

Credit Risk Analysis of Wenzhou Listed Enterprises based on KMV Model

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Abstract

This paper applied KMV model to analysis Wenzhou listed enterprises credit risk. It was found that 9 listed companies need to cause attention because of their default distance breakthrough the cordon by analysing 26 Wenzhou listed companies' credit risk according to 2020 data. It was also found that COVID-19 pandemic has great negative impact on the credit risk level of Wenzhou listed enterprises by doing data tracking analysis. On the other hand, compared with the credit risk level of 56 listed companies in Taizhou, the overall credit risk of Wenzhou listed enterprises is relatively small. From the point of view of the influencing factors of default distance, stock price fluctuations are significant, inversely proportional to the distance of default, and asset-liability ratio and operating profit ratio are coincide with the distance of default.

Keywords

KMV Model; Listed Company; Distance of Default; Credit Risk.

1. Research Background

Private enterprises are important lifeblood of Wenzhou's economic development. According to relevant data, the number of Wenzhou listed companies has reached 28 until January 2021. Paying attention to the financial status of listed companies and identifying their credit risk are vital not only to the formulation of government policies, the investment and financing decisions of financial institutions, but also to individual market participants and other industry participants. This paper uses the KMV model to identify and measure the credit risk of listed companies in Wenzhou, and further analyzes the credit risk influencing factors of listed companies, in order to provide a certain theoretical reference for the reasonable decision-making of relevant departments and investors.

2. Literature Review

There are several essential models for measuring corporate credit risk: Credit Metrics, Credit Portfolio, Logistic model, KMV model, etc. The theoretical basis of the Credit Metrics model is the VaR model and the asset portfolio theory. It mainly uses the default rate and the credit transfer matrix to quantify value fluctuations to represent credit risk. Credit Portfolio mainly uses the company's historical default data combined with macroeconomic indicators such as interest rate, unemployment rate, economic growth rate and other variables to establish a multiple econometric model to obtain the probability of default distribution. The Logistic model usually analyzes the company's credit risk probability by extracting the main influencing factors. The KMV model introduce the concept of Black-Scholes-Merton's option pricing model to construct a model that can dynamically monitor the company's credit risk by the researchers of the American KMV company.

Academics at home and abroad have conducted a lot of research using the KMV model: Vasicek [1] tested the effectiveness of the KMV model by calculating the default probability before the risk event or the rating deteriorates of IBM, National Bank of Thailand, WorldCom, and UA. This

research verified that the prediction of the KMV model has strong applicability. Jeffrey Bohn, Navneet Arora, and Irina Korablev [2] empirically tested the effectiveness of the KMV model by analyzing the risk fluctuations of different companies in the US market during 1996-2004, and found that the KMV model is superior to other popular credit risk measuring models. António Câmara; Ivilina Popova; Betty Simkins [3] used the modified KMV model to analyze global financial companies which trade options in the United States, and focused on the subprime mortgage crisis period, finally found that the prediction ability of KMV model is superior to other risk prediction models and even Credit Rating.

Shi Bihan, Fang Hua [4] used the KMV model to analyze the default probability of listed companies from 2016 to 2017, and found that the KMV model can monitor the dynamic risk signals of these companies before being processed by *ST. Yao Peng [5] used the data of 108 real estate companies which listed on the A-share market between 2010 and 2018 as a research sample, and used the KMV model to found that the company's credit risk level is positively correlated with its asset size. Ba Shusong and Jiang Feng [6] used a modified KMV model to conduct a credit risk analysis of 3243 listed companies in China through a modified KMV model, and concluded that the KMV model is effective for monitoring credit risk. They indicated that investors need to pay attention to those companies which have default distance less than 2.2, because it means the company may has a high credit risk. Ye Zhiran, Pan Yi, and Ma Xiaowen [7] exploited the KMV model to analyze and calculate default distance and default probability of 3851 listed companies, and used fixed effects model to measure the impact factors, and concluded that macroeconomic factors would affect the company's credit risk level. Wang Qianan [8] combined the KMV model with the spatial panel model to analyze the data of 151 listed companies in Shanghai from 2010 to 2018. This study found that company's credit risk increased during the period of economic downturn. There is an amplification infection effect between different companies. Wang Haowei, Xu Jiawen [9] applied the KMV model to analyze and found that credit risk of those listed real estate companies with high credit default probability in China generally increased in the later period of the COVID-19 pandemic. And it showed the credit risk gone up during the late epidemic period in real estate companies which have high probability of credit default.

