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Research Article

Empirical Analysis on Unexpected Information Effect of Monetary Policy and Stock Price Fluctuation: Taking Military and Defense Enterprises as an Example

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The existing studies have shown that the unexpected information effect of monetary policy (IEOMP) would affect the fluctuation of stock prices. This paper tests the effect of unexpected IEOMP on stock prices in China. Taking Chinese listed military and defense enterprises, for example, the author further explored how the influence of unexpected IEOMP over stock price varies between industries. The empirical analysis reveals that, despite the industrial heterogeneity of the said influence in China, the stock price of Chinese listed military and defense enterprises is still affected by unexpected IEOMP. Our analysis enables Chinese military and defense enterprises to build a more robust market mechanism for the military and defense market, open more effective channels for the industrial chain, capital chain, and private capital, and drive the national economy with the sci-tech results of defense. In addition, policymakers are recommended to keep an eye on the price fluctuation in the stock market and important economic information from stock price fluctuation in order to effectively identify the potential risks in the future economy and to improve the predictability of the feedback mechanism of monetary policy.

1. Introduction

With the development of the stock market, there is a growing concern about the influence of monetary policy over stock prices [1–4]. Information is a major determinant of stock price [5–8]. The information effect refers to the change in the market environment of investors upon receiving important information [9]. The operation of the stock market can be viewed as the process of information processing. The information effect directly affects the price identification and the determination of balanced prices in the stock market, which in turn causes price fluctuation in that market. So, information is one of the main influencing factors that cause stock price fluctuation.

This paper defines the information effect of the release of monetary policy as the information effect of monetary policy (IEOMP), which induces sudden fluctuation of the stock price in the short term. On the microscale, the IEOMP could influence investor expectations and the judgment of corporate value, resulting in a panic in the market [10–12]. On the macroscale, the IEOMP may increase the probability of systemic financial risks arising from fluctuations in stock prices caused by information effects that may lead to changes in the price or value of derivatives. Since 2016, the central bank of China has reiterated in the China Monetary Policy Report that the release of monetary policy should effectively prevent significant fluctuation of asset prices, avoid asset bubbles, and prevent systemic financial risks in time. Hence, the influence of the IEOMP over stock price has become an important research topic.

Traditional financial theory and many previous studies have proven that unexpected IEOMP fuels stock price fluctuation [1, 4, 13, 14]. But the influence of expected IEOMP remains controversial [15]. Specifically, unexpected IEOMP may affect stock price via two channels. Firstly, unexpected IEOMP could sway the investor's judgment of corporate value and further change their expectations and investment options, thereby acting on the stock price of listed enterprises. Secondly, unexpected IEOMP changes the inner value of listed enterprises by affecting the cost of

capital use. As a result, the expansion and investment of enterprises will be changed, leading to stock price fluctuation. In this paper, the stock price fluctuation induced by unexpected IEOMP is defined as the stock price effect of unexpected IEOMP.

The military and defense industry is not only a strategic high ground of national security but also a pillar of economic development. Military and defense enterprises, as core drivers of military development in China, bear the important task of research and development in national defense and lead the development of the Chinese national defense economy. Many bidding and tendering activities are planned for 2022, the second year of the 14th Five-Year Plan for Equipment Procurement. This factor, coupled with the debottlenecking of capacity limits, would herald a lasting boom in the military and defense industry. The industry is expected to grow rapidly in the coming three years. Our analysis enables Chinese military and defense enterprises to build a more robust market mechanism for the military and defense market, open more effective channels for the industrial chain, capital chain, and private capital, and drive the national economy with the sci-tech results of defense.

However, there are several challenges facing the research into the stock price effect of unexpected IEOMP:

Firstly, the expected IEOMP has been reflected in the stock price. To identify the variables of unexpected IEOMP accurately, it is necessary to differentiate between the expected and unexpected parts of IEOMP in China.

Secondly, the IEOMP is an endogenous factor for microenterprises and is related to many factors that drive corporate management [14]. Thus, it is challenging to accurately measure the IEOMP effect.

Thirdly, the IEOMP effect is influenced by complex factors. In theory, the influencing factors include policy instruments (interbank rate or currency growth rate), laws and regulations (provisions on reserve fund and capital), the microstructure of the credit market (matching efficiency, bargaining capacity, or entry cost), and corporate heterogeneity [16]. The interference factors must be excluded during the analysis of the IEOMP effect.

Fourthly, the IEOMP affects the capital market. In return, the fluctuation of the capital market affects the IEOMP effect by changing the formulation and implementation of monetary policy. Besides, the IEOMP and capital market are both influenced by the oscillation of the real economy.

