WJEMSD

WASD
WORLD ASSOCIATION FOR SUSTAINABLE DEVELOPMENT

World Journal of
ENTREPRENEURSHIP, MANAGEMENT
AND SUSTAINABLE DEVELOPMENT

ISSN: 2042-5961 (Print) | 2042-597X (Online)

WJEMSD V20 N3/4 2024

DOI: 10.47556/J.WJEMSD.20.3-4.2024.5

RESEARCH

Economic Policy Uncertainty and Corporate Bond Credit Spreads in China: Insights from a Systematic GMM Approach on Sustainable Financial Practices

Weijing Kang
School of Economics and Management, Lyuliang University
Lishi District, Lvliang City 033001, Shanxi, China
School of Management, Universiti Sains Malaysia
11800 USM Penang, Malaysia
Email: KANGWJ123321@student.usm.my

Dr Abdul Hadi Zulkafli
School of Management, Universiti Sains Malaysia
11800 USM Penang, Malaysia
Email: hadi_zml@usm.my
ORCID: 0000-0002-8299-6387

Dr Md Aslam Mia
School of Management, Universiti Sains Malaysia
11800 USM Penang, Malaysia
Miyan Research Institute
International University of Business Agriculture and Technology
1230, Dhaka, Bangladesh
Email: aslammia@usm.my
ORCID: 0000-0002-6452-1126

CITATION: Kang, W., Zulkafli, A.H. and Mia, A. (2024): Economic Policy Uncertainty and Corporate Bond Credit Spreads in China: Insights from a System GMM Approach on Sustainable Financial Practices. *World Journal of Entrepreneurship, Management and Sustainable Development,* Vol. 20, Nos 3/4, pp.265-282.

RECEIVED: 7 August 2024 / **REVISED:** 19 November 2024 / **ACCEPTED:** 22 November 2024 / **PUBLISHED:** 30 December 2024

ABSTRACT

PURPOSE: The economy has entered a new normal in China, and the transformation and upgrading of the economic structure has exacerbated the risks in the financial market. This study aims to investigate economic policy uncertainty and corporate bond credit spreads in China.

METHODOLOGY: A total of 3,265 corporate bonds derived from Chinese A-share listed firms between 2011 and 2020 are explored, and the dynamic unbalanced panel one-step system Generalised Method of Moments (GMM) is used.

FINDINGS: The results indicate that economic policy uncertainty has a significantly positive relationship with credit spreads of corporate bonds and different dimensions of economic policy uncertainty, including monetary policy uncertainty. Fiscal policy uncertainty also has a significantly positive relationship with credit spreads.

ORIGINALITY: This study discovers the impact of economic policy uncertainty on corporate bond credit spreads in China, contributing insights into sustainable financial practices.

KEYWORDS: *Credit Spreads of Corporate Bonds; Economic Policy Uncertainty; Monetary Policy Uncertainty; Fiscal Policy Uncertainty; Executive Compensation*

INTRODUCTION

Economic policy uncertainty generally refers to the difficulties economic entities encounter in accurately forecasting whether, when, and how the government will change current economic policy, including expectations before the implementation of government policies, whether the policies will be implemented, and the changes after the implementation of the policy (Gulen and Ion, 2016; Lee *et al.*, 2023). Economic growth has shifted into a new normal in China due to the fall of the demographic dividend and changes in the global economic structure (Huang and Chen, 2022). Under government-led structural reforms, economic policy uncertainty has gradually increased, and the global financial crisis has significantly exacerbated the macro-economic condition. The economic policy uncertainty index increased from 38.2 in January 2000 to 160.27 in January 2022 (Huang and Luk, 2020), showing that there is a rising tendency of economic policy uncertainty.

This study makes the following contributions. First, it enriches the study on the effect of economic policy uncertainty and its different dimensions, including monetary policy uncertainty and fiscal policy uncertainty on micro-firm behaviour. Prior research has mostly shown that economic policy uncertainty influences firm investment (Gulen and Ion, 2016), innovation (Zhu and Qi, 2022), executive changes (LaFond and Watts, 2008), cash holdings and commercial credits (Kaviani *et al.*, 2020). Moreover, most studies on monetary policy uncertainty are primarily from advanced nations

rather than emerging economies. Fiscal policy uncertainty can influence corporate investment (Jacob *et al.*, 2022), the price of stocks (Pástor and Veronesi, 2013) and risk of insolvency.

Second, it expands factors affecting credit spreads on corporate bonds. Previous research mainly pays attention to the effects of credit rating (Ziebart and Reiter, 1992), customer concentration (Choi *et al.*, 2024), innovation level (Hsu *et al.*, 2015), and the inflation rate (Batten *et al.*, 2014) on credit spreads.

Third, it explores the role of managerial governance in economic policy uncertainty affecting the credit spreads of corporate bonds. The interaction effect of executive compensation as management governance characteristics on the link between economic policy uncertainty and credit spreads not only provides new empirical evidence for related research on executive behaviour, but also provides methodological insights for firms to cope with external economic policy uncertainty by adjusting decision.

The remainder of this study is organised as follows. The next section includes theoretical analysis and research hypotheses, followed by a section discussing the research design. The empirical findings and discussion are then provided, and the concluding section discusses policy implications, research limitations, and recommendations for further studies.

