ISSN: 2692-7608 DOI: 10.6981/FEM.202305_4(5).0012

The Theoretical Logic and Practical Path of the Impact of Economic Policy Uncertainty on the Leverage Ratio of Real Estate Enterprises

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Abstract

This paper examines the impact of policy changes on the leverage of real estate companies from the perspective of economic policy uncertainty, taking the real estate industry, a highly leveraged industry, as the research object. Based on the publicly disclosed earnings data of 10 A-share representative real estate companies of different sizes, this paper uses the CCA model to obtain the default distance as an evaluation indicator to measure the systematic credit risk. The empirical results show that: (1) the default distance of real estate companies has obvious characteristics of migration change over time, and the systematic credit risk of large real estate companies is generally higher than the systematic credit risk of small real estate companies. (2) The real estate industry is influenced by national policies, and since 2018, the introduction of severe real estate purchase restrictions and control policies has led to a decline in real estate market demand, a rise in the systematic credit risk of real estate companies, and the development of the traditional real estate industry facing difficulties. after 2020, the systematic credit risk of the real estate industry has risen due to the impact of the new crown epidemic, and after the new development pattern is proposed, under the influence of national policies and Under the dual influence of the market environment, the systematic credit risk of the real estate industry has shown a shocking trend, and the traditional real estate industry is facing the challenge of transformation and upgrading. The research in this paper has practical implications for clarifying the logic behind corporate leverage and the introduction of relevant "deleveraging" policies in a scientific manner.

Keywords

CCA Model; Real Estate Industry; Economic Policy Uncertainty; New Development Pattern.

1. Introduction

The leverage ratio of enterprises is of great concern to both practitioners and academics as it relates to solvency and enterprise value. As economic growth enters a "new normal" and continues to slow, China's debt has increased in size and potential risks have risen rapidly. China is now faced with the paradox of a slowdown in real economic growth and a counter-cyclical upward trend in macro leverage, and finding a balance between "stable growth" and "deleveraging" has become one of the pressing issues in China today. However, at the same time, the rapid expansion of debt in the real economy and the excessive leverage ratio have become the root cause of the vulnerability of China's financial system. Prior to the end of 2015, when the central government clearly proposed the target of reducing leverage, China's macro leverage ratio had increased by 86.2% since the financial crisis in 2008, with an average annual increase of more than 12 percentage points. Among them, the corporate sector leverage accounted for as much as 2/3 of the total leverage ratio, and the focus of deleveraging efforts

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lies in how to reduce the leverage ratio of the corporate sector. With the concrete implementation of deleveraging policies, the structural differentiation of China's corporate leverage has gradually emerged, with structural differences between the leverage ratios of enterprises belonging to different industries. In China's real estate sector, high social demand and high housing prices have induced real estate enterprises to expand through high leverage, while long capital turnover periods, relatively single financing channels and over-reliance on exogenous financing have kept the leverage of real estate enterprises at a high level for a long time. Therefore, the real estate industry has become one of the sectors in urgent need of deleveraging, and it is of great practical significance to study the inner change logic of the leverage ratio of real estate enterprises and explore the reduction of the leverage level of real estate enterprises.

The healthy development of the real estate industry is a matter of national importance, and governments at all levels have introduced intensive real estate regulation and control policies during the multi-stage journey. Real estate companies' investment and financing decisions often rely on information about future expectations and are fraught with uncertainty, and after the introduction of economic policies, there are multiple possibilities in terms of the intensity and effectiveness of their implementation and the possibility of frequent changes, all of which expose companies to policy uncertainty. Will fluctuations in economic policy affect the leverage of real estate companies? Will a policy of "deleveraging" deteriorate the investment and financing environment for real estate companies, thereby affecting the healthy and stable development of the Chinese economy? In this context, it is important to clarify the structure of the leverage ratio of real estate enterprises and analyse the logic behind the leverage ratio for the formulation of China's economic policies and the stable and healthy development of China's real estate industry.

2. Theoretical Foundations

2.1. Model Ideas

The CCA model, also known as the unsettled equity analysis model, originated from Black-Scholes in 1973 and Merton R., an American academic, who proposed option pricing theory and the valuation of corporate debt in 1973, and was gradually refined by Moody's after further refinement of the model. The methodology was developed by Moody's. The method is one of the main models for measuring macro financial risk in the industry. A default point is set based on a company's debt and if the company's market capitalisation falls below the default point, then it is determined that the company will default, and if the company's market capitalisation is greater than the default point, then it is determined that the company will not default.

2.2. Mathematical and Theoretical Form of the Model

2.2.1. Calculate the Market Value of the Company's Assets and the Volatility of Asset Values

According to the accounting constants, the market value of an entity is equal to the sum of the market value of equity at all levels:

$$A_t = E_t + D_t \tag{1}$$

where A_t , E_t and D_t represent the market value of assets, the market value of equity and the market value of debt at time t, respectively.

