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Does Default Risk of the Listed Company Increase Since the Global Financial Crisis?—Analysis Based on the Jump Changes in Chinese Company's Asset Value

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Abstract

Recently, Chinese companies are constantly shocked by external and internal unexpected events, such as US financial crisis, European debt crisis, snow disasters and earthquakes, which make all their assets values jump to the negative direction in a short time and thus increase the default rates of companies in different degrees. Because the default risk is larger as the jump risk of company's total asset value is higher in short term, it needs to measure company's jump risk and analyze the factors causing the different jump features.

Thus, we assume that company's asset value follows diffusion-jump stochastic process, from which we derive its probability distribution. We further use the variance of jump amplitude in the distribution as the metric to measure the jump risk, and make statistical analysis of the effect of systematic and some major idiosyncratic factors on the jump change. And we find jump risk of company has positive relation with the occurrence of sudden events, the likelihood of being specially treated, and the asset-liability ratio, and has negative relation with the scale, the capability of maintaining the sustained development and its dependence on the macro economic growth.

Key words: Default risk; Asset value; Jump risk; Systematic jump; Idiosyncratic factor

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INTRODUCTION

The financial market, boasting the double features of normal fluctuation and jump, is incomplete, so it should take into account the jump change of assent value when pricing the financial asset or measuring the default risk. Especially, since the 1990s, China and many other countries have been impacted greatly by the external and internal unexpected events, such as US financial crisis, Europeans debt crisis, snow disasters and earthquakes, which further intensify incompleteness and instability of their financial markets. Because of the increasingly obvious jump risk in asset return, it becomes more and more important to research and monitor it.

Eraker[1] thinks large fluctuations and plummeting of the assets prices in the financial market in the 20th century challenge the traditional diffusion economic and statistical model. Luciano *et al.*[2, 3] also think it must take the jump risk into account when measuring the default risk of companies. Cremers *et al.*[4, 5] argue that the real credit spreads seem relatively higher than the theoretical ones. Introducing the jump factor into theoretical model helps to narrow this kind of gap, and improves the fitness of model. Barbedo and Lemgruber[6] suggest jump risk reflects the impact of the sudden structural changes in policy and economy on the asset value. Zhang *et al.*[7] find when holding the credit rating, macroeconomic variables and other financial indicators of the company constant, the hybrid model taking both normal volatility and jump change into account, is able to explain about 77% of overall fluctuations in the credit risk spread. Tang and

Yan[8] show the jump changes in the asset value really increase company's default risk in a short term. Tauchena and Zhou[9] find the jump risk factor is able to effectively describe the big change in default risk spread, and prove the impact of jump risk on default rate is countercyclical. Naifar[10] suggests from the result of his research that the impact of jump change in equity value and asset value on the default risk of company demonstrates different features in different country around the global financial crisis.

Although many researches have already systematically analyzed the impact of the jump change in asset value on the default risk, they do not discuss some other important issues, such as, what factors affect the jump change of the company and then cause a higher default risk, whether the systematical factors or the idiosyncratic factors are more like to cause the jump of asset value, etc.. Therefore, this paper tries to analyze the factors that affecting the jump change in asset value of company and thus increasing the default rate, which will help to identify and monitor the company's default risk.

1. THEORETICAL MODEL AND PARAMETERS ESTIMATION

Because we have no way to directly observe the change in the company's total asset value or collect its information data, it is difficult to find the factors that directly cause or amplify the abnormal jump in the total asset value. In order to solve this problem, the method usually used in recent researches is finding another financial asset, which has close relation with the company's total asset value on one side and whose information can be directly observed and collected on the other, such as bond, bond based option or equity. Then, the jump change in the company's total asset value can be calculated indirectly from the information of these related assets. In many developed countries, the related researches tend to use the data of derivative instruments, such as bond based option. But, in China, the whole finical system except for stock market has not enjoyed the long and sustained development. The derivative market in China is unable to provide us sufficient date to extract the jump change in the company's total asset value. Fortunately, the credit structural model shows the jump change in equity value is the major reason for the jump in company's total asset value, so we can use the data from stock (equity) market to indirectly analyze the jump risk and the factors causing and affecting jumps.

