

The Impact of EPU on Firm-Level Stock Return Volatility: Evidence from U.S. Firms

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ABSTRACT

This paper analyzes the link between economic policy uncertainty (EPU) and firm-level stock return volatility in the U.S. equity market. The sample contains 60 publicly listed U.S. firms observed annually from 2010 to 2025. Firm volatility is measured from daily stock returns and then annualized, while annual EPU is calculated from monthly EPU index values. The regression analysis applies firm fixed-effects models and uses standard errors clustered by firm. The raw data show that years with higher EPU are generally matched with higher average firm-level volatility. After controlling for firm characteristics and market return, the baseline model does not show a statistically significant direct EPU coefficient. Leverage remains positively related to volatility across the specifications, and market return remains negatively related to volatility. The leverage interaction model shows that the EPU-volatility relationship changes with firm leverage. The evidence suggests that firm-level stock volatility is linked to policy uncertainty, financial structure, and market conditions.

Keywords: EPU; Stock return volatility; Firm fixed effects; Leverage; U.S. firms

1. INTRODUCTION

EPU has become an important source of risk for firms and financial markets. Changes in government policy, fiscal policy, monetary policy, regulation, taxation, and trade policy can affect investor expectations and firm decision-making. When policy uncertainty increases, investors may become less confident about future economic conditions, and firms may face greater difficulty in planning investment, financing, and operations. As a result, EPU may be associated with higher stock return volatility.

Previous studies have shown that EPU will affect corporate behavior and financial markets. The EPU index developed by Baker et al. is a widely used standard to measure economic uncertainty related to policies^[1]. Gulen and Ion said that policy uncertainty is related to reducing enterprise investment, and uncertainty will affect the decision of each company^[2]. Wang et al. also said that EPU will affect the investment behavior of enterprises^[3]. In the financial market, Liu and Zhang provide evidence that EPU is related to the fierce fluctuation of stock market price^[4]. These studies tell us that EPU affects not only the actual enterprise decision, but also the market list. The influence of EPU is different in all companies. The size of the company and the characteristics of the company such as leverage will affect how strongly the company reacts to the uncertainty at the macro level. Large companies have several businesses and are easy to obtain funds, but companies with high leverage are easy to face financial risks. Rajan and Zingales said that the characteristics of companies such as scale and leverage are very important to explain the financial structure of enterprises^[5]. This shows that these values are also important when studying the risks of each company.

This study uses the firm-year panel dataset of 60 listed companies in the United States from 2010 to 2025 to investigate the relationship between EPU and stock return volatility of each company. The dependent variable is the stock return volatility in a year, which is calculated according to the daily stock return. The main explanation variable is the annual EPU, and the monthly EPU value is made according to the annual average. Control variables include firm size, leverage and annual market return. The empirical analysis uses firm fixed-effects regressions, which clusters standard errors at the company level.

The main research question is, the higher the EPU, will the stock return volatility of each company be higher? This study will further investigate whether the characteristics of the company will adjust this relationship. In particular, test whether the relationship between EPU and volatility varies with firm size or leverage.

It can be seen from the actual results that the relationship between EPU and the change rate of enterprises is not the same, but changes according to conditions. From the descriptive data, there is a positive relationship between EPU in one year and the average stock price volatility of enterprises. However, in the basic fixed effect model, after adjusting enterprise characteristics, enterprise fixed effect and market profit rate, the EPU of one year is not statistically significant. Leverage has always been positive in any model and statistically significant. The market profit rate has always been negative, which is statistically significant. In another interaction model, EPU is positively correlated with volatility, and the interaction between EPU and Leverage is negative and statistically significant. These results show that the financial structure of enterprises plays an important role in explaining the volatility of stock profits under policy uncertainty.

This study not only extends the research of EPU to aggregate market volatility and corporate investment, but also extends it to the stock return volatility of firm level, which is helpful to the research in related fields. In addition, taking firm size and leverage as the factors affecting the change, we investigate whether there are different influences. The results show that the impact of policy uncertainty on Firms' risks depends on the financial characteristics of some Firms.

