Research on the Influence of Economic Policy Uncertainty on Stock Market Heterogeneity Based on Investor Perspective

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Abstract

For the investors in the Chinese stock market, it is mainly divided into institutional investors and individual investors. It is well known that the number of individual investors, that is, the shareholding ratio, occupies the vast majority of the stock market, so changes in their investment behavior and sentiment will inevitably have a profound impact on the stock market. Although the proportion and size of institutional investors is smaller than that of individual investors, because of the concentration of funds and the concentration of investment behavior, the stock market will also play a non-negligible role. This paper will analyze from the perspective of investors in the stock market, whether the behavior of different investor entities has different degrees and different effects on stock market volatility. Through analysis, it is found that when the proportion of institutional investors increases, the volatility of corporate stocks can be effectively reduced. Volatility in corporate stocks rises when investor sentiment is high. When considering the shareholding ratio of institutional investors and investor sentiment, economic policy uncertainty has a greater impact on corporate stock volatility.

1. Theoretical Basis and Literature Review

With the establishment of the Shanghai Stock Exchange and the Shenzhen Stock Exchange in 1990 and 1991, China's securities capital market was formally formed. At the beginning of the formation of the capital market, the blind speculation of individual investors prevailed, causing frequent abnormal fluctuations in stock prices, individual stock prices and actual value within the company. There is a lack of necessary internal links between them, leading to instability in the stock market. Subsequently, a group of securities and fund companies were established one after another, forming the first group of institutional investors in the Chinese capital market. Institutional investors quickly approached the capital market with their more specialized theoretical knowledge and scale advantages. In the mature capital market in the West, institutional investors have the information and capital advantages that individual investors can't match, which can largely avoid the harm caused by noise trading, so they are consistently considered rational and can stabilize stocks. The main body of investment in market volatility. However, in the Chinese stock market, with the continuous rise of various types of institutional investors and the continuous growth of the overall strength, the volatility of the stock market has not decreased significantly, and there has been a sudden rise and fall, so whether institutional investors can play The discussion of stabilizing the role of the market has never stopped. The discussion

focused on whether institutional investors have fully rational investment behaviors, and whether individual investors can avoid speculative behaviors such as blind self-confidence and herding effects.

Scholars' research on the relationship between institutional investors and stock volatility focuses on the following three types: The first is that institutional investors will aggravate stock market volatility. The reason for this conclusion is mainly because institutional investors have much greater. The financial strength of individual investors and the number of stocks bought and sold, once the impact of large transactions on the stock market is much greater than ordinary individual investors. Zhou (2019) studied the relationship between institutional investors and the stock market bubble during the stock market bubble period based on a set of non-public stock-scoring account statistics (Zhou, 2019). It found that institutional investors prefer stocks with higher bubbles and there is a continuous net purchase. Investing behavior led to institutional investors not playing the expected role of eliminating stock price deviations, but led to the expansion of the bubble and the increase in volatility.

The second is that institutional investors have the role of stabilizing the stock market. Scholars who hold this view believe that the biggest difference between institutional investors and individual investors is that institutional investors are experts to manage their finances, whether it is professional analytical ability or collection. Information has the advantage that individual investors can't match. Because institutional investors can professionally analyze stock market information and follow the principle of "cautious people", they tend to be passive transactions, and are rarely affected by market sentiment and noise. The investment process is programmed to facilitate investment opportunities and control investment risks. Suppress market volatility. Wang and Xue (2018) conducted an empirical test based on detailed position data of institutional investors from 2005 to 2017. The study finds that the competition of institutional investors based on private information of enterprises will lead to the herd effect, but this kind of herding effect is not a deliberately imitated pseudo-hero behaviour (Wang & Xue, 2018). The institutional investors' reaction to the homogeneity of the enterprise is conducive to the information transmission mechanism. Perfection, which can suppress stock price synchronization.

The third view is that the existence of institutional investors is not related to stock market volatility. The theoretical basis on which scholars hold this view is the efficient market hypothesis, that is, under the premise of an efficient market, stock prices reflect all useful information, and institutional investors do not have any information superiority compared with individual investors. Therefore, the investment behavior of institutional investors does not cause fluctuations in stock prices. Liu (2015) proposed that institutional investors with rational emotions can make relatively rational judgments and choices in stock market returns. However, when stock fluctuations are abnormal, irrational emotions prevail, making institutional investors as easy to make irrational as individual investors. Judging, thus exacerbating the stock market plunging (Liu, 2015).