Assume the jump in stock (equity) price follows the Poisson process and the normal fluctuation of stock (equity) price follows the Brown motion. So, the equity price is defined as the following jump-diffusion stochastic differential equation: TANG and HUANG[11],

$$\frac{dS_t}{S_t} = (\mu_S - \lambda_S v_S)dt + \sigma_S dB_t + (J_s - 1)dN_t \tag{1.1}$$

Where μ_s is the expected return on equity, σ_s is the diffusion volatility of normal fluctuation in equity price, and they both are constants; B_t is the standard Brownian motion under the actual probability measure P; The stochastic jump of stock (equity) price is given by N_t, which follows the Poisson process with intensity parameter λ_s and λ_s is a positive constant, i.e. $P(N_t = n) = \frac{e^{-\lambda_s t}(\lambda_s t)^n}{n!}, \quad n = 0,1,2\cdots$; The jump amplitude is denoted by J_s (>0), a random variable following log-normal distribution with the expectation θ_s and the variance δ_S^2 i.e. $\ln J_s \sim N(\theta_S, \delta_S^2)$. And we also define $v_S := E(J_s - 1) = \exp(\theta_S + \frac{\delta_S^2}{2}) - 1$. Moreover, B_t, N_t and J_S are independent with each other. So, the stochastic exponential solution for stochastic differential equation (1.1) is

$$S_T = S_t \exp((\mu_S - \frac{1}{2}\sigma_S^2 - \lambda_S v_S)(T-t) + \sigma_S(B_T - B_t) + \sum_{i=0}^{N_{T-t}} \ln J_S^i) \tag{1.2}$$

Where $J_S^i (> 0)$ is the jump amplitude of the ith jump of equity price in the interval (T-t). J_S^i and J_s follow the identical distribution independently. Thus, we can derive the probability distribution of $\ln\frac{S_T}{S_t}$ from (1.2)

$$\ln\frac{S_T}{S_t} \sim \sum_{n=0}^{\infty} \frac{e^{-\lambda_S \tau}(\lambda_S \tau)^n}{n!} N(\alpha\tau + n\theta_S, \sigma_s^2\tau + n\delta_S^2), \quad \tau = T - t, \alpha = \mu_S - \frac{1}{2}\sigma_S^2 - \lambda_S v_S \tag{1.3}$$

In order to decrease the complexity of estimating the parameters in hybrid probability distribution, we use cumulant method instead of general moment method. According to Beckers (1981)[12], it had better to let $\theta_s = 0$ and impose some restriction on the parameter λ_s in order to avoid the result that σ_S^2 and δ_S^2 might take the negative value. But the restrictions we impose on λ_s differ from Beckers (1981), that is, if the σ_S^2 and δ_S^2 estimated by cumulant method take the positive value, we will not make any change on it, but if the σ_S^2 and δ_S^2 take negative value, we will redefine the jump by the rule of three standard deviation instead of assuming the jump intensity is the same for all stocks. That is, if the distance between some log-return and its expectation $E(\ln\frac{S_T}{S_t})$ is larger than three standard deviations, it will be identified as jump.

Other parameters are given by $\alpha = \bar{K}_1$, $\hat{\sigma}_s^2 + \hat{\lambda}_S\hat{\delta}_S^2 = \bar{K}_2$, $3\hat{\lambda}_S\hat{\delta}_S^4 = \bar{K}_4$, where $\bar{K}_i$ is the ith sample cumulant. Let $m_1 = \frac{1}{n}\sum_{i=1}^{n} x_i$ donate the first sample moment, and let $m_i^* = \frac{1}{n}\sum_{i=1}^{n}(x_i - m_1)^i (i \geq 2)$ donate the ith sample central moment, where $x_i = \ln \frac{S_i}{S_{i-1}}$. The relation between the sample cumulant, sample moment and sample central moment is given by:

$$\bar{K}_1 = m_1, \quad \bar{K}_2 = m_2^*, \quad \bar{K}_3 = m_3^*, \quad \bar{K}_4 = m_4^* - 3(m_2^*)^2 \qquad (1.4)$$

Thus,

$$\hat{\delta}_S^2 = \sqrt{\frac{m_4^* - 3(m_2^*)^2}{3\hat{\lambda}_S}}, \hat{\sigma}_S^2 = m_2^* - \frac{\sqrt{3}}{3}\sqrt{\hat{\lambda}_S (m_4^* - 3(m_2^*)^2)}, \hat{\alpha} = m_1 \quad (1.5)$$

2. EMPIRICAL RESEARCHES

2.1 Data

By the following rules, we choose all qualified ST (Specially treated) companies that was imposed special treatment in 2009 and randomly choose two qualified non-ST companies in each same sector as the ST company: (a) the sample company must have already completed the shareholding system reform and issues stocks only in China's A Share Market; (b) the ST company was imposed special treatment only in 2009 and has at least 7 years data before 2009; (c) the non-ST company also has at least 7 years data before 2009 and has never been imposed the special treatment. Therefore, there are 33 qualified companies, including 13 ST companies and 20 non-ST companies.