The CCA model assumes that asset values obey a stochastic process, i.e. that fluctuations in asset values follow a geometric Brownian motion process:

$$dA_t = \mu_A A_t dt + \sigma_A A_t dz \tag{2}$$

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where μ_A denotes the expected return on the asset, σ_A denotes the volatility of the asset and dz is a function of t with normal distribution properties.

Assume that all of the firm's debt is in zero-coupon bonds and that the firm defaults if it is unable to pay the debt when it matures. Assuming that asset A obeys the Wiener process, the firm's equity value E can be treated as a European option with asset value A as the underlying asset and a maturity of τ , and an exercise price of D. Defining x = T - t, it follows from Ito's Lemma that

$$E = AN(d_1) - De^{r\tau}N(d_2) \tag{3}$$

$$d_1 = \frac{\ln(A/D) + (r + 0.5\sigma_A^{\ 2}) \cdot \tau}{\sigma_A\sqrt{\tau}} \tag{4}$$

$$d_2 = d_1 - \sigma_A\sqrt{\tau} \tag{5}$$

$$\sigma_E = \frac{N(d_1)A\sigma_A}{E} \tag{6}$$

where σ_E is the volatility of the firm's equity value, r is the risk-free interest rate and τ is the maturity of the debt. It is generally 1 year and N represents a normal distribution.

2.2.2. Calculation of the Company's Point of Default and Distance to Default

(1) The default point (DP) refers to the threshold at which a company defaults. The CCA model uses the sum of one times short-term liabilities and 0.5 times long-term liabilities (with a repayment term greater than one year) as the default point, i.e.:

$$DP = STD + 0.5LTD \tag{7}$$

Of these, STD is a short-term liability and LTD is a long-term liability.

(2) Distance to default (DD) is the distance between the expected value of the market value of a company's assets and the point of default. The greater the distance, the smaller the probability of a company defaulting; the smaller the distance, the greater the probability of a company defaulting. Assuming that the value of a company's assets follows a normal distribution, we can calculate the default distance of a company using the CCA model:

$$DD = \frac{E(A) - DP}{E(A) \cdot \sigma_A} \tag{8}$$

2.3. Model Construction

The parameters included in the CCA model are: the value of the company's equity, the market value of the company's liabilities, the market value of the company's assets, the maturity of debt, the volatility of the value of assets, the risk-free interest rate and the volatility of the value of equity. Of these, all except the value of the company's assets and its volatility can be accessed through the Financial Data Platform. Asset value and its volatility need to be solved specifically using the CCA model.

The CCA model is solved in two main steps. First, according to equation (2) and equation (5), the company's asset value and asset value volatility at t=0 can be derived, and then according to equation (7) and equation (8), the company's default distance and expected default rate can be further derived.

2.4. Strengths and Weaknesses of the Model

2.4.1. Advantages of the CCA Model

(1) The CCA model is based on corporate finance theory and modern option theory, and has a sound theoretical foundation.

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(2) The data required by the CCA model can be found in the financial reports disclosed by listed companies and in the stock exchange, and is updated frequently, which allows the model to update the credit risk measures of companies at any time, and the results of the measures are time-sensitive and of high reference value.

2.4.2. Disadvantages of the CCA Model

(1) The model assumes that the market value of assets obeys a normal distribution, but in reality the market value of a company's shares is often subject to capital speculation and emotional investment, which does not correspond to objective reality and there is a serious information asymmetry, and the market value of assets may not obey a normal distribution.

(2) The CCA model does not refine the categories of debt. Although it simplifies the calculation to a certain extent, it will lead to unreasonable judgments on the structure of debt, the scope of application of the model is narrowed, and the measurement results may be distorted.

3. Study Design

3.1. Variable Setting

Before conducting an empirical study on the systematic credit risk of 10 listed real estate companies, the relevant variables involved in the CCA model need to be explained in order to make the model fit more realistic.

3.1.1. Risk-free Interest Rate

The risk-free rate is generally determined based on the interest rate of Treasury bond issues. Therefore, the interest rate indicator selected for the thesis is the average of the March Treasury issue rates for each quarter of the corresponding period from Q1 2018 to Q2 2021.

3.1.2. Volatility of the Market Value of the Company's Equity

In terms of China's financial market environment, using a dynamic model to calculate the volatility of a company's equity market value will cause a large error, so this paper uses a static model to calculate the volatility. First, the closing prices of the company's shares for each trading day from the first trading day in January 2018 to the last trading day in June 2021 for 10 companies were selected, and the daily returns were solved for using the logarithmic form assuming that the daily closing prices of the shares obeyed a lognormal distribution as follows:

$$Y = \ln(\frac{S_t}{S_{t-1}})$$

where Y represents the daily return of the stock, s_t represents the closing price of the stock on day t and s_{t-1} represents the closing price of the stock on day (t-1).