2. LITERATURE REVIEW

2.1 EPU and Its Measurement

EPU has become an important idea in empirical research. Why do you say this is because you can capture the uncertainty about the future government policy and its impact on the economy. Baker et al. laid the foundation for the research in this field and established epu index ^[1]. Their index turns policy uncertainty into a visible number that can be used in intellectual analysis. However, EPU index is an important indicator of the whole country, which will change with time, but it will not change between companies in the same year. As a result, this index cannot directly capture the different ways in which each company accepts policy uncertainty. This deficiency is the reason for using the characteristics of each company in this study. This paper combines EPU, size and leverage to investigate whether the relationship between policy uncertainty and stock return volatility varies from company to company.

Mr. Kaveh-Yazdy and Mr. Zarifzadeh summarized the main methods of measuring EPU. These include financial-parameter-based measures, text-based measures and miscellaneous measures ^[6]. They concluded that EPU has been widely used in the research of economic and financial by using the measurement method of news, ^[1] especially the index of Baker et al. They also pointed out that the way of using keywords to measure EPU is easily influenced by the choice of keywords, media reports and language-specific problems ^[6]. This is related to this study. Because the annual EPU value used here is obtained from EPU website, it was originally based on the policy uncertainty index of news produced by ^[1] Baker et al.

2.2 EPU and Firm-Level Corporate Behavior

A large number of studies show that policy uncertainty will affect the company's decision. Gulen and Ion studied the influence of Policy Independency on enterprise investment, and found that there was a strong negative correlation between Policy Independency and company-level capital investment ^[2]. Their research also shows that the impact of policy uncertainty varies from company to company, and the more difficult it is for companies to recover their investment or rely heavily on government spending, the greater the impact ^[2]. This discovery has a deep relationship with our research this time. Because it shows that the macro-level policy uncertainty will affect the company-level results, and the influence intensity of each company may be different.

Wang et al. gave similar evidence using companies listed in China ^[3]. They found that EPU had a bad relationship with the company's investment. Their research further shows that the company's characteristics such as the ability to prepare money and ownership structure can adjust the influence of policy instability ^[3]. Their analysis focuses on the company's investment rather than the fluctuation of stock price, but they also prove that the instability of national policies will affect the company's behavior, and this influence may vary from company to company. This supports the motivation of this study. In other words, investigate whether the characteristics of the company will form the relationship between EPU and stock price changes at the company level.

2.3 EPU and Stock Market Volatility

The uncertainty of Policy will also affect financial markets by changing investors' expectations, the risk of thinking and the value of future money. Liu and Zhang checked whether EPU can predict the change of stock market ^[4]. Based on the data of high-frequency S&P 500, it is found that the higher the EPU, the greater the market volatility and the stronger the

ability to predict out-of-sample volatility^[4]. Their research gives direct evidence that EPU is closely related to stock market risk. However, their analysis focuses on changes in the overall market, not changes in each company. This paper will broaden their thinking, investigate the change of stock return of each company, and try whether the company characteristics such as size and leverage will change the relationship between EPU and change.

Bouoiyour and Selmi investigated the influence of political uncertainty surrounding the 2016 U.S. presidential election on U.S. stock markets^[7]. Using the event research method, they said that the market reaction varies from industry to industry. Some industries benefited from the results of this election, while others were adversely affected^[7]. Their research focuses on the abnormal returns in the short term, rather than the fluctuations of enterprises, but they prove that political and policy uncertainty will affect the trend of the stock market, and the impact may be different in each market part. This supports the view that uncertainty does not have the same impact on all enterprises and industries.

2.4 Firm Characteristics and Heterogeneous Effects

The characteristics of the company are very important. Because even if the same macroeconomic uncertainty shock comes, each company will respond in different ways. Rajan and Zingales provided important evidence of the correlation between capital structure and corporate characteristic system in major industrial standards^[5]. Their research shows that leverage is not only accounting measure, but also reflects a wide range of financing options and financial structure at the company level^[5]. Drawing on this view, this paper uses leverage as an important corporate feature to investigate whether companies with different financial structure will respond differently to EPU.

