

# The Bankruptcy Prediction of Chinese Export-oriented Enterprise:base on the Financial Crisis

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**Abstract**—The global financial crisis, triggered by the U.S. subprime mortgage in 2007, has seriously affected the development of China's economy, making a large number of Chinese export-oriented enterprises faced with serious problems, such as profit decline, layoffs and even bankruptcy. This paper is set under the background of this global financial crisis and aiming at extracting implicit risk factors of the export-oriented enterprises through empirical research, which is different from those early studies that based under the conditions when the external environment is stable. In this paper, we built the early warning system on the basis of the logistic regression theory and help enterprises identify the internal factors leading to their corporate financial crisis, so that they can better confront with crisis in the future and take precautions against external environmental impacts, thus contributing to the development of more robust.

**Index Terms**—financial crisis, bankruptcy prediction, logit model

## I. INTRODUCTION

The global economy is still shrouded in shadow of the financial crisis at present and many enterprises are still not out of crisis. This global financial crisis in 2007, triggered by the U.S. subprime mortgage, is undoubtedly a calamity to both the virtual economy and the real economy.

The global economy has not yet fully recovered, though the financial crisis has become history. It has become a critical issue for enterprises to optimize their own structure and increase their competitive edge against potential risks. Risks are inevitable, but the most important is that we should find out the inherent risk factors to help them out of the crisis and better respond to future crises. The paper has important research significance, as it resolves two issues: set up the new crisis prediction variables under the unstable external environment and establish a warning model based on the Logit theory for prediction.

The remainder of this paper is organized as follows. Section 2 reviews the existing academic research on bankruptcy prediction models and provides the details of the methodology used to estimate the models. Section 3 describes the whole process of the establishment of the new

variables and the prediction model, including the comparison to early study on bankruptcy prediction. Section 4 summarizes the paper and gives out the final conclusion.

## II. PREVIOUS STUDIES ON BANKRUPTCY PREDICTION

The corporate financial crisis was triggered by and arises from the internal financial risks. There are broad and narrow definitions for financial risk. The corporate financial risk, defined in this paper in the context of the global financial crisis, is one under the broad sense, that is, the uncertainty of the financial situation of a company when engaging in business activities, which due to external environment and internal conditions that are difficult to predict or control. Both the external environment factors (e.g. changes in market supply and demand and changes in the macroeconomic situation) and internal factors (e.g. problems arise from financing, using and recycling the corporate funds), which constitute the financial risk under the broad sense, are likely to affect the financial situation of enterprises and hamper its normal development.

As a low-cost tool to prevent corporate financial risk, the early warning system has already been studied extensively. The model is usually set according to the following four steps: definition of the crisis, selection of indicators, determination of the model form and the final estimation of the model prediction. The first step is the most critical as it determines the accuracy of the final model. Foreign scholars generally defined bankruptcy as the corporate financial crisis standards, but it is not fit for China's national conditions according to the study of many Chinese scholars. Thus, most studies on Chinese enterprises defined the ST (Special Treatment) company in listed companies as corporate financial crisis, based on the economic environment of China and the availability of research data.

Corporate financial crisis prediction model derived from Financial Distress single variable model, which is presented by Fitzpartrick in 1932. He used a single financial ratio to determine whether the company goes bust and obtained two indicators with the highest classification rate: net profit / shareholders equity and equity / debt. Later, the scholars began to use a multi-variable linear model for further research after summarization. The most notable is the study of Dr. Altman, coming from the United States, in 1968. He finally set up five variable-Zscore model on the basis of 22 financial ratios, which can discriminate the financial crisis through specific threshold. As in practical applications, the discrimination accuracy rate of the linear model will be

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highly affected by the assumption such as the variable must be consistent with the Joint Normal Distribution, a logistic regression model based on Logarithmic Function came out. The most prominent advantage of the model is its assessment of the dependent variable using the binary category, that can be well used to distinguish classified variables with the result of 0/1, and it is found that the prediction is better when using 0.5 as a cutoff point. Based on statistical research, other scholars also proposed using artificial intelligence to solve the financial crisis early warning system, such as the artificial neural network model by Lecher, Sharda, Wilson, and fuzzy comprehensive evaluation method, decision tree method, Monte Los simulation, fuzzy clustering method and so on.