The formula for the volatility of the daily return is

$$\sigma_e = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(Y_i - \overline{Y_i})^2}$$

Where σ_e represents the daily volatility of stock returns and $\overline{Y_i}$ represents the average stock return over the selected time period.

From the definition of volatility, $\sigma_E = \sigma_e\sqrt{M}$, where σ_E is the quarterly volatility of the company's equity value and M is the actual number of trading days in different quarters.

3.1.3. Determination of the Term of the Debt

The choice of debt maturity in the empirical analysis will have a large impact on the calculation results of the model. In this paper, the study period is January 2018 to June 2021, and in order to make the empirical results more valid, one quarter is used as the metric period.

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3.1.4. Amendment of Default Points

(1) Sample selection

The company's liabilities are divided into two types: short-term liabilities and long-term liabilities. For the company's short-term liabilities, the proximity to the repayment date can easily trigger credit default risk arising from the company's lack of liquidity funds, unlike long-term liabilities, which can alleviate the company's debt pressure to a certain extent because of the long time until the repayment date, thus reducing credit risk. Therefore, the proportional relationship between short-term and long-term liabilities needs to be effectively captured when calculating a company's default point. As this paper is a measure of the credit risk of listed real estate companies in China, the method published by KMV for calculating the debt default point cannot be directly adopted, namely: $DP = STD + 0.5LTD$.

In this paper, 16 listed real estate companies that are marked ST between January 2018 and June 2021 are selected as the sample for the study.

(2) OLS estimation

Least squares estimation (OLS) was applied to the financial data of 16 A-share listed real estate companies, where the year of the financial data used varied from company to company. For example, Jinbin Development, whose stock code is 000897 and whose delisting risk warning was implemented on 21 March 2019, used its annual report data for 2018.

A multiple linear regression model was constructed with total assets as the explanatory variable in the model and short-term and long-term liabilities as the explanatory variables:

$$Y = C + \alpha_1 X_1 + \alpha_2 X_2$$

Where Y is total assets, X1 is short-term liabilities, X2 is long-term liabilities and C is the intercept term.

Multiple regression analysis using Eviews.

Table 1. Multiple linear regression results

Variable name	Coefficient	T-value	P-value
X1	1.042154	17.09938	0
X2	0.980085	3.554121	0.0035
C	257872.9	2.886114	0.0127

As can be seen from Table 1, a multiple linear regression of the 48 sample data yielded a linear regression function of

Y=1.042154X1+0.980085X2+257872.9

As can be seen in Table 1, the regression coefficients and significance of the model passed the 5% level of significance.

The model's R^2 reaches 0.9874, indicating that the two variables of short-term and long-term liabilities of the 16 ST companies explain 98% of the change in total assets, with a D.W. of 2.426453 and no first-order autocorrelation at the 5% level of significance, which shows that the model fits well overall.

(3) Amended default point formula

According to the results of the multiple linear regression, the ratio of long-term to short-term liabilities is 0.94, so the revised formula for the default point is

DP=STD+0.94LTD

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3.2. Data Sources and Processing

Table 2. Specific sources of data for the paper

		Parameter name	Parameter estimation methods	Data sources
A		Market value of assets	Option Pricing Formula	Matlab
E		Equity Value	Stock Market Capitalisation	iFinD
σ_A		Asset value volatility	Calculated from stock market capitalisation and volatility	Matlab
σ_E		Equity Value Volatility	Calculated from daily stock returns with standard deviation	iFinD
SD		Short-term debt	Data export	iFinD
LD		Long-term debt	Data export	iFinD
r		Risk-free rates	March Treasury Bond Rate	iFinD

The paper first selects 120 listed real estate companies in all A-shares that disclose their annual reports, and the study period is from Q1 2018 to Q2 2021, then excludes listed companies with longer suspensions and removes listed companies whose main business is not real estate development. Finally, considering the market capitalisation and operating income of real estate companies, the remaining real estate companies were divided into two groups, large real estate companies and small and medium real estate companies, and five companies with better operating income were drawn from each of the two groups, making a total of 10 companies to form the sample set. The large real estate companies are: Vanke A, Poly Development, New Town Holdings, Greenland Holdings and Jindi Group; the small real estate companies are: Yatong, Guangyu Group, Tianyuan, Qixia Construction and Fuxing. The specific sources of data for the thesis are as shown in Table 2.

