Is economic policy uncertainty an excuse for corporate fraud?

Zhong Ning & Xinzhou Qi

Published online: 28 Apr 2023.

Submit your article to this journal ↗

Article views: 152

View related articles ↗

View Crossmark data ↗

Routledge
Taylor & Francis Group

∂ OPEN ACCESS | Check for updates

Is economic policy uncertainty an excuse for corporate fraud?

Zhong Ning and Xinzhou Qi

School of Management, Fudan University, Shanghai, China

ABSTRACT

This study examines the dynamic relationship between economic policy uncertainty (EPU) and corporate fraud by using a sub-sample time-varying rolling window test. Corporate fraud is classified as fraud incidents (the number of corporate frauds) and fraud magnitude (the severity of corporate frauds). Based on this, we propose an EPU-Fraud Triangle model to evidence that EPU affects corporate fraud by acting on *Pressure*, *Opportunity*, and *Rationalization*. The empirical results show that corporations are more likely to engage in fraud during high EPU periods. Moreover, corporate fraud has positive impacts on EPU. As a result, this study suggests corporations consider fraud consequences and policy trends when making decisions. Additionally, government policymakers should analyze the causes of corporate fraud to develop appropriate policies. In addition, to minimize information asymmetries, investors should pay attention to corporate fraud and remain knowledgeable of national policy trends. Furthermore, the study can contribute to the smooth functioning of macroeconomics and reduce the probability of financial risks.

1. Introduction

The quality of listed corporations is the micro-foundation that promotes a virtuous cycle between the financial and real economies (Amiram, 2018; Pervaiz et al., 2022). Corporate fraud damages capital markets and the economy by conveying misleading information creating adverse effects on stakeholders and distorting the efficient allocation of economic resources (Hanson, 2011; Hersel, 2022; Velikonja, 2012). Moreover, economic policy uncertainty (EPU), a significant indicator of macroeconomic policy changes, exposes corporations to a more complex external environment (Gulen & Ion, 2016; Lyandres & Palazzo, 2016; Nguyen & Phan, 2017; Ren, 2020). Typically, corporations become more risk-averse and act more conservatively under uncertainty (Tran, 2020). However, opportunistic behavior would be triggered by high EPU, and corporations have more opportunities to commit fraud (Wen, 2021).

CONTACT Xinzhou Qi ✉ xzqi20@fudan.edu.cn

As of June 2022, there are 8,392 listed corporations in China, of which 10 have a market capitalization of over a trillion dollars (Petry, 2020; Zhang, 2022). However, growing anomalies have coincided with the expanding market capacity (Scott & Nyaga, 2019; Zhang, 2018). According to the China Securities Regulatory Commission (CSRC), there are 117 corporate frauds in 2010 (Habib & Jiang, 2015), while the number of corporate frauds reached 1488 in 2020 (Wang et al., 2021). Through August 2022, listed corporations and executives have been subject to more than 14000 disciplinary actions. Therefore, how to curb corporate fraud and protect the legitimate rights and interests of all capital market participants is one of the critical concerns of both the theoretical and practical communities (Lee, 2021; El Ghoul et al., 2021).

The main objective of this study is to explore the impact mechanism of EPU on corporate fraud. On the one hand, due to the uncertainty of the international environment, EPU has a significant impact on economic entities (Dou et al., 2022). At the internal level of the corporation, EPU can affect management by exerting pressure or increasing risk appetite, thus making management's decisions more in line with macroeconomic policy trends (Cui et al., 2021). Besides, by adjusting the corporation's valuation in the financial market, the EPU controls financing at the external level (Ashraf & Shen, 2019). On the other hand, the stability of the macroeconomic environment and strong supervision have prompted the management to worry about the punishment of fraud and to regulate the operation with discipline to reduce it (Phuong et al., 2020). After the pandemic, the economic recovery led to overconfidence among the management, which led some of them to take advantage of the opportunity to maximize profits through insider trading, illegal financing, and fraudulent management practices, leading policymakers to frequently implement corresponding policies. In the existing literature, the impact of EPU on fraud incidents is analyzed without considering fraud magnitude (Chen, 2018; Cui, 2021; Luo & Zhang, 2020). As a result, we divide corporate fraud into fraud incidents (the number of corporate frauds) and fraud magnitude (the severity of corporate frauds), hoping to fill in the causality gap in previous studies.

Considering that causality between time series can vary within a sample interval, we use a bootstrap rolling window causality test to ensure accurate results. The full-sample test assumes that the parameters are stable, but the results would be biased as a result of the changed parameter structure (Balcilar et al., 2010). However, rolling windows are more flexible when the causality between EPU and corporate fraud changes over time. Furthermore, we can observe that the parameters are not stable due to structural mutations in different sub-sample, which ensures the accuracy of the results (Shukur and Mantalos, 2000).

The empirical results show that there is a positive effect of EPU on fraud incidents and these positive relationships change with EPU. In particular, the management finds it difficult to predict economic trends when EPU is high. Increasing performance pressures increase corporations' incentive to commit fraud. However, EPU has both positive and negative effects on fraud magnitude. The negative impact is found to be the fact that although policies are issued frequently, however, these policies are consistent in orientation and objectives, which gives corporations confidence in goal-oriented policies and less incentive to commit fraud. In turn, fraud incidents and fraud magnitude positively relate to EPU. As fewer fraud incidents occur or

fraud magnitude is low, corporations are restricted by regulation, thus the government does not have to introduce excessive policies to intervene in the economy, causing EPU to be low.

There are several contributions as follows. Firstly, this study explores the two-way causal relationship between EPU and corporate fraud, thus broadening the research perspective of the dynamic interaction between EPU and corporate fraud. Secondly, we introduce EPU into the Fraud Triangle Theory (FTT) and propose the EPU-Fraud Triangle model, which can deeply explore the internal impact mechanism of EPU on corporate fraud, making the research more theoretically meaningful. Thirdly, we divide corporate fraud into fraud incidents and fraud magnitude, making the internal effects of corporate fraud and the interaction mechanism with EPU more practical. Fourthly, previous studies used only full-sample causality tests, which assumed a single causal relationship throughout the time series. We apply a sub-sample test to reveal the time-varying causal relationship between EPU and corporate fraud. The results of this method can be used to formulate government policy, assist corporations in making informed decisions and address the asymmetry of investor information.

The resting parties are as follows: Section 2 is the literature review; Section 3 presents the theoretical model; Section 4 elaborates on the methodology and data; Section 5 describes the empirical results; Section 6 presents the conclusion, implication, limitations and future research directions.

2. Literature review

The effectiveness of corporate governance on corporate fraud is a significant area of research (Gao & Yang, 2021; Wong & Zhang, 2022; Xu et al., 2018; Yiu et al., 2019; Zhong et al., 2021). Internal governance factors include management team characteristics (Liao, 2019; Xu et al., 2018; Zhou et al., 2018), corporate social responsibility score (Liao et al., 2019), employee treatment index (Zhang et al., 2020) and corporation ownership (Gao & Yang, 2021). While external governance factors studied include environmental hostility (Rizwan et al., 2018), external monitoring (Zhang, 2018) and industry concentration (Mckendall & Wagner, 1997; Mishina et al., 2010). In addition, information disclosure cannot be ignored as the main channel for investors to understand the operating conditions of listed corporations (Healy & Palepu, 2001; Wong & Zhang, 2022). The theory of corporate fraud has been studied by many scholars. According to Signal Theory (Spence, 1978), there is an information asymmetry between external stakeholders and corporation insiders (Connelly et al., 2011). Besides, Corporate Governance Theory suggests that accounting information influences robust corporate governance by disclosing complete and accurate information about corporate finance and risk (Jackson, 2020; Yiu, 2019). In addition, Cressey (1953), who pioneered the FTT, argues that three conditions are usually present when fraud occurs, namely incentives or pressures, opportunities and attitudes or rationalizations (Free & Murphy, 2015; Trompeter, 2013; Zaki, 2017), which interact to determine the likelihood of corporate fraud (AICPA, 2002). Based on the FTT, this study analyzes the two-way causal effects of EPU and corporate fraud.

Regarding the impact of EPU on corporate fraud, relevant research suggests that EPU has a significant impact on the real economy (Brogaard & Detzel, 2015; Baker, 2016; Cui, 2021). Moreover, EPU increases information asymmetry between banks and corporations, leading to high default risks (Baker, 2016; Berger, 2018). Consequently, under more performance pressure, the corporate propensity to commit fraud and the number of frauds is higher (Beladi, 2021; Dhole, 2021). Furthermore, corporations hold more cash through fraud as a precautionary measure to avoid uncertainty in times of high uncertainty (Chen, 2018; Im, 2017; Phan, 2019; Tran, 2019). Similarly, high uncertainty can postpone investment decisions (Chu & Fang, 2020) and take on less debt (Dong, 2019). Therefore, to avoid overlapping internal and external risks in an uncertain macro environment, corporations tend to white-wash actual operating conditions (Bhattacharya, 2017; Gulen & Ion, 2016; Kim & Kung, 2017). This leads to the following research hypothesis:

> H1: EPU has a positive impact on corporate fraud.