It can be seen that scholars at home and abroad have done a lot of research on the application of the KMV model. Sufficient research showed that the KMV model is effective for monitoring the credit risk of listed companies.

3. Introduction of KMV Model

3.1. Calculation of Asset Value and Asset Value Volatility

The KMV model introduces the concept of Black-Scholes-Merton option pricing, which regards the company's equity as a call option, and the face value of the debt as the strike price. The basic idea is that when the company's debt is due, the relationship between the value of the company's debt and the value of its assets needs to be evaluated. If the value of the company's debt is greater than the value of its assets, a default may occur, and vice versa.

Equations of the KMV model is as follows:

$$E = V_A N(d_1) - D e^{-rt} N(d_2) \quad (1)$$

$$d_1 = \frac{\ln(V_A/D) + (r + 0.5\sigma_A^2)t}{\sigma_A \sqrt{t}} \quad (2)$$

$$d_2 = d_1 - \sigma_A \sqrt{t} \quad (3)$$

$$\sigma_E = \frac{N(d_1)V_A\sigma_A}{E} \tag{4}$$

Table 1. The meaning of each parameter

E	V _A	σ _E	σ _A	d ₁	D	t	r
Equity value	Asset value	Equity value volatility	Asset value volatility	Standard normal distribution function	Debt face value	Debt maturity	Risk-free rate

The unknown variables in equations are the asset value V_A and the equity value volatility σ_A, which can be obtained by solving these equations through MATLAB.

3.2. Calculation of Default Distance and Probability of Default

Default distance refers to the distance from the current level of the company's asset value to the point of default within a certain period of time, the equation is as follows: $DD = (V_A - DP) / V_A * \sigma_A$.

Regarding the default point DP, Moody's Ratings concluded that the most probable default threshold is the company's short-term debt plus 50% of the long-term debt after a lot of empirical research. Therefore, this article applies $DP = SD + 1/2LD$ as the default point, SD is current liabilities, LD is non-current liabilities.

The above model assumes that the company's asset value obeys a standard normal distribution, so the expected default probability is $EDF = N(-DD)$, (N is the standard normal distribution function).

In the KMV model, the default distance and the default probability are negatively correlated, but currently there is no historical default database of listed companies in China. Therefore, this article uses the default distance to discuss the company's credit risk. The greater default distance signifies the smaller credit risk.

3.3. Sample and Parameter Selection

This paper extracts relevant data from the balance sheet of listed companies and individual stock transactions, which from the CSMAR database. Then writes the calculation code of KMV model, put the data and the code of the iterative equation into MATLAB in order to calculate the default distance and probability of the listed companies.

E is the average daily market value, σ_E = standard deviation of daily volatility * √number of trading days, daily volatility = (total market value - total market value of the previous trading day) / total market value of the previous trading day, period t is one year, the risk-free interest rate r is the one-year deposit interest rate which is 1.5%, and the debt value D adopts the report data of the listed company on December 31, 2020.

In addition, considering the large difference between the volatility of the asset value σ_A and the asset value V_A, V_A is usually tens of millions, and the value of σ_A is usually within 10. In order to avoid calculation errors, V_A = x * E is substituted for V_A when writing MATLAB code. And E/D (expressed as EtD) is introduced, and the asset value is standardized according to D to facilitate the calculation of the equation. The equations are optimized by numerical technology as follows:

$$E = xEN(d_1) - De^{-rt}N(d_2) \tag{5}$$

$$d_1 = \frac{\ln(xEtD) + (r + 0.5\sigma_A^2)t}{\sigma_A\sqrt{t}} \tag{6}$$

$$d_2 = d_1 - \sigma_A\sqrt{t} \tag{7}$$

$$\sigma_E = xN(d_1)\sigma_A \quad (8)$$

4. Research Contents

4.1. Analysis on the Credit Risk of Wenzhou Listed Companies

This paper extracts the public data of 26 listed companies in Wenzhou and runs the KMV model to obtain the following results about corporate credit risk, see [Table 2](#).