The paper quotes a total of 714 data values for 14 quarters of data on equity value, equity value volatility, short-term debt, long-term debt, and risk-free interest rates for 10 real estate companies from the iFind financial data terminal. The corresponding security codes are shown in Table 3:

Table 3. Sample data

Stock Code	Stock Code
000002.SZ	600692.SH
600048.SH	002133.SZ
601155.SH	600665.SH
600606.SH	600533.SH
600383.SH	000926.SZ

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4. Research Findings and Analysis

4.1. Summary of Model Parameter Data

The interest rates for the March Treasury issue for the corresponding period from Q1 2018 to Q2 2021 are shown in Figure 1.

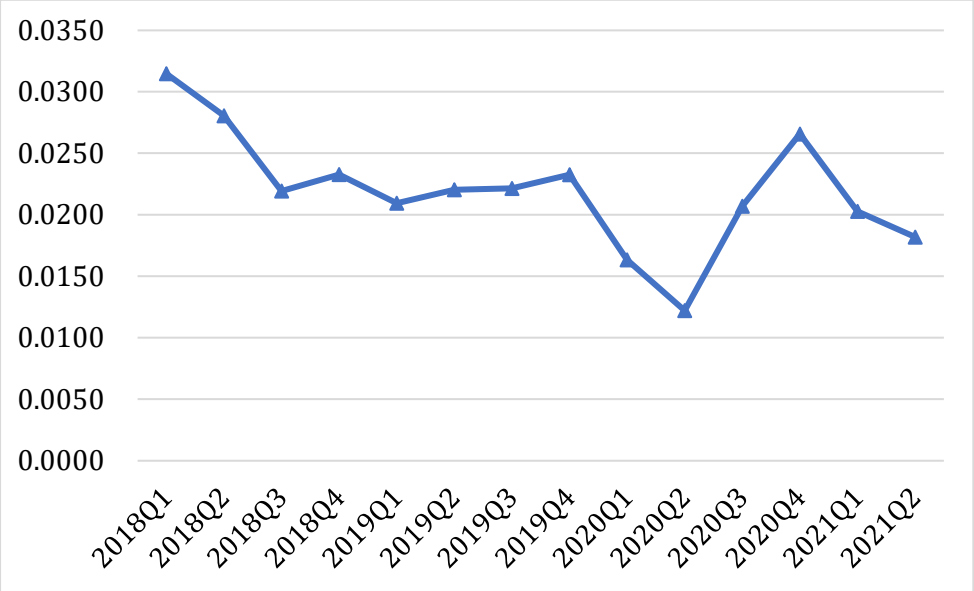

Figure 1. Interest rates for March bond issues

Based on the research design, the calculated quarterly equity market value volatility for the 10 listed real estate companies from Q1 2018 to Q2 2021 is shown in Table 4.

According to the data in Table 4: Overall, the volatility of the equity value of the real estate market was high in Q1 2018, with a steady downward trend in volatility from Q2 to Q3 and a significant increase in volatility in Q4; throughout 2019, the volatility of the equity value of the real estate market declined steadily; in Q1 2020, the volatility of the equity value of the real estate market increased significantly, and from Q2 2020 to Q2 2021 quarter, with volatility trending shakily downwards.

Table 4. Volatility of equity market values

Stock Code	000002.SZ	600048.SH	601155.SH	600606.SH	600383.SH
2018Q1	0.2280	0.2436	0.3389	0.2402	0.2490
201802	0.1849	0.2104	0.2843	0.1105	0.1410
2018Q3	0.2120	0.2472	0.2477	0.1295	0.1589
2018Q4	0.2097	0.1938	0.2275	0.1642	0.1801
2019Q1	0.1598	0.1741	0.1906	0.1486	0.2082
201902	0.1663	0.1434	0.2048	0.1322	0.1662
2019Q3	0.1175	0.1419	0.2789	0.1159	0.1442
2019Q4	0.1177	0.1449	0.1535	0.0819	0.1661
2020Q1	0.2055	0.1985	0.2504	0.1676	0.2456
2020Q2	0.1104	0.1190	0.1299	0.1385	0.1405
2020Q3	0.1653	0.1880	0.1730	0.2735	0.2163
2020Q4	0.1030	0.1042	0.1107	0.1133	0.1315
2021Q1	0.1762	0.1597	0.2424	0.1677	0.1885
2021Q2	0.0883	0.0947	0.1363	0.1030	0.1168