All data come from Guangfa Stock Transaction Database of China. We only consider the obtainable weekly closing data[1], that is, we do not consider the price jump caused by trade suspension. If abnormal jumps appear due to the relative long time suspension, we will adjust the data series referring to the listed company with similar scale in the same sector so as to eliminate it. Meanwhile, because the dividends paid by the company also cause the jump in stock price, we use recovered price data to eliminate this kind of jump.

Now we firstly calculate the variance of jump amplitude of these 33 qualified companies' equity asset return and then do statistical analysis on them, shown in Table 1.

Table 1
Analysis of Weekly Closing Prices of ST Companies and Non-ST Companies

Sector	CC	ST	Year	Kurtosis	Skewness	σ_S^2	δ_S^2
Electricity	000939	No	2006	4.5	0.08	0.0022	0.012
			2007	4.8	-0.026	0.0031	0.022
			2008	3.8	-0.13	0.0044	0.025
Electricity	000720	Yes	2006	11	-1.37	0.005	**0.089**
			2007	8.4	-0.96	0.007	**0.0657**
			2008	5.89	-0.71	0.0096	**0.073**
… … …							
Agriculture	000998	No	2006	4.7	0.21	0.002	0.014
			2007	5.3	-0.2	0.0028	0.0188
			2008	4.1	0.1	0.005	0.027
Agriculture	600506	Yes	2006	6.7	0.7	0.0026	**0.026**
			2007	11	1.56	0.005	**0.063**
			2008	6.8	0.65	0.008	**0.08**
… … …							

Note: CC denotes company's code in China's A Share Market

From Table 1, the kurtosis of most stocks deviate far from the kurtosis of normal distribution (that is three), which is consistent with the feature described by diffusion-jump model. We also find almost all ST stocks suffer obvious large jumps in 2007 and 2008, when the sudden events, such as the global financial crisis, snow disaster and earthquake, occurred. On the other side, the jump amplitude of non-ST companies also increases, but only increases by a little. This phenomenon demonstrates that the ST companies are more, even over, sensitive to the sudden events, and thus implicate higher jump risk and larger default probability.

If we further compare the weekly time series data of China's A Share Market Index, Shanghai 180 Index and the stock prices of these 33 companies, we also find almost all stock prices jump in the period of 2007-2008, but each company's jump feature differs from others. Therefore, in order to find the reason why these companies have different jump features, we will make the analysis from the perspective of the impact of sudden events, company's idiosyncratic factors and its dependence on the macro economic growth.

2.2 Factors Causing the Different Jump Features

2.2.1 Sudden Events

Use the variance of jump amplitude of equity asset value δ_S^2 as the proxy variable of the jump risk. Donate

[1] Because the 10% up-and-down limitation on the daily stock price in present China goes against the analysis of jump change, we use weekly closing data so as to weaken the effect of this limitation.

respectively the year of 2007 and 2008 by dummy **D07** and **D08** controlling the occurring time of sudden events (the global financial crisis in 2007 and snow disaster and earthquake in 2008). Now make regression of δ_S^2 on these two dummy variables **D07** and **D08** and results are shown in the first column of Table 2.

$$\delta_S^2 = C + B_1 \cdot D07 + B_2 \cdot D08 \tag{2.1}$$

From the first column of Table 2, we find δ_S^2 really has positive correlation with variables **D07** and **D08**. This result shows the sudden events actually induce the systematic jump, that is, all sample stocks suffer the abnormal jump under the impact of sudden event in 2007 and 2008. The dummy variable **D07** denotes the occurrence of global financial crisis. The coefficient of **D07** takes value 0.011 and is statistically different from zero at the 10% level of significance, which means the variances of jump amplitudes of all sample stocks averagely increase by 0.011 in 2007. The dummy variable d08 denotes the occurrence of snow disaster and the earthquake. The coefficient of **D08** takes value 0.02 and is statistically different from zero at the 5% level of significance, which means the variances of jump amplitudes of all sample stocks averagely increase by 0.02 in 2008.