In terms of the impact of corporate fraud on EPU, Julio and Yook (2012) show that corporate fraud affects the investors' judgment of economic policy expectations and thus affects EPU (Phan, 2019). In addition, corporate fraud has a significant impact on political and regulatory uncertainty, and an increase in fraud can positively impact EPU levels (Cole, 2021). Bhattacharya (2017) notes that high uncertainty is associated with delays in investment and other critical decisions and a halt or slow-down in business hiring (Harford, 2014). Balcilar (2016) observes that corporate profitability declines during economic downturns, with increased incentives for fraud and high EPU. Besides, financial panic due to corporate fraud increases uncertainty by increasing expectations of a recession (Demir & Ersan, 2017). Therefore, we propose another research hypothesis as follows:

> H2: Corporate fraud has a positive impact on EPU.

3. The EPU-Fraud Triangle model

By including investor sentiment as a guiding mechanism, we develop a new theoretical model based on FTT proposed by Cressey (1953), which comprised *Pressure*, *Opportunity* and *Rationalization*. Among them, *Pressure* mainly includes operational, competitive and financing pressure. Moreover, *Opportunity* arises from internal control weaknesses and information asymmetries. Alternatively, inadequate systems, weak regulation and low costs of fraud can provide opportunities for corporate fraud. Besides, *Rationalization* means that the fraudster embellishes their behavior by finding excuses and justifications. Hence, FTT provides a theoretical basis for analyzing the drivers of fraud. However, as the economy continues to evolve and investors climb into the market, FTT needs to be explored in greater depth. Therefore, we point out that EPU can increase the propensity of corporations to commit fraud by increasing the *Pressure*, *Opportunity* and *Rationalization*, which in turn increases corporate fraud. Based on this, we propose an EPU-Fraud Triangle model that incorporates EPU, as shown in Figure 1. The EPU-Fraud Triangle model explains how EPU influences corporate fraud by acting on *Pressure*, *Opportunity* and *Rationalization* under the traditional FTT.
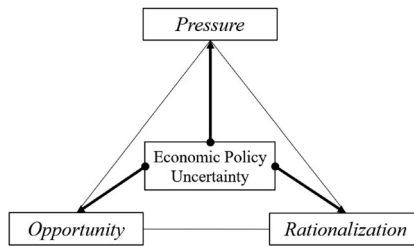
Figure 1. The EPU-Fraud Triangle model.
Source: Authors' calculation.

Higher EPU reduces the shareholding ratio of institutional investors, making it difficult to play a monitoring role, thus increasing the chances of corporate fraud. In addition, Lu & Shi (2012) argues that the larger the shareholding ratio of institutional investors, the stronger their motivation to monitor listed corporations, and the greater the constraints on corporate fraud. However, when EPU is high, institutional investors would reduce their willingness to hold shares. Therefore, there is a greater chance of corporate fraud. Furthermore, a higher EPU would cause the worst performance of the corporation. At this time, the management believes that committing fraud maximizes the interests of shareholders and themselves. Therefore, these excuses can make the fraud consistent with the management's ethical perceptions and quasi-behavior when the fraud is rationalized.

4. Methodology and data

4.1. Bootstrap full-sample causality test

Previous studies have used the Granger causality test in a Vector Autoregressive (VAR) model. However, there may have a non-standard asymptotic distribution when the time series is instability (Mosconi & Giannini, 1992; Toda & Phillips, 1994). Besides, Balcilar et al. (2010) demonstrate that the residual-based bootstrap (RB) statistic could achieve excellent performance in standard asymptotic tests to determine whether these two variables have a cointegration relationship.

Therefore, the RB-based modified-likelihood ratio (LR) causality test can test the causal relationship between EPU and corporate fraud, and the VAR(p) process for two variables may be expressed as follows:

$$C_t = \phi_0 Y_{t-1} + \ldots\ldots + \phi_p Y_{t-p} + \varepsilon_t, \qquad t = 1, 2, \ldots T \tag{1}$$

where $\varepsilon_t = (\varepsilon_{1t}, \varepsilon_{2t})'$ is a white noise process follows a zero mean and covariance matrix. We further divide Y_t into two sub-vectors $Y_t = (Y_{1t}, Y_{2t})'$ and Equation (1) can be represented as follows:

$$\begin{bmatrix} EPU_t \\ CF_t \end{bmatrix} = \begin{bmatrix} \phi_{10} \\ \phi_{20} \end{bmatrix} + \begin{bmatrix} \phi_{11}(L) & \phi_{12}(L) & \phi_{13}(L) \\ \phi_{21}(L) & \phi_{22}(L) & \phi_{23}(L) \end{bmatrix} \begin{bmatrix} EPU_t \\ CF_t \\ AC_t \\ IS_t \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix} \tag{2}$$

where EPU and CF denote economic policy uncertainty and corporate fraud, respectively. AC and IS are control variables that denote analyst concern and investor sentiment. $\phi_{ij} = \sum_{k=1}^{p+1} \phi_{ij,k} L^k$, where $i, j = 1, 2$. The optimal lag length p is determined using the Schwarz information criterion (SIC). L is a lag operator, where $L^k Z_t = Z_{t-k}$.

We test the hypothesis that EPU does not Granger causality in corporate fraud by restricting $k = 1, 2, \ldots, s$. Similarly, the inverse causal hypothesis by $\phi_{21,k} = 0$, for $k = 1, 2, \ldots, s$. When the null hypothesis is rejected, which indicates that EPU and corporate fraud have a significant causal relationship.

4.2. Parameter stability test

One assumption of the full-sample causality test in VAR models is that the parameters are constant. However, causality may be unstable if the full-sample time series undergoes structural changes. Therefore, the rolling-window bootstrap estimation can be used to avoid the problem of nonconstant parameters. Moreover, *Sup-F*, *Mean-F* and *Exp-F* tests are used to test for short-term invariance of the parameters. The L_c test (Hansen, 1992) is used to test for long-term parameter constancy. These tests are performed in the *LR* statistical sequence. In addition, *p*-values and critical values can be calculated using a parametric bootstrap procedure.

4.3. Sub-sample rolling-window causality test

Based on a modified bootstrap estimation, we can use a rolling-window sub-sample Granger causality test to overcome the above problems (Balcilar, 2010). We set up a fixed-size rolling window including the observation of l and the full- sample is divided into $T - l$ sub-sample, that is, $\tau - l + 1, \tau - l, \ldots, T$ and $\tau = l, 1 + l, \ldots, T$. The *RB*-based modified-*LR* statistic is applied to each sub-sample between EPU and corporate fraud. The effect of EPU on corporate fraud can be calculated by equation $N_b^{-1} \sum_{p-k}^{P} \hat{\phi}_{12,k}^*$, where N_b represents the number of bootstrap repetitions. Similarly, the effect of corporate fraud on EPU can be calculated by equation $N_b^{-1} \sum_{p-k}^{P} \hat{\phi}_{21,k}^*$. $\hat{\phi}_{12,k}^*$ and $\hat{\phi}_{21,k}^*$ are the bootstrap estimations from the above VAR model. The 90% confidence intervals are computed where the lower and upper bounds equal the same as the 0.05 and 0.95 quantiles of $\hat{\phi}_{21,k}^*$ and $\hat{\phi}_{12,k}^*$, respectively. Furthermore, the accuracy and performance of the rolling window estimation depend on the increment interval and window width of each regression. Large window sizes can ensure the accuracy of parameter estimation, but an extremely large window size may reduce representativeness due to heterogeneity. However, if the window size is too small, the accuracy of parameter estimation would reduce. Therefore, the window width should be set in an interval with good representativeness and accuracy.

4.4. Data origins

We use monthly data for the period from January 2000 to June 2022 to test the dynamic causality of EPU and corporate fraud. The main reason is that the CSRC liberalized the approval of Chinese corporations to list abroad in 1999. In addition, in

1999, the CSRC opened up the approval process for overseas listings. Besides, on November 1999, China and the United States (U.S.) signed a bilateral agreement regarding China's accession to the World Trade Organisation (WTO). Hence, the data starts from January 2000.

For corporate fraud, there are 14642 fraud records are selected from a sample of all A-share listed corporations from 2000 onward, and the data are obtained from the corporation section of the Wind database. For fraud incidents, we use Excel to manually aggregate the 14642 data by month, resulting in monthly data on the number of frauds. Besides, to measure the fraud magnitude, it is first classified according to the type of fraud corresponding to the amount of punishment. Next, we sort by severity in the range of 0 to 1 and set the initial weight. Then, the weights for each fraud record in turn can be set. Lastly, it is summarized into monthly data.

