Research on the Impact of Economic Policy Uncertainty on the Cost of Debt Financing—Based on Experimental and Mathematical Statistics Analysis

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Abstract. Capital is the lifeblood of a company's survival and development. Companies with lower financing costs are generally more competitive. However, the global pandemic of the new crown pneumonia has increased the uncertainty of economic policies and brought challenges to the financing activities of enterprises. The article selects the data of A-share non-financial listed companies from 2010 to 2019, first removes companies with missing data, and then narrows the scope of the data. Finally, 14,123 observation data of 2,354 listed companies were obtained. Establish a regression model to explore the relationship between economic policy uncertainty and corporate debt financing costs from the perspective of accounting conservatism. The study found that, first, the uncertainty of economic policy and the cost of corporate debt financing have a U-shaped relationship. Second, accounting conservatism can reduce corporate debt financing costs. Third, Economic policy uncertainty will negatively adjust accounting conservatism and reduce the role of corporate debt financing.

Keywords: economic policy uncertainty · corporate financing · debt financing cost · accounting conservatism

1 Introduction

Debt financing is an indispensable part of normal business operations. According to data from the People's Bank of China, the balance of my country's renminbi loans to the real economy rose from 174.64 trillion yuan in 2017 to 251.31 trillion yuan in 2019. From the perspective of financing structure, the proportion of renminbi loans in the scale of social financing Always maintain a high level. Therefore, it is of great significance to conduct in-depth research on the issue of corporate debt financing (Fig. 1).

Studies have shown that the cost of corporate debt financing is affected by many factors. Scholars have conducted in-depth analysis of this issue from the perspective of the company's own business activities. However, there are few pieces of literatures that analyze the challenges brought by the uncertainty of the external environment to the debt financing activities of enterprises. Creditors are facing a more unforeseeable future and

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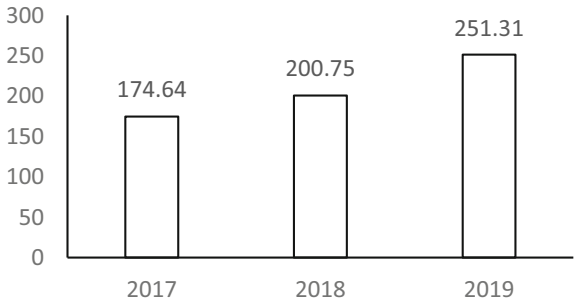

Fig. 1. Balance of RMB loans issued to the real economy

require higher yields, which increases the cost of debt financing of enterprises, while enterprises are facing demands. In the sluggish market, business operations are even worse. In order to maintain the stability of cash flow, it is necessary to raise funds from creditors. This has formed a vicious circle in the past, which has increased the burden on enterprises. Therefore, the article explores the impact of economic policy uncertainty on corporate debt financing costs. The improvement of accounting conservatism can effectively reduce the information asymmetry in the debt relationship. However, few articles explore the impact of economic policy uncertainty on corporate debt financing costs from the perspective of accounting conservatism.

2 Materials and Methods

2.1 Research Hypothesis

There are two main viewpoints in the study of economic policy uncertainty on the cost of corporate debt financing. Some scholars believe that the increase in economic policy uncertainty will reduce the debt financing costs of enterprises. Miaochen research found that when uncertainty rises, companies will maintain a low level of debt financing and stable debt financing volatility, and increase the level of equity financing, reduce the demand for debt financing, and thus reduce the cost of debt financing. Tang established the Logit model and found that the increase in economic policy uncertainty has led to an increase in the ratio of corporate internal financing and equity financing, and a reduction in the total demand for debt financing, resulting in a reduction in the cost of debt. Another group of scholars have different opinions. Liu believes that timely information disclosure can reduce corporate debt financing, but the increase in economic policy uncertainty has weakened this relationship.

The government's macro-control has a huge impact on the debt financing cost of enterprises. Whenever the economic environment is depressed or a "gray swan" event occurs, the government will often adopt loose monetary policies, lower interest rates, release liquidity to the market, stabilize the market and employment, and help companies tide over the difficulties.