THEORETICAL ANALYSIS AND RESEARCH HYPOTHESIS

Theoretical Analysis

The notion of information asymmetry was first put forward by George Akerlof in 1970. Joseph Stiglitz and Michael Spence developed this to different fields of economic study, which further enriched the theory. Information asymmetry is very common in the capital market, and a high degree of information asymmetry exists between bond investors and issuers.

In the middle of the 20th century, as the division of corporate ownership and management powers became more common in American businesses, the principal and agent issue started to gain academic interest. Two types of agency conflict in modern companies emerged, that of company owners and managers (Jensen and Meckling, 1976).

Research Hypothesis

Economic policy uncertainty

The frequent changes in economic policies have increased the uncertainty in economic policies. Financial resources, such as bank loans and recently issued bonds, may face a crunch as economic policy uncertainty rises (Ashraf and Shen, 2019; Xu *et al.*, 2024). Reduced alternative financing sources, greater finance costs, and lower cash flow from financing activities will influence the

solvency of firms and raise the default risk of issued bonds (Tran, 2021), and increased economic policy uncertainty raises the unpredictability of firms' external environment; this can bring increased information volatility and ambiguity (Ilut and Schneider, 2022). As a result, the degree of information opacity and information asymmetry between firms and the market increases.

The first hypothesis proposes:

H1: Economic policy uncertainty has a positive relationship with the credit spreads of corporate bonds.

The greater the monetary policy uncertainty the greater the risk of the enterprise's business environment. Implementation of the original plan will be considerably altered, and the firm's operations may deviate from the previous target; this will increase the enterprise's costs and influence the performance and solvency of the firm (Ashraf and Shen, 2019). In addition, increased monetary policy uncertainty will exacerbate information asymmetry between companies and external capital providers, making it more difficult for bond investors to judge the qualification of firms and, as a result, necessitating a larger risk premium (Wittenberg-Moerman, 2008) and credit spreads will rise. The hypothesis is as follows:

H1a: Monetary policy uncertainty has a positive relationship with the credit spreads of corporate bonds.

In terms of fiscal policy uncertainty, government purchases, investments, subsidies, and tax policies are highly volatile; this might signify internal operating risks and a deteriorating external financing environment for corporations (Olivero, 2019). In this instance, a high number of important resources are tied up, reducing the company's risk-taking potential, so it tends to reserve more cash and liquid assets and reduce the extent of debt financing (Jin and Wen, 2020). The risk of debt default or perhaps bankruptcy rises considerably and credit spreads on corporate bonds are higher. The hypothesis is as follows:

H1b: Fiscal policy uncertainty has a positive relationship with the credit spreads of corporate bonds.

The interaction effect of executive incentives

Executives play an essential role in the operation of the enterprise and are the direct participants and core leaders of the enterprise's decisions (Bolton *et al.*, 2015). With the monetary or fiscal policy uncertainty increasing, compensation incentives allow management's opportunistic behaviour at the operational level and disclosure level to be effectively monitored and suppressed, leading to more prudent business behaviour and lower internal business risk (Phan *et al.*, 2019). Therefore, when economic (monetary or fiscal) policy uncertainty increases, a high level of executive compensation facilitates better checks and balances on corporate management and weakens credit spreads increases. The hypotheses are as follows:

H2: Executive compensation negatively impacts the relationship between economic policy uncertainty and the credit spreads of corporate bonds.

H2a: Executive compensation negatively impacts the relationship between monetary policy uncertainty and the credit spreads of corporate bonds.

H2b: Executive compensation negatively impacts the relationship between fiscal policy uncertainty and the credit spreads of corporate bonds.

The research framework is shown in Figure 1.