2. Variable Identification

2.1. High-Frequency Identification Strategy. To empirically measure the IEOMP, it is necessary to effectively differentiate between the expected and unexpected parts and to consider the endogeneity problem of the measurement. Referring to Nakamura and Steinsson [14], this paper introduces high-frequency identification with a short time window to separate the unexpected part from the IEOMP. In this way, the endogeneity problem is solved effectively for the corporate-level identification of unexpected IEOMP. When the unexpected IEOMP variable is taken as a regression variable, the regression error only covers the information displayed in the narrow time window. According to the high-frequency identification theory, the limited information is orthogonal to the proposed variables of unexpected IEOMP.

After dividing the IEOMP, the expected part contains the influence of the stock market on monetary policy. The unexpected part was adopted to examine the influence of unexpected IEOMP over the stock price. This effectively excludes the interference from the endogeneity problem of macroscopic factors.

Moreover, the high-frequency identification with a short time window ensures that the factors that both affect the IEOMP and stock price are orthogonal to our variables and greatly alleviate the problem that the IEOMP and capital market are simultaneously affected by the real fluctuation economy.

In summary, this paper constructs a factor model and adopts the high-frequency identification strategy to recognize the variables of unexpected IEOMP in China. Since China's central bank issued policies to relax the control of loan interest rates for financial institutions on July 20th, 2013, the time window was set as 2014–2018. The authors mainly explored the variation of the relevant variables on the issuance day of any major monetary policy (e.g., rate and reserve adjustment) by China's central bank compared with the previous day. For simplicity, this day is referred to as the issuance day in the rest of the paper.

2.2. Variable Construction. Referring to Nakamura and Steinsson [14], this paper builds a factor model to identify the variables of unexpected IEOMP. The strategy of using the factor model to identify the variables affecting monetary policy can be traced all the way back to Gürkaynak et al. [17].

The $T \times n$-order factor model can be expressed as

$$X = MP\text{Shock} * \Lambda + \varpi, \tag{1}$$

where *MP Shock* is a $T \times m$-order latent variable ($m < n$); Λ is an $m \times n$-order factor loading; and ϖ is a $T \times n$-order white noise error.

Firstly, the distances from the covariance matrix of X to the covariance matrices corresponding to the factor model (1) containing n_0 factors are solved to prove that X is generated from n_0 factors, rather than $n(n > n_0)$ factors.

Next, X is assumed as a 16×8-order matrix to estimate the latent variable *MPShock*. The 16 rows correspond to the issuance days of major monetary policies by China's central bank during 2014–2018. For simplicity, such a day is referred to as the issuance day in the rest of the paper. The 8 columns correspond to the variables related to the policy rate and cover the following three parts: the first part is the expected change of monetary policy rate in the market from the issuance day in the current month to the end of the month. In this part, this paper mainly utilizes the data related to the

five-year national bond futures in active futures contracts. For simplicity, these futures are referred to as the target futures in the rest of the paper. To model the change of market expectations from the issuance day in the current month to the end of the month, the number of days in the current month is denoted as m_0; the issuance day in the current month is denoted as d_0. In addition, $p^1_{t-\Delta t}$ and p^1_t are defined as the settlement prices of the target futures before and on the issuance day in the current month, respectively; r_{-1} and r_0 be the mean release rates of the target futures before the issuance day in the current month and from that day to the end of the month, respectively. Then, we have

$$p^1_{t-t} = \frac{d_o}{m_0} * r_{-1} + \frac{(q_0 - d_0)}{m_0} * E_{t-t} r_0, \tag{2}$$

$$p^1_t = \frac{d_0}{m_0} * r_{-1} + \frac{(q_0 - d_0)}{m_0} * E_t r_0. \tag{3}$$

From formulas (2) and (3), it can be derived that

$$E_t r_0 - E_{t-t} r_0 = \frac{(m_0 - d_0)}{m_o} * \left(p^1_t - p^1_{t-t}\right). \tag{4}$$

The second part is the expected change of policy rate before the next release of major monetary policy by the central bank on the issuance day. Similar to the parameter settings for the first part, the number of days in the month of the next release of major monetary policy is denoted as m_1, and the issuance day in that month is denoted as d_1. In addition, $p^n_{t-\Delta t}$ and p^n_t are defined as the settlement prices of the target futures before and on the issuance day in that month, respectively; r_1 is the mean base rate in that month from the issuance day to the end of the month. Then, we have

$$E_t r_1 - E_{t-t} r_1 = \frac{(m_1 - d_1)}{m_1} * \left[(p^n_t - p^n_{t-t}) * \frac{d_1}{m_1} * (E_t r_0 - E_{t-t} r_0) \right]. \tag{5}$$

The third part is about the data related to the forward rate of return of national bonds (NBROR), which reflects the market expectations of rate variation. Let $t_m = 3, 6, 12, 24, 36, 60$ be the relevant time points. Then, the relevant data include 3-month NBROR ($t_m = 3$), 6-month NBROR ($t_m = 6$), 1-year NBROR (($t_m = 12$)), 2-year NBROR (($t_m = 24$)), 3-year NBROR ($t_m = 36$), and 5-year NBROR ($t_m = 60$). Through heteroscedasticity estimation, this paper computes the BNROR change rate on the issuance day compared to the previous day and estimates the variation of relevant variables within a day after the release of major monetary policies.