#### *A. Linear Discriminant Model of bankruptcy prediction*

Reference [3], choosing 72 of China's listed companies as sample, establishes the enterprise early warning model with the average prediction accuracy of 91.7%, through the R-cluster analysis and multiple discriminant model simulation based on Altman's 5-Zcore model.

Reference [4] shows that there exists a big deviation when using Altman's 5-Zcore model to predict the bankruptcy risk of China's enterprises, and it's not reliable to predict the corporate financial crisis only from the Z values. The author also proposes that the model can still play a better early warning role when using Z values combined with its volatility in analysis.

#### *B. Non-linear regression model of bankruptcy prediction*

Instead of four categories, that is profitability, solvency, operational capacity and growth capacity, Li shan(2008) chooses three principal components, applying the factor loading matrix, to establish Logit model of financial distress prediction. The author extracts 40 listed companies in 2006 (including 20 ST-companies) in the empirical test and reaches 85% accuracy rate.

By comparing Fisher discriminant model and Logistic regression model based on the Normal Test and Principal Component Analysis, Wang Chunli and Han Weiguo(2008) finds that the Logistic regression models plays a better role in the overall forecast than Fisher discriminant model, and further they obtains that in the advanced 1-4 periods of prediction, the outcomes of 1-2 advanced periods are better than the 3-4 advanced periods predictions.

Lin juan and Yang Meiping(2010) proposes the idea of innovation index built. In their paper, financial risk is divided into stages of development financing activities, investment activities, operational activities and income distribution activities in four categories in accordance with the financial activities of SMEs. In order to determine the financial early-warning prediction degree, a model of SMEs is built under the Delphi method, principal component analysis method and then through the efficiency coefficient score method.

#### *C. BP neural network and fuzzy algorithm Methods of bankruptcy prediction*

By introducing a comprehensive evaluation of intelligent BP neural network method, Li Ming, Xiao Dongsheng (2008) overcomes the artificial fuzziness and randomness in the

weight determination. Their model obtains 80% accuracy rate when predicting financial risks under four risk categories.

With the introduction of non-financial factors such as the audit opinion and corporate governance, and reducing indicator set through the neighborhood rough set method, Wu Lihua and Ma Chaoqun(2009) combines the two highly complementary methods of Rough set and Neural network to improve early warning capability of the model. In their empirical test, the prediction accuracy was 91.7%, higher than the Logistic model and a single neural network model.

Later, some other scholars come up with a number of new methods to overcome the disadvantage of single intelligent method. References [11] builds the PAC-SVM financial early warning model, which is fit for small sample space, to overcome the limitations of the current identification methods and the poor prediction effect of BP neural network under small samples. References [12] set a new financial early warning model based on the SVM(Support Vector Machine) to improve the predictive capability.

This paper researches on the early warning system under the background of the financial crisis based on the Logit regression model, and draws conclusions after comparing to the earlier studies under the stable external environment.

### III. EMPIRICAL RESEARCH

#### *A. Delimitation of financial crisis and Selection of research object*

This paper studies the financial crisis of Chinese enterprises in the context of the 2007 global financial distress, therefore, the companies whose stock is regarded as Special Treatment (ST) is defined as corporate financial crisis object in our paper, taking into account the actual situation of our country and the early study of domestic scholars. As this study is set under the foundation of the subprime mortgage crisis in 2007 and there is certain of latency of the impact of the crisis, we choose the 2008 ST companies as bankruptcy prediction research object. In this paper, the 2008 ST companies include two categories: (1) Listed companies that has been marked "ST" before 2008. Although they are marked not directly because of the 2007 global crisis, its poor management has led it not able to cope with the crisis from the outside world and remove the "ST" mark in 2008; (2) Listed companies that is just be marked "ST" in 2008. That, these companies appeared to have bankruptcy crisis in 2008, indicates there hidden some potential risks in their former healthy financial conditions. The global subprime mortgage crisis helped expose the hidden issues and make those companies jump into crisis without warning. Generally speaking, this method of crisis definition is both reasonable and legal, and it's also in line with the needs of objective facts.

China is one of the largest export-oriented countries, and its economic growth depends largely on the export of foreign trade. The dramatic decline in domestic demand in other countries and their intense of trade protection system will have serious negative effects on the economic development of China, especially for large export dependence companies.

As durable consumer goods and garment industry are highly dependent on export trade, we finally choose 113 listed companies in the related fields as our empirical study object, including 15 ST companies and 98 non-ST companies (2008).