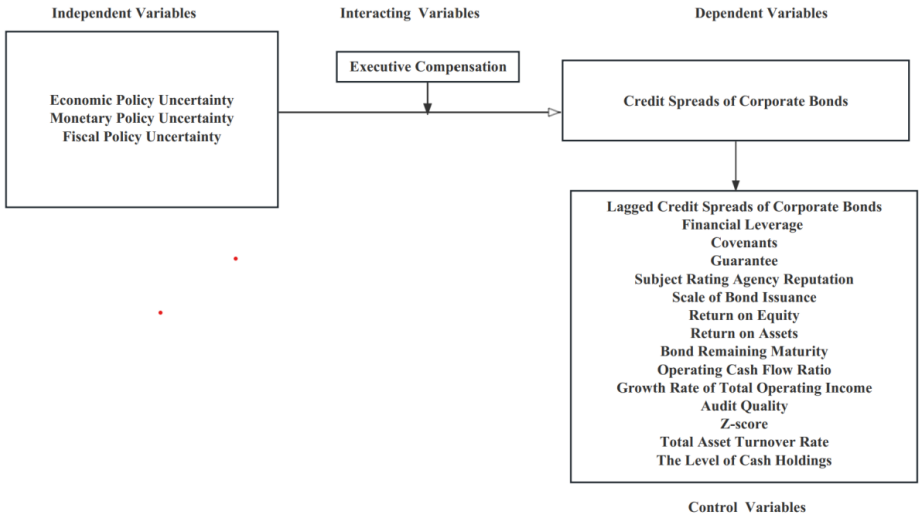

Figure 1: Research Framework

Source: Constructed by authors

RESEARCH DESIGN

Data Source and Sample Selection

The initial sample incorporates 4,780 listed corporate bonds in China from 2011-2020. From the initial sample, 94 floating rate bonds, 97 bonds issued by financial firms, 596 bonds of negative credit spreads, 243 missing bond-level data, 287 missing financial data of the firm level and 198 ST or *ST bonds were excluded. Therefore, the remaining 3,265 listed corporate bonds satisfy the requirements of the research. The data on uncertainty in economic policy, monetary policy, and fiscal policy were collected from https://economicpolicyuncertaintyinchina.weebly.com/. Other data were obtained by Wind. To reduce the impact of outliers, the continuous variables were winsorized by 1% up and down.

VARIABLES

The dependent variable is the credit spread of corporate bonds and the independent variables are economic policy uncertainty, monetary policy uncertainty and fiscal policy uncertainty, while the interaction variable is executive compensation. According to Douglas *et al.* (2016), Puni and Anlesinya (2020) and Hsu *et al.* (2015), other control variables also incorporate financial leverage, covenants, guarantees, subject rating agency reputation, scale of bond issuance, return on equity, return on assets, bond remaining maturity, the operating cash flow ratio, growth rate of total operating income, audit quality, Z-score, total asset turnover rate, and the level of cash holdings. These variables are shown in Table 1.

Table 1: Definitions of Variables

Variable	*Definitions*	*Unit*
Credit Spreads of Corporate Bonds (CS)	The yield to maturity of the bond at issuance minus the yield to maturity of the corresponding treasury bond of the same period	%
Economic Policy Uncertainty (EPU)	Based on the monthly Chinese economic policy uncertainty index from Huang and Luk (2020) to calculate the quarterly variables via the formula $EPU_t = (3 \times EPU_m + 2 \times EPU_{m-1} + EPU_{m-2}) / 6 / 100$ and then lags one period and m takes 3, 6, 9 and 12	Number
Monetary Policy Uncertainty (MPU)	Based on the monthly Chinese monetary policy uncertainty index from Huang and Luk (2020) to calculate the quarterly variables via the formula $MPU_t = (3 \times MPU_m + 2 \times MPU_{m-1} + MPU_{m-2}) / 6 / 100$ and then lags one period and m takes 3, 6, 9 and 12	Number
Fiscal Policy Uncertainty (FPU)	The lagged one period of the annual average of monthly data of FPU/100	Number
Executive Compensation (ECOM)	Natural logarithm of the sum of the top three executive compensation	RMB
Lagged Credit Spreads of Corporate Bonds (CS_{it-1})	The yield to maturity of the bond at issuance minus the yield to maturity of the corresponding treasury bond of the same period at time t-1	%
Financial Leverage (Lev)	Total debt divided by total assets	Ratio
Covenants (Covenants)	A dummy variable that takes the value of one for any type of partial or entire special terms and conditions and zero otherwise	0,1
Guarantee (Guarantee)	A dummy variable that takes the value of one when the bond has any type of partial or entire guarantees and zero otherwise	0,1
Subject Rating Agency Reputation (Reputation)	A dummy variable that takes the value of one when the rating agency engaged is China Chengxin International or United Credit Suisse and zero otherwise	0,1
Scale of Bond Issuance (Scale)	Natural logarithm of the total amount of bond issue	Number
Return on Equity (ROE)	Net profit divided by average shareholders' equity	Ratio
Return on Assets (ROA)	Net profit/total assets	Ratio
Bond Remaining Maturity (BRM)	The time remaining for the bond to survive	Year

The Operating Cash Flow Ratio (Cfo)	Net cash flows from operating activities/total assets	Ratio
Growth Rate of Total Operating Income (Growth)	Operating income gap/prior period operating income	Ratio
Audit Quality (Big4)	A dummy variable takes the value one if a firm is audited by a Big Four auditor and zero otherwise	0,1
Z-score (Z)	Altman (1968) Z	Number
Total Asset Turnover Rate (TAT)	Sales revenue/average total assets	Ratio
The Level of Cash Holdings (Cash	Cash and financial assets held for trading/total assets	Ratio

Source: Author's compilation from Wind, CSMAR and Weebly websites

Empirical Model

The present study adopts a GMM to explore the dynamic model of credit spreads of corporate bonds; this incorporates lagged credit spreads caused by persistent corporate bond yield over time. According to Monte Carlo research, two-step estimators in dynamic panel data models have been found to present improved efficiency, but the enhancement in efficiency might be relatively restricted (Blundell and Bond, 1998).

This research uses the dynamic credit spreads model to evaluate the effect of economic policy uncertainty on the credit spreads in Model 1. In Model 2, the combined impact of monetary and fiscal policy uncertainty on the credit spreads is denoted. In Model 3, the dynamic credit spreads model is adopted to assess the interaction impact of the executive compensation on the link between economic policy uncertainty and credit spreads of corporate bonds. In Model 4, the dynamic credit spreads model is adopted to evaluate the interaction impact of the executive compensation on the association between monetary policy uncertainty and credit spreads of corporate bonds, and on the association between fiscal policy uncertainty and credit spreads.

