Table 4, 5 and 6:

Table 4 Evaluation System of Financial Indicators for Long-term Solvency of Listed Companies (Asset Scale)

| Indicator project type | Indicator Name | Formula for Calculating Indicators | Indicator Connotation | Indicator Conclusion |
|---|---|---|---|---|
| An Analysis of the Impact of Asset Size on Long-term Solvency | Asset-liability ratio | A1=(Total liabilities/total assets)*100% | The bigger the index, the heavier the debt burden of enterprises, and vice versa. | If the ratio exceeds 100%, it indicates that the enterprise is insolvent and is regarded as a warning line of bankruptcy. |
| | Tangible asset -liability ratio | A2=(Total liabilities/(total assets-intangible assets-goodwill) *100% | This index is the improvement of the property right ratio, mainly considering that intangible assets cannot be used as a guarantee to repay debts due to the uncertainty of value and sunk. | It is generally considered that the difference between this ratio and the asset-liability ratio shouldn't be too large. |
| | Equity ratio of long-term liabilities | A3=(Total non-current liabilities/owner's equity)*100% | The smaller the index is, the lower the degree of capitalization of corporate liabilities and the lower the pressure of long-term debt repayment, and vice versa. | This index should not be too high, and should generally be below 20%. |

Table 5 Evaluation System of Long-term Solvency Financial Indicators of Listed Companies (Profitability)

| | | | | |
|---|---|---|---|---|
| An Analysis of the Impact of Profitability on Long-term Solvency | Sales interest ratio | B1=(Interest expense/operating income) *100% | This index reflects the guarantee degree of debt repayment by the sales situation of enterprises. The more the index shows, the smaller the proportion of cash received through sales to repay interest. | The smaller the index, the better. |
| | Guaranteed multiple of earned interest | B2=(Total profit + interest disbursement) / interest disbursement) *100% | This index reflects the specific relationship between corporate profits and interest costs. Generally speaking, the higher the index, the stronger the long-term solvency of enterprises. | It is generally considered that the index should be at least greater than 1. |

Table 6 Evaluation System of Financial Indicators for Long-term Solvency of Listed Companies (Cash Flow)

| | | | | |
|---|---|---|---|---|
| An Analysis of the Impact of Cash Flow on Long-term Debt Solvency | Principal-interest repayment ratio of matured debt | C1=(net operating cash flow/(non-current liabilities due within one year + bills payable)*100% | The net cash flow of operating activities is the most sTable and regular source of cash for enterprises, which is the basic guarantee for debt repayment. The larger the value of this index, the stronger the long-term solvency of enterprises. | It is generally considered that the index should be at least greater than 1. |
| | Guarantee multiple of interest cash flow | C2= Net Cash Flow/Interest Cost of Operating Activities | This index can better reflect the solvency of enterprises than the multiple of interest earned. | It should be at least greater than 1. |
| | Operating Flow Cash Ratio | C3=(Net cash flow/total liabilities of operating activities) *100% | Through this ratio, we can know most of the cash sources needed to maintain the company's operation and support the company's development, so as to judge whether the company's financial situation is good or not, and whether the company's operation is healthy. | The higher the proportion, the better. |

## 3. Conclusion

Based on the objective evaluation of the solvency of our country's listed companies, this paper takes the short-term solvency and long-term solvency evaluation index system as the research object, emphasizing on improving the current accrual-based index design system, using the cash flow realization system as the basis for the design of the index system as far as possible, and highlighting the solvency of cash flow. The evaluation index system of liquidity and long-term solvency is optimized. After the analysis of the optimization system, the content of the evaluation system of solvency of Listed Companies in China is richer, and the evaluation results are more real, accurate and effective.

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