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Does economic policy uncertainty aggravate financial constraints?

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This paper examines the impact of economic policy uncertainty on economic growth due to its effects on firms' investment decisions, which subsequently justify firms' financial constraints. Using a sample of Chinese listed firms, the study documents that economic policy uncertainty reduce firms' financial constraints. The reduction in financial constraints stems mainly from the decrease in investments which increases the firm's cash holding. Additional tests reveal that the reduction in firms' financial constraints is pronounced more among non-politically connected firms compared to their counterparts. Further tests reveal that a reduction in a firms' financial constraints is of a short-term nature. In the long run, economic policy uncertainty increase firms' financial constraints. The study recommends that changes in policies must be done carefully to avoid turbulence and friction in firms' investment decisions.

Keywords: economic growth; economic policy uncertainty (EPU); investment; financial constraints; long run

JEL CODES: D81; D92; E22; L25; O24; O43

1. Introduction

This paper investigates whether economic policy uncertainty (EPU) aggravates firms' financial constraints through subdued economic growth. Though governments formulate policies and regulations to create stability of nations, the prospective difference in application processes and the results of these policies may have the potential to increase EPU which impedes economic growth. The existing literature documents various conclusions

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on the effects of EPU at both the micro-level and the macro-level e.g., increases in earnings management (Yung & Root, 2019); increases in corporate tax burden (Dang et al., 2019); reduction in investment and debt issuance (Liu & Zhang, 2019); and increases in cost of capital (Drobetz et al., 2018). While the extant literature suggests that the frequent enactment of policies creates an uncertainty environment which is a dynamic driver for economic fluctuations (Alvarez et al., 1998), it has not yet investigated the effects of policy uncertainty on firm-specific financial constraints. Consequently, the objective of this paper is to fill this gap in the literature by examining whether EPU aggravates firm financial constraints.

From a theoretical standpoint, continuous formulation of policies overly poses a risk of decreasing firm performance which increases credit risk (Iqbal et al., 2019; Waisman et al., 2015). However, in view of the fact that policy uncertainty reduces firm performance and increases credit risk, it can be plausible to speculate that policy uncertainty affects firm financial constraints. This study posit that policy uncertainty may affect firm financial constraints in the following ways. First, the frequent enactment of policies may result in delaying firms' investment decisions, i.e., the risk-averse firms may engage in "wait and see mode" (Liu & Zhang, 2019) until the wind of uncertainty calms down. During that period, firms increase their cash holdings (*precautionary savings theory*). Second, risk appetite firms are inclined to utilise any opportunities which may arise when uncertainty is high, provided the returns are high. However, due to the possibility that risk-averse firms may hold their cash, it is arguably reasonable to conjecture that the risk-taking firms are likely to face a challenge in raising external finance since there it is plausible that financing firms maybe among risk-averse firms. Third, the investment changes driven by policy uncertainty (Drobetz et al., 2018; Waisman et al., 2015) could create the volatility of cash flows and capital chain breaks which are highly likely to impact financial constraints. Therefore, theoretically, EPU is highly likely to impact firm's financial constraints driven by different corporate attitudes towards risk. With the theoretical view that EPU may directly affect firms' risk behavior and firms' external financing methods, it is plausible to test whether EPU increases or decreases the firm's financial constraints, which is the core objective of this paper.

China provides an excellent research setting in which to analyse the impact of EPU on financial constraints because, for the past several decades, the economy of the People's Republic of China has been transforming its policies (Zhongli, 1990). Several stringent macroeconomic and non-macroeconomic policies such as policies governing the real estate industry; supply-side structural reform; tax policy adjustment programmes and mandatory corporate social responsibility disclosure, have been enacted to regulate and control the stability of China's economy and the welfare of its people (Dang et al., 2019; Liu & Zhang, 2019). This is revealed by the rising trend of EPU indices for China which are hosted on an EPU website (see Figure 1).

Figure 1 shows the EPU index over the years. The trend is oscillating, thereby indicating instability over the presented period. On average, the EPU index has risen over the years, and this may mean increased uncertainty of the operating environment.

In order to examine the effect of EPU on firms' financial constraints, the study adopted multiple proxy measures of financial constraints. Financial constraints are measured using the *KZ-score* (Kaplan & Zingales, 1997) and *WW-score* (Whited & Wu, 2006). The study employed the EPU index for China developed by Baker et al. (2006). Figure 1 shows the EPU index for the People's Republic of China for the period 2000–2017. An upward volatile trend is observed over the period. The EPU index presented was calculated based on the newspaper method (Baker et al., 2016).