At present, the world is undergoing major changes unseen in a century. The rise of the uncertainty index has brought challenges to the operation of enterprises. Therefore,

the impact of economic policy uncertainty on corporate debt financing costs should be considered from two aspects. On the one hand, according to the theory of information transmission, the increase in uncertainty will increase the opacity of information and the expected rate of return in the market. Creditors will demand a higher rate of return. This is an objective economic law. On the other hand, it is an indisputable fact that the Chinese government has strong macro-control capabilities on the market, and at the same time helping companies solve financing difficulties during difficult times can effectively stabilize employment and maintain social stability. This is an indisputable fact. Although injecting liquidity into the market can help companies overcome difficulties, it is not a long-term solution. Therefore, macro-control has reduced the cost of debt capital to a threshold, and the cost of debt financing for companies has shown a trend of first decline and then rise.

The impact of accounting conservatism on corporate debt financing has always been a hot issue in the theoretical and practical circles. After years of research, scholars have produced rich results on this issue. Scholars have found that accounting conservatism can effectively reduce the debt financing cost of enterprises. Robert analyzed this issue from the perspective of measurement attributes and found that fair value measurement has a higher risk than historical cost, and companies subject to financial constraints prefer historical cost measurement; Chao Chen addressed this issue by distinguishing different financing channels. Through analysis, it is found that whether it is bank loans or corporate bond issuance, sound accounting policies can reduce corporate debt financing costs.

The increase in uncertainty is the "general background" of the times, and accounting conservatism is the "microclimate" of specific business processing, both of which will have an impact on the debt financing costs of enterprises. As analyzed above, accounting conservatism reduces the debt financing cost of enterprises by reducing the information asymmetry between creditors and debtors. Due to the increase in uncertainty, accountants are often faced with information that is difficult to verify when dealing with specific businesses. For the processing of this information, the accounting conservatism principle stipulates that the possible gains or assets brought about by uncertainty are generally not recognized or can only be recognized in accordance with stricter standards, which makes the profits of the company systematically underestimated, and the creditors Passed a negative signal. Based on the above analysis article, the following three hypotheses are proposed:

Hypothesis 1: There is a U-shaped relationship between the uncertainty of economic policy and the cost of corporate debt financing.

Hypothesis 2: Accounting conservatism will reduce corporate debt financing costs.

Hypothesis 3: Economic policy uncertainty will negatively adjust accounting conservatism and reduce the role of corporate debt financing.

2.2 Research Design

The article selected the 2010–2019 A-share non-financial company listed company data as the initial research sample, and finally obtained 14,123 observation data of 2,354 listed companies, all of which came from the CSMAR database. Most of the debt financing of enterprises is measured by bank borrowing and the average value of long-term and

Table 1. Variable Definitions

Symbol	Name	Remark
C-Score	Accounting conservatism	Khan & Watt's C-Score model
DC	debt financing costs	Interest expense/average long-term and short-term debt
EPU	Economic Policy Uncertainty	Economic Policy Uncertainty Index
SIZE	size of assets	The natural logarithm of the size of the company's assets
LEV	leverage ratio	Total liabilities/total assets
SOE	Nature of property rights	State-owned enterprises take 1, otherwise take 0
Q	Tobin's Q	Company market value/asset replacement cost
COCEN	Equity concentration	The largest shareholder's shareholding ratio
IND	Industry Control	Industry dummy variables
YEAR	Annual control	Annual dummy variable

short-term debt. The economic policy uncertainty index jointly compiled by Stanford University and the University of Chicago is used to reflect the uncertainty of economic policy. The control variable is mainly the control at the enterprise level. Select the size of assets (SIZE), leverage ratio (LEV), Tobin's Q (Tobin'Q), the nature of corporate property rights (SOE), and the concentration of equity (COCEN) as control variables (Table 1).

2.3 Model Building

$$DC_{it} = \alpha_0 + \alpha_1 EPU_{it} + \alpha_2 EPU_{it}^2 + \alpha_3 SIZE_{it} + \alpha_4 LEV_{it} + \alpha_5 SOE_{it} + \alpha_6 Q_{it} + \alpha_7 COCEN_{it} + \varphi_{it} \quad (1)$$

$$DC_{it} = \alpha_0 + \alpha_1 C - Score_{it} + \alpha_2 SIZE_{it} + \alpha_3 LEV_{it} + \alpha_4 SOE_{it} + \alpha_5 Q_{it} + \alpha_6 COCEN_{it} + \varphi_{it} \quad (2)$$

$$DC_{it} = \alpha_0 + \alpha_1 C - Score_{it} + \alpha_2 EPU_{it} + \alpha_3 C - Score_{it} * EPU_{it} + \alpha_4 SIZE_{it} + \alpha_5 LEV_{it} + \alpha_6 SOE_{it} + \alpha_7 Q_{it} + \alpha_8 COCEN_{it} + \varphi_{it} \quad (3)$$