For the measurement of the EPU, Baker (2016) based on the frequency of articles on economic policy-related uncertainty in the *South China Morning Post* (SCMP), and the data are obtained from the monthly China EPU Index published on the EPU website.[1]

The control variables are analyst concern and investor sentiment. In the analysis of EPU on corporate fraud, analyst concern measures the total number of people followed by analysts per stock per month, and the external governance role played by analysts in capital markets has been studied in the literature (Bierey & Schmidt, 2017; Luo et al., 2015). We used data from the Wind database to measure analyst concern. Besides, to analyze corporate fraud on EPU, we establish investor sentiment as a control variable, which is pointed out by Baker et al. (2012). Moreover, the original data are synthesized according to Wei et al. (2014) to exclude the influence of macroeconomic factors. And the data from the China Stock Market & Accounting Research (CSMAR) in the thematic research section.

4.5. Sample characterization

As shown in Figure 2, the trends in EPU and fraud incidents are more volatile than fraud magnitude. EPU and corporate fraud do not behave consistently throughout the interval and show complex interactions over time. By 2007, investor sentiment has peaked in the run-up to the subprime crisis, setting the stage for a full-blown crisis. The U.S. subprime crisis spread and triggered the global financial crisis, with EPU increasing. By 2012, there are 64 corporations involved in 72 frauds. Hence, many analysts propose shorting or choosing defensive sectors, accompanied by a further rise in EPU. Due to leveraged allocations and futures shortening, a round of crashes swept during June 2015. Therefore, many corporations commit fraud through insider trading and conducting irregular capital raisings. As COVID-19 exploded in 2020, corporate fraud is showing a bi-high. However, with the control of the domestic outbreak and the orderly resumption of production, EPU is gradually decreasing. Overall, the interaction between EPU and corporate fraud is influenced by analyst concerns and investor sentiment.
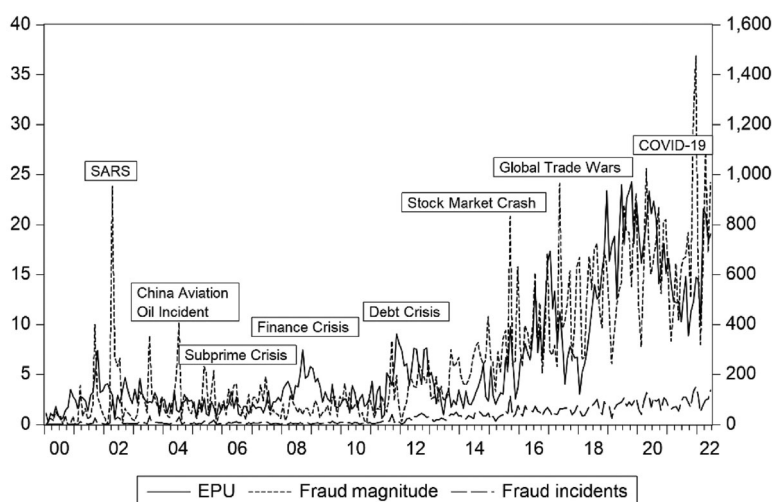
Figure 2. Trend of EPU, fraud incidents, and fraud magnitude.
Source: Authors' calculation.

Table 1. Descriptive statistics of the variables.

	EPU	Fraud incidents	Fraud magnitude	Analyst concern	Investor sentiment
Mean	246.520	32.085	6.348	4.651	54.341
Median	140.450	14.000	3.610	3.281	52.051
Maximum	970.830	151.000	36.910	42.000	218.960
Minimum	9.067	0.000	0.000	0.000	21.361
Standard deviation	236.410	34.099	6.625	3.012	28.828
Skewness	1.469	1.196	1.507	1.000	2.388
Kurtosis	4.119	3.542	5.062	3.120	12.017
Jarque-Bera	111.192***	67.707***	150.071***	3.459***	932.412***

Source: Authors' calculation.

5. Empirical results

5.1. Descriptive statistics of the data

Table 1 shows the descriptive statistics for EPU, fraud incidents, fraud magnitude, analyst concern, and investor sentiment. All variables are right-skewed distributed. Additionally, the kurtosis of EPU, fraud incidents, fraud magnitude, analyst concern and investor sentiment are all greater than 3, indicating that variables are spikily distributed. Furthermore, Jarque-Bera shows that variables are all significantly non-normally distributed at the 1% level, indicating that traditional causality tests are inappropriate, which further validates that it is reasonable by using a time-varying rolling-window sub-sample Granger causality test based on a modified bootstrap estimation. EViews and R software are used in the empirical test. Additionally, all variables have converted to logarithmic values to eliminate the heteroskedasticity problem in the time series.

5.2. Bootstrap full-sample causality test

We conducted the Augmented Dickey-Fuller (ADF) unit root test to determine the smoothness of EPU, fraud incidents, fraud magnitude, analyst concern, and investor sentiment. The results are shown in Table 2.

Table 2. The results of the ADF unit root test.

Series	Levels		First differences	
	t-statistic	*p*-values	t-statistic	*p*-values
EPU	−1.161(2)	0.692	−19.277(1) ***	0.000
Fraud incidents	−3.619(3)	0.712	−6.664(2) ***	0.000
Fraud magnitude	−1.118(7)	0.635	−11.269(5) ***	0.000
Analyst concern	−1.763(3)	0.238	−12.741(1) ***	0.000
Investor sentiment	−3.571(3)	0.625	−13.634(2) ***	0.000

Notes: (1) The number in parenthesis indicates the lag order selected based on the recursive t-statistic.
(2) ***denotes significance at the 1% level.
Source: Authors' calculation.

Table 3. The results of bootstrap full-sample Granger causality tests.

Tests	Bootstrap *LR* Test	
	Statistics	*p*-values
EPU does not Granger-cause fraud incidents	1.805	0.243
EPU does not Granger-cause fraud magnitude	0.521	0.461
Fraud incidents does not Granger-cause EPU	3.110	0.391
Fraud magnitude does not Granger-cause EPU	2.195	0.218
Analyst concern does not Granger-cause fraud incidents	4.030***	0.001
Analyst concern does not Granger-cause fraud magnitude	4.201***	0.003
Fraud incidents does not Granger-cause analyst concern	2.952	0.441
Fraud magnitude does not Granger-cause analyst concern	1.890	0.402
Inverstor sentiment does not Granger-cause EPU	6.301***	0.000
EPU does not Granger-cause Investor sentiment	0.479	0.198

Note: ***denotes significance at 1% level.
Source: Authors' calculation.

The results of the ADF hypothesis show that the underlying series are non-stationary and these variables are stable after first-order differences. Since all series are I(1) processes, the ADF test indicates that the VAR model can estimate the full-sample causality of Equation (2). According to SIC, the optimum lag can be set to 2.

Furthermore, a full-sample causality test is conducted to verify the long-term causal relationships between the data, as shown in Table 3.

As illustrated in Table 3, there is no Granger causality between EPU and corporate fraud, which implies that the long-term relationship is unclear. Furthermore, the results indicate that analyst concern is the Granger cause of fraud incidents and fraud magnitude at the 1% level, suggesting that analyst concern is a leading indicator of fraud incidents and fraud magnitude. Similarly, investor sentiment is a leading indicator of EPU.

5.3. Parameter stability test

Since the parameters in the full-sample estimation would change over time (Cheng & Schwienbacher, 2016). Therefore, this study tests for parameter stability through *Sup-F*, *Mean-F*, *Exp-F* and L_c. The results are shown in Table 4.

As shown in Table 4, the *Sup-F* and *Exp-F* tests indicate that EPU, fraud incidents, fraud magnitude and VAR system evolve at the 1% level. Besides, the *Mean-F* test demonstrates abrupt changes in EPU, fraud magnitude, and VAR system at the 5% level, while fraud incidents at the 1% level. In addition, the L_c test suggests that the

Table 4. The results of parameter stability test.

Tests	EPU		Fraud incidents		Fraud magnitude		VAR system	
	Statistics	*p*-values	Statistics	*p*-values	Statistics	*p*-values	Statistics	*p*-values
Sup-F	21.294***	0.000	27.764***	0.001	19.921***	0.003	31.082***	0.002
Mean-F	12.781**	0.015	13.407***	0.000	11.390**	0.017	17.571**	0.011
Exp-F	7.974***	0.000	9.071***	0.000	9.610***	0.000	11.046***	0.000
L_c							9.605 ***	0.002

Notes: (1) We calculate *p*-values using 10,000 bootstrap repetitions.
(2) **and ***denote significance at the 5%, and 1% levels, respectively.
Source: Authors' calculation.

parameters in the VAR system follow a random walk process, which implies that the parameters are unstable throughout the sample period. Therefore, the parameter stability test illustrates significant instability properties between EPU and corporate fraud, which means that the bootstrap full-sample causality test results are unreliable due to structural changes in the underlying variables.