Compared with institutional investors, individual investors are the largest and most heavily influential investor in China's stock market. The research on this angle is mainly based on the theory of bounded rationality and the theory of cognitive bias. Traditional financial theory cannot explain the growing financial market vision. The rapid rise of behavioral finance theory based on psychology and finance has gradually become an important theoretical basis for the research field of investment behavior of contemporary financial market investors. The research on investor sentiment mainly focuses on three points. The first point is to verify the objectivity and evidence of investor sentiment based on psychology and experimental economics. The second point is based on investor psychological bias and research on emotions. The role of asset pricing, and to explain some of the anomalies in financial markets. The third point is the construction of investor sentiment indicators, through the various channels and methods to build quantitative indicators, and then study the impact of investor sentiment on the stock market. Similar to the conclusions of the impact of institutional investors, there is still disagreement about the impact of investor sentiment on the stock market. De Long, Shleifer, and Summers (1990) first proposed noise trading model, when investigating the systematic risk source of asset prices, incorporates investor sentiment into risk considerations, and believes that changes in investor sentiment will lead to asset price volatility through channels that affect systemic risk (De Long et al., 1990). Baker and Bloom (2013) analyzed the changes in investor sentiment and stock returns, and found that when the mood is in a low stage, investors are more sensitive to fluctuations in asset prices, that is, the impact of sentiment on price fluctuations during periods of low and high levels (Baker & Bloom, 2013). The magnitude is different. Zhang and Wang (2013) used multiple regression analysis and impulse response test development, and investor sentiment has a significant positive effect on stock market volatility. However, some scholars believe that there is a negative correlation between investor sentiment and the stock market (Zhang & Wang, 2013). Baker, Bloom, and Davis (2016) constructed the investor sentiment index and global sentiment index of six developed countries, and studied the global index and the domestic index respectively (Baker et al., 2016). The stock market influence found that no matter which kind of sentiment index has a negative impact on stock market returns. Especially for low-value stocks with low profitability and small total issuance, this reaction is more obvious. Yin and Wu (2019) used data mining methods to construct high-frequency indicators of investor sentiment to study its impact on the stock market. It was found that investor sentiment is conducive to predicting changes in stock returns, but this predictive ability will be due to the time

of day (Yin & Wu, 2019). The difference, as well as the overall state of the stock market, is significantly different. According to the existing literature, the research conclusions of investor sentiment on stock market return rate and volatility have not been unified, mainly because the influence of emotional changes is bound to change under different external environments. In 2003, there were 33 Chinese securities fund companies with total assets of less than 8 billion yuan. However, by the end of 2017, there were more than 100 securities fund companies with total assets of 165.993 billion yuan. It can be seen that after entering the supernormal development state, the establishment and development scale of Chinese fund companies have increased rapidly, achieving a substantial leap, and most fund companies are listed on the Shanghai Stock Exchange or the Shenzhen Stock Exchange.

Scholars' research on investor sentiment for the stock market In addition to discussing the relevance of the two in different states, scholars' research on investor sentiment is also focused on the construction of emotional indicators, along with information technology. With continuous development, the application of various text data mining has positively promoted the scientific nature of index construction. This paper will use the more classic CICSI index in the Guotaian database as a surrogate indicator of investor sentiment, and use the ISI index to verify the robustness of the research conclusions in the robustness test. According to the possibility of data, the investor's sentiment indicators used in this paper use monthly data from February 2003 to December 2018.
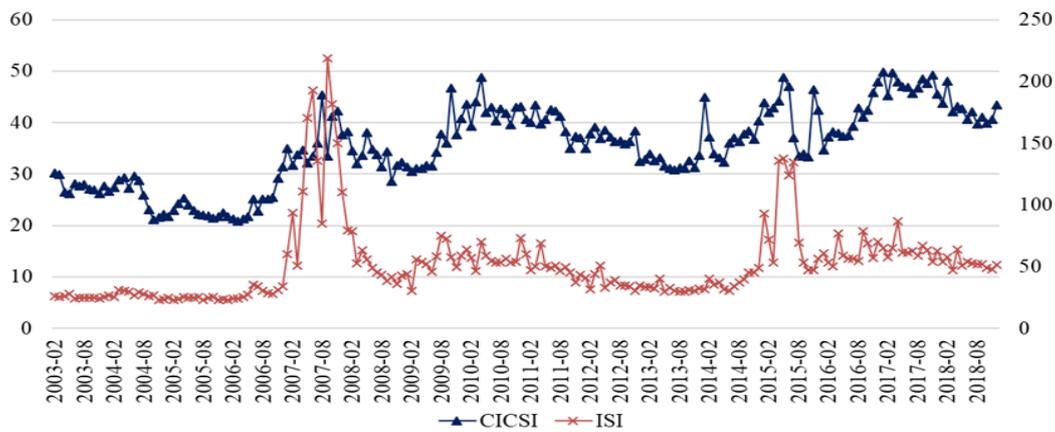

Figure-1. CICSI index and ISI index trend chart.