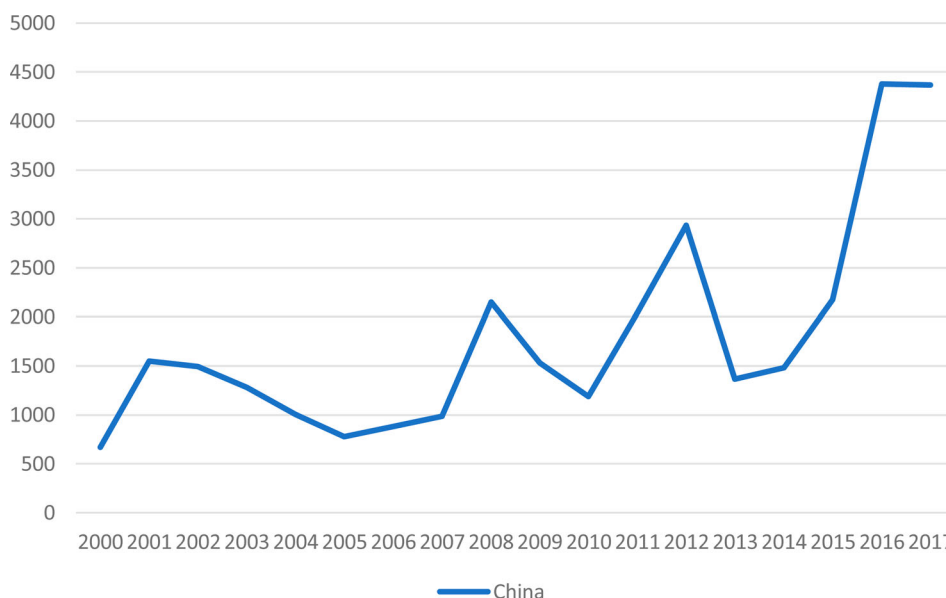


Figure 1. Economic policy uncertainty index of China.

Source: https://www.policyuncertainty.com/china_monthly.html

Using 2009 to 2018 A-Share companies' data obtained from China Stock Market, the study examined whether EPU reduces firms' financial constraints. This study extends the existing literature in the following manner. First, the study extends EPU literature by showing how EPU impacts firm' financial constraints. Secondly, the study expands the literature regarding factors that exacerbate financial constraints. Thirdly, the study provides evidence in support of the notion that high EPU is indeed a concern for the firms' investment decisions.

The remainder of this paper is organised as follows. Section 2 discusses prior empirical studies and develops our hypothesis. Section 3 describes the sample selection and empirical methods. Section 4 focuses on results presentation and section 5 concludes the remarks.

2. Hypothesis development

2.1. Economic policy uncertainty

After the 2008 global financial crises, widespread reports suggested that fiscal regulations and monetary policies contributed to a steep decline in major economies. This assertion motivated Baker et al. (2016) to develop an index for measuring EPU. The index was designed using 10 leading United States of America newspapers that contain these three words: economic, policy, and uncertainty (Baker et al., 2016). The trio further constructed EPU for other eleven countries, including China. China's EPU is based on a monthly index. The current study defines EPU as economic risk, where the future decisions of government regulations are uncertain, raising the fear of businesses to invest. While the existing literature links EPU to both micro- and macroeconomic risks, it has not yet elucidated the effects of policy uncertainty on firm-specific financial constraints. In this study, focus is on the effect of EPU on firms' financial constraints.

2.2. *Economic policy uncertainty and financial constraints*

Financial constraint is when a corporate does not have access to external finance or may be facing high costs of debt (Dyreng & Markle, 2016). Liu & Li (2017) define financial constraints as the common difficulties of attaining outside capital. Financial constraint is generally stimulated by both micro- and macro-level factors. Micro-level factors are factors that relate to corporate level processes of a corporate and have much to do with internal decision-making. Thus, the operating activities such as investment decisions, corporate governance and market selection are more likely to determine the future level of financial constraints of a firm. As an example, Bayar et al. (2017) highlighted that poor corporate governance is associated with high financial constraints. Macro-level factors are factors that are related to the economic environment. These factors are usually associated with national economics that is affected by policy enactment processes. The continuous enactment of policies creates an uncertain environment which is a dynamic driver of economic fluctuations (Dang et al., 2019; Nodari, 2014). The information prevailing in the economy creates a basis upon which firms and individuals make economic decisions. The continuous change and frequent formulation of new policies hinder proper decision-making and forecasting of the business's future. Bonga (2019) highlighted that reducing uncertainty requires less frequent policy changes and avoiding numerous policies. Bonciani and Roye (2016) show that EPU is associated with credit supply and reduces economic activities.