5.4. Bootstrap sub-sample rolling-window causality test

Based on these results, the bootstrap rolling window sub-sample causality test can be used to reassess the relationship between EPU and corporate fraud. By setting up 24 months as a fixed window width, the data are rolling continuously from January 2000 to June 2022. Thereby, the study finds that the causal relationship between EPU and corporate fraud across different sub-sample reflects unique variations in specific economic contexts, which differs from the existing literature (Carberry et al., 2018; Tessema & Rubbaniy, 2022). In this way, we can assess whether EPU impacts corporate fraud or vice versa. Furthermore, the results of the dynamic coefficients can reflect whether the two-way effect between EPU and corporate fraud is positive or negative.

5.5. Results and discussion

As can be seen in Figures 3 and 4, there is a positive correlation between EPU and fraud incidents during 2010:M6-2010:M12, 2015:M3-2016:M1 and 2022:M1-202:M6 at the 10% level, which indicates that higher or lower EPU is accompanied by either higher or lower fraud incidents.

In September 2010, the Basel III Accord illustrates the importance of financial security at the international level (Slovik & Cournède, 2011). Therefore, along with the improving international economic environment, China's export sector continued to recover. By December, the Central Economic Work Conference stated that the market mechanism should continue to be brought into play to accelerate economic restructuring. Therefore, the increasingly dynamic domestic and international economic environment has led to a positive trend in China's economy and a sharp decline in EPU. Besides, the transparent economic policy environment has given corporations confidence, resulting in an improved operating environment. Furthermore, the stability of the policy environment has increased the profitability of businesses, thus further reducing their willingness to commit fraud. Therefore, EPU and fraud incidents positively correlate in 2010:M6-2010:M12, which verifies hypothesis 1.
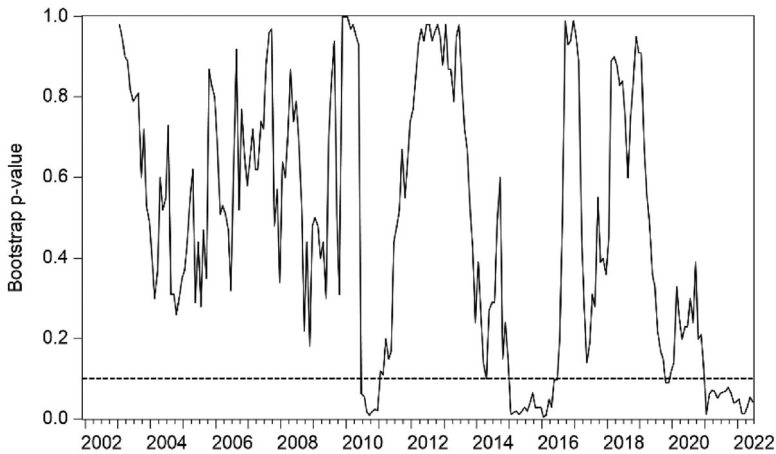
Figure 3. Bootstrap *p*-values rolling test statistic testing the null hypothesis that EPU does not Granger cause fraud incidents.
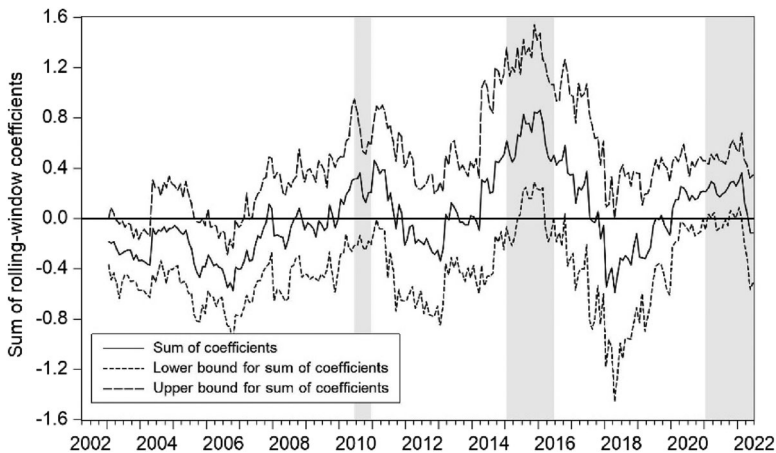Source: Authors' calculation.

Figure 4. Bootstrap estimates the sum of rolling-window coefficients for the impact of EPU on fraud incidents.
Source: Authors' calculation.

In March 2015, a series of policies indicate that an accommodative macro environment reduces the difficulty in judging the investment risk of banks (Fallon, 2015; Li, 2018; Liu, 2018). At this time, banks choose to expand credit, thus further reducing incentives to commit corporate fraud. However, while market irrationality makes the economy bright, it hides asset bubbles (Dong et al., 2020). Consequently, over 2000 stocks have fallen in late June. As the ultimate goal of monetary policy is currency stability, economic growth, and financial stability, the state has introduced a series of policies to respond (Fuqian, 2018; Miao & Wang, 2018). The targeting of different policies has led to potential conflicts in implementation, leading to increased uncertainty in the economic system. Consequently, some corporations resort to
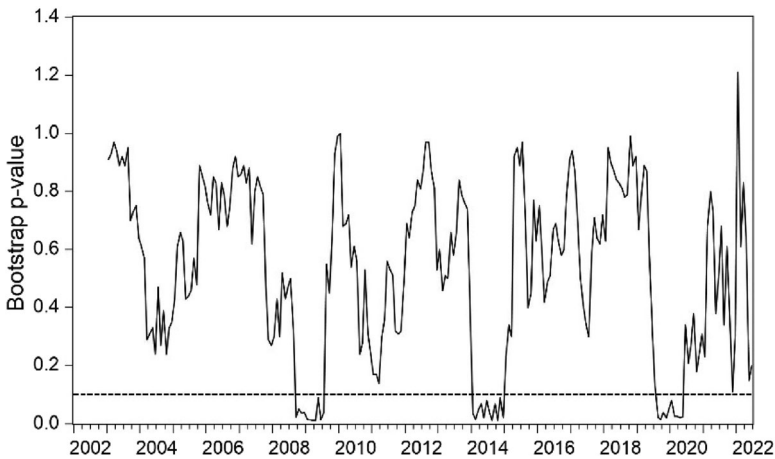
Figure 5. Bootstrap *p*-values rolling test statistic testing the null hypothesis that EPU does not Granger cause fraud magnitude.
Source: Authors' calculation.

various fraudulent means such as disclosure fraud, false disclosure, delayed disclosure, and insider, which illustrates the *Pressure* factor in the EPU-Fraud Triangle model. In addition, in June, A-share ushered in the peak of private placement unbundling, of which the market value of fixed income unbundling reached 65.8 billion yuan. However, we need to be alert to the harmful effects brought about by unbundling and this *Opportunity* factor has led to a substantial increase in fraud incidents. Thus, higher uncertainty drove more frauds during the period 2015:M7-2016:M6, reflecting the *Pressure* and *Opportunity* factors in the EPU-Fraud Triangle model and proving hypothesis 1.

By 2022, the Russian-Ukrainian War and epidemics impacted the domestic economy (Malchrzak et al., 2022; Pereira et al., 2022). Hence, EPU increases amidst the multiple pressures of the international environment and epidemic. Besides, under tremendous pressure to perform, the management believes it can maximize shareholders' and their interests by committing fraud and the number of frauds by the corporation would be higher (Dyck et al., 2021). Therefore, EPU and fraud incidents show a positive relationship during 2022:M1-2022:M6. In addition, many fraudsters believe that EPU leads to higher incidences of irrational behavior by investors, and the management would justify satisfying their selfish interests and committing fraud (Christian et al., 2019). These excuses make fraud consistent with the management's ethical beliefs, and fraud is set as rationalized, further validating the *Rationalization* factor of the EPU-Fraud Triangle model. Hence, the incentive to commit fraud increases in an uncertain environment, and fraud incidents are higher.

Figures 5 and 6 indicate EPU has positive causality within the period 2014:M1-2014:M12 and 2019:M8-2020:M5. However, there is a negative effect during 2008:M11-2009:M7.

