The Impact of Economic Policy Uncertainty on Corporate Social Responsibility

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Abstract: Influenced by the increasingly complex and severe situation at home and abroad, frequent policy changes have improved the uncertainty level of economic policy uncertainty, and corporate Social Responsibility has attracted people's high attention. According to the data of Shanghai and Shenzhen in Chinese mainland. This paper explores how uncertainty in economic policy affects corporate social responsibility. The empirical results suggest that higher economic policy uncertainty leads to lower levels of corporate social responsibility. Mechanism analysis reveals that when the uncertainty of economic policy is enhanced, the level of corporate social responsibility can be reduced by reducing the asset-liability ratio of enterprises. In addition, among the enterprises that have issued standard audit opinions, the negative correlation is more significant, and the negative correlation is significantly suppressed when the enterprises are in losses. The conclusion of this paper is of great significance for re-examining the continuity of economic policies and stabilizing market expectations.

1. Introduction

In order to further promote the recovery of the economy, we need to overcome some difficulties and challenges. Challenges are mainly manifested in insufficient effective demand, overcapacity in some industries, weak social expectations, lots of risks and hidden dangers, blocked points in the domestic cycle as well as the rising complexity, severity and uncertainty of the external environment. As the main body and micro-foundation of economic growth, the impact of enterprises on high-quality economic development should not be underestimated. The degree of fulfillment of their social responsibilities is an important manifestation of high-quality development, which is necessarily affected by the uncertainty of economic policy. Therefore, it is necessary to explore the impact of economic policy uncertainty (EPU) on corporate social responsibility (CSR).

There is still disagreement about how EPU affects CSR. Some studies show that in the face of policy uncertainty, microeconomic subjects can take various measures to improve internal governance to release positive signals to stakeholders, which weakens the negative impact brought by the expectation of macroeconomic environmental fluctuations, making internal control more effective and then enhance the level of CSR[1]. Another part of the studies shows different ideas. From a bank credit point of view, EPU will increase the degree of information asymmetry between banks

and businesses, which means banks will raise lending rates to cushion the risk of information asymmetry between banks and companies. When corporate loan accuracy increases, the cost of capital rises. The financing constraints of daily production and operation will gradually increase. This will cause companies to reduce their investment and especially the investment related to CSR will be difficult to be sustained. When corporate capital is mainly dependent on the external markets, its funds will be largely affected by the market environment. EPU reduces corporate investment in fulfilling their social responsibility by increasing the external financing costs of enterprises, thus inhibiting enterprises from fulfilling their social responsibility[2].Therefore, based on relevant theories, this paper regarding the EPU as an exogenous shock, focuses on exploring the impact of the EPU on the level of CSR. Based on the perspective of enterprise audit opinions, this paper will explore the heterogeneity characteristics of EPU on the impact of CSR, and further explore whether the loss of enterprises has a significant regulating effect on the relationship between EPU and CSR. In addition, this paper examines the impact of EPU on asset-liability ratio and reveals the possible mechanism of EPU affecting CSR level.

The marginal contribution of this article is: (1) In this paper, CSR is included in the research framework of "macroEPU-CSR", which expands the internal logic and mechanism of the influence of macroeconomic policy uncertainty on the CSR behavior of micro market bodies. (2) In the analysis of heterogeneity, this paper examines the possible channels and mechanisms of EPU affecting CSR fulfillment through grouping and moderating effects. In mechanism analysis, regarding the asset-liability ratio as the intermediary variable, this paper explores the intermediary effect on CSR, enriches the research on the motivation of enterprises to fulfill social responsibility. (3) Performance of social responsibility is regarded as one of the important behavior decisions of enterprises. Studying the relationship between EPU and CSR expands the research on the impact of EPU on enterprise behavior and the impact of macroeconomic policy on micro enterprise behavior.