Table 2. Wenzhou listed company credit risk (2021)

Name of company	Stock code	Default distance	Default rate
Zhejiang Yiming Food Co., Ltd.	605179	3723.1	0
Zhejiang Tengen Electrics Co., Ltd.	605066	3.6527	0.00013
Zhejiang Zoenn Design Co., Ltd.	300901	3.4801	0.000251
Gsp Automotive Group Wenzhou Co.,Ltd.	605088	3.0997	0.000968
Goldcard Smart Group Co.,Ltd.	300349	2.9235	0.0017
Zhejiang Chint Electrics Co., Ltd.	601877	2.8884	0.0019
Zhejiang Giuseppe Garment Co., Ltd.	002687	2.8664	0.0021
Zhejiang Aokangshoes Co.,Ltd.	603001	2.8356	0.0023
Huayi Electric Company Limited (*ST)	600290	2.6748	0.0037
Zhejiang Dong Ri Limited Company.	600113	2.5882	0.0048
Zhejiang Renzhi Co., Ltd. (*ST)	002629	2.5091	0.0061
Zhejiang Weiming Environment Protection Co., Ltd.	603568	2.4663	0.0068
Zhejiang Red Dragonfly Footwear Co.,Ltd.	603116	2.4562	0.007
Fuda Alloy Materials Co.,Ltd	603166	2.4553	0.007
Zhejiang Semir Garment Co.,Ltd.	002563	2.38	0.0087
Baoxiniao Holding Co.,Ltd	002154	2.2596	0.0119
Huaфон Chemical Co.,Ltd.	002064	2.2017	0.0138
Zhejiang Linuo Flow Control Technology Co., Ltd.	300838	2.1334	0.0164
Petpal Pet Nutrition Technology Co., Ltd.	300673	2.0988	0.0179
Dianguang Explosion-proof Technology Co., Ltd.	002730	2.0173	0.0218
Zhejiang Cheng Yi Pharmaceutical Co.,Ltd	603811	1.8193	0.0344
Wenzhou Yihua Connector Co., Ltd.	002897	1.7843	0.0372
Jinlong Machinery & Electronic Co.,Ltd	300032	1.7164	0.043
Panda Dairy Corporation.	300898	1.645	0.05
Zhejiang Canaan Technology Limited	300412	1.5846	0.0565
Wenzhou Hongfeng Electrical Alloy Co.,Ltd.	300283	1.5668	0.0586

This article uses the default distance to discuss the company's credit risk. The greater the default distance, the smaller the credit risk. Among those companies in [Table 2](#), it should be noted that Yiming Food is a newly listed company in 2020, and the trading day is only 4 days in 2020. Therefore, the calculation result for Yiming Food is obviously deviated. In addition, Zhejiang Tengen Electrics, Zhejiang Zoenn Design, Gsp Automotive Group Wenzhou, Zhejiang Linuo Flow Control Technology, Panda Dairy are also newly listed companies in 2020, and the trading days are also less than one year, so there may be deviations in the calculation as well. Excluding the data of Yiming Food, the average default distance of listed companies in Wenzhou in [Table 2](#) is 2.40414, the median is 2.4553, and the standard deviation is 0.568578675. Ba Shusong and Jiang Feng [6] proposed the company within high default risk if the company

default distance is less than 2.2. Based on the data in the [Table 2](#), there are 9 companies need to be pay attention by relevant departments, financial institutions and investors: Zhejiang Linuo Flow Control Technology, Petpal Pet Nutrition Technology, Dianguang Explosion-proof Technology, Zhejiang Cheng Yi Pharmaceutical, Wenzhou Yihua Connector, Jinlong Machinery & Electronic, Panda Dairy Corporation, Zhejiang Canaan Technology, Wenzhou Hongfeng Electrical Alloy. Moreover, it is worth noting that Zhejiang Renzhi and Huayi Electric in the above list are *ST companies, but their default distance has not exceeded 2.2, in contrast the default distance is higher than the average level. The credit risk status of them are currently good.