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Stock Code	600692.SH	002133.SZ	600665.SH	600533.SH	000926.SZ
2018Q1	0.2270	0.1588	0.1460	0.1983	0.1652
201802	0.1927	0.1914	0.1454	0.1646	0.1176
2018Q3	0.1518	0.1125	0.1100	0.1304	0.1312
2018Q4	0.2686	0.1860	0.1859	0.2116	0.1852
2019Q1	0.2111	0.1579	0.1552	0.1777	0.1205
201902	0.1876	0.1351	0.1389	0.2141	0.1221
2019Q3	0.1187	0.1046	0.1074	0.1083	0.0864
2019Q4	0.1067	0.0945	0.0920	0.1181	0.0682
2020Q1	0.3261	0.2223	0.1610	0.2711	0.1811
2020Q2	0.2253	0.0697	0.0839	0.2338	0.0926
2020Q3	0.1519	0.1368	0.1274	0.1767	0.1340
2020Q4	0.1091	0.0700	0.0684	0.1400	0.0806
2021Q1	0.1426	0.0963	0.1006	0.1010	0.0980
2021Q2	0.1335	0.1427	0.0830	0.0860	0.0949

4.2. Empirical Analysis

The data for the 10 sample companies were calculated using the process in the previous chapter on research design and using MATLAB mathematical statistical software, the distance to default for the sample companies for each quarter from Q1 2018 to Q2 2021 could be calculated. This paper uses MATLAB 2016a for programming the calculations. The quarterly default distances for the sample companies from Q1 2018 to Q2 2021 are shown in Table 5.

From the model principle, it can be seen that the smaller the default distance of the sample company, the greater the possibility of debt default; conversely, the larger the default distance, the less the possibility of debt default. Through the measurement of the default distance of real estate companies, financial institutions can more objectively assess the credit risk of the company when granting loans to real estate companies, and decide whether to grant loans and the size of loans according to the actual situation, in order to reduce the possibility of credit risk.

The thesis divides 10 companies into two groups: large real estate companies and small and medium real estate companies. From the default distance statistics, the default distance of real estate companies shows obvious characteristics of migration over time. The change in default distance over time for large real estate companies and small and medium-sized real estate companies is shown in Figures 2 and 3.

Table 5. Distance to default for sample companies

Stock Code	000002.SZ	600048.SH	601155.SH	600606.SH	600383.SH
2018Q1	3.95	3.64	2.76	3.08	3.63
2018Q2	4.7	4.18	3.22	6.55	6.3
2018Q3	4.2	3.64	3.65	5.92	5.64
2018Q4	4.16	4.61	3.87	4.35	4.94
2019Q1	5.69	5.25	4.92	5.28	4.45
2019Q2	5.37	6.25	4.45	5.84	5.44
2019Q3	7.49	6.35	3.1	6.64	6.23
2019Q4	7.59	6.25	5.83	8.87	5.49
2020Q1	4.41	4.67	3.62	4.52	3.79

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2020Q2	8.41	7.92	7.11	6.03	6.72
2020Q3	5.37	4.81	5.08	2.57	4.2
2020Q4	8.33	8.31	7.57	4.81	6.61
2021Q1	5.07	5.51	3.77	3.78	4.65
2021Q2	9.93	9.15	6.56	6.49	7.43

Stock Code	600692.SH	002133.SZ	600665.SH	600533.SH	000926.SZ
2018Q1	4.35	6.04	5.78	4.66	5.37
2018Q2	5.12	4.99	5.63	5.54	7.31
2018Q3	6.52	8.45	7.94	7.05	6.72
2018Q4	3.68	5.01	4.63	4.29	4.67
2019Q1	4.69	6	5.75	5.24	7.52
2019Q2	5.28	6.97	6.29	4.3	7.24
2019Q3	8.32	8.93	7.8	8.25	9.95
2019Q4	9.21	9.71	8.95	7.57	12.62
2020Q1	3.03	4.19	5.41	3.4	4.85
2020Q2	4.39	13.55	10.64	4.05	9.81
2020Q3	6.45	6.67	6.32	5.15	6.3
2020Q4	8.98	12.5	10.48	6.16	9.74
2021Q1	6.92	9.19	7.69	8.82	8.44
2021Q2	7.35	6.25	9.57	10.51	8.75