In their study of EPU and value of cash holding, Im et al. (2017) concluded that an increase in EPU increases cash holding, a risk-averse strategy. Thus the "wait and see" attitude of firms owing to an intolerable level of uncertainty leads to delay in investment projects, change in commitments, and friction in financial markets. This friction in financial markets impedes easy access to external finance and, in some cases, increases finance costs. On the other hand, another branch of literature suggests that EPU may provide a risk-chasing attitude. Gong & Lin (2017) argue that firms should consider all uncertainties to exploit the opportunities associated with them. In a similar vein, Zahra (2005) conjectures the view that risk-taking has potential effects on the survival and growth of small firms. As such, firms with momentum to develop and grow may adopt a risk-taking strategy and seize potential opportunities which arise during high policy uncertainty periods. The above diversity perspectives motives lead to the study hypothesis that:

H1a. *Ceteris paribus, higher economic policy uncertainty is highly likely to aggravate firms' financial constraints.*

H1b. *Ceteris paribus, higher economic policy uncertainty is highly likely to reduce the firm's financial constraints.*

3. **Data, variables and research design**

3.1. *Data*

The study used data obtained from the China Security Market and Accounting Research (CSMAR) database. Annual financial statements of A-share listed companies, covering the period of 2009 to 2017 was obtained. Firms in the financial sector were eliminated. Firms with missing values of relevant data to generate variables were also eliminated. The final sample after all exclusions consisted of 16 888 firm-year observations. See Table 1 for the sample selection process.

3.2. Financial constraints measures

Consistent with the objectives of this study, the study adopted variables from existing empirical studies in accordance with the relevant literature. Though there are vast studies on financial constraints, two proxy measures for financial constraints were adopted. The first proxy measure for financial constraints is the KZ-score, a financial constraint model created by Kaplan and Zingales (1997). The second proxy measure for financial constraints is WW-score, a financial constraint prediction model created by Whited and Wu (2006) to capture the level of firm-specific financial constraints. These proxy measures are widely used in prior studies to assess a firm's risk of financial constraints and financial distress (e.g., Bayar et al., 2017; Grice & Dugan, 2003). The proxy measures are created such that higher (lower) values represent greater (lower) financial constraints.

3.3. Economic policy uncertainty measure

This study adopts the EPU index measure designed by Baker et al. (2016). The index is constructed using three components which are newspaper coverage of policy-related news, the number of tax code provisions set to expire in future years, and the disagreements among economics analysts. Annual EPU is calculated as the natural logarithm of the arithmetic mean of twelve-monthly China EPU indexes. The index is designed to measure the uncertainty shock on the economy. A great deal of literature has utilised this index in testing policy uncertainty (e.g., Chi & Li, 2017; Iqbal et al., 2019; Wang et al., 2014).

3.4. Control variables

Based on prior financial constraints studies, this study includes a battery of control variables in the regression model. The study included a variable CashHoldings. High policy uncertainty is associated with high cash holdings (Demir & Ersan, 2017). Also the study included book-to-market variable to control for financial constraints. Book-to-market captures the increase or decrease in a firm's projected future growth. Firms exhibiting growth are less likely to face financial constraints. The study added another variable, property plant and equipment (PPE). Discretionary accruals (Accruals) to capture a firm's financial reporting practices was also included. Yung and Root (2019) demonstrate that EPU has a globally consistent relation with earnings management. Thus, firms are highly likely to control reported earnings to control the net potential negative consequences of the regulatory outcome. On the other hand, when seeking external loans, firms may aggressively report their financial statements, to present an appealing picture of financial institutions. Therefore, this study expects discretionary accruals to reduce firms' financial constraints.

The study controlled for firms' patent rights using intangible assets (Intangible). The study also included return on assets (ROA), industry sales growth (Ingrowth), Tobin and

Table 1. Sample selection.

Data Restrictions	Number
Starting CSMAR sample of A-share listed firms	23,504
Less financial and insurance firms	-3536
Less firms without necessary data to compute financial constraints	-3,987
Less firms missing data to compute control variables	-1,457
Final sample	16,888

firm sales growth (FSG). When facing greater policy uncertainties, firms exhibit lower performance (Iqbal et al., 2019). The study also took in the variable Risk to control for overall business risk. The study controlled for a firm's capital structure using variable leverage (Lev). A firm's capital structure plays a significant role in accessing external finance. Firms with high leverage are highly likely to face difficulties in accessing external financing and are more prone to fall into financial distress (Edwards et al., 2016).