3 Results and Discussion

3.1 Descriptive Statistics and Correlation Analysis

It can be seen from Table 2 that the average and median debt financing of the sample companies are 0.113 and 0.1, respectively. The average value exceeds the median. The

Table 2. Descriptive Statistics

Symbol	Sample size	Average	median	Standard deviation	Minimum	Max
DC	14326	0.113	0.1	0.093	0	1.273
C-Score	14326	0.044	0.034	0.08	−0.16	0.32
EPU	14326	3.308	3.639	2.16	0.989	7.919
LEV	14326	0.481	0.482	0.181	0.099	0.895
ROE	14326	0.067	0.067	0.096	−0.552	0.355
Q	14123	1.57	1.196	1.276	0.139	8.249
COCEN	14326	33.92	32.023	14.114	8.38	74.824

Table 3. Correlation Analysis

	DC	C-Score	EPU	LEV	SIZE	ROE	Q
DC	1						
C-Score	0.039***	1					
EPU	−0.026***	0.451***	1				
LEV	−0.085***	0.178***	−0.114***	1			
SIZE	−0.125***	−0.471***	0.141***	0.472***	1		
ROE	−0.048***	−0.235***	−0.052***	−0.069***	0.152***	1	
Q	0.051***	−0.014*	−0.123***	−0.493***	−0.512***	0.114***	1
COCEN	−0.040***	−0.169***	−0.087***	0.123***	0.218***	0.110***	−0.099***

***, **, * are significant at 1%, 5%, and 10% respectively

average value of accounting conservatism is 0.044 and the median is 0.034, both of which are greater than 0, indicating that the overall accounting conservatism of the sample companies is relatively good. It reflects that listed companies are paying more and more attention to the disclosure of their own financial information, but the minimum and maximum values of accounting conservatism are −0.160.32 respectively, which also shows that the accounting information disclosure of sample companies is polarized. The debt financing cost of most listed companies is lower than the average debt financing cost. The uncertainty of economic policy has risen from the minimum value of 0.989 in 2010 to 7.919 in 2019, indicating that the uncertainty of economic policy has gradually increased in recent years. Among the control variables, the mean values of financial leverage and return on equity are 48.1% and 6.7% respectively, and the difference between the mean and the median is not obvious, indicating that the risks and returns of the sample companies are moderate. As shown in Table 3, the Pearson correlation coefficients among the variables did not exceed 0.8, indicating that there is no multicollinearity in the model.

3.2 Regression Result

It can be seen from Table 4. The quadratic coefficient is positive and significant, indicating that there is a U-shaped relationship between the uncertainty of economic policies and the cost of corporate debt financing. The results show that there is a critical value for the uncertainty of economic policy. In the short term, when the uncertainty of economic policy increases, the government will often require banks to issue low-interest loans for enterprises for social stability, which reduces the debt financing costs of enterprises. When the policy uncertainty is too high, commercial banks will increase the borrowing interest rate from the perspective of their own asset safety, thereby increasing the debt financing cost of the enterprise.

In order to further verify the U-shaped relationship, the U-test test is performed on the model. It can be seen from Table 5 that the extreme point is 5.269, the EPU range is 4.449–7.759, the extreme point is within the data range, and the slope shows a trend of first decline and then rise. Therefore, it can be considered that the economic policy is uncertain There is a U-shaped relationship between gender and corporate debt financing costs.

It can be seen from Table 6 that the C-Score coefficient is negative and significant at the 0.05 level, indicating that accounting conservatism is negatively correlated with corporate debt financing costs, that is, the higher the accounting conservatism of a company, the lower the company's debt financing cost. Therefore, Hypothesis 2 is verified.

Model (3) introduces the interaction terms of economic policy uncertainty and accounting conservatism and economic policy uncertainty on the basis of model (1). The C-Score coefficient is significantly negative, the coefficient of the interaction term is significantly positive, and the sign is significant and opposite, indicating that the uncertainty of economic policy will negatively regulate the reduction of corporate debt financing costs by accounting conservatism. Hypothesis 3 has been verified (Table 7).