Sources: RESSET database.

In order to better display the trend of the CICSI index and the ISI index for nearly 20 years, it is displayed through the trend chart. It can be seen from Figure 1 that the CICSI index has the left coordinate axis as the main coordinate axis and the value is too large, and the ISI index is the coordinate axis on the right side and the value is small. Because the calculation basis and calculation method of the two are different, the absolute value of the amount is not comparable, mainly the relativeity of the trend. As can be seen from the above chart, in the vicinity of the 2007 global financial crisis and the 2015 stock market crash, both indexes showed abnormal fluctuations.

2 Model Setting and Data Selection
2. 1. Basic Model Settings

In order to better explore the heterogeneity of investor behavior on the stock market under the premise of uncertain economic policy, this paper will choose the a-share listed company listed on the Shenzhen Stock Exchange and the Shanghai Stock Exchange as the research subject, and apply the panel data model for analysis. Referring to the setting of the panel model in the fourth chapter of this paper, the institutional investors and individual investor sentiment, and the interaction between the two and the economic policy uncertainty index are included in the model.

$$HV_{i,t} = \beta + \beta_1 EPU_t + \beta_2 CICSI_t + \gamma Control_{i,t} + u_i + \eta_t + \varepsilon_{i,t} \tag{1}$$

$$HV_{i,t} = \beta + \beta_1 EPU_t + \beta_2 Inir_{i,t} + \beta_3 EPU_t * Inir_{i,t} + \gamma Control_{i,t} + u_i + \eta_t + \varepsilon_{i,t} \tag{2}$$

$$HV_{i,t} = \beta + \beta_1 EPU_t + \beta_2 CICSI_t + \gamma Control_{i,t} + u_i + \eta_t + \varepsilon_{i,t} \tag{3}$$

$$HV_{i,t} = \beta + \beta_1 EPU_t + \beta_2 CICSI_t + \beta_3 EPU_t * CICSI_t + \gamma Control_{i,t} + u_i + \eta_t + \varepsilon_{i,t} \tag{4}$$

In models 1~4 (ie, formulas 1~4), $HV_{i,t}$ Is the first i A-share listed company t Volatility β Is the intercept term; EPU_t is the economic policy uncertainty index corresponding to each period; coefficient β_1 Representing the marginal impact of uncertain economic policies on the volatility of individual stocks; $Control_{i,t}$ for different enterprises in different periods and the control variables of the overall economy, including factors such as gdp growth rate and corporate equity return rate; γ represents the marginal impact of each control variable on individual stock volatility; u_i versus η_t control individual effects and time effects; $\varepsilon_{i,t}$ is a random disturbance and $\varepsilon_{i,t} \sim N(0, \sigma^2)$. This article focuses on Model 2 and Model 4 β_2 versus β_3 Symbol and value, in model 2, coefficient β_2 representing the influence of the shareholding ratio of institutional investors in each listed company on the fluctuation of individual stocks, coefficient β_3 under the influence of economic policy uncertainty, the influence of institutional investors' shareholding ratio will change. In model 3, the coefficient β_2 representing the impact of changes in investor sentiment in each listed company on its stock volatility, coefficient β_3 under the influence of economic policy uncertainty, the interaction between investor sentiment and uncertainty on individual stock volatility.

2.2. Variable Selection

This paper selects the monthly stock price volatility of China's A-share listed companies on the Shanghai Stock Exchange and the Shenzhen Stock Exchange as the explanatory variables. Based on the above research and the availability of actual data, the period from February 2003 to December 2018 was selected as the sample interval. Exclude ST, financial, delisted, and some companies with missing data. Stock price volatility the standard deviation of the daily closing price of the above company is used as the monthly historical volatility indicator. The data comes from the Wind database and the Guotaian database. The key explanatory variable EPU index is based on the SCMPEPU index developed by Baker et al. (2016) according to the South China Morning Post and the monthly data of the MLEPU index developed by Baker et al. (2016) according to the two mainland newspapers, Guangming Daily and People's Daily. Key explanatory variable proxy indicator. In this paper, the MLEPU index is the main research variable, and the SCMPEPU index is used as a tool variable for robustness testing. The institutional investors' shareholding ratio is the monthly data of each listed company. The investor sentiment indicator selects the CICSI index as the main measure, and the ISI index as the substitute indicator of the robustness test. The data comes from the RESSET database.