*B. The selection of the financial ratios*

1) Qualitative selection of the variables

Corporate financial crisis is led from complex business reasons. But the most essential is that the corporate do not set up a strong concept of crisis to effectively guard against potential financial risks. Thus, affect the normal development of the corporate and lead business into a financial crisis.

In general, the risk factors that cause enterprise bankruptcy can be divided into two categories, external environment factors and internal factors. The external environment factors refer to the instability of exogenous environment which comes from the outside of an enterprise and is uncontrollable, including market uncertainty, economic situation changes, interest rate and exchange rate fluctuations and policy changes. The internal factors refer to internal controllable factors, including financial factors and non-financial factors.

Early western scholars in the bankruptcy warning research, has adopted a number of financial ratios to design their model, resulting in the disorder of target selection. And because of the lack of theoretical basis for selecting the financial ratios, different scholars obtained a variety of different conclusions, making the study of enterprise crisis warning lack of uniformity. In order to make the study in this field more widely accepted, later scholars began to study the classification of financial ratios, attempting to establish a more accurate early warning model.

As the quality of financial ratios largely determines the reliability of early warning model, we should select the indicators that can significantly differentiate whether a company will come into a corporate financial crisis or not, from both qualitative and quantitative point of view. Thus, help other companies grow more healthily in the uncertain environment and better cope with external impacts. Consolidating the financial factors, which caused corporate financial crisis, we can describe an enterprise's financial situation and predict corporate financial crises from the following four areas: profitability, solvency, operational capacity and growth capacity. So, we got the 19 primary financial ratios as in the Table I .

Return On Invested Capital
Net Profit per Share (EPS)
<b>Solvency</b>
Asset-Liability Ratio
Current Assets/ Total Assets
Current liability/Total Liability
Current ratio
Quick Ratio
Net Cash Flow from Operation / Current Liability
Net Cash Flow from Operation / Total Liability
<b>Operational Capacity</b>
Inventory Turnover
Accounts Receivable Turnover
Liquid Assets Turnover
Fixed Assets Turnover
Total Assets Turnover
<b>Growth Capacity</b>
Growth Rate of Operating Profit (year on year )
Growth Rate of Operating Revenue (year on year )
Growth Rate of Net Profit On total Assets (year on year )

We can make comprehensive and objective evaluation of the target companies' financial situation through the financial indicators in Table I . However, as there may exists multicollinearity between indicators, which will lead to the decline of the predictive power of the ultimate early warning model, indicators of the model must be further screened so that they can better distinguish whether listed companies will get into corporate financial crisis or not.

2) Quantitative screening of the variables

As the requirements of Disclosure System for Annual Report of Listed Companies identified, the deadline of listed companies to publish their annual report is April 30th of the following year, and the (t-1) year Annual Report of the listed companies and if the company is classified as "ST" company in last year are almost published at the same time. Therefore, using the data in (t-1) year to predict whether the listed company will be in a corporate financial crisis and be marked "ST" in t year has little practical significance.

Foreign scholars study in 1980 also showed that use information just after the bankruptcy to predict bankruptcy will overestimate the predictive ability of bankruptcy models. This paper adopts domestic scholars' methodology, using (t-2) year financial ratio value in the financial statements to analyze if the companies in t years will, for various internal and external factors, get into bankruptcy crisis, that is, 2006 financial ratios value are used to analyze the business in 2008 and predict whether the enterprises will be included in the "ST" after the impact of the subprime mortgage crisis.

Because different indicators vary in the description and statistical capabilities, using single indicator to discriminate is unreasonable. Therefore, four categories of indicators must be combined through excluding some highly relevant indicators and reserving those that can make clear distinction between ST companies and non-ST companies.

TABLE I. FINANCIAL RATIO

<b>Profitability</b>
Return On total Assets
Net Profit On total Assets

TABLE II. LEVENE TEST & INDEPENDENT SAMPLE T-TEST OF VARIABLES

	Levene Test		Independent Sample T-test		
	F	Sig.	t	df	Sig.(double side)