(1) $$CS_{it} = \beta_0 + \beta_1 \times CS_{it-1} + \beta_2 \times EPU_{it} + \beta_k \times \sum Controls_{k,it} + u_i + u_t + \varepsilon_{it}$$

(2) $$CS_{it} = \beta_0 + \beta_1 \times CS_{it-1} + \beta_2 \times MPU_{it} + \beta_3 \times FPU_{it} + \beta_k \times \sum Controls_{k,it} + u_i + u_t + \varepsilon_{it}$$

(3) $$CS_{it} = \beta_0 + \beta_1 \times CS_{it-1} + \beta_2 \times EPU_{it} + \beta_3 \times ECOM_{it} + \beta_4 \times EPU_{it} \times ECOM_{it} + \beta_k \times \sum Controls_{k,it} + u_i + u_t + \varepsilon_{it}$$

(4) $$CS_{it} = \beta_0 + \beta_1 \times CS_{it-1} + \beta_2 \times MPU_{it} + \beta_3 \times FPU_{it} + \beta_4 \times MPU_{it} \times ECOM_{it} + \beta_5 \times FPU_{it} \times ECOM_{it} + \beta_k \times \sum Controls_{k,it} + u_i + u_t + \varepsilon_{it}$$

Where CS_{it} represents the credit spreads of corporate bonds in corporation ^{i} at time ^{t}. EPU_{it}, MPU_{it}, FPU_{it} denote economic policy uncertainty, monetary policy uncertainty and fiscal policy uncertainty respectively in firm ^{t} at time ^{t} located in certain regions. $ECOM_{it}$ implies the executive compensation in corporation ^{t} at time ^{t}. $Controls_{k,it}$ denotes a series of control variables in corporation ^{i} at time ^{t}. β_0 is an intercept of the equation, and β_1,.....,β_k shows the coefficients of independent or control variables. u_i and u_t are separately time-invariant and firm-invariant unobservable heterogeneity, and ε_{it} represents the error term.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 2 displays the descriptive statistics of the main variables. Credit spreads (CS) take a mean of 3.165%, so the yield to maturity at the time of bond issuance is 3.165% higher than the yield to maturity of the corresponding treasury bonds. Therefore, the listed firms in China can take on more risk and corporate bond financing costs can be at a relatively high level. Credit spreads fluctuate between 0.0854% and 45.95%, with a standard deviation of 5.398%. Therefore bond credit spreads in various firms have large differences and a few firms have a very high bond credit risk. The finding is almost line with the research of Zhou *et al.* (2017).

Economic policy uncertainty (EPU) has a mean of 1.623, a median of 1.63 and a standard deviation of 0.282, indicating that no significant skewness emerges. Economic policy uncertainty has a minimum of 1.22 and a maximum of 2.154; therefore this index is moderately high and volatile. Additionally, monetary policy uncertainty (MPU) has a mean of 1.196, standard deviation of 0.43 and median of 1.127; therefore, no significant skewness exists. Monetary policy uncertainty ranges between 0.719 and 2.194, showing that there is a high degree of monetary policy uncertainty. Furthermore, it appears that similar results concerning MPU have been demonstrated in the data of fiscal policy uncertainty (FPU) during the period from 2011 to 2020.

In this study, the interaction variable is executive compensation (ECOM). The ECOM takes an average value of 14.75, standard deviation of 0.816, and the range is between 13.14 and 17.13; therefore, there is a significant disparity in executive compensation between listed companies, and the problems of unequal distribution of compensation still emerges in China. Therefore, the level of managerial governance differs greatly among listed companies. Other control variable results are almost similar to previous studies of Douglas *et al.* (2016), Puni and Anlesinya (2020) and Danisman and Tarazi (2024). Table 2 shows the summary statistics contained the main variables and control variables from 2011 to 2020.

Table 2: Descriptive Statistics

VARIABLES	Obs	Mean	SD	Min	Max	Median
CS	3,265	3.165	5.398	0.0854	45.95	2.136
EPU	3,265	1.623	0.282	1.220	2.154	1.630
MPU	3,265	1.196	0.430	0.719	2.194	1.127
FPU	3,265	1.226	0.275	0.829	2.003	1.249
ECOM	3,265	14.75	0.816	13.14	17.13	14.66
Lev	3,265	58.69	15.82	19.67	90.52	59.14
Covenants	3,265	0.725	0.447	0	1	1
Guarantee	3,265	0.392	0.488	0	1	0
Reputation	3,265	0.231	0.421	0	1	0
Scale	3,265	20.62	0.814	18.52	22.97	20.62
ROE	3,265	6.744	11.98	-63.77	31.40	7.210
ROA	3,265	2.688	4.170	-17.18	13.49	2.546
BRM	3,265	5.247	1.475	3	10	5
Cfo	3,265	4.375	5.897	-14.26	18.39	4.483
Growth	3,265	12.62	27.70	-48.47	132.2	9.284
Big4	3,265	0.172	0.378	0	1	0
Z	3,265	1.590	0.878	-0.385	4.496	1.430
TAT	3,265	60.08	45.21	6.410	234.4	48.03
Cash	3,265	12.95	7.926	1.231	43.09	11.59

Source: Author's compilation from Wind, CSMAR and Weebly website.

