The Impact of Economic Policy Uncertainty, Investor Sentiment, and Monetary Policy on Stock Return Rates and Market Liquidity: A Systematic Analysis

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Abstract. This study examines the effects of policy uncertainty on stock return rates, analyzing the influences of monetary policies and investor sentiment on market dynamics. Expansionary policies are found to increase market liquidity, while contractionary policies decrease it. Policy uncertainty generally reduces stock return rates. Positive investor sentiment temporarily boosts return rates, but low sentiment can lead to market sell-offs, causing declines in stock prices and returns. Mediation regression analysis reveals that economic policy uncertainty (EPU) negatively correlates with stock returns, significantly lowering investor sentiment. This result indicates that investor sentiment acts as a mediator in the EPU-stock return relationship, highlighting its pivotal role in stock market dynamics under the lens of policy uncertainty.

Keywords: Behavioral Economics; Investor Sentiment; Policy Uncertainty; Impulse Response

1 Introduction

In the realm of financial market research, the link between investor sentiment and market dynamics is profoundly intertwined. The study by Baker and Wurgler, which introduced a composite sentiment index composed of a variety of market indicators, revealed a significant correlation between sentiment levels and market liquidity [3-5]. However, existing research often overlooks the impact of economic policy uncertainty. The investigation by Goyenko & Ukhov delved into the direct effects of monetary policy changes on stock market liquidity [2], while the work of Gregory W. Brown and Michael T. Cliff challenged the conventional belief in sentiment's ability to predict short-term stock returns [1].

This paper integrates the concepts of investor sentiment and economic policy uncertainty, aiming to analyse their combined impact on return rates. In the midst of a constantly shifting global economic environment, it endeavors to thoroughly explore how the instability of economic policy, intertwined with investor sentiment, affects stock market returns.

2 Data specification

The policy uncertainty data analysed in this paper are derived from various scenarios of policy

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uncertainty in "Economic Policy Uncertainty In China," spanning from January 2000 to May 2023, As shown in Table 1.

Table 1: The First Data Summary Table.

Date	EPU	MPU	FPU
Jan-00	38.20	58.23	85.68
Feb-00	40.06	22.36	66.56
Mar-00	48.60	31.70	35.28
……	……	……	……
Mar-22	228.20	134.56	242.65
Apr-22	234.52	153.77	230.29
May-22	200.00	119.24	181.49

Our analysis of Chinese stock market companies and the Shanghai Composite Index, as outlined in Table 2, employs the CSMAR dataset, encompassing data from 2016 to 2022, including investor sentiment indices and monthly closing prices. Companies with incomplete data were excluded to ensure the integrity and completeness of the dataset, resulting in an exhaustive sample covering all companies listed on the Shanghai Stock Exchange.

Table 2: The Second Data Summary Table.

time	close	volume	……	IS	CPI	M2
Jan-16	2,898.6961	195,230,580	……	53.16	100.5	5538.08
Feb-16	3,044.9028	250,840,433	……	50.37	101.6	8299.13
Mar-16	2,908.7660	142,389,813	……	76.78	99.6	21579.35
……	……	……	……	……	……	……
Mar-22	3,488.8347	326,001,662	……	85.49	100	56199.44
Apr-22	3,282.7166	378,210,460	……	61.16	100.4	2022.56
May-22	3,047.0624	378,210,460	……	49.99	99.8	27315.25

During the data cleansing process, we employed advanced data processing techniques and algorithms to ensure the accuracy and consistency of the data. To this end, we conducted thorough statistical and economic analyses of these datasets.

3. Model building and solving

3.1 Index construction

By constructing a series of precise indicators and applying them to subsequent experiments, we aim to bolster the persuasiveness and accuracy of our research. The formula for calculating the turnover rate is shown as Formula 1.

$$TURN = \frac{MT_t}{\frac{(TMV_{t-1} + TMV_t)}{2}} \times \frac{ATD_t}{CTD_t} \tag{1}$$

where TURN refers to the turnover rate, MT denotes market turnover, TMV signifies the total market value of circulated shares, ATD indicates the average number of trading days, and CTD represents the cumulative number of trading days.