<b>Return On total Assets</b>	Equal Variances	5.938	0.016	4.794	111	0
	Uneven Variances			3.679	16.136	0.002
<b>Net Profit On total Assets</b>	Equal Variances	9.581	0.002	6.146	111	0
	Uneven Variances			4.49	15.846	0
<b>Return On Invested Capital</b>	Equal Variances	7.493	0.007	4.735	107	0
	Uneven Variances			3.59	12.369	0.004
<b>Net Profit per Share (EPS)</b>	Equal Variances	0.288	0.593	3.569	111	0.001
	Uneven Variances			4.131	20.95	0
<b>Asset-Liability Ratio</b>	Equal Variances	61.759	0	-4.882	111	0
	Uneven Variances			-1.94	14.054	0.073
<b>Current Assets/ Total Assets</b>	Equal Variances	1.251	0.266	0.908	111	0.366
	Uneven Variances			0.947	19.147	0.355
<b>Current liability/Total Liability</b>	Equal Variances	0.171	0.68	-0.146	111	0.884
	Uneven Variances			-0.144	18.346	0.887
<b>Current ratio</b>	Equal Variances	2.413	0.123	1.647	111	0.102
	Uneven Variances			1.233	15.984	0.236
<b>Quick Ratio</b>	Equal Variances	3.504	0.064	0.977	111	0.33
	Uneven Variances			0.657	15.431	0.521
<b>Net Cash Flow from Operation / Current Liability</b>	Equal Variances	1.105	0.296	2.072	111	0.041
	Uneven Variances			2.442	21.328	0.023
<b>Net Cash Flow from Operation / Total Liability</b>	Equal Variances	0.844	0.36	2.317	111	0.022
	Uneven Variances			2.508	19.71	0.021
<b>Inventory Turnover</b>	Equal Variances	0.588	0.445	1.509	111	0.134
	Uneven Variances			1.772	21.247	0.091
<b>Accounts Receivable Turnover</b>	Equal Variances	0.372	0.543	1.734	111	0.086
	Uneven Variances			2.242	23.724	0.035
<b>Liquid Assets Turnover</b>	Equal Variances	0.042	0.839	2.288	111	0.024
	Uneven Variances			2.427	19.389	0.025
<b>Fixed Assets Turnover</b>	Equal Variances	0.013	0.909	1.115	111	0.267
	Uneven Variances			0.973	17.089	0.344
<b>Total Assets Turnover</b>	Equal Variances	0.049	0.826	2.05	111	0.043
	Uneven Variances			2.058	18.605	0.054
<b>Growth Rate of Operating Profit (year on year )</b>	Equal Variances	30.699	0	3.771	109	0
	Uneven Variances			1.532	14.074	0.148
<b>Growth Rate of Operating Revenue (year on year )</b>	Equal Variances	0.062	0.805	1.888	109	0.062
	Uneven Variances			2.393	23.388	0.025
<b>Growth Rate of Net Profit On total Assets(year on year )</b>	Equal Variances	25.864	0	3.798	101	0
	Uneven Variances			1.725	7.157	0.127

For every financial ratio in the Table I , we extract the 2006 raw data of 113 sample companies from the public financial statements of listed companies (Experimental data are all from Wind Financial Information Terminal, marking ST companies as “1” and non-ST companies “0”)., edit in Excel and import into SPSS software to screen. The result of Independent Sample T-test is as in Table II .

First, we test the 19 primary indicators using Levene Test

of Homogeneity Of Variance. In the test, if the F value Sig.> 0.05, it shows homogeneity of variance-type test "exists no significant difference", that is Equal Variances. Or, if the F value Sig. < 0.05, it means that the sample variance are uneven.

Table II shows that 6 of the 19 indicators' Levene test results are “existing significant difference”, including: Return On total Assets, Net Profit On total Assets, Return On

Invested Capital, Asset-Liability Ratio, year on year growth rate of Operating Profit and Return On Net Assets. The later T-test results of these 6 indicators should be selected based on the results of Levene Test (i.e., choosing the second line of each indicator in Table II).

After Independent Sample T-test, we finally got that part of the financial indicators in 2006 has significant judging capability in whether the internal and external factors will lead export-oriented companies to abnormal financial situation in the coming second year 2008. These indicators consist of 4 Profitability indicators, 2 Cash Solvency indicators and 2 Operational capability indicators. The 3 Growth capacity indicators are all not significant enough to be reserved as final variables for prediction according to Table II.

The test results imply that, under the impact of 2007 subprime mortgage crisis, the early prediction indicators established under the stable external environment is no longer applicable on the issue of whether a company will expose its own financial problem and lead to corporate financial crisis in 2008. So, in order to meet the current crisis-prone environment with high uncertainty, we must extract a new index system and establish crisis early warning model that is fit for the volatile external environment conditions based on the new index system.