The size of Firm is also related to understanding that the response to policy uncertainty varies from company to company. Big Firm are easy to use capital markets, and divide their businesses into many categories, so they have a strong ability to resist the impact of macroeconomic. On the other hand, young Firm have great restrictions on money and are sensitive to uncertainty. Therefore, in order to investigate whether the influence of EPU on stock return volatility varies from company to company, this study takes firm size and leverage as the characteristics of each company. In this way, the paper connects the research literature of EPU with the research literature of capital structure and firm heterogeneity.

3. DATA AND VARIABLES

3.1 Data Sources

This study uses 60 firm-year panel dataset of U.S. firms from 2010 to 2025. There are 960 firm-year observations in the original panel data, and each observation represents one year's data of a firm.

The main explanatory variable is EPU index, which is obtained from EPU web-site. Although this data can be downloaded directly from website, this index was originally produced by Baker et al. and was based on newspaper reports about the economic uncertainty of policies^[1].

The daily stock closing price of each company is taken from Bloomberg. Use this daily closing price to calculate the daily stock return and the change of stock return in one year. We also collect accounting data from Bloomberg, such as total assets and total loans. Use these accounting values to make the size and leverage of the company. Use the data from FRED's S&P 500 index to investigate the overall market yield.

3.2 Variable Construction

The dependent variable is annualized stock return volatility. Daily stock returns are calculated from Bloomberg daily closing prices:

$$Return_{i,d} = \frac{Close_{i,d} - Close_{i,d-1}}{Close_{i,d-1}} \quad (1)$$

where $Close_{i,d}$ is the closing price of firm i on trading day d . Annualized stock return volatility is then calculated as the standard deviation of daily stock returns within each year multiplied by the square root of 252:

$$Volatility_{i,t} = SD(Return_{i,d}) \times \sqrt{252} \quad (2)$$

where t represents the year. This variable measures the annual stock return risk of each firm. A higher value indicates greater uncertainty in the firm's stock price movements.

The main independent variable is annual EPU. Monthly EPU values are converted into annual values by taking the average within each year:

$$EPU_t = \frac{1}{12} \sum_{m=1}^{12} EPU_{t,m} \quad (3)$$

Since EPU is a macro-level measure, all firms in the same year share the same EPU value. Firm size is measured as the natural logarithm of total assets:

$$Size_{i,t} = \ln(TotalAssets_{i,t}) \quad (4)$$

This variable controls for differences in firm scale. The larger a firm is, the more likely it is to have diversified operations and better access to capital markets.

Leverage is measured as total debt divided by total assets:

$$Leverage_{i,t} = \frac{TotalDebt_{i,t}}{TotalAssets_{i,t}} \quad (5)$$

This variable captures the firm's financial structure and debt exposure. A higher leverage ratio indicates that a firm relies more heavily on debt financing.

Market return is measured as the annual return of the S&P 500 index:

$$MarketReturn_t = \frac{Index_{x_t} - Index_{x_{t-1}}}{Index_{x_{t-1}}} \quad (6)$$

This variable is included to control for broad market conditions that may affect firm-level stock volatility.

3.3 Summary Statistics

Table 1 shows the basic statistics of the main variables used in the analysis. The average annual stock return volatility is 0.233, and the standard deviation is 0.112. This shows that the risk of the company's stock is very different in every company and year. The average annual EPU index is 146.769, with a value between 87.056 and 261.896. This shows that the policy uncertainty has changed greatly during the period under investigation.

Firm size has a mean of 11.671, while the average leverage ratio is 0.291. The leverage variable ranges from 0 to approximately 1, showing that firms in the sample differ substantially in their debt exposure. The mean annual market return is 0.116, with a minimum of -0.216 and a maximum of 0.259. The summary statistics indicate that the dataset contains meaningful variation in both macro-level uncertainty and firm-level financial characteristics.