3.5. Empirical model

The study model is presented below:

$$\text{Financial Constraint}_{i,t} = \beta_0 + \beta_1 \text{EPU}_t + \beta_2 \text{Controls} + \text{Year} + \text{Industry} + \varepsilon \quad (1)$$

where i denote firms and t denote years. Financial constrain is measured using the KZ-score and WW-score. EPU is an EPU based on Baker et al. (2016). Controls refer to all control variables. In the main model, the coefficient of focus is β_1 . ε is the residual of the formula. Definitions of all variables are in Table 2.

4. Empirical results

4.1. Descriptive statistics

Table 3 presents descriptive statistics for the EPU, financial constraints, and control variables adopted in the study. First, the study winsorized all continuous variables at 1% at each tail of our data to alleviate the possibility of outliers. Our main dependent variables, the KZ-score and WW-score have a mean value of -1.555 and -0.326 , respectively. Our independent value EPU has a median value of 5.260. To check for multicollinearity, the study conducted a variable inflation factor (VIF). The results of the variable inflation factor indicate the absence of a collinearity problem. The variance inflation factor is less than 10, which is the rule of thumb.

Table 2. Definition of variables.

Variables	Description	Source
KZscore	Based on Kaplan and Zingales (1997)	CSMAR
WWscore	Based on Whited and WU (2006)	CSMAR
EPU	Economic policy uncertainty based on (Baker et al., (2006) index	EPU website
CashHoldings	Cash and cash equivalents scaled by total assets	CSMAR
BM	Book-to-market (book value of equity scaled by market value of equity)	CSMAR
PPE	Property plant and equipment (fixed assets scaled by total assets)	CSMAR
Accruals	Discretionary accruals based on Jones (1991)	CSMAR
Intangible	Intangible assets scaled by total assets	CSMAR
ROA	Return on assets (net profit scaled by total assets)	CSMAR
IndGrowth	Industry growth (average industry sales growth scaled by total assets)	CSMAR
Tobin	Tobin Q	CSMAR
FSG	Firm sales growth (change in sales scaled to previous year's sales)	CSMAR
Risk	Business risk	CSMAR
Lev	Leverage (total debt scaled by total assets)	CSMAR

Table 3. Descriptive statistics.

Variable	Observations	Mean	Std. Dev.	Min	Median	Max
KZscore	16,888	-1.555	2.471	-5.004	-3.047	5.669
WWscore	16,888	-0.326	1.424	-6.717	-1.140	2.359
EPU	16,888	5.260	0.534	4.550	5.091	6.000
CashHoldings	16,888	0.167	0.130	0.011	0.130	0.706
BM	16,888	0.260	0.117	0.169	0.225	1.049
PPE	16,888	0.224	0.204	0.003	0.167	1.138
Accruals	16,888	0.022	0.098	-0.204	0.000	0.596
Intangible	16,888	0.047	0.053	0.000	0.033	0.339
ROA	16,888	0.067	0.045	0.003	0.057	0.244
IndGrowth	16,888	-0.135	0.195	-0.679	-0.142	0.691
Tobin	16,888	0.176	0.153	0.015	0.133	0.949
FSG	16,888	0.567	0.210	0.083	0.585	0.967
Risk	16,888	0.038	0.029	0.003	0.031	0.170
Lev	16,888	0.176	0.135	0.053	0.137	1.098

All variables are defined in [Table 2](#).

4.2. The role of economic policy uncertainty on financial constraints.

[Table 4](#) presents the baseline regression results from estimating the study model ([equation 3](#)). The regression results, both OLS and fixed effects show that the coefficients for EPU are negative and statistically significant at 1% level for both financial constraints measures. These findings indicate that EPU is negatively associated with firms' financial constraints. Using column (1) as an example, on average, every unit increase in EPU results in a 0.957 decrease in KZ-score which is a decrease in firms' financial constraints. These findings are consistent with our **H1a**. The study results are economically significant. For instance, the coefficient of EPU in column (1) is 0.957, indicating that, on average, the increase in economic policy, the lower the firm's financial constraints, by 0.957 which is about 32.9%. The regression coefficients of cash holdings are negative and statistically significant, suggesting that cash holdings reduce the firm's probability of facing financial constraints.

4.3. Robustness checks

4.3.1. Re-measure of financial constraints using proxy measures

To test the robustness of our results, we first employ alternative measures of financial constraints. The study used the Altman's Z-score ([1998](#)) and Zhang et al.'s ZChina score ([2010](#)). Unlike KZ- and WW-scores, both Z-score and ZChina scores are coded such that positive values represent a decrease in financial constraints. [Table 5](#) presents the results for the robustness check using Zscore and ZChina score. The regression results show that the coefficients on EPU are positive for both Zscore and ZChina score, and statistically significant at 1% level. These findings support the study main results, suggesting that indeed EPU reduce firms' financial constraints. This shows that the study results are robust.