The complexity of market liquidity issues extends beyond the scope of a single comprehensive indicator [6-7]. Therefore, building upon the research by Goyenko et al.[8]and Fong et al.[9], we have selected variables that can holistically capture liquidity characteristics, ultimately opting for the Amihud illiquidity ratio. Drawing from the work of Amihud and Noh, we employed the Amihud illiquidity ratio (AMH) to gauge price impact and reflect stock market liquidity [10]. as shown in Formula 2 and 3:

$$AMH_{i,ym} = 1 \Big/ D_{i,ym} \sum_{d=1}^{D_{i,ym}} \frac{|R_{i,yd}|}{VOL_{i,yd}} \tag{2}$$

$$VOL_{n,t-1} = TV_{n,t} \times P_{n,t} \tag{3}$$

where TV is the transaction volume.

3.2 Policy uncertainty model

In their microstructure research, Goyenko and Ukhov (2009) investigated the relationship between monetary policy and stock market liquidity, emphasizing how monetary policy significantly influences liquidity levels. Innovatively, this study adopts monetary policy uncertainty (MPU) as a measure of the unpredictability of central bank policies.

Therefore, we conducted a visual analysis of monetary policy uncertainty and the Amihud illiquidity ratio. As shown in Figure 1. Observing the results in Figure 1, a clear negative correlation is evident between the variables. As monetary policy uncertainty increases, typically accompanied by economic instability or recession, the likelihood of implementing expansionary monetary policies rises. In such scenarios, the Amihud Illiquidity Ratio decreases, consequently enhancing market liquidity.

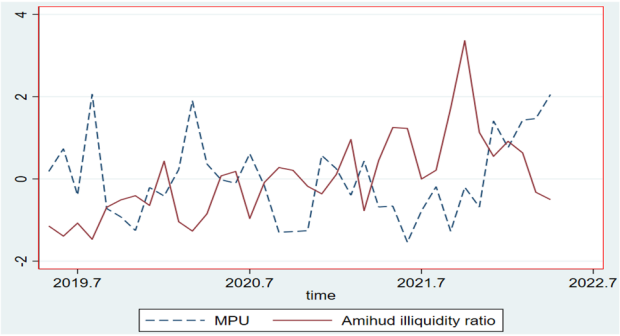

Figure 1 Time series model of monetary policy uncertainty and Amihud illiquidity ratio.

3.3 regression

As society progresses, the factors influencing the economy become increasingly diverse. To delve deeply into how economic policy uncertainty (EPU) and investor sentiment (IS) affect stock return rates amid a multitude of macroeconomic factors, this experiment undertakes a regression analysis of both current and expected returns.

$$RETURN_t = \alpha + \beta_1 EPU_t + \beta_2 CPI_t + \beta_3 M2_t + \varepsilon_t \quad \text{a.}$$

$$RETURN_t = \alpha + \beta_1 EPU_{t-1} + \beta_2 CPI_{t-1} + \beta_3 M2_{t-1} + \varepsilon_t \quad \text{b.}$$

where $RETURN_t$ is the monthly composite return of the Shanghai A-share market, EPU_t is the monthly policy uncertainty index of China, $M2_t$ is the broad money supply, and CPI_t is the change rate of the consumer price index. Models a and b explore the impact of economic policy uncertainty on the current and expected stock returns, respectively.

$$RETURN_t = \alpha + \beta_1 IS_t + \beta_2 CPI_t + \beta_3 M2_t + \varepsilon_t \quad \text{c.}$$

$$RETURN_t = \alpha + \beta_1 IS_{t-1} + \beta_2 CPI_{t-1} + \beta_3 M2_{t-1} + \varepsilon_t \quad \text{d.}$$

where IS_t represents investor sentiment. Models c and d delve into the influence of investor sentiment on both current and expected stock returns, respectively.

The regression outcomes of Model a and Model b as illustrated in Table 3, robustly demonstrate a significant negative correlation between economic policy uncertainty (EPU) and both current and expected monthly return rates in the A-share market. Specifically, after adjusting for macroeconomic variables such as the consumer price index (CPI), an increase in EPU markedly diminishes stock return rates. The negative correlation coefficient for current A-share market returns stands at -0.0374, while the coefficient for anticipated returns is -0.0329. These findings empirically underscore that with the escalation of economic policy uncertainty, there is a substantial and discernible adverse effect on both the overall performance and future expectations of the stock market.