2. Theoretical analysis and hypothesis proposal

On the basis of the theory of information asymmetry and signal transmission, EPU means implicit and ambiguity of external information. This increases the information asymmetry between the enterprise's internal management and the information users. Enterprises have many investment opportunities. These investment opportunities can be regarded as call options that the enterprise can hold. Therefore, when the enterprise chooses to execute the investment project, it is equivalent to execute the call option. Rising EPU increases the value of call options held by companies, so companies may delay current investment projects to wait for better investment opportunities[3][4]. Kogut and Kulatilaka[5]believed that when the investment project is irreversible and the management has greater discretion in the project decision, the external uncertainty has an important impact on the investment project decision. As a result, as external uncertainty rises, companies will suspend their current investment decisions. Research of Gulen's and Ion's[6] shows the money invested of quoted companies in the United States decreases with the increase of EPU, and the relationship between the two is more significant in the enterprises with higher investment reversibility and more dependent on government spending. Jens[7]found that U. S. listed companies delayed investment-related stock and bond issues before the election. If CSR is regarded as a special long-term asset investment, it has the characteristics of irreversible investment, uncertain income and timing. Based on the above analysis, when the EPU increases, facing the irreversible long-term asset investment with uncertain income, enterprises naturally tend to postpone the current investment projects, that is, to reduce the level of CSR.

In addition, domestic and foreign studies show that EPU will have a significant impact on the business behavior of enterprises, Zhang Lixiang's[8](2019) empirical analysis shows that with the

increase of EPU, enterprises tend to reduce their asset-liability ratio. Li Zheng's (2006)[9]relevant studies show that the asset-liability ratio is significantly and positively correlated with the social responsibility activities of enterprises, that is, the lower the asset-liability ratio, the less the social responsibility activities of enterprises. Therefore, when the EPU rises, enterprises may reduce the levels of CSR.

To sum up, the hypothesis of this paper is H1: Higher EPU leads to lower levels of CSR.

3. Study design

3.1 Sample selection and data source

This paper takes the data of Shanghai and Shenzhen A-share listed companies in China from 2010 to 2020 as samples and screens them: Firstly, Samples of financial and insurance listed companies were excluded; secondly, the samples of ST and ST * companies were excluded; thirdly, the samples of insolvent companies were excluded; fourthly, the missing samples of key indicators were excluded. After the above processing, 3,965 enterprises were finally obtained, which is a total of 100 observations. The company financial data were gathered from the CSMAR database and the CSR data comes from the CSR rating of HeXun website. To reduce the effect of outliers on the estimated results, the main continuous variables are indented at 1% and 99%.

Table 1: Variable definitions

type of variable	variable symbol	variable declaration
explained variable	CSR	Comprehensive score of social responsibility of China's listed companies released by Hexun network
explanatory variable	EPU	A weighted average of the monthly index of EPU
controlled variable	Size	The natural log of total assets for the year
	Lev	gross liability/ total assets at the end of the year
	ROA	Average balance of net profit / total assets
	REC	Net accounts receivable / total assets
	Board	The number of boards takes the natural log number
	Top1	Number of shares of the largest shareholder / total number of shares
	Balance1	Share ratio of the second largest shareholder / share ratio of the largest shareholder
	ListAge	Year of ln (current year-market year + 1)
	BM	Book value / total market value
	Year	virtual variable of year
	Industry	virtual variables of Industry

(1) Dependent Variable: Corporate social responsibility (CSR)

This paper adopts the comprehensive score of social responsibility of listed companies in China released by Hexun network as a measure of CSR. The score is based on the social responsibility report and financial report information of listed Chinese companies. This index conducts a systematic evaluation of corporate social responsibility from five aspects: shareholder responsibility, employee responsibility, suppliers, customers rights and interests responsibility, environmental responsibility, public responsibility, which can comprehensively and objectively reflect CSR.