4.3.2. Re-measure of financial constraints using direct measures

The study argues that rather than focusing only on proxy measures of financial constraints, it is paramount to test the effect of EPU on direct measures of firms' financial constraints. The study therefore uses firms' cash holdings, cash flows and working capital to measure their

Table 4. Economic policy uncertainty and financial constraints.

This table shows the role of economic policy uncertainty on aggravating financial constraints. Huber-White robust standard errors clustered by firm are used to control for heteroscedasticity and serial correlation.

	(1)	(2)	(3)	(4)
	OLS		Fixed Effect	
	KZscore	WWscore	KZscore	WWscore
EPU	-0.957*** (-4.56)	-0.526*** (-4.35)	-1.612*** (-18.82)	-0.876*** (-17.45)
CashHoldings	-4.236*** (-19.27)	-2.341*** (-18.54)	-3.167*** (-13.95)	-1.769*** (-13.30)
BM	-0.807*** (-3.60)	-0.431*** (-3.37)	-0.796*** (-3.93)	-0.411*** (-3.45)
PPE	-0.032 (-0.27)	-0.003 (-0.04)	-0.342*** (-3.36)	-0.179*** (-3.03)
Accruals	2.486*** (12.24)	1.420*** (12.13)	1.330*** (7.69)	0.765*** (7.47)
Intangible	1.053* (1.72)	0.531 (1.54)	0.402 (0.50)	0.202 (0.44)
ROA	-6.138*** (-7.76)	-3.116*** (-6.83)	-5.837*** (-8.10)	-3.006*** (-6.97)
ISG	-0.085 (-1.12)	-0.063 (-1.41)	-0.024 (-0.37)	-0.027 (-0.67)
Tobin	-1.208*** (-26.33)	-0.679*** (-25.58)	-0.586*** (-12.29)	-0.331*** (-11.85)
FSG	0.663*** (3.27)	0.390*** (3.36)	-0.123 (-0.46)	-0.034 (-0.22)
Risk	4.233*** (3.18)	2.433*** (3.16)	-1.028 (-0.69)	-0.339 (-0.40)
Lev	2.247*** (11.99)	1.284*** (11.95)	0.897*** (6.27)	0.496*** (5.87)
_cons	8.871*** (7.50)	4.401*** (6.18)	10.675*** (9.26)	5.227*** (7.61)
Firm-fixed	No	No	Yes	Yes
Year-fixed	Yes	Yes	Yes	Yes
Industry-fixed	Yes	Yes	Yes	Yes
N	16888	16888	16888	16888
adj. R^2	0.355	0.329	0.120	0.103
r2	0.358	0.333	0.125	0.108

*** Mean the significance level at 1%.

** Mean the significance level at 5%.

* Mean the significance level at 10%.

financial constraints. Table 6 presents the regression results using direct measures of financial constraints. In all columns, (1) to (3), the study found a strong positive significant effect of EPU on all direct measures of financial constraints. These results ratify that EPU increases cash holdings, increases firms' net cash flow, and firms' working capital.

4.3.3. Endogeneity test based on system-GMM

The study posits that EPU may not be an exogenous variable and there may be a reversal causality problem. Also, there may be other variables that affect financial constraints.

Table 5. Re-measure of financial constraints.

For brevity, only EPU coefficients are reported. Huber-White robust standard errors clustered by firm are used to control for heteroscedasticity and serial correlation.

	(1) Zscore	(2) ZChina
EPU	0.708*** (5.17)	0.564*** (49.43)
_cons	-2.180*** (-2.94)	-2.693*** (-43.83)
Controls	Yes	Yes
Year-fixed	Yes	Yes
Industry-fixed	Yes	Yes
N	16888	16888
adj. R^2	0.499	0.354
r2	0.502	0.358

*** Mean the significance level at 1%.

** Mean the significance level at 5%.

* Mean the significance level at 10%.

Thus, the study findings may highly likely be biased. The study implements advanced panel data models to test the validity and consistency of the main findings. Also, owing to the dynamic effect of EPU, fixed-effects and random-effects estimation techniques do not cater for previous periods in the model. To correct this, the study employs dynamic panel data estimation techniques. Therefore, the study employs the System Generalized Method of Moments (GMM) estimation technique designed by Arellano and Bond (1991). The study treats the lag of the dependent variables as additional independent variables and the main explanatory variable (EPU) as an endogenous variable. Table 7, columns (1) and (2) display the results of the one-step system GMM, and columns (3) and (4) display the results of the two-step system-GMM. The coefficients of the lagged KZ-score and WW-score are positive and statistically significant.