Table 1. Descriptive Statistics

Variable	Mean	SD	Min	Max
Annualized stock volatility	0.233	0.112	0.064	1.031
Annual EPU	146.769	46.428	87.056	261.896
Size	11.671	1.275	6.989	15.303
Leverage	0.291	0.168	0.000	1.001
Market return	0.116	0.126	-0.216	0.259

Notes: Size is measured as the natural logarithm of total assets. Leverage is measured as total debt divided by total assets. Market return is the annual S&P 500 return.

4. METHODOLOGY

In this study, we use firm fixed-effects panel regression models to investigate the relationship between EPU and stock price changes. Like the panel-data specification logic mentioned in Hausman, this study uses firm fixed effects to adjust the company differences that do not seem to change over time^[8]. This method is correct. Because the characteristics of invisible companies may be related to the size and the value of each company such as leverage. EPU will only change year

by year and will be absorbed by year fixed effects, so it will not add the fixed effect of year. On the contrary, the model uses the annual s&p 500 market return to adjust the broad market situation.

The baseline model is specified as follows:

$$Volatility_{i,t} = \beta_0 + \beta_1 EPU_t + \beta_2 Size_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 MarketReturn_t + \beta_5 (EPU_t \times Size_{i,t}) + \alpha_i + \epsilon_{i,t} \quad (7)$$

where $Volatility_{i,t}$ represents the annualized stock return volatility of firm i in year t . The term $EPU_t \times Size_{i,t}$ is included to test whether firm size moderates the relationship between EPU and firm-level stock volatility. α_i represents firm fixed effects, and $\epsilon_{i,t}$ is the error term.

The coefficient β_1 indicates the relationship between EPU and stock return volatility when the interaction term is added. Coefficient β_5 is the most important interaction coefficient. If β_5 is statistically significant, it can be seen that the relationship between EPU and volatility is different for companies of different sizes. Since this dataset is a company-year panel structure, the data of the same company may be related over time. According to the practice of Cameron and Miller, the standard errors are clustered at the company level, and the dependence of the error term on the company is considered [9]. In order to confirm the soundness of the basic results, this study is calculated according to the specifications of two other models. The first robustness check uses lagged EPU to check whether the policy uncertainty will delay the impact on company-level volatility.

$$Volatility_{i,t} = \beta_0 + \beta_1 EPU_{t-1} + \beta_2 Size_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 MarketReturn_t + \beta_5 (EPU_{t-1} \times Size_{i,t}) + \alpha_i + \epsilon_{i,t} \quad (8)$$

This specification helps to determine whether the relationship between policy uncertainty and volatility remains unchanged when EPU measurement is delayed by one year. The delayed EPU specification requires the EPU value of the previous year, so the observed value of the sample in the first year is excluded from this robustness check.

In the second robustness check, the intersection of EPU and size is replaced by the intersection of EPU and leverage:

$$Volatility_{i,t} = \beta_0 + \beta_1 EPU_t + \beta_2 Size_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 MarketReturn_t + \beta_5 (EPU_t \times Leverage_{i,t}) + \alpha_i + \epsilon_{i,t} \quad (9)$$

This model examines whether firms with different debt exposure respond differently to EPU.

A statistically significant coefficient on $EPU_t \times Leverage_{i,t}$ would indicate that leverage moderates the relationship between EPU and stock return volatility.

empirical strategy pays more attention to relationships than to determine serious causality. Although the use of Firm fixed effects and clustered standard errors can improve the reliability of quotation, there may be some problems such as simultaneity between incomplete variables, market conditions and measured policy uncertainty with the passage of time, endogeneity concerns. Therefore, this result should be accepted as evidence showing the relationship among EPU, company characteristics and stock return changes, rather than a decisive causal effect.

5. EMPIRICAL RESULTS

5.1 Descriptive Evidence

This section introduces the actual results of the relationship between EPU and enterprise storage volume. Before seeing the results of regression analysis, let's take a look at what pattern this data is through simple statistics.

Figure 1 shows the annual epu index from 2010 to 2025. During the investigation period, we can see that the EPU index has changed greatly, and according to different years, the policy uncertainty has also changed significantly. The changes over time are the basis of studying whether the changes of policy uncertainty are related to the changes of stock return volatility of each enterprise.