3. Empirical Analysis

3.1. Hausman Test

The research process used between February 2003 and December 2018 included panel data of individual stock volatility data, macroeconomic operational data, and individual enterprise data. The commonly used models for analyzing panel data include random effects models and fixed effects. The model is determined by the Hausmann test to determine the use of the model. It can be seen from the results of the Hausmann test in the Table 1 that the p-value is zero, which significantly rejects the null hypothesis that the random effect is more effective, and the selection of the fixed effect is more suitable for the research content of this paper. In order to ensure the rigor of the research process, this paper controls the time effect and individual effect in the process of empirical analysis, which belongs to the double fixed effect model, and considers the gap between various industries and controls the industry effect.

Table-1. Hausmann test.

Variable	Fe	Re	Difference
LN (EPU)	0.111209	0.112765	-0.0015559
The GDP growth rate	0.084502	0.081756	0.0027465
HJ	-0.04674	-0.04739	0.0006517
Market volatility	0.90777	0.912488	-0.0047181
Return on equity	-0.00017	-0.00017	-1.98E-07
The enterprise scale	0.230741	0.178453	0.0522881
Equity concentration ratio 10	-0.01451	-0.01345	-0.0010563
State ownership ratio	-0.00014	-0.00015	0.0000116
Investor sentiment	-0.00863	-0.00537	-0.0032664
Institutional investor	-0.05335	-0.05888	0.0055303
chi2(10)=(b-B)'[(V_b-V_B)^(-1)](b-B)=440.94			
Prob>chi2 =0.0000			

Source: RESSET database, http://www.policyuncertainty.com/index.html.

3.2. Sample Empirical Analysis

In the specific analysis process, the SCMPEPU index is selected as the economic policy uncertainty representative index, and CSICI is the investor sentiment proxy index. At the macro level, we control factors such as GDP growth rate, macroeconomic sentiment index, and overall market volatility. At the micro level, we control factors such as the return on net assets, firm size, and concentration of equity. The specific analysis results are shown in the Table 2.

Table-2. Full sample regression analysis.

Variable	I	II	III	IV
LN(EPU)	0.102***	0.102***	0.111***	0.111***
	-0.006	-0.006	-0.006	-0.006
The GDP growth rate	0.093***	0.093***	0.084***	0.085***
	-0.002	-0.002	-0.003	-0.003
HJ	-0.055***	-0.055***	-0.047***	-0.047***
	-0.002	-0.002	-0.002	-0.002
Market volatility	0.900***	0.900***	0.908***	0.908***
	-0.006	-0.006	-0.006	-0.006
Return on equity	-0.000***	-0.000***	-0.000***	-0.000***
	0	0	0	0
The enterprise scale	0.180***	0.180***	0.231***	0.231***
	-0.005	-0.005	-0.006	-0.006
Equity concentration ratio 10	-0.015	-0.014	-0.015	-0.015
	-0.02	-0.02	-0.02	-0.02
Institutional ownership		-0.056**		-0.053**
		-0.021		-0.021
CSICI			0.009***	0.009***
			-0.001	-0.001
cons	1.092***	1.114***	-0.530**	-0.506*
	-0.16	-0.16	-0.203	-0.203
R-sq	0.341	0.342	0.343	0.343
r2_w	0.341	0.341	0.343	0.343
corr	-0.155	-0.155	-0.211	-0.21

Standard errors in parentheses.
* $p<0.05$, ** $p<0.01$, *** $p<0.001$.
Data sources: RESSET database, http://www.policyuncertainty.com/index.html.