Table 6. Re-direct measure of financial constraints.

For brevity, only EPU coefficients are reported. Huber-White robust standard errors clustered by firm are used to control for heteroscedasticity and serial correlation.

	(1) CashHoldings	(2) CashFlow	(3) WC
EPU	0.034*** (2.59)	0.085*** (12.37)	1.043*** (21.82)
_cons	-0.212*** (-3.20)	-0.333*** (-8.68)	-4.139*** (-15.27)
Controls	Yes	Yes	Yes
Year-fixed	Yes	Yes	Yes
Industry-fixed	Yes	Yes	Yes
N	16888	16888	16888
adj. R^2	0.371	0.109	0.486
r2	0.375	0.114	0.489

*** Mean the significance level at 1%.

** Mean the significance level at 5%.

* Mean the significance level at 10%.

In all columns, (1) to (4), the coefficients of EPU are negative and statistically significant at the level of 1%, suggesting that EPU reduces firms' financial constraints. The system-GMM regression method is reported with the Arellano-Bond AR (2) test for auto-correlation and the Hansen test for over-identification. The test results indicate the absence of model misspecification. Overall, the system-GMM test results for endogeneity and dynamic specifications testify that our results are robust.

4.3.4. Further endogeneity test using 2SLS

The study further conducts the endogeneity test using 2SLS regression technique. The study followed prior literature (e.g., Wang et al., 2014) and used the average EPU index of eight major economies as an instrumental variable. The study used economic policy uncertainties of Germany, Britain, Japan, Italy, France, Russia, Canada, and the United States of America as an instrumental variable. The study used the second least squared regression estimation method. Table 8 shows the first and second stage 2SLS regression results, using the average EPU of eight countries as an instrumental variable. Columns (1) and (3) present the first stage regression results. The study results of first stage regressions are positive and statistically significant, showing that indeed average EPU of eight countries can be used as an instrument in our second stage regression. On second stage regressions, the study found that the regression coefficients on EPU measures are negative and statistically significant for both KZ-score and WW-score at the level of 1%, suggesting that EPU reduces firms' financial constraints. These results suggest that there is a low risk of endogeneity. Further, these findings suggest that this current research is robust.

Table 7. Endogeneity test based on System-GMM.

For brevity, only lagged KZ, lagged WWscore and EPU coefficients are reported. Huber-White robust standard errors clustered by firm are used to control for heteroscedasticity and serial correlation.

	(1) One-step system GMM	(2) One-step system GMM	(3) Two-step system GMM	(4) Two-step system GMM
	KZscore	WWscore	KZscore	WWscore
Lagged KZ	0.134*** (2.86)		0.125*** (2.70)	
Lagged WWscore		0.119** (2.30)		0.129** (2.38)
EPU	-0.206*** (-3.56)	-0.123*** (-2.87)	-0.183*** (-3.45)	-0.124*** (-3.06)
_cons	5.248** (1.96)	2.661 (1.12)	6.270*** (2.64)	2.380 (0.97)
Controls	Yes	Yes	Yes	Yes
N	8333	8333	8333	8333
AR(1)	0.000	0.000	0.000	0.000
AR(2)	0.185	0.278	0.131	0.314
Hansen	0.276	0.507	0.276	0.507

*** Mean the significance level at 1%.

** Mean the significance level at 5%.

* Mean the significance level at 10%.

Table 8. Endogeneity test using 2SLS.

For brevity, only Average EPU and EPU coefficients are reported. Huber-White robust standard errors clustered by firm are used to control for heteroscedasticity and serial correlation.

	(1) EPU	(1) KZscore	(1) WWscore
Average EPU	1.897*** (108.53)		
EPU		-0.528*** (-12.32)	-0.301*** (-11.95)
_cons	-4.348*** (-46.81)	6.173*** (21.70)	2.891*** (17.50)
Controls	Yes	Yes	Yes
N	16888	16888	16888
adj. R ²	0.427	0.314	0.291
r2	0.428	0.315	0.292

*** Mean the significance level at 1%.

** Mean the significance level at 5%.

* Mean the significance level at 10%.