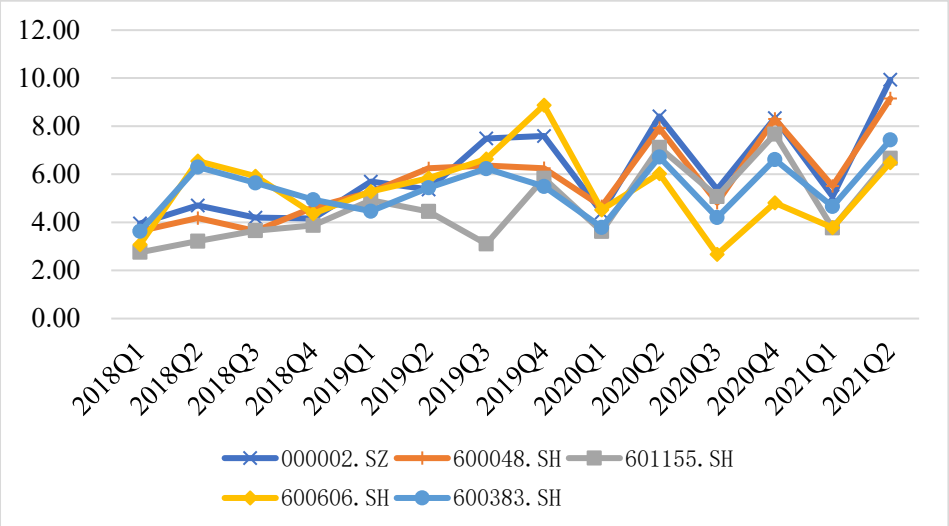

Figure 2. Change in distance to default over time migration for large real estate companies

As can be seen from Figures 2 and 3, the trend in the distance to default for large, medium and small real estate companies is relatively consistent over time, but it is difficult to visualize the difference between the distance to default for large real estate companies and medium and small real estate companies, so the average distance to default is introduced to describe the

ISSN: 2692-7608 DOI: 10.6981/FEM.202305_4(5).0012

difference between the overall distance to default for large real estate companies and medium and small real estate companies, as shown in Figure 4.

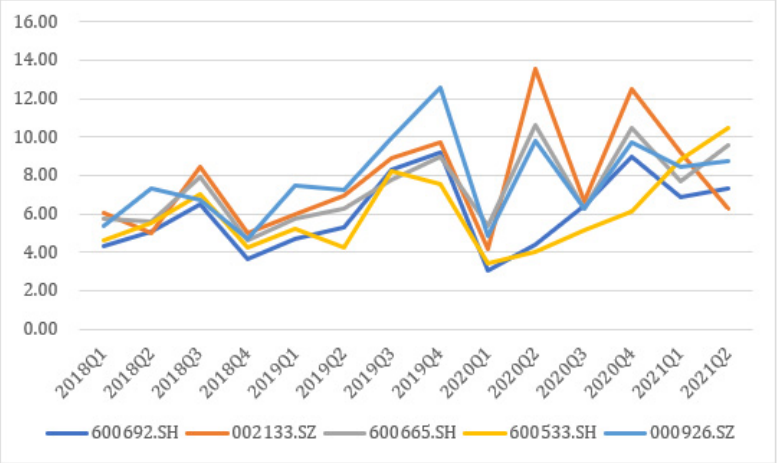

Figure 3. Change in distance to default over time migration for small and medium-sized real estate companies

In Q1 2018, the overall default distance of 10 real estate companies was small, with 5 large real estate companies defaulting between 2 and 4, and 5 small and medium-sized real estate companies defaulting between 4 and 6, indicating a high systematic credit risk, and the credit risk of large real estate companies was significantly higher than that of small real estate companies.At the end of 2017, the 19th National Congress put forward the The strategy of "housing without speculation" accelerated the transformation of the real estate industry, the introduction of relevant regulatory policies made it more difficult for speculators to purchase homes, the momentum of rapid price increases was curbed, the demand in the real estate market declined, real estate companies experienced difficulties in recovering funds in the short term, and Vanke even shouted out the " From the first quarter to the third quarter of 2018, the banking industry generally reduced the amount of loans to real estate companies, and real estate companies gradually began to broaden their business operations, resulting in a serious phenomenon of "de-realisation". As small and medium-sized real estate companies have smaller capital and easier business transformation, their default distance showed an upward trend, with the default distance of five small and medium-sized enterprises distributed between 6 and 8 at the end of 3Q, and the systematic risk was on a decreasing trend; large real estate companies, due to their relatively large capital, had a non-significant increase in default distance, and the systematic credit risk did not improve. in 4Q 2018, the demand in the real estate market Weakening of real estate market demand, the frequency of implementing control policies across the country set a new historical record, more than 30 provinces issued policies to restrict purchases and sales, and the traditional golden period of real estate sales, "Golden Nine and Silver Ten", had a dismal performance. 10 large, small and medium-sized real estate companies defaulted on their loans. The distance to default fell to around 4 simultaneously, and the systematic credit risk increased.

From Q1 to Q4 2019, the default distance of 10 large, medium and small real estate companies continued to rise, with five large real estate companies defaulting between 6 and 8 and five small and medium real estate companies defaulting between 8 and 10 at the end of Q4, resulting in a significant reduction in systemic credit risk in the real estate industry. In January, May and September, the central bank lowered the quotas three times, the purchase restrictions and related regulatory policies were relaxed, the goal of "housing without speculation" entered a smooth transition phase, and the policy objective also transitioned from resolutely curbing the

ISSN: 2692-7608 DOI: 10.6981/FEM.202305_4(5).0012

rise in housing prices to avoiding large ups and downs in housing prices. Major real estate developers have also started to broaden their marketing channels and enter the internet sales market to attract more potential home buyers. The combination of a warming external environment and companies seeking change themselves helped to reduce systemic credit risk in the real estate industry.