Pairwise Correlation

The pairwise correlation of the main variables is represented in Table 3. The variables may be strongly correlated and lead to multicollinearity problems; it is, therefore, vital to evaluate the multicollinearity. The correlation among the variables is less than 0.8 and the multicollinearity does not emerge, as shown in Kennedy (2008).

Table 3: Correlation Matrix

	CS	EPU	MPU	FPU	ECOM
CS	1				
EPU	-0.037	1			
MPU	-0.13	0.75	1		
FPU	-0.01	0.80	0.697	1	
ECOM	-0.06	-0.113	-0.308	-0.118	1

Source: Constructed by authors

Regression Results

Table 4 indicates the results of the dynamic credit spread model (Eq. 1, 2, 3 and 4) by one-step system GMM. Eq. (1) and (2) respectively evaluate the influence of economic policy uncertainty and its different dimensions on the credit spreads of corporate bonds. Eq. (3) estimates the interaction influence of executive compensation on the association between economic policy and credit spreads of corporate bonds. Eq. (4) evaluates the interaction impact of executive compensation on the link between different dimensions of economic policy uncertainty and credit spreads.

There is a significantly positive link between economic policy uncertainty and credit spreads of corporate bonds at the 1% level, as seen in Column 1. The coefficient (2.04) of economic policy uncertainty shows that a 1% increase in economic policy uncertainty results in a 2.04% rise of credit spreads. An increase in economic policy uncertainty makes the credit spreads rise in China; this is line with hypothesis H1. The probable reason is that when economic policy uncertainty rises, there is a lack in financing sources, such as bank loans and newly issued bonds.

In Column 2, a significantly positive association emerges between monetary policy uncertainty (or fiscal policy uncertainty) and credit spreads at the 10% level. The coefficient (0.693) of monetary policy uncertainty shows that a 1% rise in monetary policy uncertainty results in a 0.693% rise of credit spreads, and the coefficient (2.274) in fiscal policy uncertainty indicates that a 1% increase of fiscal policy uncertainty leads to a 2.274% increase of credit spreads. Therefore, both monetary policy uncertainty and fiscal policy uncertainty bring an increase of the credit spreads of corporate bonds in China; this is in agreement with hypotheses H1a and H1b.

In Column 3, a significantly positive impact of economic policy uncertainty on credit spreads of corporate bonds exists at the 1% level. The coefficient of the interaction term for executive compensation (L.EPU×ECOM) is -9.146 and is significant at the 1% level. In Column 4, a significantly positive effect of monetary policy uncertainty on credit spreads exists at the 5% level, and the interaction term (L.MPU×ECOM) is significantly negative at the 5% level. Fiscal policy uncertainty has a significantly positive impact on the credit spreads at the 10% level and the interaction term (L.FPU×ECOM) is significantly negative at the 10% level. Therefore, higher executive compensation weakens the positive relationship between economic (or monetary or fiscal) policy uncertainty and credit spreads; this is line with the hypotheses H2, H2a and H2b. This is because compensation incentives can increase the level of risk-taking by managers and mitigate agency problems.

Table 4: Impact of Economic Policy Uncertainty on Credit Spreads

Variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*
	(1)	(2)	(3)	(4)
$CS_{it\text{-}1}$	1.001*** (0.115)	1.363*** (0.425)	0.991*** (0.133)	0.971*** (0.336)

Variables	Model 1	Model 2	Model 3	Model 4
	(1)	(2)	(3)	(4)
L.EPU	2.04*** (0.42)		136.939*** (47.119)	
ECOM			18.571*** (5.574)	2.989** (1.278)
L.EPU×ECOM			-9.146*** (3.191)	
L.MPU		0.693* (0.414)		15.656** (7.292)
L.MPU×ECOM				-1.097** (0.505)
L.FPU		2.274* (1.308)		19.644* (11.914)
L.FPU×ECOM				-1.405* (0.808)
Lev	-0.082 (0.114)	0.313** (0.137)	0.091 (0.14)	0.042 (0.099)
Covenants	5.844 (4.35)	15.903* (8.269)	-18.441 (11.988)	4.181 (5.802)
Guarantee	12.178 (8.335)	-0.61 (5.107)	4.478 (5.51)	5.973 (3.763)
Reputation	3.906 (2.562)	11.961** (4.829)	1.065 (2.284)	0.323 (2.706)
Scale	7.016 (7.215)	0.914 (1.929)	-8.758 (6.783)	-2.807** (1.184)
ROE	-0.054* (0.03)	-0.373** (0.173)	-0.103 (0.177)	-0.418*** (0.142)
ROA	0.103 (0.084)	1.087* (0.633)	0.109 (0.492)	1.102*** (0.414)
BRM	-2.115 (1.422)	-1.1 (0.829)	1.369 (1.322)	0.517 (0.86)
Cfo	-0.019 (0.056)	0.117 (0.073)	0.051 (0.054)	-0.054 (0.042)
Growth	0.003 (0.008)	-0.003 (0.01)	-0.004 (0.009)	0.025 (0.028)
Big4	-4.481 (4.554)	-2.568 (8.112)	0.957 (3.323)	18.98*** (6.126)
Z	-0.036 (1.014)	7.357** (3.522)	0.074 (1.8)	-0.956 (2.628)
TAT	-0.004 (0.013)	-0.156** (0.066)	-0.015 (0.022)	0.001 (0.023)
Cash	0.006 (0.047)	-0.102 (0.068)	0.021 (0.057)	-0.009 (0.052)