Table 2
Regression of δ_S^2 on the Sudden Event and the Idiosyncratic Factors

Explanatory variables	(1)		(2)		(3) WLS	
	Coefficient	t Value	Coefficient	t Value	Coefficient	t Value
C	0.03**	6.3	0.041**	3.9	0.038**	7.5
D07	0.011*	1.6	0.011*	1.62	0.008**	3.1
D08	0.02**	2.83	0.009	1.18	0.011**	4.7
RATIO			0.021	1.3	0.014**	2.6
SCALE			-0.023**	-3.1	-0.021**	-4.4
ST			0.023**	2.3	0.018**	3.4
Adjusted R2	0.08		0.24		0.66	

Note: ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level.

2.2.2 Company's Idiosyncratic Factors

From the statistic analysis and the time-series data graph of stock returns, we find the jump amplitude of each stock shows different feature, so it should introduce idiosyncratic factors into the regression model. We choose three representative ones including the asset-liability ratio, the scale of the company and whether the company will be specially treated in the next year, as explanatory variables from all idiosyncratic factors.

$$\delta_S^2 = C + B_1 \cdot D07 + B_2 \cdot D08 + B_3 \cdot RATIO + B_4 \cdot SCALE + B_5 \cdot ST \tag{2.2}$$

Where **RATIO** denotes the asset-liability ratio which is calculated by the total asset and total reliability; The dummy variable **SCALE** denotes the scale of company. We regulate that the company is a small & middle one if its total asset of the company is smaller than 1 billion Yuan and the variable **SCALE** takes the value 0. Otherwise, the variable **SCALE** takes the value 1; the dummy variable **ST** represents whether the company will be specially treated in the next year, if "YES", it takes the value 1, if "NO", it takes the value 0. The regression result is shown in the second column of the Table 2.

From the regression result, both R^2 and adjusted R^2 increase largely, which means companies' idiosyncratic factors affect the jump amplitude obviously. δ_S^2 has significant positive correlation with the variable **ST**. If the company will be specially treated in the next year, δ_S^2 of ST companies is 0.025 larger averagely than that of non-ST ones. δ_S^2 also has positive correlation with the variable **RATIO**. So, if the asset-liability ratio is higher, the chance that company suffers the financial trouble is bigger and the volatility in asset value is larger. However, this correlation is statistically different from zero only at the 20% level of significance.

δ_S^2 has negative correlation with the variable **SCALE**, which means if the company is a large one. δ_S^2 is 0.023 smaller averagely than the small & middle companies. It is because the company with larger scale or equity asset value, enjoys better capacity of resisting the impact of sudden events and of absorbing and digesting the new information especially the negative one. In addition, the large companies in China enjoys more perfect managing and controlling mechanism, steadier operating performance, relative stronger competitiveness and better information transparency, so they have higher risk tolerance and their market values are more reasonable.

2.2.3 Company's Dependence on the Macro Economic Growth

Company's growth capability implicates not only its dependence on the macro economic growth, but also its operating performance, and thus indicates whether the company suffers the financial trouble. It might help to improve the fitness of model. So, we use the correlation of company's growth capability with China's nominal GDP growth rate as the proxy of its dependence on the macro economic growth. The major indicators reflecting the company's growth capability includes: main business income, net growth rate of asset, total growth rate of asset, etc, from which we will find the fittest one by comparison.

After collecting each company's related data, we firstly use the method of cubic spline interpolation to make up the lost figures. Then take similar method referring to

Dragon and Hong[13] to separate the growth capability related closely to macro economy from the growth capability without relation to macro economy so as to observe their effect on δ_S^2 respectively.