In 2008, to hedge the impact of the financial crisis, the Chinese government proposed a *Four-Trillion investment Stimulus Package*, which demonstrates the determination and confidence of the government (Morrison, 2009). Moreover, in 2009, the
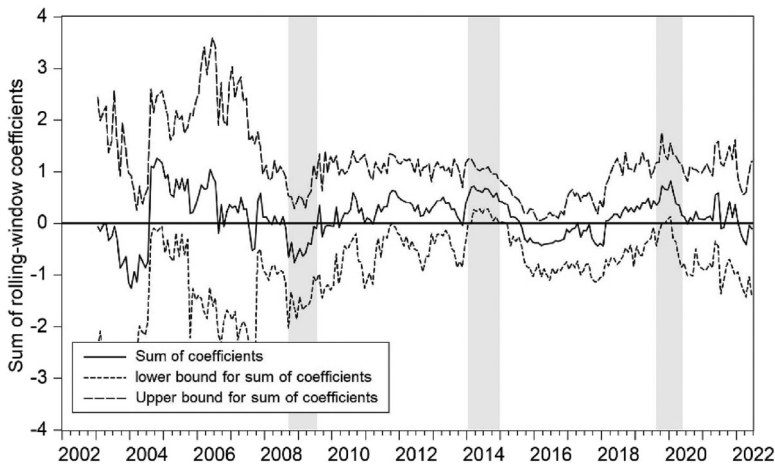
Figure 6. Bootstrap estimates the sum of rolling-window coefficients for the impact of EPU on fraud magnitude.
Source: Authors' calculation.

scale of tax cuts reached more than 550 billion yuan, which hedged the uncertainty brought about by the international financial crisis (Deng et al., 2020; Zheng et al., 2018). Additionally, the government continues to implement institutional tax cuts, which hedged the uncertainty and risk pressure, thus enhancing their confidence and reducing corporate fraud (Yagan, 2015). Therefore, a high-quality institutional environment could have discouraged corporate fraud during the high EPU period from 2008:M11-2009:M7.

In 2014, to cope with the downward pressure on the economy, the Chinese government adopted a series of proactive fiscal policies, which can stimulate the development of small and medium-sized corporations, adjust and optimize the structure of domestic demand, and support industrial restructuring (Marquis et al., 2015). Besides, the CSRC has launched the most stringent delisting mechanism in history, and published the *Employee Stock Ownership Plan* for listed corporations, making it impossible for corporations to commit serious fraud (Liu & Lee, 2019). As a result, the lower EPU in 2014:M1-2014:M12 has reduced the willingness of corporations to take risks, resulting in a decrease in fraud magnitude, which verifies hypothesis 2.

In August 2019, the U.S. has announced that a 10% tariff would be imposed on $300 billion of Chinese exports to the U.S. (Bown, 2019; Wall, 2020). In 2020, the World Health Organization (WHO) declared COVID-19 as a public health emergency of international concern, further increasing EPU (Gostin et al., 2020). Therefore, high EPU raises the financial and performance pressure on corporations, which in turn impacts decision-making behavior, validating the *Pressure* factor in the EPU-Fraud Triangle model. In addition, high EPU reduces the certainty of business expectations and provides an excuse for irresponsible misbehavior to pass the buck, which validates the *Rationalization* factor. As a result, fraud magnitude increases by high EPU during the period of 2019:M8-2020:M5, which proved hypothesis 2.

Figures 7 and 8 demonstrate the positive correlations of fraud incidents on EPU, during the period of 2004:M1-2004:M12 and 2022:M1-2022:M3.
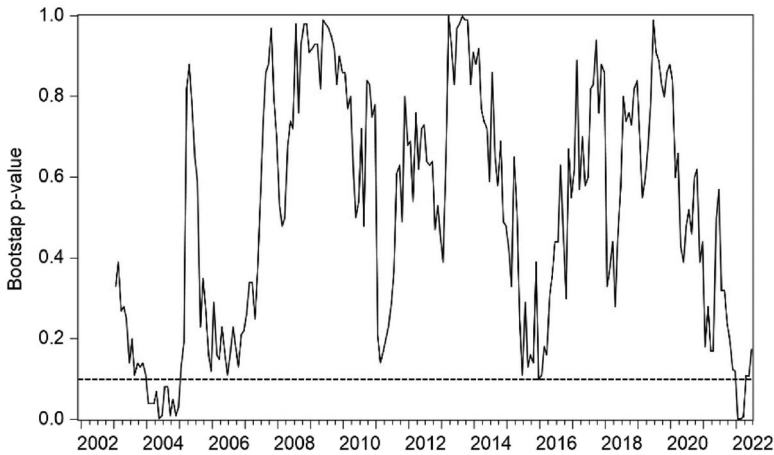
Figure 7. Bootstrap *p*-values rolling test statistic testing the null hypothesis that fraud incidents does not Granger cause EPU.
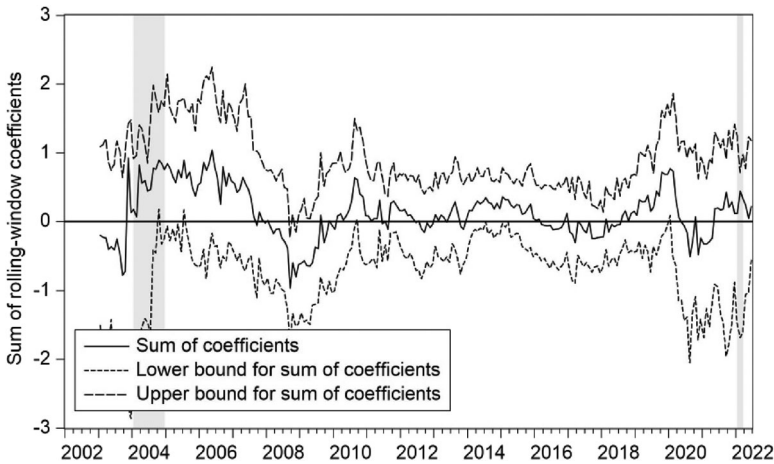Source: Authors' calculation.

Figure 8. Bootstrap estimates the sum of rolling-window coefficients for the impact of fraud incidents on EPU.
Source: Authors' calculation.

In January 2004, in response to the continuous downturn in the stock market, the State Council issues *Certain Opinions on Promoting the Reform, Opening and Stable Development of the Capital Market* (Wang et al., 2017). Furthermore, the legal and regulatory system is improved, which has enhanced market standardization. Therefore, the quality of annual reports improved, limiting the frequency and number of corporate fraud (Ika & Ghazali, 2012). Moreover, entrepreneur confidence fluctuates at a high level, with a marked increase in order intake. Consequently, corporate profitability continued to rise, further reducing the willingness to commit fraud. Besides, the reduction in fraud incidents confirms the effectiveness of the policy, which means that it has reduced the perception of EPU and helped to keep EPU at a
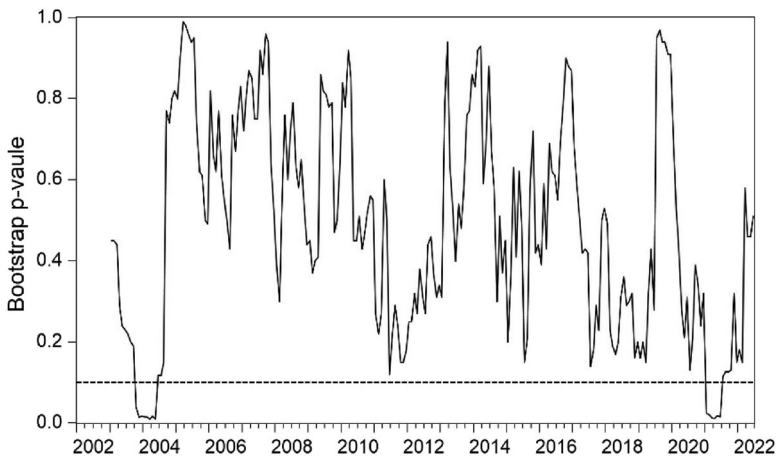
Figure 9. Bootstrap *p*-values rolling test statistic testing the null hypothesis that fraud magnitude does not Granger cause EPU.
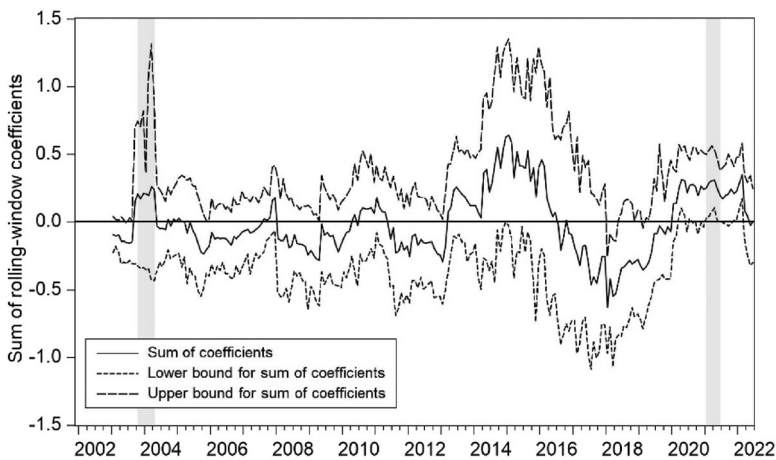Source: Authors' calculation.