4.2. Comparison of Listed Companies' Credit Risk in Wenzhou before and after the Pandemic

Except for the 6 companies which were listed in 2020, credit risk analysis results of other 20 listed companies are shown in [Figure 1](#), which based on the available data in 2019. Before the pandemic, the average default distance of listed companies in Wenzhou was 2.65752. The median was 2.66635, and the standard deviation was 0.939747487. But the credit risk of listed companies in Wenzhou has shown an overall upward trend after the pandemic. After the pandemic, 14 companies' credit risk have risen: Zhejiang Chint Electrics, Zhejiang Aokangshoes, Zhejiang Weiming Environment Protection, Zhejiang Red Dragonfly Footwear, Fuda Alloy Materials, Zhejiang Semir Garment, Baoxiniao Holding, Petpal Pet Nutrition Technology, Dianguang Explosion-proof Technology, Zhejiang Cheng Yi Pharmaceutical, Wenzhou Yihua Connector, Jinlong Machinery & Electronic, Zhejiang Canaan Technology, Wenzhou Hongfeng Electrical Alloy. Meanwhile, after experiencing the pandemic, there are 6 companies have increased their default distance and reduced their credit risk.

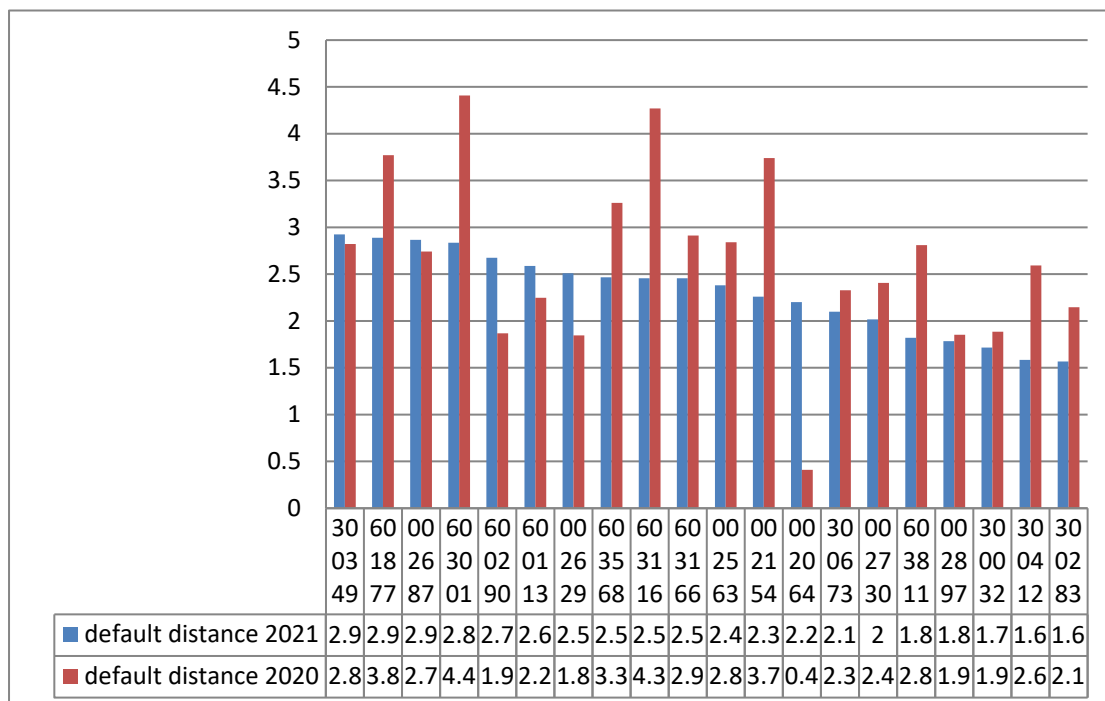


Figure 1. Comparison of credit risk of Wenzhou listed companies in 2020 and 2021 (represents listed companies by stock code which showed in [Table 2](#))

4.3. Credit Risk Comparison of Listed Companies in Taizhou

Taizhou City is adjacent to Wenzhou City. It is also an area with a very developed private economy. And it is a pilot zone for financial reform and innovation for small and micro

enterprises as same as Wenzhou. Therefore, selects listed companies in Taizhou for comparative analysis. The comparative analysis selects 56 listed companies in Taizhou to calculate and analyze. Table 3 shows the results which are calculated by the KMV model.