Variables	Model 1	Model 2	Model 3	Model 4
	(1)	(2)	(3)	(4)
Constant	-140.116 (139.842)	-51.271 (43.269)	-96.57 (156.673)	3.912 (29.639)
Observations	2394	2394	2394	2394
AR(1) [p-value]	0.000	0.001	0.000	0.000
AR(2) [p-value]	0.808	0.621	0.303	0.526
Hansen test of over-identifying restrictions[p-value]	0.152	0.527	0.671	0.128

Note: Robust standard errors are in parentheses. ***p<0.01, **p<0.05, *p<0.1.
Source: Constructed by authors

Robustness Checks

Alternative measures for economic policy uncertainty

In Table 5, the lagged one period of the annual average of monthly data of economic policy uncertainty (EPU1) calculates economic policy uncertainty and the monthly Chinese fiscal policy uncertainty index from Huang and Luk (2020) to evaluate the quarterly index (FPU1) measuring the fiscal policy uncertainty. The monetary policy uncertainty is also obtained by the lagged one period of the annual average of monthly data of monetary policy uncertainty (MPU1). The dynamic panel one-step GMM is adopted to evaluate the model (Eq. 1, 2, 3, and 4); the required diagnostic tests for dynamic panel GMM meet the requirements. The current results are in line with results shown in Table 4.

Table 5: Alternative Measure for Economic Policy Uncertainty

Variables	Model 1	Model 2	Model 3	Model 4
	(1)	(2)	(3)	(4)
CS_{it-1}	1.628*** (0.495)	1.631** (0.669)	0.962*** (0.114)	0.973*** (0.353)
L.EPU1	26.633*** (9.296)		290.871*** (111.738)	
ECOM			27.813*** (10.469)	6.946*** (2.004)
L.EPU1×ECOM			-19.962*** (7.608)	
L.MPU1		1.866* (1.104)		27.469*** (10.555)
L.MPU1×ECOM				-1.892*** (0.717)

Variables	Model 1	Model 2	Model 3	Model 4
	(1)	(2)	(3)	(4)
L.FPU		6.905** (3.265)		
L.FPU1				14.428** (6.109)
L.FPU1×ECOM				-0.993** (0.422)
Controls	YES	YES	YES	YES
Constant	-102.126* (53.923)	-388.002 (364.646)	-450.169** (176.972)	-78.596** (37.727)
Observations	2394	2394	2394	2394
AR(1) [p-value]	0.003	0.001	0.000	0.000
AR(2) [p-value]	0.973	0.748	0.516	0.238
Hansen test of over-identifying restrictions[p-value]	0.482	0.889	0.238	0.244

Note: Robust standard errors are in parentheses. ***p<0.01, ** p<0.05, *p<0.1.
Source: Constructed by authors

Alternative measures for credit spreads of corporate bonds

The impact of economic policy uncertainty on the credit spreads of corporate bonds is shown in Table 6. As a robustness test, this study uses the difference among the yield to maturity of the corporate bonds at issuance and the one-year fixed deposit rate (CS1) as a dependent variable. The dynamic panel one-step GMM is utilised to evaluate the model (Eq. 1, 2, 3, and 4); the required diagnostic tests for dynamic panel GMM meet the requirements.

The results shown in Column (1) indicate a consistent positive association between the economic policy uncertainty and credit spreads at the 1% level. This robustness check further reveals that credit spreads increase significantly as the economic policy uncertainty rises. In Column (2), the robustness check further found that credit spreads increased significantly when the monetary (or fiscal) policy uncertainty increases. Columns (3) and (4) further confirm that executive compensation weakens the positive impact of economic policy uncertainty (or different dimensions of economic policy uncertainty, including monetary policy uncertainty and fiscal policy uncertainty) on credit spreads. The results are therefore robust.

Table 6: Alternative Measure for Credit Spreads of Corporate Bonds

Variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*
	(1)	(2)	(3)	(4)
$CS1_{it-1}$	0.993*** (0.106)	1.294*** (0.362)	0.982*** (0.127)	1.001** (0.39)
L.EPU	1.864*** (0.432)		127.929*** (45.409)	
ECOM			17.434*** (5.417)	3.472** (1.657)
L.EPU×ECOM			-8.557*** (3.076)	
L.MPU		1.061** (0.451)		16.331* (8.674)
L.MPU×ECOM				-1.133* (0.605)
L.FPU		2.337* (1.394)		22.017* (13.336)
L.FPU×ECOM				-1.581* (0.904)
Controls	YES	YES	YES	YES
Constant	-13.594 (120.691)	-77.738 (51.161)	-92.278 (156.157)	13.898 (30.893)
Observations	2394	2394	2394	2394
AR(1) [p-value]	0.000	0.000	0.000	0.000
AR(2) [p-value]	0.456	0.432	0.322	0.558
Hansen test of over-identifying restrictions[p-value]	0.121	0.725	0.782	0.331

Note: Robust standard errors are in parentheses. ***p<0.01, **p<0.05, *p<0.1
Source: Constructed by authors

CONCLUSIONS

This research paper uses corporate bonds issued by A-share listed firms in China between 2011 and 2020; the dynamic panel one-period system GMM is adopted to evaluate the impact of economic policy uncertainty, and various dimensions of economic policy uncertainty on the credit spreads of corporate bonds in this research. The results indicate that economic policy uncertainty has a significantly positive relationship with credit spreads of corporate bonds, and various dimensions of economic policy uncertainty, including monetary policy uncertainty and fiscal policy uncertainty, also have a significantly positive association with credit spreads.