Figure 10. Bootstrap estimates the sum of rolling-window coefficients for the impact of fraud magnitude on EPU.
Source: Authors' calculation.

low level (Lewis & Young, 2019). Hence, the fraud incidents and EPU shows a positive relationship during 2004:M1-2004:M12.

In 2022, the Omicron variant has spread globally, affecting corporate production activities. Besides, the Russia-Ukraine military conflict has led to geopolitical risk. A series of pressure impact international energy, commodities, foreign exchange and inflation (Yang et al., 2020). Therefore, corporations take risks in the form of fraud to maintain market demand and avoid the risk of default due to a break in the financial chain (Gornall & Strebulaev, 2018). Moreover, the duration and intensity of COVID-19 and the uncertainty of international disputes have led to an increase in fraud incidents, which has caused a rise in EPU. Thus, high fraud incidents result in high EPU during 2022:M1-2022:M3.

Furthermore, Figures 9 and 10 show that there have positive correlations between fraud magnitude and EPU over 2003:M10-2004:M4 and 2021:M1-2021:M6.

In 2004, the high intensity of regulatory policy has caused the management to fear the severity of the penalties for fraud and instead to regulate operations with discipline and reduce fraud incidents (Sawant, 2010; Malyshev, 2006). Moreover, the United Nations predicts that world economic growth would accelerate in 2004 due to low-interest rates and fiscal stimulus measures in the U.S., as well as China's growing role as a significant importer and exporter (Bernanke & Reinhart, 2004). Additionally, the International Monetary Fund (IMF) forecasts world GDP growth of 4.1% in 2004, 0.9% faster than in the same period in 2003 (Vreeland, 2006). Therefore, owing to macroeconomic stability and low fraud magnitude, the government maintains the existing policies to promote business activities with a low EPU index during 2003:M10-2004:M4.

In 2021, effective control of the pandemic has ushered in high export growth and a large trade surplus (Sun et al., 2022). Throughout April, China's exports amount to about $264 billion, up 32.3% year-on-year. However, the post-pandemic economic recovery has led to overconfidence and more corporate activity, such as initial public offerings, investments, debt financing and mergers & acquisitions (Zhao et al., 2022). Thereby, some corporations take advantage of the opportunity to maximize their profits through insider trading, illegal fundraising, and fraudulent management practices (Zhu et al., 2021). As a result, corporations engage in risky fraudulent operations that deviate from the policy in the process. Given the severe impact of fraud and adjusting the expectations of entrepreneurs, investors and the general public about the economy, various policies have been introduced to achieve different objectives (Logue & Grimes, 2022). Therefore, an increase in fraud magnitude leads to high EPU during 2021:M1-2021:M6.

6. Conclusion

The study uses a bootstrap rolling causality test to analyze EPU and corporate fraud. In addition, we propose an EPU-Fraud Triangle model to show that EPU influences corporate fraud by acting on *Pressure*, *Opportunity* and *Rationalization*. The empirical results show that there is a positive effect of EPU on fraud incidents and these positive relationships change with EPU. In particular, when EPU is high, it is difficult for the management to grasp the future trend of economic policies. Under more pressure to perform, corporations have a stronger incentive to commit fraud. However, EPU has both positive and negative effects on fraud magnitude. The negative impact is found to be the fact that although policies are issued frequently, however, these policies are consistent in orientation and objectives, which gives corporations confidence in goal-oriented policies and less incentive to commit fraud. In turn, fraud incidents and fraud magnitude positively relate to EPU. When fewer fraud incidents or fraud magnitude is low, corporations are restricted by regulation, thus the government does not need to introduce excessive policies to intervene in the economy, and the corresponding EPU is low.

6.1. Theoretical implications

We argue that EPU can increase the likelihood of corporations committing fraud by increasing *Pressure*, *Opportunity* and *Rationalization*. Accordingly, we propose the EPU-Fraud Triangle model. Not only does this theoretical model extend the original FTT, but it also analyzes the internal mechanism of corporate fraud in depth. Furthermore, we find that the two-way causal relationship between EPU and corporate fraud has positive as well as negative dynamic causal effects over time. As a result, this study presents a more credible conclusion than previous research paradigms available in the field. Moreover, by dividing corporate fraud into fraud incidents and fraud magnitude, the research on corporate fraud becomes more detailed on a theoretical level, as well as opening up a new theoretical research perspective, filling a gap in the existing literature.

6.2. Practical implications

Managers should fully consider the reaction of investors before committing fraud, and keep in mind that blind optimism and radicalism have irreversible consequences. In addition, the study found that fraud incidents and fraud magnitude affect EPU positively, thus managers should always pay attention to fraud behavior in other corporations. In light of this, managers should be aware of the policy shift in advance when it is found that market fraud is increasing and getting more serious over a period of time, in order to adjust production and operation strategies and ensure the corporation's stable development.

In order for government policymakers to make informed decisions, they must fully consider the root causes of fraud and clarify the extent of fraud in the current market. Due to the positive impacts EPU has on fraud incidents and fraud magnitude, it is recommended to reduce the frequency of policy releases. Occasionally, a higher EPU is negatively related to fraud magnitude. Therefore, it is necessary to combine the current international situation with market feedback at this point in time to determine the most appropriate policies. As a result, the macro economy can be kept operating smoothly by reducing the probability of financial risks.

It is critical for investors to remain aware of national policy trends when operating in the financial markets. As the government frequently issues policies to rectify and warn corporate fraud, it is necessary to be attentive to whether the corporation has the motivation to commit fraud, so that arrangements can be made in advance. Additionally, investors should always keep up with news and relevant websites such as the CSRC. There may be frequent or serious fraud incidents within a period of time, and investors should be aware that the government may issue a series of policies for strong supervision, so that they may withdraw from the market as soon as possible to minimize losses.

6.3. Limitations and future research directions

There is a lack of universality in this study since it only examines China, a developing country that is emerging. As a result of considerable differences in the level of

development as well as national systems, laws, and regulations in different countries, there is a significant variation in the motivation and behavior of corporations that commit fraud. Therefore, in order to make the research conclusions more universal, future research will further expand the research objects, and not only classify countries by different levels of development, but also classify countries based on their institutions and cultures. Moreover, EPU can affect fraud through FTT, and there are likely to be other mediating variables. In light of the length of the article, we will not discuss it in more detail here. Consequently, we will further explore the influence of mediating variables (such as analyst concern and investor sentiment) in future research to learn more about the internal mechanism of EPU and corporate fraud. Moreover, we use artificial statistics and empowerment to measure fraud incidents and fraud magnitude, resulting in an overly absolute evaluation. We may measure the indicators in the future with interviews, questionnaires or other methods (such as the entropy weight analytic hierarchy process), so as to avoid too subjective and too objective problems.

Note

1. http://www.policyuncertainty.com/scmp_monthly.html

Disclosure statement

There are no competing or conflicts of interest to declare.

References

Amiram, D., Bozanic, Z., Cox, J. D., Dupont, Q., Karpoff, J. M., & Sloan, R. (2018). Financial reporting fraud and other forms of misconduct: A multidisciplinary review of the literature. *Review of Accounting Studies*, 23(2), 732–783. https://doi.org/10.1007/s11142-017-9435-x

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

Baker, M., Wurgler, J., & Yuan, Y. (2012). Global, local, and contagious investor sentiment. *Journal of Financial Economics*, 104(2), 272–287. https://doi.org/10.1016/j.jfineco.2011.11.002

Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. *The Quarterly Journal of Economics*, 131(4), 1593–1636. https://doi.org/10.1093/qje/qjw024

Balcilar, M., Ozdemir, Z. A., & Arslanturk, Y. (2010). Economic growth and energy consumption causal nexus viewed through a bootstrap rolling window. *Energy Economics*, 32(6), 1398–1410. https://doi.org/10.1016/j.eneco.2010.05.015

Balcilar, M., Gupta, R., & Segnon, M. (2016). The role of economic policy uncertainty in predicting US recessions: A mixed-frequency Markov-switching vector autoregressive approach. *Economics*, 10(1), 1–18. https://doi.org/10.5018/economics-ejournal.ja.2016-27

Beladi, H., Deng, J., & Hu, M. (2021). Cash flow uncertainty, financial constraints and R&D investment. *International Review of Financial Analysis*, 76, 101785. https://doi.org/10.1016/j.irfa.2021.101785

Berger, A. N., Guedhami, O., Kim, H. H., & Li, X. (2018). Economic policy uncertainty and bank liquidity creation. *Journal of Banking and Finance, 87*, 386–396.