In order to eliminate the heteroscedasticity and reduce the trend of volatility, and the relationship between better variables, the economic policy uncertainty index and the firm size value are logarithmically processed. The variables in the above table correspond to their respective coefficients. The first column is the regression coefficient result without considering the shareholding ratio of the institutional investors and the investor's sentiment. The EPU coefficient value is 0. 102, which is significantly positive at the 1% level. The increase in economic policy uncertainty will lead to an increase in the volatility of individual stocks. The ii column is the regression result considering the proportion of institutional investors' shareholding in the enterprise equity distribution. The EPU coefficient value has not changed. The coefficient value of the institutional investor's shareholding ratio is -0. 056, which is significantly negative at the 5% level. When the proportion of institutional investors in corporate equity increases, the volatility of individual stocks declines, and institutional holdings play a role in stabilizing stock returns. The iii column in Table 2 is the coefficient regression result considering the investor's sentiment, and the coefficient value of the investor's sentiment is 0. 009, which is significantly positive at the 1% level, which means that when the investor's mood is high, the stock volatility increases. The iv column in Table 2 is the model regression result considering both the internal institutional investor ratio and the overall investor sentiment. The EPU coefficient value has not changed significantly, and is still significantly positive at the 1% level. The coefficient value of institutional investors' shareholding ratio is still significantly negative at 5%, and the investor's sentiment coefficient value is significantly positive at 1%. In general, the economic policy uncertainty index and investor sentiment have positive effects on individual stock volatility, and institutional investors' shareholding ratio is conducive to easing stock volatility.

Table-3. Interaction effect regression analysis.

Variable	I	II	III	IV	V	VI
LEPU	0.111***	0.106***	0.283***			
	–0.006	–0.015	–0.026			
GDP	0.085***	0.084***	0.081***	0.071***	0.071***	0.067***
	–0.003	–0.003	–0.003	–0.003	–0.003	–0.003
HJ	–0.047***	–0.047***	–0.043***	–0.043***	–0.043***	–0.039***
	–0.002	–0.002	–0.002	–0.002	–0.002	–0.002
Market volatility	0.908***	0.908***	0.897***	0.915***	0.915***	0.909***
	–0.006	–0.006	–0.006	–0.006	–0.006	–0.006
Return on equity	–0.000***	–0.000***	–0.000***	–0.000***	–0.000***	–0.000***
	0	0	0	0	0	0
LSZ	0.231***	0.231***	0.228***	0.236***	0.236***	0.233***
	–0.006	–0.006	–0.006	–0.006	–0.006	–0.007
Equity concentration ratio 10	–0.015	–0.015	–0.014	–0.014	–0.014	–0.014
	–0.02	–0.02	–0.02	–0.02	–0.02	–0.02
Institutional ownership	–0.053*	–0.098	–0.055**	–0.057**	–0.298	–0.058**
	–0.021	–0.132	–0.021	–0.021	–0.158	–0.021
CICSI	0.009***	0.009***	0.013***	0.008***	0.008***	0.011*
	–0.001	–0.001	–0.003	–0.001	–0.001	–0.004
EPU* mechanism ratio		0.009				
		–0.026				
EPU*CSSCI			0.005***			
			–0.001			
LCEPU				0.058***	0.03	0.209***
				–0.009	–0.02	–0.034
CEPU* organization ratio					0.053	
					–0.034	
CEPU*CSSCI						0.004***
						–0.001
_cons	–0.506*	–0.482*	–1.586***	–0.557**	–0.427	–1.516***
	–0.203	–0.215	–0.259	–0.204	–0.221	–0.292
R-sq	0.343	0.343	0.343	0.34	0.34	0.34
r2_w	0.343	0.343	0.343	0.34	0.34	0.34
Corr.	–0.21	–0.21	–0.207	–0.217	–0.216	–0.213

Standard errors in parentheses.
* $p<0.05$, ** $p<0.01$, *** $p<0.001$.
Data sources: RESSET database, http://www.policyuncertainty.com/index.html.

Considering that economic policy uncertainty may be related to institutional investors' investment decisions and investor sentiment, they affect each other. Because this paper focuses on the economic policy uncertainty and the interaction between the two, the impact of individual stock volatility. As shown in the above table, in the column i, ii, and iii of Table 3, the SCMPEPU index is used as a substitute indicator for economic policy uncertainty, and the iv, v, and vi columns are used to ensure the robustness of the research results, and the MLEPU index is used as the SCMPEPU index. Alternative indicator. The coefficient of the interaction term between the EPU index and the institutional investor's shareholding ratio in column ii is 0. 009, and the coefficient of the interaction term between the EPU index and the institutional investor's shareholding ratio in column v is 0. 053, and both coefficient values are positive. Explain that the increase in economic policy uncertainty has led to an increase in the marginal role of institutional investors in the volatility of individual stocks, but the two coefficients are not significant, indicating that institutional investors' shareholding ratio fluctuates against individual stocks on the premise of considering economic policy uncertainty. Have a similar gentle effect. In the third column, the coefficient of the interaction term between the EPU index and the investor's sentiment is 0. 005, and the coefficient of the interaction term between the CEPU index and the investor's sentiment in the vi column is 0. 004, and both coefficient values

are significantly positive at the 1% level. It shows that the increase in the level of uncertainty in economic policy leads to an increase in the marginal effect of investor sentiment on individual stock volatility, that is, when the level of economic policy is high, the increase in investor sentiment will lead to stronger volatility of individual stocks.