4.4. The mediating effect of firms' investment

It would appear that EPU is bad for firm performance (Iqbal et al., 2019); therefore, it is important to investigate why EPU reduces firms' financial constraints and thus increases cash levels, cash flow and working capital during the policy turbulent period. Therefore, the study investigates the reason behind firms' reduction in financial constraints. Wang et al. (2014) documented that EPU hinders investment decisions. In view of the fact that EPU hinders firms' investment decisions, the study tests the mediation effect of investment on the relationship between EPU and financial constraints. The study followed Baron and Kenny (1986) and adopts the following mediating equations:

$$FinancialConstraint_{i,t} = \beta_0 + \beta_1 EPU_t + \beta_2 Controls + Year + Industry + \varepsilon \quad (2)$$

$$M_{i,t} = \varphi EPU_t + \mu Controls + Year + Industry + \varepsilon_1 \quad (3)$$

$$FinancialConstraint_{i,t} = \beta_0 + \beta_1 EPU_t + \beta_2 M_{i,t} + \beta_3 Controls + Year + Industry + \varepsilon_2 \quad (4)$$

where M_{it} denotes the mediator variable, which is the investment. Controls refer to a battery of control variables used in this study and ε_1 and ε_2 are residuals of formula (5) and (6) respectively. Table 9 reports the regression results of the mediating effect of investment on the relationship between EPU and financial constraints. Column (1) shows the results of the effect of EPU on firms' investments. The coefficient on EPU is negative and statistically significant at the 1% level, suggesting that as EPU increases, firms' investments decrease. In column (2) and (3), the coefficients of investment are positive and statistically significant at 1% levels for both KZ-score and WW-score, suggesting that as firms' investments increase, the cash holdings decrease, and

firms' financial constraints increase. Overall, through reduction (increase) in firms' investments, EPU reduces (increases) firms' financial constraints. Therefore, firms' investments mediate the relationship between EPU and firms' financial constraints.

4.5. Additional test

4.5.1. *The role of political connectedness*

This study attempts to test the role of heterogeneity on the effect of EPU on firms' financial constraints. The theoretical and empirical literature of firms' political connections is premised on the belief that firms that are politically connected to the government or political activists are inclined to have more favours compared to their counterparts. Such firms have a tendency of supporting government policies (Mahmood et al., 2017). Therefore, it is rational to test the role of political connectedness. The study divides the sample into two groups in terms of politically connected firms: firms with present or former top managers who have a direct relationship with present or past political activists, and non-politically connected firms. In Table 10, regression results are reported for both politically and non-politically connected firms. Among political connected firms, the coefficients on EPU measures are negative and statistically significant at a 1% level for the KZ-score and WW-score. Among non-political connected firms, column (1) and (2), the coefficients of EPU are negative and statistically significant at the 10% level. In the group of non-connected firms, column (3) and (4), the coefficients of EPU are negative and strongly significant at the level of 1%. These results suggest that the negative relationship between EPU and firms' financial constraints is less pronounced among politically connected firms.

4.5.2. *The long-run changes in financial constraints.*

Even though the above findings indicate that EPU reduces firms' financial constraints, the mediating test suggests that the reduction in financial constraints is mainly from an

Table 9. Mediating test.

For brevity, only EPU and investment coefficients are reported. Huber-White robust standard errors clustered by firm are used to control for heteroscedasticity and serial correlation.

	(1) Investment	(2) KZscore	(3) WWscore
EPU	-0.133*** (-13.73)	-0.815*** (-3.82)	-0.448*** (-3.65)
Investment		1.072*** (3.72)	0.587*** (3.59)
_cons	1.079*** (18.41)	7.714*** (6.26)	3.766*** (5.09)
Controls	Yes	Yes	Yes
Year-fixed	Yes	Yes	Yes
Industry-fixed	Yes	Yes	Yes
N	16888	16888	16888
adj. R ²	0.683	0.356	0.331
r2	0.684	0.360	0.335

*** Mean the significance level at 1%.

** Mean the significance level at 5%.

* Mean the significance level at 10%.

Table 10. The role of political connectedness.

For brevity, only EPU coefficients are reported. Huber-White robust standard errors clustered by firm are used to control for heteroscedasticity and serial correlation.