Our comparison begins from analyzing company's main business income. We regress seasonal growth rates of each company's main business income (denoted by MBIR) on the seasonal growth rates of nominal GDP:

$$MBIR^i = \alpha_M^i + \beta_M^i * GDPR + \varepsilon_M^i \tag{2.3}$$

Therefore, α_M^i denotes the ith company's growth capability of main business incomes without relation to macro economy, and β_M^i denotes the ith company's growth capability of main business incomes related closely to macro economy, which reflects the systematic influence of macro economy on company's growth. In this way, we can get all companies' α_M^i and β_M^i. Then, we regress δ_S^2 on them (see column (1) of Table 3).

$$\delta_S^2 = C + B_6 \cdot \alpha_M + B_7 \cdot \beta_M \tag{2.4}$$

Generally, a bigger α_M^i implicates the higher growth capability without relation to macro economy, so the probability that the company's asset value experiences a big or jump change is also smaller. Thus, α_M should have negative correlation with δ_S^2

From the data we have, we find all seasonal growth rates of China's nominal GDP take positive values during the period of 2002-2009, which shows China's economy enjoys the high and rapid growth in this period. Therefore, a bigger β_M^i indicates the company's growth of main business income is consistence with macro economic growth while a smaller even negative β_M^i means the company's main business income increase slowly even decrease in this period. The latter situation implicates the company could suffer financial trouble, and its asset value maybe experience a jump change. Thus, β_M also should have negative correlation with δ_S^2.

Table 3
Effects of α_M and β_M on δ_S^2

Explanatory variables	(1)		(2)		(3)		(4)WLS	
	Coefficient	t Value	Coefficient	t Value	Coefficient	t Value	Coefficient	t Value
C	0.038**	13.3	0.036**	5.6	0.041**	3.9	0.0387**	8.28
α_M	-0.023	-1.22	-0.025	-1.33	-0.0056	-0.3	-0.006	-0.97
β_M	-0.0037	-1.17	-0.003	-1.1	0.0001	0.03	-0.0005	-0.5
D07			0.012*	1.7	0.012*	1.9	0.008**	3.5
D08			0.02**	3.1	0.013*	1.68	0.012**	5.12
RATIO					0.025*	1.6	0.024**	3.7
SCALE					-0.024**	-3.2	-0.024**	-5.4
ST					0.02**	2.01	0.017**	3.6
Adjusted R2	0.016		0.11		0.24		0.78	

Note: ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level.

The first column is the result from the regression of δ_S^2 only on α_M and β_M. It shows both α_M and β_M have negative correlation with δ_S^2, which is consistence with the above analysis. But, the coefficients of these two variables are insignificant statistically and the adjusted R^2 is small. When we add the dummy variables **D07** and **D08** into the regression model to control the impact of sudden events, we find the adjusted R^2 rise from 0.016 to 0.11 as shown in the second column. So, the fitness of the regression model is improved significantly. However, the coefficients of α_M and β_M are insignificant statistically.

We then combine them with other idiosyncratic factors including **RATIO**, **SCALE** and **ST** to explain the change of δ_S^2 (see column (3) of Table 3), the adjusted R^2 increases dramatically but the coefficients of α_M and β_M are insignificant statistically again. And even after we eliminate the heteroscedasticity in the model by weighted least square method, they are still insignificant (see column (4) of Table 3). Therefore, we think the variables α_M and β_M do not help to explain the change of δ_S^2.

Now, let us analyze the effect of growth rate of net asset on δ_S^2. Likewise, α_N^i denotes growth of the ith company's net asset without relation to macro economy, and β_N^i denotes growth of the ith company's net asset related closely to macro economy. In this way, we can get all companies' α_N^i and β_N^i. Then, we also regress δ_S^2 on them and the results are listed in Table 4.

$$\delta_S^2 = C + B_6 \cdot \alpha_N + B_7 \cdot \beta_N \tag{2.5}$$

From the first column of Table 4, we can see both α_N and β_N have significant negative correlation with δ_S^2. When holding other variables constant, if α_N goes up 1%, δ_S^2 will go down averagely by about 0.0017. And when holding other variables constant, if β_N goes up 1%, δ_S^2 will go down averagely by about 0.00026.

Table 4
Effects of α_N and β_N on δ_S^2

Explanatory variables	(1) Coefficient	(1) t Value	(2) Coefficient	(2) t Value	(3) Coefficient	(3) t Value	(4)WLS Coefficient	(4)WLS t Value
C	0.048**	16.17	0.039**	8.13	0.037**	3.65	0.036**	7.38
α_N	-0.168**	-5.1	-0.158**	-4.74	-0.13**	-3.64	-0.06**	-3.81
β_N	-0.026**	-4.9	-0.025**	-4.73	-0.019**	-3.44	-0.009**	-3.78
D07			0.012*	1.82	0.01*	1.68	0.01**	5.12
D08			0.015**	2.25	0.004	0.5	0.011**	4.88
RATIO					0.024*	1.6	0.01*	1.91
SCALE					-0.011	-1.5	-0.015**	-3
ST					0.023**	2.4	0.019**	4.47
Adjusted R2	0.19		0.22		0.32		0.82	

Note: ** indicates statistical significance at the 5% level, * indicates statistical significance at the 10% level.