3.3. Robust Test

The research focus of this paper is based on the perspective of investors, considering the uncertainty of economic policy, the influence of corporate institutional investor shareholding and investor sentiment on individual stock volatility. In the process of testing for robustness, the indicators of economic policy uncertainty index and investor sentiment are replaced to verify the robustness of the research conclusions. The specific results are shown in the Table 4.

Table-4. Robustness test.

Variable	I	II	III	IV	V
LEPU	0.111***	0.093***			
	-0.006	-0.006			
GDP	0.085***	0.077***	0.059***	0.058***	0.058***
	-0.003	-0.003	-0.003	-0.002	-0.002
HJ	-0.047***	-0.052***	-0.046***	-0.045***	-0.045***
	-0.002	-0.002	-0.002	-0.002	-0.002
Market volatility	0.908***	0.886***	0.895***	0.896***	0.897***
	-0.006	-0.006	-0.006	-0.006	-0.006
Return on equity	-0.000***	-0.000**	-0.000**	-0.000**	-0.000**
	0	0	0	0	0
LSZ	0.231***	0.124***	0.129***	0.134***	0.134***
	-0.006	-0.006	-0.006	-0.006	-0.006
Equity concentration ratio 10	-0.015	-0.014	-0.014	-0.015	-0.015
	-0.02	-0.02	-0.02	-0.02	-0.02
Institutional ownership	-0.053*	-0.058**	-0.061**	-0.051*	-0.052*
	-0.021	-0.021	-0.021	-0.021	-0.021
CICSI	0.009***				
	-0.001				
ISI		0.002***	0.002***	0.002***	0.002***
		0	0	0	0
LCEPU			0.019*		
			-0.009		
D2epu				0.015**	
				-0.004	
D2cepu					0.015**
					-0.005
cons	-0.506*	2.126***	1.961***	1.860***	1.860***
	-0.203	-0.17	-0.175	-0.171	-0.171
R-sq	0.343	0.344	0.342	0.343	0.343
r2_w	0.343	0.344	0.342	0.343	0.343
Corr.	-0.21	-0.095	-0.1	-0.105	-0.105

Standard errors in parentheses.
* p<0.05, ** p<0.01, *** p<0.001.
Data sources: RESSET database, http://www.policyuncertainty.com/index.html.

The i-th column in Table 4 is the regression analysis result of the original data, which is mainly used to compare and analyze the regression results of the robustness test. In the second column, ISI is the surrogate index of investor sentiment. The ISI coefficient value is 0. 002 and is significantly positive at the 1% level, which is the same as the coefficient value and significance of the CICSI index. In addition to the use of ISI as a surrogate indicator of investor sentiment in column iii, the MLEPU index is used as a surrogate indicator for

economic policy uncertainty. The coefficient values of the two are consistently and significantly the same as the coefficient values in the comprehensive study. The robustness of the research conclusions. In the iv and v columns, the SCMPEPU index and the MLEPU index lag 2 periods as substitute indicators for economic policy uncertainty, and the regression results are still stable.

4. Summary

This paper discusses the impact of institutional investor structure and overall investor sentiment on individual stock volatility in the context of economic policy uncertainty and the consideration of economic policy uncertainty. Through the results of the full sample analysis, it can be found that the increase in the shareholding ratio of institutional investors is conducive to reducing the volatility of individual stocks and playing a role of gradual volatility. When investor sentiment rises, it will have a positive effect on the volatility of individual stocks. This paper focuses on the two interactive term coefficients of economic policy uncertainty and institutional investors' shareholding ratio and investor sentiment. After regression analysis, it is found that institutional investors' shareholding ratio fluctuates against individual stocks considering economic policy uncertainty. The impact is not significantly different. The increase in the level of economic policy uncertainty leads to an increase in the marginal effect of investor sentiment on individual stock volatility. When the level of economic policy is high, the increase in investor sentiment will have a stronger driving effect on individual stock volatility. In order to verify the correctness of the model and the robustness of the research results, a series of alternative indicators for the explanatory variables and key explanatory variables were compared and found that the regression results were robust regardless of which substitution variable was chosen.

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