As we can learn from Table II, Profitability indicators are still effective in determining financial status of a company and their significance for prediction is relatively high. In the 7 Solvency indicators: the 5 indicators reflecting the debt structure can no longer well distinguish the company's financial situation under the unstable conditions; the other 2 indicators reflecting the Currency Solvency capability earns higher significance, as they better implies how to get out of debt and unexpected situations with the shortest possible speed. Therefore, the cash liquidity is more important than capital debt structure in reflecting the corporate financial situation and helping protect from outside impact under the new situation. The Liquid Assets Turnover and Total Assets Turnover of Operational capability, which have always been attached great importance, are still indicators with strong warning effects. In terms of Growth capability, the financial ratios in this category are all used to predict future tendency through analyzing their former trends. And it is effective only it satisfies with the prerequisite that the external environment is stable. Thus, those Growth capability indicators are no longer applicable, neither.

As the Net Profit On total Assets and the Return On total Assets all indicate the profitability of the total assets, they are highly relevant and only the one which earns higher significance can be reserved as final indicator, that is, the Net Profit On total Assets. The same to the two Currency Solvency capability, we retained one with higher significance to avoid multicollinearity. In addition, as the Debt Structure reflects the business management situation and the vulnerability of an enterprise in Financing, we remain one of them as the final indicator, that is, the Asset-Liability Ratio whose significance is relatively higher than other 4 indicators. Then, we got the final set of early warning indicators as below in Table III.

### C. Financial crisis prediction model

#### 1) The establishment of Logit model

We import the 113 sample companies' data and the crisis discrimination variable (0/1) into SPSS for Logistic Regression. Before the indicators are put into the model, the software evaluates the links between each indicator and the dependent variable and finally gives the assessment value of each indicator as in Table IV.

TABLE III. FINAL INDICATORS

<b>X<sub>1</sub></b>	Net Profit On total Assets
<b>X<sub>2</sub></b>	Return On Invested Capital
<b>X<sub>3</sub></b>	Net Profit per Share (EPS)
<b>X<sub>4</sub></b>	Liquid Assets Turnover
<b>X<sub>5</sub></b>	Total Assets Turnover
<b>X<sub>6</sub></b>	Asset-Liability Ratio
<b>X<sub>7</sub></b>	Net Cash Flow from Operation / Total Liability

TABLE IV. ASSESSMENT OF INDICATORS

	Final Indicators	A Score	df	Sig.
<b>X<sub>1</sub></b>	Net Profit On total Assets	22.787	1	0
<b>X<sub>2</sub></b>	Return On Invested Capital	18.885	1	0
<b>X<sub>3</sub></b>	Net Profit per Share (EPS)	11.327	1	0.001
<b>X<sub>4</sub></b>	Liquid Assets Turnover	5.707	1	0.017
<b>X<sub>5</sub></b>	Total Assets Turnover	3.203	1	0.074
<b>X<sub>6</sub></b>	Asset-Liability Ratio	11.469	1	0.001
<b>X<sub>7</sub></b>	Net Cash Flow from Operation / Total Liability	4.468	1	0.035
	The Overall Statistic	30.548	7	0

TABLE V. ASSESSMENT OF VARIABLES

	Final Indicators	B	Exp (B)
<b>X<sub>1</sub></b>	Net Profit On total Assets	-0.162	0.851
<b>X<sub>2</sub></b>	Return On Invested Capital	0.2	1.221
<b>X<sub>3</sub></b>	Net Profit per Share (EPS)	-4.975	0.007
<b>X<sub>4</sub></b>	Liquid Assets Turnover	-0.447	0.639
<b>X<sub>5</sub></b>	Total Assets Turnover	-1.369	0.254
<b>X<sub>6</sub></b>	Asset-Liability Ratio	0.043	1.043
<b>X<sub>7</sub></b>	Net Cash Flow from Operation / Total Liability	-2.748	0.064
<b>A</b>	Constant	-2.627	0.072

According to the Sig. in the Table IV, 6 out of the 7 indicators get high significance under the test level of 0.05. It means that the research between the indicators, except the Total Assets Turnover, and the dependent variable for discrimination is statistically significant. In addition, Table 2-1 also gives the assessment value after the 7 indicators are put into the model: Score  $\chi^2=30.548$ , degrees of freedom  $df = 7$ , Sig. =0.000, showing that the overall test of the model is statistically significant.