When we add the dummy variables **D07** and **D08** into the regression model, we find the adjusted R^2 rise from 0.019 to 0.22 (see column (2) of Table 4) and all coefficients of **D07**, **D08**, α_N and β_N are significant statistically, which further confirms that the sudden events have systematic effect on jump change while company's growth capability and its dependence on macro economy might expand or contract this effect.

We further introduce idiosyncratic factors including **RATIO**, **SCALE** and **ST** into the model (see column (3) of Table 4).The adjusted R^2 increases dramatically from 0.24 to 0.32, and coefficients of all variables except for **SCALE** are significant. But when we eliminate the heteroscedasticity in the model by weighted least square method l (see column (4) of Table 4), all coefficient including the variable **SCALE** are significant. We also test the joint null hypothesis $B_6 = B_7 = 0$, and the testing result rejects this hypothesis at the 1% level of significance. In addition, when comparing to Model (3.2), the fitness of the model taking into account of growth capability and its dependence on macro economy is better.

To sum up, both α_N and β_N extracted from company's growth rate of net asset significantly expand or contract the impact of sudden events on the equity value. When they take positive value, δ_S^2 will decrease and so will the jump risk. But when they take negative value, δ_S^2 will increase obviously and the equity value will possibly suffer a larger jump.

Finally, we use the same method to analyze the effect of growth rate of company's total asset on δ_S^2, and get the similar result. However, the effect of total asset on δ_S^2 is weaker than that of net asset. This is possible because the growth of total asset includes the growth of total liability, whose negative effect on δ_S^2 weakens the overall effect of total asset.

After making analysis on the three major indicators reflecting the company's growth capability – main business income, growth rate of net asset, total growth rate of asset, we think growth rate of net asset is the fittest one which can relatively better demonstrates company's growth capability and its dependence on the macro economic growth will expand or contract the effect of sudden events on δ_S^2.

CONCLUSIONS

With the development and improvement of China's economy, our financial markets integrate more closely with the international markets and thus are affected more by the latter. The external unexpected events, such as US financial crisis, Europeans debt crisis, have already brought larger impact on China's financial market and caused bigger jump risk in all kinds of financial assets. Moreover, with the increasing perfectness of China's financial system, the price limitation on the stock market will be cancelled. At that time, the jump change in company's equity and total asset value will more significantly affect its default risk. Therefore, when measuring, managing and controlling company's default risk, we must take the jump change of its asset value into account and analyze the factors causing and affecting it.

Because the company's total asset value is directly related to its default risk, a better way of measuring and managing the default risk is to observe the change in total asset value. However, we can not directly observe the change in it and have no way to directly collect its information data, so it needs to find a method that can help to indirectly monitor the change in total asset value. The credit structural model just meets this demand. It states that the jump change in company's equity value is the major reason for the jump of its total asset value, thus we can use the data from stock (equity) market to indirectly analyze the jump risk of its total asset value and the factors causing and affecting jumps.

Therefore, we firstly assume the equity (stock) price follows diffusion-jump stochastic process, in which the Poisson process describes the jump in the price and Brown motion describes the normal fluctuation of the price. Then we derive the probability distribution of equity return and regard the variance of jump amplitude in the distribution as the metric to measure the jump risk. Finally, we use a large amount of date collected form China's A Share Stock Market to make statistical and regressive analysis of the effects of some major factors on jump risk and get the following results: (1) Sudden events obvious cause the jump change in all stocks, and we call it the systematic effect on jump risk; (2) Each company's jump feature differs from others. It is because the idiosyncratic factors obviously affect the jump amplitude of asset value. If the scale of company is larger, the jump amplitude is smaller. If the asset-reliability ratio is larger, the jump amplitude is bigger. And if the company will be specially treated, the asset value also suffers obvious jumps; (3) Company's stronger capability of maintaining the sustained development and its higher dependence on the macro economic growth help to contract the jump amplitude and decrease the jump risk.

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