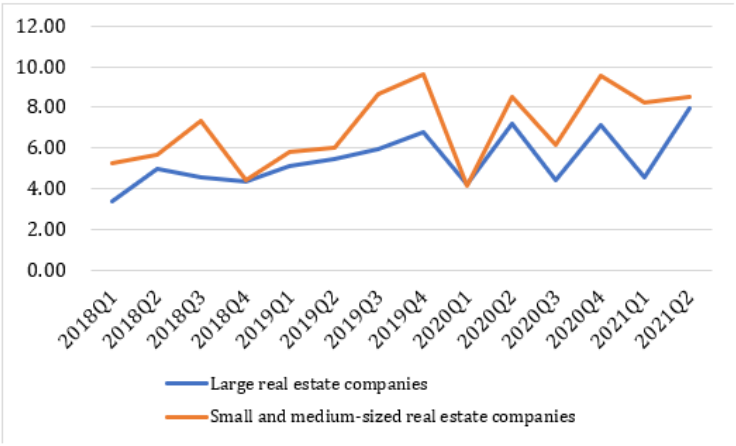

Figure 4. Change in average distance to default over time migration for large, small and medium-sized real estate companies

In the 1st quarter of 2020, the national economy came to a halt due to the outbreak of the new crown epidemic, the domestic market environment changed dramatically, sales returns could not be achieved, new loans could not be implemented, the default distance of all 10 large, small and medium-sized real estate companies dropped significantly to around 4, and the systemic credit risk of the real estate industry rose significantly. on 14 May 2020, a major domestic cycle, with domestic and international The new development pattern of the dual cycle promoting each other was proposed for the first time, and many policies were introduced from the supply side and demand side to help the real estate industry recover, with the default distance of 10 real estate companies rising to around 8 in 2Q, and systemic credit risk decreasing significantly. between 3Q 2020 and 2Q 2021, the default distance of 10 real estate companies showed oscillating trends, and by the end of 2Q 2021, large, medium and small The default distance for real estate companies both rose to around 8 and systemic credit risk decreased. During this period, the domestic economy recovered rapidly, but against the backdrop of global monetary easing and declining economic growth, the public's risk aversion was evident and the momentum of rising house prices in some cities was high , purchase restrictions and regulation policies were upgraded again, the state introduced relevant policies to prevent the illegal inflow of funds into the real estate market, implemented capital monitoring for key real estate enterprises, improved the supply and demand relationship in the real estate market, deleveraged, controlled costs and improved quality, making The real estate industry is gradually transforming towards internal development.

5. Conclusion and Recommendations

The paper selects the CCA model to measure the credit risk of the real estate industry in the context of the development of the real estate market.The paper selects the financial data of 10 real estate companies (5 large real estate companies and 5 small and medium-sized real estate companies) from Q1 2018 to Q2 2021 after describing the theoretical basis of the model and the research design, and establishes a multiple linear regression model corrected for the

ISSN: 2692-7608 DOI: 10.6981/FEM.202305_4(5).0012

parameter of default point, and finally used the CCA model to empirically analyze the systemic credit risk of these 10 real estate companies, with the following conclusions: The default distance of real estate companies has obvious characteristics of migration over time, and is influenced by the scale of capital, when facing development difficulties, it is easier for small and medium-sized real estate companies to transform their business and dispatch capital, resulting in large real estate companies The systemic credit risk of large real estate companies is generally higher than that of small real estate companies . The real estate industry is influenced by national policies. Since 2018, the introduction of severe real estate purchase restriction and regulation policies has led to a decline in real estate market demand, strict capital regulation has led to a shrinkage of financing channels for real estate companies, a rise in systemic credit risk for real estate companies, and the development of the traditional real estate industry has faced difficulties. Since 2020, the national economy has come to a halt due to the impact of the New Crown epidemic, and the real estate market The environment has undergone tremendous changes and the systematic credit risk of the real estate industry has risen. After the new development pattern was proposed, under the dual influence of national policies and the market environment, the systematic credit risk of the real estate industry has shown an oscillating trend, and the traditional real estate industry has faced the challenge of transformation and upgrading.