Table 3. Credit risk of listed companies in Taizhou (2021)

Name of company	Stock code	Default distance	Default rate	Name of company	Stock code	Default distance	Default rate
Forest Packaging Group Co., Ltd.	605500	7.2844	1.6156E-13	Zhejiang Yueling Co.,Ltd.	002725	2.1586	0.0154
Zhejiang East-asia Pharmaceutical Co., Ltd.	605177	5.0385	2.3459E-07	Zhejiang Tiancheng Controls Co.,Ltd.	603085	2.1409	0.0161
Zhe Jiang Headman Machinery Co.,Ltd.	688577	4.2545	1.0478E-05	Luoxin Pharmaceuticals Group Stock Co.,Ltd.	002793	2.1182	0.0171
Aishida Co.,Ltd	002403	3.3056	0.00047387	Zhejiang Xiantong Rubber&Plastic Co.,Ltd	603239	2.0951	0.0181
Zhejiang Supor Co.,Ltd.	002032	3.2323	0.00061389	Jack Sewing Machine Co.,Ltd.	603337	2.0566	0.0199
Zhejiang Weixing Industrial Development Co.,Ltd.	002003	3.1259	0.00088633	Sanwei Holding Group CO.,Ltd.	603033	2.0369	0.0208
Zhejiang Shuanghuan Driveline Co.,Ltd.	002472	3.012	0.0013	San Bian Science & Technology Co., Ltd	002112	2.0148	0.022
Sto Express co.,Ltd.	002468	2.8891	0.0019	Zhejiang Crystal-Optech Co., Ltd.	002273	2.0022	0.0226
Zhejiang Gongdong Medical Technology Co., Ltd.	605369	2.7714	0.0028	Changying Xinzhi Technology Co.,Ltd.	002664	1.9817	0.0238
Yorhe Fluid Intelligent Control Co.,Ltd.	002795	2.7608	0.0029	Zhejiang Weixing New Building Materials Co.,Ltd.	002372	1.9684	0.0245
Yonggao Co., Ltd.	002641	2.7542	0.0029	Zhejiang Firstar Panel Technology Co.,Ltd	300256	1.9562	0.0252
Lianhe Chemical Technology Co.,Ltd.	002250	2.6352	0.0042	Yotrio Group Co., Ltd.	002489	1.9543	0.0253
Zhejiang Baida Precision Manufacturing Corp.	603331	2.6187	0.0044	Zhejiang Tiantaixianghe Industrial Co., Ltd.	603500	1.9215	0.0273
Zhejiang Hisoar Pharmaceutical Co.,Ltd.	002099	2.6017	0.0046	Zhe Jiang Hua Hai Pharmaceutical Co.,Ltd.	600521	1.8952	0.029
Aurisco Pharmaceutical Co.,Ltd.	605116	2.5593	0.0052	Zhejiang Qjiang Motorcycle Co.,Ltd.	000913	1.8805	0.03
Tengda Construction Group Co.,Ltd.	600512	2.5411	0.0055	Leo Group Co.,Ltd.	002131	1.8646	0.0311
Zhejiang Wellsun Intelligent Technology Co.,Ltd.	300882	2.5307	0.0057	Add Imdusty(Zhejiang) Co.,Ltd	603089	1.8558	0.0317