Table 3: Regression results of economic policy uncertainty on stock return rates.

Var.	Current stock return			Expected stock return		
	(1)	(2)	(3)	(1)	(2)	(3)
EPU	-0.0076*	-0.0170*	-0.0174*	-0.0170**	-0.0332**	-0.0329**
	(-1.81)	(-1.93)	(-1.89)	(2.04)	(-2.41)	(-2.82)
M2		0.007	0.005		0.011	0.013
		(0.71)	(0.37)		(1.41)	(1.23)
CPI			0.00439***			-0.0079***
			(2.67)			(-3.37)
Constant	0.0424	-0.0383	-0.0816	-0.0283*	0.101	-0.727***
	(0.0332)	(0.104)	(0.964)	(-1.87)	(0.111)	(2.97)

The results presented in Table 4 indicate that investor sentiment significantly and positively impacts both current and expected stock return rates, with coefficients of 0.003 and 0.001, respectively, at a 1% significance level, suggesting a positive correlation. The short-term elevation in investor sentiment, driven by intensified trading activities and rising stock prices, serves to enhance stock returns. Conversely, a decline in investor confidence leads to a contraction in market demand, subsequently resulting in downward adjustments in stock prices and a corresponding decrease in returns.

Table 4: regression results of investor sentiment on stock return rates.

	Current stock return (1)	Expected stock return (2)
IS	0.003***	0.001***
	(5.31)	(7.17)
M2	-0.0045***	-0.113***
	(-3.04)	(-3.16)
CPI	-0.0042***	-0.0091***
	(-4.19)	(-3.70)
Constant	1.019***	1.408***
	(3.78)	(3.99)

As shown in Table 5, the mediation regression analysis centered on investor sentiment elucidates the intricate relationship between economic policy uncertainty (EPU) and stock return rates. There is a significant negative correlation coefficient (-0.017) between EPU and current stock returns, indicating an inverse relationship. EPU markedly suppresses investor sentiment, with frequent policy changes fostering pessimism about future returns. Investor sentiment, in turn, significantly affects the volatility of stock returns; under the influence of EPU, negative sentiment leads to a decline in stock returns. This analysis confirms the mediating role of investor sentiment in how EPU impacts stock returns. Incorporating the investor sentiment variable changes the coefficient of EPU from -0.033 to -0.017, losing its significance, thus highlighting the critical mediating role of investor sentiment in the long-term response of stock returns to EPU.

Table 5: regression results of economic policy uncertainty, investor sentiment, and their impact on current and expected stock return rates.

	Current stock return (1)	Current stock return (2)	Investor sentiment (3)	Expected stock return (4)	Expected stock return (5)
EPU	-0.017*	-0.008	-5.770	-0.033**	-0.017
	(-1.89)	(-1.35)	(-2.33)	(-2.82)	(-1.19)
IS		0.003***			0.003***
		(5.11)			(6.34)
M2	0.005	-0.006	15.374	0.013	-0.051
	(0.37)	(-1.04)	(5.11)	(1.23)	(-1.53)
CPI	0.004***	-0.003***	1.37*	-0.008***	-0.007***
	(2.67)	(-4.06)	(1.75)	(-3.37)	(-3.80)
Constant	-0.0816	1.245***	-366.584***	-0.727***	1.207***
	(0.964)	(4.32)	(-3.09)	(2.97)	(4.94)

3.4 Path Analysis

Our research harnesses path analysis to unravel the complex nexus between policy uncertainty, investor sentiment, and stock returns. We construct a multi-dimensional policy uncertainty framework, comprising economic (EPU), monetary (MPU), and fiscal (FPU) policy uncertainty, paired with a nuanced investor sentiment index including variables like discounted closed-end fund to earnings (DCEF), turnover rate (TURN), initial public offerings (IPO), IPO first-day returns (IPOR), new investor numbers (NIN), and the consumer confidence index (CCI).