(2)Independent Variable: economic policy uncertainty (EPU)

EPU refers to the possibility of the government to change the existing policies or announce new policies in the future. To measure EPU, this paper adopts the method of Baker: The annual data is a weighted average of a monthly EPU. The larger the index, the higher the level of EPU.

(3) Control variables

This article refers to Huang Yongqis'[11]and other scholars' research results, selecting enterprise scale(Size), debt-to-assets ratio (Lev),return on asset(ROA), accounts receivable ratio(REC), the number of directors (Board), the shareholding ratio of the largest shareholder (Top1), equity balance degree(Balance1), listed years (ListAge),and book-to-market ratio(BM) as control variables, as well as adding year and industry as virtual variables to control the time and industry effect. Concrete variable definition is described in Table 1.

3.2 Model setting

To verify the hypothesis, this paper uses the "OLS + robust standard error" method, and the set the benchmark model as:

$$CSR_{i,t} = \beta_0 + \beta_1 EPU_t + \sum Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (1)$$

In the model, $CSR_{i,t}$ represents the corporate social responsibility, EPU_t the economic policy uncertainty, $\sum Controls_{i,t}$ represents the control variables, $\sum Industry$ is the fixed effect of the industry, $\sum Year$ is the fixed effect of the year, $\varepsilon_{i,t}$ is the stochastic error term.If the coefficient of EPU_t is greater than 0, it indicates that the increase of EPU will lead to the increase of CSR,otherwise it indicates that the increase of EPU will lead to the decrease of CSR.

4. Empirical analysis

4.1 Descriptive statistics

Descriptive statistics results for the main variables are presented in Table 2. The maximum value and minimum value of EPU is 834.0 and 99.01, and the average amount is 395.0, and the std is 254.4, indicating the high level of EPU. The maximum value and minimum value of CSR is 90.87 and -18.45. The mean is 23.75 and the standard deviation is 15.37, indicating that the difference of CSR is large.

Table 2: Descriptive statistics

Variable	N	Mean	SD	Min	p50	Max
CSR	30126	23.75	15.37	-18.45	21.88	90.87
EPU	30126	395.0	254.4	99.01	306.8	834.0
Size	30126	22.12	1.292	19.52	21.93	26.40
Lev	30126	0.419	0.210	0.027	0.410	0.925
ROA	30125	0.043	0.066	-0.398	0.041	0.244
REC	30040	0.120	0.104	0.000	0.097	0.507
Board	30123	2.129	0.198	1.609	2.197	2.708
Top1	30126	0.346	0.149	0.083	0.325	0.758
Balance1	30125	0.360	0.287	0.006	0.279	1.000
ListAge	30126	2.019	0.936	0.000	2.197	3.332
BM	30126	1.001	1.148	0.051	0.630	10.14

4.2 Benchmark regression analysis

Table 3 reports the multiple regression results of economic policy uncertainty (EPU) and corporate social responsibility (CSR). The regression coefficient for economic policy uncertainty (EPU) and corporate social responsibility (CSR) was-0.016 and is significant at 1%, indicating that economic policy uncertainty (EPU) reduces the level of corporate social responsibility (CSR). The hypothesis is verified.

Table 3: Benchmark regression analysis

	(1)
VARIABLES	CSR
EPU	-0.016***
	(-22.89)
Size	3.928***
	(27.61)
Lev	-3.641***
	(-5.18)
ROA	82.316***
	(52.64)
REC	0.469
	(0.39)
Board	0.393
	(0.68)
Top1	4.122***
	(3.62)
Balance1	1.273**
	(2.49)
ListAge	0.053
	(0.39)
BM	-0.984***
	(-7.04)
Constant	-64.516***
	(-16.92)
Observations	30,035
Number of groups	3,965
Year FE	YES
Industry FE	YES

4.3 Robustness test and endogeneity analysis

(1) Adding province fixed effect
Differences of economic level, marketization, policy, cultural factors in different provinces may have some effect on the regression results, so this adds province fixed effect (province) in the benchmark regression model to avoid missing important macro factors. Regression results are described in Table 4 (1), the coefficient of EPU is negative at 1%, the main research results of this paper is still valid.