Zhejiang Yilida Ventilator Co.,Ltd.	002686	2.4614	0.0069	Zhejiang Wansheng Co., Ltd.	603010	1.8488	0.0322
Zoje Resources Investment Co.,Ltd.(ST)	002021	2.3774	0.0087	Zhejiang Tianyu Pharmaceutical Co., Ltd	300702	1.8328	0.0334
Zhejiang Xinnong Chemical Co.,Ltd.	002942	2.3496	0.0094	Zhejiang Hisun Pharmaceutical Co., Ltd.	600267	1.8243	0.034
Maider Medical Industry Equipment Co.,Ltd.	688310	2.3051	0.0106	Zhejiang Yongtai Technology Co, Ltd.	002326	1.8082	0.0353
Zhejiang Zomax Transmission Co., Ltd.	603767	2.2603	0.0119	Zhejiang Jiuzhou Pharmaceutical Co.,Ltd	603456	1.7946	0.0364
Zhejiang Dayuan Pumps Industry Co.,Ltd	603757	2.2559	0.012	Zhejiang Tiantie Industry Co.,Ltd.	300587	1.7849	0.0371
Chunghsin Technology Group Co.,Ltd.(*ST)	603996	2.2324	0.0128	Zhejiang Shengda Bio-Pharm Co., Ltd.	603079	1.7062	0.044
Zhejiang Xianju Pharmaceutical Co., Ltd.	002332	2.229	0.0129	Zhejiang Yinlun Machinery Co., Ltd.	002126	1.6979	0.0448
Zhejiang Yonggui Electric Equipment Co., Ltd.	300351	2.2234	0.0131	Aerospace Ch Uav Co.,Ltd.	002389	1.6108	0.0536
Chimin Health Management Co., Ltd.	603222	2.221	0.0132	Zhejiang Starry Pharmaceutical Co.,Ltd.	603520	1.546	0.0611
New East New Mterials Co.,Ltd	603110	2.1635	0.0153	Zhejiang Ausun Pharmaceutical Co., Ltd.	603229	1.4481	0.0738

In [Table 3](#), the average default distance to of listed companies in Taizhou is 2.389258929, the median is 2.16105, and the standard deviation is 0.914228735. There are six companies are newly listed companies in 2020: Forest Packaging Group, Zhejiang East-asia Pharmaceutical, Zhe Jiang Headman Machinery, Zhejiang Gongdong Medical Technology, Aurisco Pharmaceutical, Zhejiang Wellsun Intelligent Technology, so the number of trading days is inconsistent with other companies, it may cause data deviation. In the analysis results, it can be seen that there are 29 companies with a default distance less than 2.2, which accounting for 51.79%. Comparing the data in [Table 2](#), it is showed that listed companies which have a default distance less than 2.2 in Wenzhou only accounting for 34.62%. And it can be seen that although the number of listed companies in Taizhou is more than Wenzhou, the overall credit risk of listed companies in Taizhou is relatively large according to the number of companies whose default distance are below 2.2 ,the average level and the median.

4.4. Analysis of Affecting Factors

According to the credit risk analysis of listed companies in Taizhou and Wenzhou, remove 12 newly listed companies in 2020, set the default distance of the remaining 70 listed companies to Y, and then select 3 variables: X1 (stock price volatility), X2 (asset-liability ratio) and X3(operating profit ratio), construct a multiple regression model:

$$Y=C+\beta_1X_1+\beta_2X_2+\beta_3X_3+\varepsilon \quad (9)$$

Running the regression model through Eviews, then get the following results,see [Figure 2](#) .

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.355897	0.085287	51.07344	0.0000
X1	-4.818021	0.168240	-28.63774	0.0000
X2	0.361100	0.095747	3.771393	0.0003
X3	0.227081	0.058807	3.861469	0.0003
R-squared	0.925752	Mean dependent var	2.220747	
Adjusted R-squared	0.922377	S.D. dependent var	0.437069	
S.E. of regression	0.121772	Akaike info criterion	-1.317895	
Sum squared resid	0.978668	Schwarz criterion	-1.189410	
Log likelihood	50.12633	Hannan-Quinn criter.	-1.266859	
F-statistic	274.3039	Durbin-Watson stat	1.638839	
Prob(F-statistic)	0.000000			

Figure 2. Results of regression model

In the above results, the R2 is 0.925752, and the corrected R2 is 0.922377, it indicates that the equation fits well. The F value is 274.3039 at 0.05 significance level, it can be founded that $F_{0.05}(3, 66)=2.75$. The F value in the regression model is 274.3039, which is far greater than 2.75, it indicates that the linear relationship of the model is significantly at the 5% significance level. The P values of the variables X1, X2, and X3 are 0, 0.0003, and 0.0003 respectively, which are far less than 0.05. The null hypothesis can be rejected ($H_0: \beta_1=\beta_2=\beta_3=0$). It means that the three variables have significant impact on the explained variable Y.