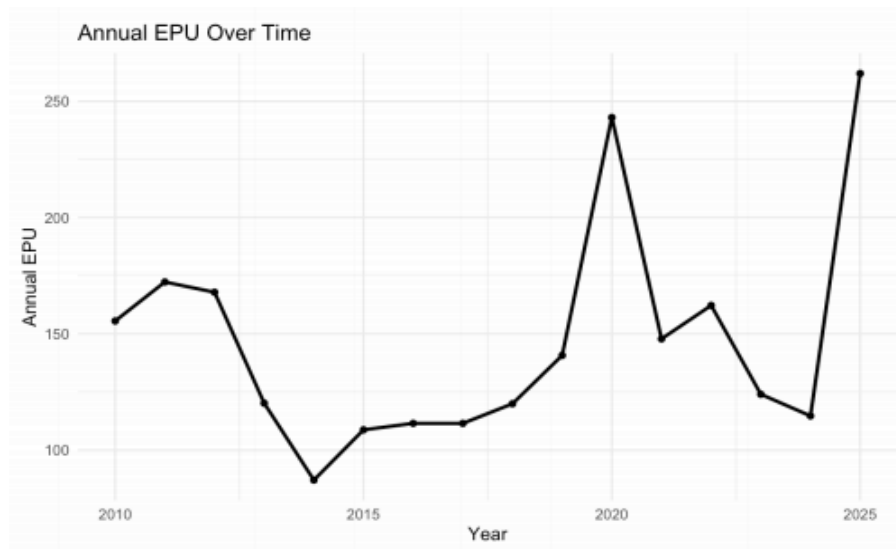


Figure 1. Annual EPU Over Time

Figure 2 is a chart showing the average stock return volatility and EPU of each company every year. By looking at this scatter plot, you can see that there is a positive relationship between EPU and average volatility. In the years when the policy uncertainty is high, the average stock volatility of each company is often high. However, please take this figure as the initial illustrative evidence. Because this chart doesn't consider the firm fixed effects, the characteristics of the company and the overall market situation.

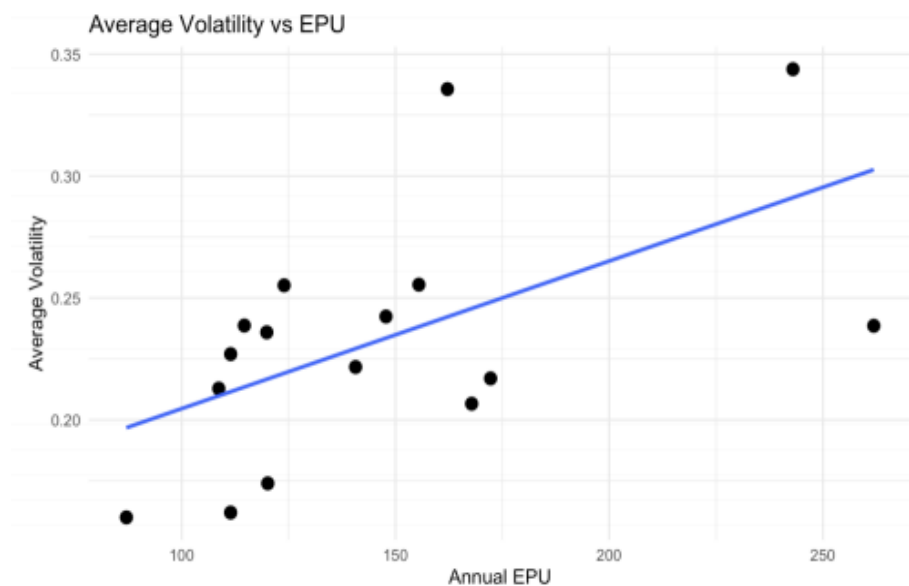


Figure 2. Average Volatility and Annual EPU

Notes: Average volatility is calculated as the mean annualized stock return volatility across firms in each year.