We also get the ultimate model and the sensitivity of the indicator variables as in Table V.

According to the coefficient value B in Table V, we got the Logit regression model under the unstable external environment with the final split point of 0.5 as in (1) and (2):

$$\ln \hat{p}/(1-\hat{p}) = -2.627 - 0.162 X_1 + 0.2 X_2 - 4.975 X_3 - 0.447 X_4 - 1.369 X_5 + 0.043 X_6 - 2.748 X_7 \quad (1)$$

Or:

$$\hat{p} = \frac{e^{(-2.627-0.162 X_1+0.2 X_2-4.975 X_3-0.447 X_4-1.369 X_5+0.043 X_6-2.748 X_7)}}{1+e^{(-2.627-0.162 X_1+0.2 X_2-4.975 X_3-0.447 X_4-1.369 X_5+0.043 X_6-2.748 X_7)}} \quad (2)$$

Where  $\hat{p}$  is the rate of occurrence of financial crisis in the second year corresponding to the year when the data of the indicators are collected. When  $\hat{p} < 0.5$ , it is defined as financial healthy, and  $\hat{p} > 0.5$  as financial crisis.  $X_1 \sim X_7$  are the 7 indicator variables in Table III.

This study sample consists of 98 ST companies and 15 non-ST companies, with non-ST companies accounting for 86.7% and ST companies accounting for 13.3%, that is, the correct probability when randomly determined as non-ST company is 86.7%, and ST company 13.3%. The prediction accuracy for non-ST company of the model is 99% and for ST company is 41.7%, showing an obvious advantage over the random discrimination in identifying the corporate financial crisis. And the model has an overall prediction accuracy of 92.7%.

#### 2) The sensitivity analysis of the model indicators

The  $Exp(B)$  in Table V reflects the sensitivity of the dependent variable to each of the indicator variables, namely, when the value of other independent variables fixed, the argument for each additional unit, will lead to  $Exp(B)$  times change in the logarithmic function  $\ln \hat{p}/(1-\hat{p})$ . According to the Table V, Return On Invested Capital and Asset-Liability Ratio are crisis indicators, their increase may make it easier for companies to drop into corporate financial crisis. The increase of Asset-Liability Ratio indicates the excessive pressure of debt and companies may plunge into bankruptcy crisis as they are unable to pay due debts in short time. The increase of the Return On Invested Capital on the one hand may be caused by the invested capital growth rate less than profit growth, on the other hand may result from the reduction in invested capital. The latter is the cause of corporate financial crisis, because the investors' divestment or the lack of investment is bound tightly to the normal operation of enterprises. Therefore, we must consider both sides of the impact of Return On Invested Capital to the development of enterprise. In terms of this study under the unstable external environment, the increase of the Return On Invested Capital will promote the formation of a financial crisis. The other 5 indicators'  $Exp(B)$  is less than 1, indicating that their increase will help protect enterprises from corporate financial crisis.

#### IV. CONCLUSION

In this paper, we do research on the corporate financial crisis prediction and establish the warning index system and Logit regression model under the unstable external environment. The following are the conclusions we get from this study:

- 1) Logit regression model is an easy and effective prediction method. The model can be used for early warning of crisis for listed companies and help improve the company's ability to resist risk.
- 2) In the background of the subprime mortgage crisis, the Growth capability indicators and the Debt Structure indicators got by the prior academic research are no longer applicable to export-oriented enterprises. Under this condition, such enterprises should be more concerned about Profitability and Operating capacity, and for Solvency, enterprises should shift their attention from Debt Structure to their own Cash Solvency capacity.
- 3) In the condition of unstable external environment, the Return On Invested Capital and Asset-Liability Ratio are crisis indicators, however, the Net Profit On total Assets, the Net Profit per Share (EPS), the Liquid Assets Turnover, the Total Assets Turnover and the Cash Solvency are all protection indicators.
- 4) The Model also has certain limitations: a) the research object of this paper is restricted to domestic export-oriented enterprises, especially the consumer durables and garment industry, hence the prediction capability of the model may not be apparent when applied to other Domestic-oriented industries; b) when selecting indicators, we consider more on the internal financial ratios and ignore non-financial factors and external factors, thus, the reliability of the prediction highly depends on the accuracy of the corporate financial statements.

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