Since the cross-sectional data is prone to heteroscedasticity, use White heteroscedasticity test to gain the analytical results as follows, see [Figure 3](#).

Heteroskedasticity Test: White

F-statistic	2.471701	Prob. F(3,66)	0.0694
Obs*R-squared	7.070169	Prob. Chi-Square(3)	0.0697
Scaled explained SS	11.27183	Prob. Chi-Square(3)	0.0103

Figure 3. Results of White heteroscedasticity test

The P value of the White statistic (Obs*R-squared) is 0.0697, it is greater than 0.05, so the null hypothesis is accepted. There is no heteroscedasticity set by the white test under the existing conditions. In addition, although there is generally no autocorrelation phenomenon in cross-sectional data regression, the results shows that there is no autocorrelation in the first-order and second-order by running DW and LM tests.

In summary, the multiple regression equation can be obtained as:

$$Y=4.355897-4.818021X1+0.3611X2+0.227081X3 \tag{10}$$

From this equation, it can be founded that three variables have impact on the default distance: X1 -stock price volatility and default distance changes in reverse. An increase in stock price volatility will reduce the default distance, which means credit risk will increase. The default distance will decrease by 4.818021 percentage if one percentage increase in X1. X2-asset-liability ratio is positively correlated with default distance, default distance will increase by 0.3611 percentage if X2 increases by one percentage. X3-operating profit margin coincide with

default distance as well, the default distance will increase by 0.227081 percentage if X3 increase by one percentage. And the rise in X2 and X3 will both reduce the corporate credit risk.

It is obviously that the negative impact of stock price fluctuations on the credit risk of listed companies is very significant. And the factors which affecting stock price fluctuations are very complex. The asset-liability=total liabilities/total assets, this ratio is an indicator of debt solvency. Because of an increase in asset-liability ratio will reduces credit risk to a certain extent, this ratio needs to be viewed dialectically when using the KMV model to analyze corporate credit risk. Reasonable use of financial leverage may increase capital gains. On the other hand, it is also necessary to consider that the greater debt-to-asset ratio, the greater tax deduction effect and the greater tax surplus. The debt-to-asset ratio is beneficial to corporate development and credit risk management. Therefore, it should be maintained at a reasonable level. Operating profit ratio = operating profit/operating income, it is an indicator of profitability. An increase in operating profit ratio can reduce credit risk, it means that increasing operating profit can reduce credit risk to a certain extent.

5. Conclusion

Based on above analysis, it can be concluded that 9 of the 26 listed companies in Wenzhou have default distance which is less than 2.2 in 2021. After comparing the data between Wenzhou and Taizhou, it can be found that although the number of listed companies in Wenzhou is relatively small, however, the overall credit risk level is lower than that in Taizhou. There are 14 listed companies in Wenzhou experienced a rise in the default distance since the outbreak of pandemic in 2020. It accounting for a relatively large proportion, which means that the pandemic has a great impact on the credit risk of Wenzhou listed companies, in other words, Wenzhou listed companies generally have insufficient anti-risk capabilities. It is recommended that relevant departments and financial institutions strengthen risk supervision and prevention, pay attention to the development and application of big data technology to quantify corporate credit risk, meanwhile, cultivate relevant talents.

From the perspective of influencing factors, stock price fluctuations has the most obvious negative impact on corporate credit risk. The debt-to-asset ratio and operating profit margin are positively correlated with the default distance. The greater the default distance, the smaller the credit risk. Therefore, listed companies can optimize their credit risk conditions by strengthening their own business management and risk prevention management, maintaining reasonable debt, and increasing operating profits.

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