Bernanke, B. S., & Reinhart, V. R. (2004). Conducting monetary policy at very low short-term interest rates. *American Economic Review*, 94(2), 85–90. https://doi.org/10.1257/0002828041302118

Bhattacharya, U., Hsu, P. H., Tian, X., & Xu, Y. (2017). What affects innovation more: Policy or policy uncertainty? *Journal of Financial and Quantitative Analysis*, *52*(5), 1869–1901. https://doi.org/10.1017/S0022109017000540

Bierey, M., & Schmidt, M. (2017). What drives the consequences of intentional misstatements? Evidence from rating analysts' reactions. *Journal of Business Finance & Accounting*, *44*(1–2), 295–333. https://doi.org/10.1111/jbfa.12229

Bown, C. P. (2019). US-China trade war: The guns of August. *Trade and Investment Policy Watch*, *20*, 1–6.

Brogaard, J., & Detzel, A. (2015). The asset-pricing implications of government economic policy uncertainty. *Management Science*, *61*(1), 3–18. https://doi.org/10.1287/mnsc.2014.2044

Carberry, E. J., Engelen, P. J., & Van Essen, M. (2018). Which firms get punished for unethical behavior? Explaining variation in stock market reactions to corporate misconduct. *Business Ethics Quarterly*, *28*(2), 119–151. https://doi.org/10.1017/beq.2017.46

Chen, Y., Chen, D., Wang, W., & Zheng, D. (2018). Political uncertainty and firms' information environment: Evidence from China. *Journal of Accounting and Public Policy*, *37*(1), 39–64.

Cheng, C., & Schwienbacher, A. (2016). Venture capital investors and foreign listing choices of Chinese companies. *Emerging Markets Review*, *29*, 42–67.

Christian, N., Basri, Y. Z., & Arafah, W. (2019). Analysis of fraud pentagon to detecting corporate fraud in Indonesia. *International Journal of Economics, Business and Management Research*, *3*(8), 123–129.

Chu, J., & Fang, J. (2020). Economic policy uncertainty and firms' labor investment decision. *China Finance Review International*, *11*(1), 73–91.

Cole, R., Johan, S., & Schweizer, D. (2021). Corporate failures: Declines, collapses, and scandals. *Journal of Corporate Finance*, *67*, 101872.

Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management*, *37*(1), 39–67.

Cressey, D. R. (1953). Other people's money; a study of the social psychology of embezzlement.

Cui, X., Wang, C., Liao, J., Fang, Z., & Cheng, F. (2021). Economic policy uncertainty exposure and corporate innovation investment: Evidence from China. *Pacific-Basin Finance Journal*, *67*, 101533.

Cui, X., Yao, S., Fang, Z., & Wang, H. (2021). Economic policy uncertainty exposure and earnings management: Evidence from China. *Accounting & Finance*, *61*(3), 3937–3976.

Demir, E., & Ersan, O. (2017). Economic policy uncertainty and cash holdings: Evidence from BRIC countries. *Emerging Markets Review*, *33*, 189–200.

Deng, L., Jiang, P., Li, S., & Liao, M. (2020). Government intervention and firm investment. *Journal of Corporate Finance*, *63*, 101231.

Dhole, S., Liu, L., Lobo, G. J., & Mishra, S. (2021). Economic policy uncertainty and financial statement comparability. *Journal of Accounting and Public Policy*, *40*(1), 106800.

Dong, F., Miao, J., & Wang, P. (2020). Asset bubbles and monetary policy. *Review of Economic Dynamics*, *37*, S68–S98.

Dong, H., Liu, Y., & Chang, J. (2019). The heterogeneous linkage of economic policy uncertainty and oil return risks. *Green Finance*, *1*, 46–66.

Dou, Y., Li, Y., Dong, K., & Ren, X. (2022). Dynamic linkages between economic policy uncertainty and the carbon futures market: Does COVID-19 pandemic matter? *Resources Policy*, *75*, 102455.

Dyck, I. J., Morse, A., & Zingales, L. (2021). How pervasive is corporate fraud? *Journal of Financial Economics*, *141*(1), 1–16. Rotman School of Management Working Paper, (2222608).

El Ghoul, S., Guedhami, O., Kim, Y., & Yoon, H. J. (2021). Policy uncertainty and accounting quality. *The Accounting Review*, *96*(4), 233–260.

Fallon, T. (2015). The new silk road: Xi Jinping's grand strategy for Eurasia. *American Foreign Policy Interests*, *37*(3), 140–147.

Free, C., & Murphy, P. R. (2015). The ties that bind: The decision to co-offend in fraud. *Contemporary Accounting Research*, *32*(1), 18–54.

Fuqian, F. (2018). Seeking the theoretical origins of supply-side structural reform. *Social Sciences in China*, *39*(4), 37–52.

Gao, Y., & Yang, H. (2021). Does ownership matter? Firm ownership and corporate illegality in China. *Journal of Business Ethics*, *168*(2), 431–445.

Gornall, W., & Strebulaev, I. A. (2018). Financing as a supply chain: The capital structure of banks and borrowers. *Journal of Financial Economics*, *129*(3), 510–530.

Gostin, L. O., Friedman, E. A., & Wetter, S. A. (2020). Responding to COVID-19: How to navigate a public health emergency legally and ethically. *Hastings Center Report*, *50*(2), 8–12.

Gulen, H., & Ion, M. (2016). Policy uncertainty and corporate investment. *The Review of Financial Studies*, *29*(3), 523–564.

Habib, A., & Jiang, H. (2015). Corporate governance and financial reporting quality in China: A survey of recent evidence. *Journal of International Accounting, Auditing and Taxation*, *24*, 29–45.

Hanson, S. G., Kashyap, A. K., & Stein, J. C. (2011). A macroprudential approach to financial regulation. *Journal of Economic Perspectives*, *25*(1), 3–28.

Harford, J., Klasa, S., & Maxwell, W. F. (2014). Refinancing risk and cash holdings. *The Journal of Finance*, *69*(3), 975–1012.

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, *31*(1–3), 405–440.

Hersel, M. C., Gangloff, K. A., & Shropshire, C. (2022). Mixed messages: Crisis communication-dismissal (in)coherence and shareholder trust following misconduct. *Academy of Management Journal*, *65*(1), 170–191.

Ika, S. R., & Ghazali, N. A. M. (2012). Audit committee effectiveness and timeliness of reporting: Indonesian evidence. *Managerial Auditing Journal*, *27*(6), 539–562.

Im, H. J., Park, H., & Zhao, G. (2017). Uncertainty and the value of cash holdings. *Economics Letters*, *155*, 43–48.

Jackson, G., Bartosch, J., Avetisyan, E., Kinderman, D., & Knudsen, J. S. (2020). Mandatory non-financial disclosure and its influence on CSR: An international comparison. *Journal of Business Ethics*, *162*(2), 323–342.

Julio, B., & Yook, Y. (2012). Political uncertainty and corporate investment cycles. *The Journal of Finance*, *67*(1), 45–83.

Kim, H., & Kung, H. (2017). The asset redeployability channel: How uncertainty affects corporate investment. *The Review of Financial Studies*, *30*(1), 245–280.

Lee, C. C., Lee, C. C., & Xiao, S. (2021). Policy-related risk and corporate financing behavior: Evidence from China's listed companies. *Economic Modelling*, *94*, 539–547.

Lewis, C., & Young, S. (2019). Fad or future? Automated analysis of financial text and its implications for corporate reporting. *Accounting and Business Research*, *49*(5), 587–615.

Liao, J., Smith, D., & Liu, X. (2019). Female CFOs and accounting fraud: Evidence from China. *Pacific-Basin Finance Journal*, *53*, 449–463.

Li, L. (2018). China's manufacturing locus in 2025: With a comparison of "Made-in-China 2025" and "Industry 4.0. *Technological Forecasting and Social Change*, *135*, 66–74.

Liu, H., & Lee, H. A. (2019). The effect of corporate social responsibility on earnings management and tax avoidance in Chinese listed companies. *International Journal of Accounting & Information Management*, *27*(1), 2–19.

Liu, K. (2018). Chinese manufacturing in the shadow of the China–US trade war. *Economic Affairs*, *38*(3), 307–324.

Logue, D., & Grimes, M. (2022). Living up to the hype: How new ventures manage the resource and liability of future-oriented visions within the nascent market of impact investing. *Academy of Management Journal*, *65*(3), 1055–1082.

Lu, Y., & Shi, X. (2012). Corporate governance reform and state ownership: Evidence from China. *Asia-Pacific Journal of Financial Studies*, *41*(6), 665–685.

Luo, X., Wang, H., Raithel, S., & Zheng, Q. (2015). Corporate social performance, analyst stock recommendations, and firm future returns. *Strategic Management Journal*, *36*(1), 123–136.

Luo, Y., & Zhang, C. (2020). Economic policy uncertainty and stock price crash risk. *Research in International Business and Finance*, *51*, 101112.

Lyandres, E., & Palazzo, B. (2016). Cash holdings, competition, and innovation. *Journal of Financial and Quantitative Analysis*, *51*(6), 1823–1861.