Table 4. Model 1 Regression Results

Symbol	Result
EPU	−6.26E−07***
EPU^2	5.94E−08***
LEV	−3.00E−06***
SIZE	−7.76E−07***
ROE	−3.39E−06***
Q	−1.93E−07***
COCEN	−6.71E−09***
_cons	0.0000321***
n	14123
Adj-R2	0.0183
F	38.52***

Table 5. U-test Results

	Lower limit	Upper limit
Interval	0.989	7.919
Slope	−5.08E−07	3.15E−07
T	−4.294	2.629
P > t	8.83E−06	0.004
Extreme point	5.269	
EPU Value Range	[4.449–7.759]	

Table 6. Model 2 Regression Results

Symbol	Result
C-Score	−0.032**
LEV	−0.016***
SIZE	−0.009***
ROE	−0.031***
Q	−0.002***
COCEN	0.000
_cons	0.339***
n	14123
Adj-R2	0.027
F	18.786***

***, **, * are significant at 1%, 5%, and 10% respectively

For the robustness of the results, this paper adopts the method of shortening the time window, selecting the data from 2015 to 2019 to re-regress the model and the regression results are consistent with the previous conclusions. The results are shown in the Table 8.

Table 7. Model 3 Regression Results

Symbol	Result
EPU	0.003***
C-Score	−0.647***
EPU* C-Score	5.343***
LEV	−0.024***
SIZE	−0.009***
ROE	−0.010
Q	−0.000
COCEN	−0.002**
_cons	0.320***
n	14123
Adj-R2	0.238
F	275.748***

***, **, * are significant at 1%, 5%, and 10% respectively

Table 8. Robustness Test Results

	(1)	(2)	(3)
C-Score		−0.035**	−0.674***
LEV	−2.80E−06***	−0.016**	−0.010
SIZE	−6.38E−07***	−0.008***	−0.010***
ROE	−3.69E−06***	−0.038***	−0.017*
Q	−1.25E−07	−0.001	−0.002**
COCEN	−3.36E−09	0.000	0.000
EPU	−1.19E−06***		−0.000
EPU*EPU	1.16E−07***		
C-Score*EPU			5.363***
_cons	−6.38E−07***	0.315***	0.354***
n	14123	14123	14123
Adj-R2	0.018	0.025	0.233
F	26.834***	11.789***	256.091***

***, **, * are significant at 1%, 5%, and 10% respectively

4 Conclusion

Based on the background of increasing uncertainty in current economic policies, this paper selects non-financial listed companies from 2010 to 2019 and establishes a regression model to study the impact of economic policy uncertainty and accounting conservatism on corporate debt financing costs. Research shows that: (1) The uncertainty of economic policy and the cost of debt financing of the enterprise show a U-shaped relationship; (2) The sound accounting policy can significantly reduce the cost of debt financing of the enterprise; (3) Economic policy uncertainty will negatively adjust accounting conservatism and reduce the role of corporate debt financing.

In summary, this article puts forward the following three suggestions. First, improve the supporting emergency loan guarantee mechanism. Avoid excessive panic in the market when the gray swan event occurs and create a relatively stable internal market environment for the business development of the company. A stable internal market environment is conducive to the dual-cycle strategic layout based on the domestic cycle. At the same time, the guarantee mechanism can also help companies reduce debt financing costs and help companies achieve high-quality development. Second, solve the problem of corporate financing difficulties. From the perspective of financing structure, the proportion of RMB loans in the scale of social financing has always been maintained at a relatively high level. It is recommended that the government accelerate the construction of the capital market, enrich the financing methods of enterprises, and enhance the vitality of enterprises. Third, maintain the stability of the domestic market. Prudent macroeconomic policies can keep the uncertainty of economic policies relatively stable, reduce the degree of information asymmetry in the market, reduce corporate financing costs, and reduce the secondary harm of the gray swan event to companies.

References

1. Lv M, Bai M (2018) Political uncertainty and corporate debt financing: empirical evidence from China, 51(13)
2. Göx RF, Wagenhofer A (2010) Optimal precision of accounting information in debt financing. Eur Account Rev 19(3)
3. Chen C, Zhu S (2013) Financial reporting quality, debt maturity, and the cost of debt: evidence from China. Emerg. Mark. Finance Trade 49(sup4)
4. Khan M, Watts RL (2009) Estimation and empirical properties of a firm-year measure of accounting conservatism. J Account Econ 48(2)
5. Lind JT, Mehlum H (2010) With or without U? The appropriate test for a U-shaped relationship. Oxford Bull Econ Stat 72(1):109–118