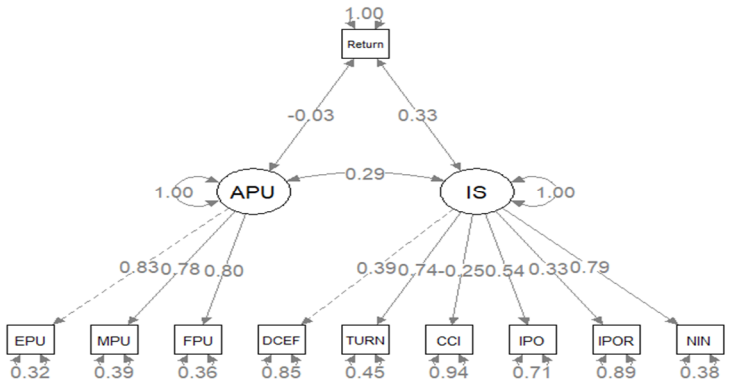

Figure 2 Path Model of APU and IS Mediation on Stock Returns.

The path model, illustrated in Figure 2, unveils a negative trajectory from Aggregate Policy Uncertainty (APU) to stock returns (-0.03 coefficient), juxtaposed against a positive correlation between investor sentiment (0.33 coefficient) and returns. Crucially, sentiment's mediating role (-0.29 from APU to IS, 0.33 from IS to Return) spotlights its intermediary influence, highlighting how policy uncertainty and investor sentiment orchestrate stock market dynamics. This succinct yet potent empirical synthesis advances our understanding of the financial market's multifaceted interactions.

3.5 Impulse Response Analysis

To delve into the dynamic mechanisms of financial markets, this experiment will analyse the impulse response of economic policy uncertainty (EPU) and investor sentiment (IS) to stock returns (Return), aiming to uncover their immediate and sustained effects on the stock market.

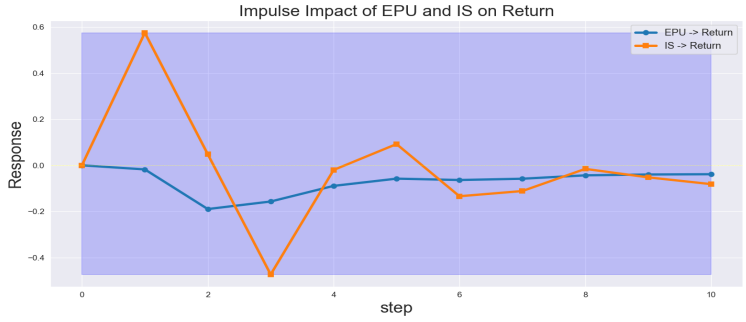

Figure 3 The Impulse Response Graph of EPU and IS on Returns.

The impulse response results are presented in Figure 3. Initially, economic policy uncertainty (EPU) exerts a negative impact on stock returns, reflecting the market's cautious stance. This influence gradually diminishes and occasionally shifts to positive, indicating an adaptation to policy fluctuations. Over 10 cycles, the impact of EPU stabilizes, signifying the market's long-

term adjustment. Concurrently, investor sentiment (IS) initially boosts stock return rates, demonstrating the effect of positive sentiment on stock prices. However, as time progresses, the impact of IS on returns weakens and stabilizes, suggesting that fluctuations in sentiment have a limited long-term influence on stock price trends.

4 Conclusion

In classical stock market theory, policy considerations were not incorporated in the cross-sectional interaction of investor sentiment and stock returns. This study innovatively includes both policy uncertainty and investor sentiment in the analysis of stock return rates. The findings reveal that expansionary (or contractionary) monetary policies positively (or negatively) impact market liquidity. Our path analysis employs a multi-dimensional set of policy uncertainty indicators and a comprehensive investor sentiment index, offering a holistic perspective on their influence on the stock market. Mediation regression analysis uncovers the intermediary role played by investor sentiment between economic policy uncertainty and stock return rates. Positive shifts in investor sentiment can enhance stock returns in the short term, as reflected in immediate stock price increases and trans-period spillover effects. However, during periods of low sentiment, increased market sell-offs lead to a decline in demand and prices, subsequently resulting in lower stock return rates.

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