(2) Adding more control variables
In the benchmark regression model, we add 4 control variables: Whether it's a Big Four accounting firm (Big4), audit opinion (Opinion), Tobin Q value (TobinQ), and the regression results are shown in Table 4 (2). The coefficient of EPU is negative at the level of 1%, and the study conclusion remains unchanged.

(3) Considering the influence of the lag-period explanatory variables

In this paper, we delay the explanatory variable by one phase and regress again. The regression results are demonstrated in Table 4 (3), and the coefficient of EPU is negative at the level of 1%, respectively, verifying the robustness of the benchmark regression.

(4) Replacing the explanatory variable measure

In this paper, the robustness is tested by changing the measurement of explanatory variables. Firstly, the annual data calculation method of Baker data is changed. Take the arithmetical mean of the index for the 12 months of the year and divide it by 1008[10], we get EPU to make further robustness test. The regression results are displayed in Table 4 (4). The coefficient of EPU is negative at the level of 1%, indicating that the conclusion is still robust.

In addition, this paper also uses the method of Davis by using the monthly data of December of each year as annual data to obtain EPU for further robustness test. The regression results are demonstrated in Table 4 (5), and the coefficient of EPU is significantly negative at the level of 1%, which is consistent with the benchmark regression conclusion.

Table 4: Regression results for the robustness test

	(1)	(2)	(3)	(4)	(5)
VARIABLES	CSR	CSR	CSR	CSR	CSR
EPU	-0.016***	-0.015***	-0.017***	-1.507***	-0.031***
	(-23.10)	(-22.68)	(-26.35)	(-22.89)	(-22.89)
Constant	-62.874***	-61.940***	-58.780***	-64.567***	-62.132***
	(-16.16)	(-15.25)	(-15.28)	(-16.93)	(-16.35)
Observations	30,035	29,454	25,841	30,035	30,035
Controls	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
province FE	YES	NO	NO	NO	NO

(5) PSM

In this paper, nearest neighbor matching method 1:1, 1:3 and kernel matching method are used respectively. Matching variables are: company size (Size), asset-liability ratio (Lev), the number of directors (Board), equity balance degree (Balance1), and it passed the balance test. This paper use the matched samples to regress again and the regression results of neighbor matching method 1:1, 1:3 and kernel matching method are displayed in table 5(1) to (3): the coefficient of EPU is negative at 1%, further verifying the robustness of the benchmark regression.

Table 5: Results of regression of endogeneity test

	(1)	(2)	(3)
VARIABLES	CSR	CSR	CSR
EPU	-0.016***	-0.016***	-0.016***
	(-18.45)	(-17.34)	(-18.45)
Constant	-79.610***	-80.883***	-79.523***
	(-20.50)	(-19.30)	(-20.45)
Observations	15,244	12,682	15,242
Controls	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES

4.4 Heterogeneity analysis

Audit opinion (Opinion) is taken as the group variable. If the financial report of the enterprise is issued with a standard audit opinion in the current year, the value is 1, otherwise it is 0. Table 6 (1) (2) shows the regression results, the regression coefficient of the economic policy uncertainty (EPU)

and corporate social responsibility (CSR) is-0.016, significant at the 1% level; In the samples without the standard audit opinion, the regression coefficient of economic policy uncertainty (EPU) and corporate social responsibility (CSR) is-0.008, significant at the 5% level. For the group coefficient difference test, the p-value of economic policy uncertainty (EPU) was 0.000, indicating that there was a significant difference between the economic policy uncertainty (EPU) coefficient of the standard audit opinion and no standard audit opinion. This shows that the negative correlation between economic policy uncertainty (EPU) and corporate social responsibility (CSR) is more significant among the enterprises that have issued standard audit opinions.