Based on the above conclusions, as the real estate industry is linked to dozens of upstream and downstream industries, its role as the ballast of China's economy cannot be replaced in the short term. In order to effectively prevent and avoid systemic credit risks in the real estate industry, promote the transformation and upgrading of the traditional real estate industry, optimize the domestic market environment, and accelerate the construction of a new development pattern with a large domestic cycle as the mainstay and dual domestic and international cycles promoting each other, the following recommendations are thus made:

(1) Adhere to the principle of "housing and housing without speculation" and promote the internal development of the real estate industry. Real estate companies should adhere to the three major principles of deleveraging, cost control and quality improvement, and gain revenue through refined management. Under the new development pattern, the low-cost factor advantage of the traditional real estate industry is gradually disappearing. The transformation and upgrading of the traditional real estate industry should strive to shift from factor-driven to innovation-driven, and continuously improve the technological innovation capability and product technology content of real estate enterprises.

(2) Guiding supply and demand towards balance and strengthening the integration of urban and rural areas. In order to prevent excessive housing prices from having a crowding-out effect on residents' consumption and thus "eroding" the real economy, apart from introducing relevant purchase restriction policies on the demand side to curb speculation, we should also deepen the structural reform of the supply side of the real estate industry on the supply side and adjust the supply of land in large cities, so as to promote a balance between supply and demand and achieve the objective of controlling housing prices. Real estate companies can cooperate with local governments to carry out city-industry operations, innovate revenue models and build urban-rural integrated development of the whole industrial chain urban circle.

(3) Moderate regulation to prevent further inflation of the house price bubble under an aggressive monetary policy. Since the new crown epidemic, against the backdrop of global monetary easing and declining economic growth, public risk aversion has been evident and house prices in some cities have been rising at a high rate. From the perspective of macro-control, in the process of opening up the internal circulation to promote double circulation, financial supervision should be strengthened and relevant regulation and purchase restriction policies should be introduced to prevent the excessive inflow of funds leading to the expansion

ISSN: 2692-7608 DOI: 10.6981/FEM.202305_4(5).0012

of the housing price bubble; it is also necessary to prevent the macro-control policies of the property market from being "one-size-fits-all" to avoid causing disorder in the real estate market environment.

Acknowledgments

Anhui University of Finance and Economics Postgraduate Research and Innovation Fund Project “Research on the mechanism and path of green finance to promote high-quality economic development”. (Project Approval Number: ACYC2021317).

References

[1] Black F, Scholes M. The pricing of options and corporate liabilities[J]. Journal of political economy, 1973, 81(3): 637-654.

[2] Wilson T C. Portfolio credit risk [J]. 1997.

[3] Martinelli E, Carvalho A C P L, Rezende S O, et al. Rules extractions from bank's bankrupt data using connectionist and symbolic learning algorithms [J]. Computational finance 1999, 2000.

[4] Brédart X. Bankruptcy prediction model using neural networks [J]. Accounting and Finance Research, 2014, 3(2): 124-128.

[5] Benjamin Bruder, Pierre Hereil, Thierry Roncalli. Managing Sovereign Credit Risk in Bond Portfolios. 2012, III (1):5-28.

[6] Md. Nurul Kabir, Andrew Worthington, Rakesh Gupta. Comparative credit risk in Islamic and conventional banks. 2015, 34:327-353.

[7] Yu Liyong. Research on risk management of state-owned commercial banks [D]. Doctoral dissertation, Harbin Institute of Technology, 2002.

[8] Wu Chong, Zhang Bo, Pan Qishu. A comprehensive fuzzy evaluation of commercial banks' credit risk[J]. Statistics and Decision Making,2004(1):4-5.

[9] Zeng Shihong, Wang Fang. Research on credit risk evaluation of manufacturing listed companies based on KMV model[J]. Forecasting,2013,32(02):60-63+69.

[10] Cheng Cui-feng. Research on early warning of financial crisis of listed chemical companies in China based on logistic regression model[J]. Reform and Opening,2016(23):9-10.

[11] Song Lingfeng, Ye Yonggang. A study of macro-financial risks in China's real estate industry - based on the perspective of financial stability [J]. Economic Management,2010,32(12):34-39.

[12] Lian Ping. The standardized development of financial holding companies under the "double cycle"[J]. China Finance, 2020, (Z1):97-99.

[13] Bai Hexiang, Liu Shefang, Luo Xiaowei, Liu Leilei, Hao Weiya. Research on the measurement and early warning of systemic financial risk in China based on the real estate market[J]. Financial Research,2020, (08):54-73.

[14] Liu Yan, Li Hongzheng. Industry leverage and debt risk in Shandong Province--analysis based on CCA model[J]. Financial Economics,2020, (01):56-65.

[15] Xu Yongge, Li Ran. Credit risk of real estate enterprises under the perspective of supply chain finance[J]. Finance and Accounting Monthly,2018, (08):164-169.

[16] Zhu Chen, Hua Guihong. The impact of Internet finance on systemic risk in China's banking sector-an empirical study based on SCCA model and stepwise regression method[J]. Research in Financial Economics,2018, (02):50-59.