The correlation matrix shows that there is also a positive correlation between the annual EPU and the annual stock price return fluctuation. The correlation between these two values is about 0.251, which means that the higher the EPU, the greater the fluctuation of the stock. Because the correlation between the numerical values used for explanation is generally not high, it is unlikely that multicollinearity problems will appear strongly in the regression model.

5.2 Baseline Regression Results

Table 2 shows the results of the standard-based firm fixed-effects regression. Dependent variables are annualized stock return volatility. The model includes annual EPU, firm size, leverage, annual market return and the interactive items of EPU and firm size. The standard error is clustered at the firm level. Because several regression variables have missing values, the firm-year observation value of 930 is used in the benchmark regression.

In the baseline model, the concept of annual EPU is negative, but it is not a static signal. This is because, after adjusting the firm fixed effects, firm size, leverage and market return, in this setting, the coefficient of the intensity firm size directly related to the volatility of annual EPU is negative, which is somewhat significant. This means that the bigger the company, the smaller firm-level stock return volatility may be. Because big companies have various businesses, it is easy to borrow money from capital market. Leverage is a positive number statistically significant, which means that the more companies are in debt, the greater firm-level stock return volatility. This result is in line with the idea that raising money through borrowing will improve the company's financial risk. The market return is negative and statistically significant, which means that the volatility of the company tends to decrease in the year when the overall market performance is good.

The interaction term between EPU and enterprise scale is positive, but it is not clear statistically. Therefore, baseline model will not produce strong evidence that the scale of the enterprise will greatly change the relationship between EPU and the change of stock price return.

Table 2. Baseline Regression Results

Variable	Coefficient
Annual EPU	-0.000377
Size	-0.027*
Leverage	0.192***
Market return	-0.148***
Annual EPU $\times$ Size	0.000077
Firm fixed effects	Yes
Clustered SE by firm	Yes
Observations	930

Notes: The dependent variable is annualized stock return volatility. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

5.3 Robustness Check with Lagged EPU

Table 3 reports the results of the first robustness check. This will replace the current annual EPU with the backward EPU. In this method, we will investigate whether the uncertainty of policy will affect the fluctuation of enterprise level for a period of time. Because the backward EPU model needs the EPU value of the previous year, the year data of the first sample is not used. The regression analysis of backward EPU uses the data of 874 enterprise years.

The result is roughly the same as the basic model. Backward EPU is statistically meaningless, and the interaction between backward EPU and enterprise scale is also statistically meaningless. This shows that there is no strong evidence that the backward EPU will directly affect the fluctuation at the enterprise level, and there is no evidence that the scale of the enterprise will greatly change the relationship during this period.

Leverage remains positive and statistically significant, while market return remains negative and statistically significant. These results are consistent with the baseline model and suggest that leverage and market conditions are stable predictors of firm-level stock return volatility across specifications.

Table 3. Robustness Check with Lagged EPU

Variable	Coefficient
Lagged EPU	0.000247
Size	0.005102
Leverage	0.235912***
Market return	-0.195431***
Lagged EPU $\times$ Size	0.000012
Firm fixed effects	Yes
Clustered SE by firm	Yes
Observations	874

Notes: The dependent variable is annualized stock return volatility. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

5.4 Robustness Check with EPU and Leverage Interaction

Table 4 represents the second robustness check. This check replaces the combination of EPU and firm size with the combination of EPU and leverage. In this setting, firms with different loan sizes will investigate whether there are different reactions to Policy Independency. In this model, the annual EPU is positive and statistically significant. This means that if the leverage combination is added, the higher the policy uncertainty, the higher the stock return volatility of each firm. Leverage is also a positive value, which is statistically significant. This shows that the more debts firms have, the higher the tendency of volatility.