Malchrzak, W., Babicki, M., Pokorna-Kałwak, D., Doniec, Z., & Mastalerz-Migas, A. (2022). COVID-19 vaccination and Ukrainian refugees in Poland during Russian–Ukrainian war—Narrative review. *Vaccines*, *10*(6), 955.

Malyshev, N. (2006). Regulatory policy: OECD experience and evidence. *Oxford Review of Economic Policy*, *22*(2), 274–299.

Marquis, C., Jackson, S. E., & Li, Y. (2015). Building sustainable organizations in China. *Management and Organization Review*, *11*(3), 427–440.

McKendall, M. A., & Wagner, J. A. III, (1997). Motive, opportunity, choice, and corporate illegality. *Organization Science*, *8*(6), 624–647.

Miao, J., & Wang, P. (2018). Asset bubbles and credit constraints. *American Economic Review*, *108*(9), 2590–2628.

Mishina, Y., Dykes, B. J., Block, E. S., & Pollock, T. G. (2010). Why "good" firms do bad things: The effects of high aspirations, high expectations, and prominence on the incidence of corporate illegality. *Academy of Management Journal*, *53*(4), 701–722.

Morrison, W. M. (2009). *China and the global financial crisis: Implications for the United States*. Library of Congress Washington DC Congressional Research Service.

Mosconi, R., & Giannini, C. (1992). Non-causality in cointegrated systems: Representation estimation and testing. *Oxford Bulletin of Economics and Statistics*, *54*(3), 399–417.

Nguyen, N. H., & Phan, H. V. (2017). Policy uncertainty and mergers and acquisitions. *Journal of Financial and Quantitative Analysis*, *52*(2), 613–644.

Pereira, P., Bašić, F., Bogunovic, I., & Barcelo, D. (2022). Russian-Ukrainian war impacts the total environment. *Science of the Total Environment*, *808*, 155865.

Pervaiz, J., Qu, B., & Masih, J. (2022). Venture capital, enterprise performance and accounting information quality-GEM listed companies of China. *Frontiers in Management and Business*, *3*(2), 199–206.

Petry, J. (2020). Financialization with Chinese characteristics? Exchanges, control and capital markets in authoritarian capitalism. *Economy and Society*, *49*(2), 213–238.

Phan, H. V., Nguyen, N. H., Nguyen, H. T., & Hegde, S. (2019). Policy uncertainty and firm cash holdings. *Journal of Business Research*, *95*, 71–82.

Phuong, N. C., Nguyen, T. D. K., & Vu, H. P. (2020). Politics and institution of corporate governance in Vietnamese state-owned enterprises. *Managerial Auditing Journal*, *35*(5), 667–684.

Ren, Y., Guo, Q., Zhu, H., & Ying, W. (2020). The effects of economic policy uncertainty on China's economy: Evidence from time-varying parameter FAVAR. *Applied Economics*, *52*(29), 3167–3185.

Rizwan, S., Ahmed, J., & Rasiah, R. (2018). The devil made me do it: Environmental factors leading to corporate financial fraud. *Journal of Managerial Sciences*, *11*(3), 321–353.

Sawant, R. J. (2010). Emerging market infrastructure project bonds: Their risks and returns. *The Journal of Structured Finance*, *15*(4), 75–83.

Scott, A., & Nyaga, G. N. (2019). The effect of firm size, asset ownership, and market prices on regulatory violations. *Journal of Operations Management*, *65*(7), 685–709.

Shukur, G., & Mantalos, P. (2000). A simple investigation of the Granger-causality test in integrated-cointegrated VAR systems. *Journal of Applied Statistics*, *27*(8), 1021–1031.

Slovik, P., & Cournède, B. (2011). Macroeconomic impact of Basel III.

Spence, M. (1978). Job market signaling. In *Uncertainty in economics* (pp. 281–306). Academic Press.

Sun, T., Zhang, W. W., Dinca, M. S., & Raza, M. (2022). Determining the impact of COVID-19 on the business norms and performance of SMEs in China. *Economic Research-Ekonomska Istraživanja*, *35*(1), 2234–2253.

Tessema, A., & Rubbaniy, G. (2022). Investors' responses to macroeconomic news: The role of mandatory derivatives and hedging activities disclosure. *International Journal of Managerial Finance*, *18*(1), 55–71.

Toda, H. Y., & Phillips, P. C. (1994). Vector autoregression and causality: A theoretical overview and simulation study. *Econometric Reviews*, *13*(2), 259–285.

Tran, Q. T. (2020). Corruption and corporate risk-taking: Evidence from emerging markets. *International Journal of Emerging Markets*, *15*(2), 372–387.

Tran, Q. T. (2019). Economic policy uncertainty and corporate risk-taking: International evidence. *Journal of Multinational Financial Management*, *52*, 100605.

Trompeter, G. M., Carpenter, T. D., Desai, N., Jones, K. L., & Riley, R. A. Jr, (2013). A synthesis of fraud-related research. *Auditing: A Journal of Practice & Theory*, *32*(Supplement 1), 287–321.

Velikonja, U. (2012). The cost of securities fraud. *Wm. & Mary L. Rev*, *54*, 1887.

Vreeland, J. R. (2006). *The International Monetary Fund (IMF): Politics of conditional lending*. Routledge.

Wall, S. (2020). *Reluctant European: Britain and the European Union from 1945 to Brexit*. Oxford University Press.

Wang, C., Strauss, J., & Zheng, L. (2021). High-speed railway opening and corporate fraud. *Sustainability*, *13*(23), 13465.

Wang, Y. C., Tsai, J. J., & Li, Q. (2017). Policy impact on the Chinese stock market: From the 1994 bailout policies to the 2015 Shanghai-Hong Kong stock connect. *International Journal of Financial Studies*, *5*(1), 4.

Wei, Y., Zheng, N., Liu, X., & Lu, J. (2014). Expanding to outward foreign direct investment or not? A multi-dimensional analysis of entry mode transformation of Chinese private exporting firms. *International Business Review*, *23*(2), 356–370.

Wen, F., Li, C., Sha, H., & Shao, L. (2021). How does economic policy uncertainty affect corporate risk-taking? Evidence from China. *Finance Research Letters*, *41*, 101840.

Wong, J. B., & Zhang, Q. (2022). Stock market reactions to adverse ESG disclosure via media channels. *The British Accounting Review*, *54*(1), 101045.

Xu, Y., Zhang, L., & Chen, H. (2018). Board age and corporate financial fraud: An interactionist view. *Long Range Planning*, *51*(6), 815–830.

Yagan, D. (2015). Capital tax reform and the real economy: The effects of the 2003 dividend tax cut. *American Economic Review*, *105*(12), 3531–3563.

Yang, B., Pu, Y., & Su, Y. (2020). The financialization of Chinese commodity markets. *Finance Research Letters*, *34*, 101438.

Yiu, D. W., Wan, W. P., & Xu, Y. (2019). Alternative governance and corporate financial fraud in transition economies: Evidence from China. *Journal of Management*, *45*(7), 2685–2720.

Zaki, N. M. (2017). The appropriateness of fraud triangle and diamond models in assessing the likelihood of fraudulent financial statements-an empirical study on firms listed in the Egyptian Stock Exchange. *International Journal of Social Science and Economic Research*, *2*(2), 2403–2433.

Zhang, J., Wang, J., & Kong, D. (2020). Employee treatment and corporate fraud. *Economic Modelling*, *85*, 325–334.

Zhang, J. (2018). Public governance and corporate fraud: Evidence from the recent anti-corruption campaign in China. *Journal of Business Ethics*, *148*(2), 375–396.

Zhang, Y., Zhang, Y., & Yao, T. (2022). Fraudulent financial reporting in China: Evidence from corporate renaming. *Journal of Contemporary Accounting & Economics*, *18*(1), 100283.

Zhao, W., Yin, C., Hua, T., Meadows, M. E., Li, Y., Liu, Y., … Fu, B. (2022). Achieving the sustainable development goals in the post-pandemic era. *Humanities and Social Sciences Communications*, *9*(1), 1–7.

Zheng, G., Wang, S., & Xu, Y. (2018). Monetary stimulation, bank relationship and innovation: Evidence from China. *Journal of Banking & Finance*, *89*, 237–248.

Zhong, X., Ren, L., & Song, T. (2021). Different effects of internal and external tournament incentives on corporate financial misconduct: Evidence from China. *Journal of Business Research*, *134*, 329–341.

Zhou, F., Zhang, Z., Yang, J., Su, Y., & An, Y. (2018). Delisting pressure, executive compensation, and corporate fraud: Evidence from China. *Pacific-Basin Finance Journal*, *48*, 17–34.

Zhu, X., Ao, X., Qin, Z., Chang, Y., Liu, Y., He, Q., & Li, J. (2021). Intelligent financial fraud detection practices in post-pandemic era. *The Innovation*, *2*(4), 100176.