Investors need to increase their understanding of government economic policies. Compared to institutions and companies, investors as individuals have less access to information and lack detailed

analysis of government economic policies. Investors should take market expectations into account when making investment decisions and analyse the influence of economic policy uncertainties on the issuers of corporate bonds.

This study evaluates a subset of economic policy uncertainty indicators, particularly monetary and fiscal policy uncertainty. This limited scope leaves out important factors such as trade policy uncertainty, and uncertainties in relation to exchange rates and capital account policies. These should be investigated in future research.

REFERENCES

Altman, E.I. (1968): Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance*, Vol. 23, No. 4, pp.589-609.

Ashraf, B.N. and Shen, Y. (2019): Economic policy uncertainty and banks' loan pricing. *Journal of Financial Stability*, Vol. 44, p.100695. Available at: https://doi.org/10.1016/j.jfs.2019.100695

Batten, J.A., Jacoby, G. and Liao, R.C. (2014): Corporate yield spreads and real interest rates. *International Review of Financial Analysis*, Vol. 34, pp.89-100. Available at: https://doi.org/10.1016/j.irfa.2014.05.009

Blundell, R. and Bond, S. (1998): Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, Vol. 87, No. 1, pp.115-143.

Bolton, P., Mehran, H. and Shapiro, J. (2015): Executive compensation and risk taking. *Review of Finance*, Vol. 19, No. 6, pp.2139-2181. Available at: https://doi.org/10.1093/rof/rfu049

China Stock Market and Accounting Research (CSMAR) website: https://www.csmar.com/en/

Choi, J., Huh, Y. and Seunghun Shin, S. (2024): Customer liquidity provision: Implications for corporate bond transaction costs. *Management Science*, Vol. 70, No. 1, pp.187-206.

Danisman, G.O. and Tarazi, A. (2024): Economic policy uncertainty and bank stability: Size, Capital, and Liquidity Matter. *The Quarterly Review of Economics and Finance*, Vol. 93, pp.102-118. Available at: https://doi.org/10.1016/j.qref.2023.11.008

Douglas, A.V., Huang, A.G. and Vetzal, K.R. (2016): Cash flow volatility and corporate bond yield spreads. *Review of Quantitative Finance and Accounting*, Vol. 46, pp.417-458. Available at: https://doi.org/10.1007/s11156-014-0474-0

Gulen, H. and Ion, M. (2016): Policy uncertainty and corporate investment. *Review of Financial Studies*, Vol. 29, No. 3, pp.523-564. Available at: http://doi.org/10.1093/rfs/hhv050

Hsu, P.H., Lee, H.H., Liu, A.Z. and Zhang, Z. (2015): Corporate innovation, default risk, and bond pricing. *Journal of Corporate Finance*, Vol. 35, pp.329-344.

Huang, H.J. and Chen, Y. J. (2022): Impact of economic policy uncertainty on bond defaults. *Journal of Zhongnan University of Economics and Law*, Vol. 01, pp.38-49. Available at: http://doi.org/10.19639/j.cnki.issn1003-5230.2022.0004

Huang, Y. and Luk, P. (2020): Measuring economic policy uncertainty in China. *China Economic Review*, Vol. 59, p.101367. Available at: https://doi.org/10.1016/j.chieco.2019.101367

Ilut, C.L. and Schneider, M. (2022): Modelling uncertainty as ambiguity: A review. NBER Working Paper No. w29915. Available at: https://doi.org/10.2139/ssrn.4080655

Jacob, M., Wentland, K. and Wentland, S.A. (2022): Real effects of tax uncertainty: Evidence from firm capital investments. *Management Science*, Vol. 68, No. 6, pp.4065-4089.

Jensen, M.C. and Meckling, W.H. (1976): Theory of the firm: Managerial behaviour, agency costs and ownership concentration. *Journal of Financial Economics*, Vol. 3, No. 4, pp.305-360.

Jin, Y. and Wen, W. (2020): Tax policy uncertainty and corporate debt financing decisions. *Contemporary Finance*, Vol. 05, pp.135-147. Available at: http://doi.org/10.13676/j.cnki.cn36-1030/f.2020.05.012

Kaviani, M.S., Kryzanowski, L., Maleki, H. and Savor, P. (2020): Policy uncertainty and corporate credit spreads. *Journal of Financial Economics*, Vol. 138, No. 3, pp.838-865.

Kennedy, P. (2008): *A Guide to Econometrics.* 6th edn. New Jersey:Wiley-Blackwell.