The interaction term of EPU and leverage is negative, which is statistically significant. The results show that the positive relationship between EPU and volatility weakens with the increase of leverage. This discovery needs to be explained. One possible explanation is that the companies with higher leverage in the sample may include many mature companies with more stable jobs, which may reduce the sensitivity to policy uncertainty. Another possibility is that the effect of leverage depends on the company type, industry and the structure of balance-sheet. Therefore, this result will be evidence of heterogeneity, but don't think it is evidence that leverage will always reduce the risk of policy uncertainty. The market return remains negative and is statistically significant. This is the same as baseline model and lagged EPU model. Robustness results show that the situation of leverage and the whole market has always been related to stock return volatility at the company level, and the estimation effect of EPU changes with the interaction specification.

Table 4. Robustness Check with EPU and Leverage Interaction

Variable	Coefficient
Annual EPU	0.000738***
Size	-0.016103
Leverage	0.290573***
Market return	-0.146982***
Annual EPU $\times$ Leverage	-0.000635*
Firm fixed effects	Yes
Clustered SE by firm	Yes
Observations	930

Notes: The dependent variable is annualized stock return volatility. Standard errors are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

6. DISCUSSION

The experimental results show that the relationship between EPU and the company's stock price fluctuation is not simple, and it will change with various conditions. In the descriptive analysis, the annual EPU is positively correlated with the overall average share price change of the company. This means that in years with high policy uncertainty, the risk of stock profit is generally greater. However, if the fixed characteristics of each company, company characteristics and the profit of the whole stock in the market are put into the basic regression analysis, the direct coefficient of EPU is meaningless statistically. The difference between the descriptive analysis results and the basic regression analysis results shows that the original positive relationship may not only be the direct influence of EPU, but also partly reflect the inherent factors of each company and the overall market situation.

An important discovery is that leverage has always been positive in all model specifications, and it is statistically significant. This shows that the price fluctuation of stock return of companies with more debt is easy to get bigger. Economically speaking, this result is reasonable. Because debt increases the obligation of fixed payment, the value of the company is easily affected by changes in income, interest rate and investor's ideas. If the uncertainty becomes greater, the anxiety about whether the companies with more debt can repay and use their funds freely will become stronger. This finding is also in line with the extensive capital structure literature, which explains that leverage is an important risk-related feature of the company.

Market return is also consistently negative and statistically significant. This shows that the firm-level volatility will be lower than usual when the overall stock market is good. In a good market year, the investor confidence is high, the fund raising is stable, and the company value is not easily affected negatively. On the contrary, when the market trend is not good, volatility will become higher. This result tells us that it is very important to consider the overall market situation when studying the changes of the company's stock. The basic interaction between EPU and firm size is positive, but it is not statistically significant. That is to say, there is no strong evidence that the size of the company will greatly change the relationship between EPU and stock changes. Large companies have a variety of businesses, and it is easy to raise funds, but this does not seem to make a significant difference in the "response to EPU" in the basic model. One possible reason is that the companies surveyed are publicly listed U.S. firms, many of which are already large and have stable funds. Therefore, the size gap of the company is not big enough to produce obvious adjustment effect.

Another interaction model can show us more detailed results. If EPU and leverage interaction are added, the annual EPU is positive and becomes statistically significant. On the other hand, the interaction between EPU and leverage is negative and becomes a static signal. This shows that EPU is related to the larger stock return volatility, but this positive relationship is weak in enterprises with larger leverage. This result requires attention to reading. Because, companies with large leverage may look different from simple expectations that are more sensitive to uncertainty. One possible explanation is that this large sample leverage enterprise may include mature and stable companies with predictable cash flow. Such a company can have a lot of debt even if it is not more sensitive to policy uncertainty. Another explanation is that leverage may show different corporate characteristics in different industries. Therefore, a negative explanation does not necessarily mean that leverage will lower the risk. On the contrary, it shows that the effect of EPU may vary according to the financial structure and sample configuration of the enterprise.

This result is a part of it, which supports the view that EPU is related to stock market risk. However, not all conditions have the same evidence. Easy-to-understand data and leverage interaction model show that there is a positive relationship between EPU and volatility. However, there is no statistically significant direct influence on EPU in the baseline model and the lagged EPU model. Therefore, the study believes that EPU may have a greater impact on the channels of each enterprise, especially through financial structure, than the simple average impact on all enterprises.