4.5 Moderation Effect

With the loss (Loss) as the adjustment variable, its meaning is: The net profit of the enterprise in that year is less than 0 to take 1, otherwise take 0. Economic policy uncertainty (EPU) and whether the loss (Loss) transaction EPU * Loss. The regression results are shown in Table 6 (3). According to the regression results, the regression value of economic policy uncertainty (EPU) and corporate social responsibility (CSR) is 0.008, significant at the 1% level. In the meantime, the relationship between economic policy uncertainty (EPU) and corporate social responsibility (CSR) is significant at the level of 1% in Model 2, and the regression value was-0.015. This shows that the negative correlation between economic policy uncertainty (EPU) and corporate social responsibility (CSR) is significantly suppressed when the enterprise is in the red.

4.6 Mechanistic analysis

Table 6: Regression results of Heterogeneity analysis, Moderation Effect and Mechanistic analysis

	(1) No standard audit opinion was issued	(2) Standard audit opinions were issued	(3) Moderation Effect	(4) Mechanistic analysis
VARIABLES	CSR	CSR	CSR	Lev
EPU	-0.008**	-0.016***	-0.015***	-0.019***
	(-2.21)	(-28.61)	(-28.78)	(-25.82)
Loss			-9.501***	
			(-32.73)	
EPU*Loss			0.008***	
			(10.07)	
Constant	-30.854**	-64.167***	-64.036***	-87.553***
	(-2.45)	(-24.01)	(-24.98)	(-13.59)
Observations	937	29,098	30,035	30,035
Controls	YES	YES	YES	YES
Year	YES	YES	YES	YES
Industry	YES	YES	YES	YES
P-value	0.000		/	/

Both domestic and foreign research conclusions reveal that unstable economic policies will have an important impact on enterprise business behavior. Li Zheng's（2006）related research shows that the asset-liability ratio is significantly positively correlated with the social activities of corporate responsibility, that is, the lower the asset-liability ratio, the less social activities of corporate responsibility, so the lower the level of corporate social responsibility[10]. Based on the above analysis, when the uncertainty of economic policy strengthens, the level of corporate social responsibility may be reduced by reducing the asset-liability ratio of enterprises, as shown in Table 6.

5. Conclusions

Since the promulgation of the 14th Five-Year Plan, ensuring that the leverage of real enterprises is "stable and stable" has become an important part of the current economic work. Under the strategic layout of deepening the supply-side structural reform and accelerating the construction of A new development pattern, this paper, based on the perspective of economic sociology, takes the data of 2010-2020 to study the impact of economic policy uncertainty on corporate social responsibility. The benchmark regression results show that the economic policy uncertainty will restrain the level of CSR. Mechanism analysis shows that when the uncertainty of economic policy strengthens, the level of corporate social responsibility may be reduced by reducing the asset-liability ratio of enterprises. In addition, among the enterprises that have issued standard audit opinions, the negative correlation between economic policy uncertainty and corporate social responsibility is more significant, and the negative correlation between economic policy uncertainty and corporate social responsibility is significantly suppressed when the enterprises are in losses.

The conclusion of this paper has certain policy significance. First, the rise of EPU increases the potential risk of enterprises, so the government should try to maintain policy stability and predictability to make the enterprise according to the anticipation policy to adjust the company's decision and behavior to reduce the risk of enterprises may face, which is beneficial to the performance of the corporate social responsibility. Secondly, considering the companies of different audit environment, different loss levels and even different characteristics have different sensitivity to policy changes, the targeting and coordination of all kinds of economic policies is particularly important, so policies should be formulated according to the characteristics of different enterprises. Finally, enterprises should take precautions and enhance risk awareness to enhance the ability to resist risk impact which helps enhance their own strength to reduce the adverse impact of economic policy uncertainty. And at the same time, they should establish a sense of social responsibility, and play the basic force of dredging the great cycle of the national economy.

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