LaFond, R. and Watts, R.L. (2008): The information role of conservatism. *Accounting Review*, Vol. 83, No. 2, pp.447-478. Available at: http://doi.org/10.2308/accr.2008.83.2.447

Lee, K., Choi, E. and Kim, M. (2023): Twitter-based Chinese economic policy uncertainty. *Finance Research Letters*, Vol. 53, p.103627.

Olivero, M.P. (2019): Fiscal policy and credit spreads: Evidence from a SVAR. *Economics Bulletin*, Vol. 39, No. 2, pp.1393-1403.

Pástor, Ľ. and Veronesi, P. (2013): Political uncertainty and risk premia. *Journal of Financial Economics*, Vol. 110, No. 3, pp.520-545. Available at: https://doi.org/10.1016/j.jfineco.2013.08.007

Phan, H.V., Nguyen, N., Nguyen, H.T. and Hegde, S.P. (2019): Policy uncertainty and firm cash holdings. *Journal of Business Research*, Vol. 95, pp.71-82. Available at: https://doi.org/10.2139/ssrn.3051576

Puni, A. and Anlesinya, A. (2020): Corporate governance mechanisms and firm performance in a developing country. *International Journal of Law and Management*, Vol. 62, No. 2, pp.147-169.

Tran, Q.T. (2021): Economic policy uncertainty and cost of debt financing: international evidence. *The North American Journal of Economics and Finance*, Vol. 57, p.101419. Available at: https://doi.org/10.1016/j.najef.2021.101419

Weebly website: https://economicpolicyuncertaintyinchina.weebly.com/

Wind Data Service website: https://www.wind.com.cn/

Wittenberg-Moerman, R. (2008): The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market. *Journal of Accounting and Economics*, Vol. 46, Nos 2-3, pp.240-260. Available at: https://doi.org/10.1016/j.jacceco.2008.08.001

Xu, X., Wang, W. and Yang, J. (2024): Economic policy uncertainty and innovation: the moderating role of digital transformation. *Applied Economics Letters*, pp.1-7. Available at: http://doi.org/10.1080/13504851.2024.2302885

Zhou, H., Zhou, C., Lin, W. and Li, G. (2017): Corporate governance and credit spreads on corporate bonds: an empirical study in the context of China. *China Journal of Accounting Studies*, Vol. 5, No. 1, pp.50-72. Available at: https://doi.org/10.1080/21697213.2017.1292722

Zhu, Q.L. and Qi, R.F. (2022): Does economic policy uncertainty inhibit innovation among listed companies? *Research on Financial Issues*, Vol. 4, pp.109-120. Available at: http://doi.org/10.19654/j.cnki.cjwtyj.2022.04.012

Ziebart, D.A. and Reiter, S.A. (1992): Bond ratings, bond yields and financial information. *Contemporary Accounting Research*, Vol. 9, No. 1, pp.252-282.

BIOGRAPHY

Weijing Kang is a PhD student at Universiti Sains Malaysia. Her areas of research interest are Corporate Finance, Digital Finance and Green Finance. She has published 13 essays in Chinese journals such as Friends of Accounting, Journal of Southwest Normal University of Natural Science Edition, Journal of Changsha University and Journal of Hebei University of Engineering. Kang has completed 10 provincial and municipal projects, including a study on the selection of successor industries in the economic transformation of resource-based cities, research on Internet Finance and Financing Issues of Small and Medium-sized Enterprises, and research on the application of flipped classroom teaching model in the teaching of Finance. She has also attended over 15 workshops/seminars on various research issues/techniques/tools both in and outside of China.

Dr Abdul Hadi Zulkafli is an Associate Professor and Chairman of Finance and Islamic Finance Section, School of Management, Universiti Sains Malaysia. He holds a Bachelor of Business Administration (Hons) (Finance) from Universiti Teknologi MARA, an MBA from Universiti Kebangsaan Malaysia, and a PhD (Corporate Finance) from the University of Malaya. He teaches Principles of Finance, Corporate Finance, Entrepreneurial Finance, Personal Finance, Analysis of Financial Statement and Enterprise Risk Management. His areas of research interest are Corporate Governance, Corporate Finance and Sustainability. He has published in local and international journals such as Advances in Financial Economics, Transnational Corporations Review, International Journal of Business and Society,

Institutions and Economies, Journal of Multinational Financial Management, International Journal of Business Governance and Ethics. He is currently conducting research related to Digital Financial Literacy and Digital Financial Services.

Dr Aslam Mia holds a PhD in development economics (research area: microfinance) from the University of Malaya, Malaysia. He is currently a Senior Lecturer at the School of Management, Universiti Sains Malaysia. Dr Mia has published around 70 articles related to productivity and efficiency of financial institutions, market structure, microfinance and urban economics in internationally reputed peer-reviewed journals. Recently, his sole authored book on Social Purpose, Commercialization, and Innovations in Microfinance has been published by Springer. He has also presented his research findings at over 30 national and international conferences/seminars in the last decade. Due to his significant contribution to research and publications, Dr Mia received the PhD Candidate with Highest Impact Publications award by University of Malaya in 2018. He has also conducted over 35 workshops/ seminars on various research issues/techniques/tools, both within and outside of Malaysia..