These findings have several implications. For the people of investor, this shows that they need to consider the level of the company when studying the risks caused by policy uncertainty. Different financial structure enterprises may have different reactions to the impact of uncertainty at the same macro level. The results show that it is very important for business managers to keep the flexibility of financial, especially in the period of great uncertainty. For researchers, this discovery shows that we should not conclude that EPU has the same impact on all enterprises, but should continue to investigate different impacts in future research.

7. LIMITATIONS

This study has several limitations. The empirical analysis focuses on association rather than strict causality. The fixed-effects model adjusts the time-varying characteristics of firm, and standard errors are clustered at firm level. But these methods can't completely eliminate the potential anxiety of endogeneity. For example, some time-varying factors may affect the stock volumes of both policy uncertainty and firm-level stock volatility. Therefore, we must regard the estimated coefficient as evidence of relationship, not causal effect.

This study does not include year fixed effects. Because EPU is a macro-level variable that changes according to different years, if the annual fixed effect is added, it will absorb the variables of EPU and its probability cannot be estimated. Instead, the study uses the annual S&P 500 market return to adjust the broad market state. However, this method may not fully capture the special macroeconomic shock such as interest rate change, inflation, monetary policy and global financial conditions.

This sample is limited to 60 U.S. publicly listed firms from 2010 to 2025. This panel varies from company to company every year, but the sample may not represent all U.S. firms. Public listed companies are usually larger and more mature than non-public enterprises, and they disclose information in an orderly manner. As a result, this research result may not be fully applicable to small enterprises, non-public enterprises and enterprises in other countries.

The analysis uses annual data. Annual voluntariness helps to measure the risk of the overall stock return in one year, but it may mask the short-term response to policy uncertainty events. Financial markets can immediately respond to policy news, elections, financial policy releases and government closure risks. If annual data are used, these short-term effects may be run in and the ability to find immediate market response may be reduced.

EPU index is a broad macro measurement method, which is based on news reports and keyword text mining. As Kaveh-Yazdy and Zarifzadeh said, this measurement method is easily influenced by the way of media reporting and keyword selection [6]. In the same year, all companies received the same EPU value, but each company was affected by the policy uncertainty in different ways. For example, compared with industry companies with fewer rules, industry companies with more rules may be more responsive to policy uncertainty. This study uses the combination of company size and leverage to deal with some differences, but it does not fully capture the impact of policy uncertainty of each industry and each company.

This regression model contains only a few control variables. Firm size, leverage and market return are important controls. However, other elements, such as profitability, liquidity, growth opportunities, industry characteristics, and interest rate exposure, may also affect stock return volatility. In future research, a larger dataset can be used. Add additional firm-level and macroeconomic controls to better explain the relationship between EPU and firm-level volatility.

8. CONCLUSION

This study examines whether EPU is associated with firm-level stock return volatility using a firm-year panel dataset of 60 U.S. publicly listed firms from 2010 to 2025. The analysis uses annualized stock return volatility as the dependent variable and annual EPU as the main explanatory variable, with firm size, leverage, market return, firm fixed effects, and firm-level clustered standard errors included in the empirical models.

The results show that the effect of EPU on company changes is not the same in all models. Descriptive results show that there is a positive relationship between annual EPU and average stock volatility, but no statistically significant EPU direct effect is found in the basic fixed effect model. In contrast, in the model including the interaction between EPU and leverage, we find that there is a positive relationship between EPU and volatility, which changes with the company's leverage. In all models, leverage is always positive and statistically significant, while market return is always negative and statistically significant.

These survey results show that the fluctuation of the company's stock price comes not only from the instability of the big policy, but also from the company's money structure and broad market state. This study turned the attention from the market turmoil gathered by everyone to the turmoil of each company, and showed that the company's personality helps to explain the different reactions of each policy instability, thus contributing to EPU literature. In the future research, we can expand this analysis by using larger sample, smaller interval data, other corporate management elements and policy uncertainty indicators of each industry.

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