	(1)	(2)	(3)	(4)
	Connected		Non-connected	
	KZscore	WWscore	KZscore	WWscore
EPU	-0.485*	-0.269*	-1.026***	-0.562***
	(-1.94)	(-1.86)	(-16.09)	(-15.19)
_cons	4.831***	2.049**	9.772***	4.963***
	(3.06)	(2.24)	(15.73)	(11.04)
Controls	Yes	Yes	Yes	Yes
Year-fixed	Yes	Yes	Yes	Yes
Industry-fixed	Yes	Yes	Yes	Yes
N	6482	6482	10406	10406
adj. R^2	0.348	0.327	0.358	0.330
r2	0.357	0.336	0.364	0.337

*** Mean the significance level at 1%.

** Mean the significance level at 5%.

* Mean the significance level at 10%.

increase in cash holdings which results from a reduction in investments. Thus, the increase in cash holdings explains that a firm is not investing or seizing profitable opportunities. Therefore, the fixed costs associated with a firm may plausibly exceed the revenue generated by it and results in a loss. Consequently, it is arguably reasonable to conjecture that the cash holding is short-term behaviour. Therefore, the study tests the long-run effect of EPU on firms' financial constraints. The study constructs change in financial constraints (ΔFC) from year $t-1$ to t , ΔFC from year t to $t+1$ and ΔFC from year $t+1$ to year $t+2$. Table 11 presents the regression results for the long-run effect. The study found that the negative impact of (ΔFC) from year $t-1$ to t , ΔFC from year t to $t+1$ remains significant. However, in the year $t+1$ to $t+2$ the impact is positive and statistically significant at the 1% level. These results support the above argument that the negative effect of EPU on firms' financial constraints is a short-term phenomenon, possibly because a firm cannot keep on shunning new investments and holding cash when it has fixed costs such as rentals and salaries which accrue regardless of investment decisions.

5. Conclusion and policy recommendations

Although the extant literature has concluded that EPU brings turbulence in the business sphere, it has not yet elucidated the effects of EPU on the firm's financial constraints. In this paper, examination was made of the effect of EPU on the firm's financial constraints. The study constructed a regression model in which KZ-score and WW-score were dependent variables that measure financial constraints. The study used the EPU index designed by Baker et al. (2016). Annual EPU is calculated as the natural logarithm of the arithmetic mean of twelve-monthly China EPU indexes.

The empirical test revealed that EPU is significantly and negatively associated with a firm's financial constraints. The mediating test shows that the reduction in firms' financial constraints is a result of the reduction in firm's investments which is prompted by the turbulent environment posed by frequent enactment of policies. This consequently leads to an increase in cash holdings. Additional tests revealed that the reduction in firms' financial

Table 11. The long-run effect.

For brevity, only EPU coefficients are reported. Huber-White robust standard errors clustered by firm are used to control for heteroscedasticity and serial correlation.

	(1) $\Delta KZscore$ $t-1$ to t	(2) $\Delta KZscore$ t to $t+1$	(3) $\Delta KZscore$ $t+1$ to $t+2$	(4) $\Delta WWscore$ $t-1$ to t	(5) $\Delta WWscore$ t to $t+1$	(6) $\Delta WWscore$ $t+1$ to $t+2$
EPU	-0.266*** (-2.68)	-0.232** (-2.15)	6.573*** (55.52)	-0.147** (-2.43)	-0.155** (-2.35)	3.632*** (51.41)
_cons	1.504*** (2.92)	0.832 (1.44)	-30.289*** (-46.95)	0.857*** (2.74)	0.547 (1.55)	-16.628*** (-43.54)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed	Yes	Yes	Yes	Yes	Yes	Yes
Industry-fixed	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	13003	10643	8577	13003	10643	8577
adj. R^2	0.011	0.003	0.004	0.009	0.001	0.002
r^2	0.018	0.011	0.015	0.016	0.010	0.013

*** Mean the significance level at 1%.

** Mean the significance level at 5%.

* Mean the significance level at 10%.

constraints is more pronounced among non-politically connected firms compared to their counterparts. Further tests revealed that a reduction in firms' financial constraints is of a short-term nature. In the long run, EPU increases firms' financial constraints. By examining the effect of EPU on financial constraints, this study did not only scrutinised the effects of frequent formulation of policies but also provided a broad understanding of factors that mediate this relation. The study's findings therefore, confirmed the hypothesis that *ceteris paribus*, higher EPU is highly likely to aggravate firms' financial constraints. The study findings also confirmed the hypothesis that *ceteris paribus*, higher EPU is highly likely to aggravate firms' financial constraints which ultimately leads to subdued economic growth.

The results of this study are essential for several reasons. First, the study contributes to the literature on how EPU impacts financial constraints. Second, the study expands the literature on factors that exacerbate financial constraints. Third, the study provides evidence that high EPU is indeed a concern for firms' investment decisions. Finally, the study reveals that changes in policies must be undertaken carefully to avoid turbulence and friction in the financial market. A pilot test should be conducted before enacting policies so as to minimise the disturbance to the economy. Ultimately, the paper provides an understanding of the risks of wanton introduction of laws.

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