By applying the above calculations, this paper can effectively identify the IEOMP and separate the unexpected part, thereby obtaining the variables of unexpected IEOMP in China. Specifically, positive IEOMP represents the unexpected constructive IEOMP, while negative IEOMP represents the unexpected expansive IEOMP.

To prove the robustness of our results, this paper modifies the price index used to form IEOMP and uses the 7-day interest rate swap in China (O/N SHIBOR) to reidentify the variables of unexpected IEOMP. The sign of the unexpected IEOMP recognized by the O/N SHIBOR data was kept consistent with those of the unexpected IEOMP generated from the data on the target futures: positive IEOMP still represents the unexpected constructive IEOMP, while negative IEOMP still represents the unexpected expansive IEOMP.

If any data about the target futures, O/N SHIBOR, base rate, or NBROR are missing on the issuance day or the release day of the China Monetary Policy Report, the missing data were replaced with the data on the next day ($day = 1$). If any data are missing on the day preceding the issuance day ($day = -1$), the missing data were filled with the data on the day before that day (($day = -2$)). All the above data come from Wind Database.

3. Empirical Analysis

3.1. Modeling. To verify the stock price effect of unexpected IEOMP in microenterprises, this paper treats the daily change of the stock price of listed enterprises, i.e., the stock yield, as the explained variable. The explained variable was designed for the following reasons.

Firstly, the stock yield can measure the stock price effect of unexpected IEOMP more frequently than the other corporate-level outcome variables. The variable is constructed based on high-frequency data (daily frequency) and the issuance day. The stock yield and IEOMP variation are of the same frequency, and both are discrete variables.

Table 1 lists the variables involved in our empirical analysis.

Secondly, the stock price is forward-looking and brings two additional benefits to our empirical analysis: (1) under the assumptions of rational expectations and rapid market clearance, all predicted information is included in the stock price. Thus, the stock price variation only reveals the impact of new information and manages to effectively measure the influence of unexpected IEOMP on enterprises. (2) The stock yield "absorbs" the changes in the economic environment and thereby covers the short- and long-term effects of unexpected IEOMP.

According to the high-frequency identification theory, when stock yield serves as the explained variable, the unexpected IEOMP is orthogonal to the other factors affecting the stock yield on the current day. This paper predicts that unexpected IEOMP significantly affects the stock price of listed enterprises.

Based on the above settings, this paper verifies the influence of unexpected IEOMP on the corporate stock price. The benchmark model for regression is a fixed effects model based on panel data:

$$\Delta R_{i.t} = \beta_0 + \beta_1 \mathrm{MPShock}_t + \beta_2 Z_{i,t} + \alpha_i + \nu_t + \epsilon_{i,t}, \tag{6}$$

where the explained variable $\Delta R_{i.t}$ is the stock yield composed of stock price data, representing the stock price of listed enterprises on the issuance day, compared with the previous day; the explanatory variable $MPShock_t$ is the unexpected IEOMP; α_i, and ν_t are individual fixed effects and time fixed effects, respectively; $Z_{i,t}$ is control variables, all characteristic variables related to the balance sheet of enterprises [18–21]; and $\epsilon_{i,t}$ is the error term.

Table 1: Variables for empirical analysis.

Type	Code	Name	Definition
Explained variable	ΔR	Stock yield	$(R_t - R_{t-1})/R_{t-1}$
Explanatory variable	*MP* Shock	Unexpected IEOMP	High-frequency identification
Control variable	*Log assets*	Enterprise scale	Log of corporate total assets
	Cash over assets	Cash-assets ratio	Cash/total assets
	Earnings over assets	Income-assets ratio	Operating income/total assets
	Fixed assets over assets	Fixed assets ratio	Fixed assets/total assets
	Log Market-to-Book	Log of book-to-market ratio	Log of book-to-market ratio
	Debt over earnings	Debt-to-income ratio	Total liabilities/operating income
	Earnings over interest expenses	Income-expenditure ratio	Operating income/interest spending

Table 2: Descriptive statistics on control variables.

Name	Code	Observation	Mean	Standard deviation	Minimum	Maximum
Enterprise scale	Log *assets*	30,729	23.55	1.352	20.10	27.72
Cash-assets ratio	*Cash over assets*	30,729	0.008	0.089	−0.264	0.367
Income-assets ratio	*Earnings over assets*	30,729	0.040	0.052	−0.181	0.282
Fixed assets ratio	*Fixed assets over assets*	30,729	0.233	0.176	0.002	0.732
Log of book-to-market ratio	Log *Market-to-Book*	30,729	1.377	0.633	−0.222	3.349
Debt-to-income ratio	*Debt over earnings*	30,729	25.82	53.20	−52.72	313.1
Income-expenditure ratio	*Earnings over interest expenses*	30,729	-1.306	64.29	−390.2	348.5

3.2. Descriptive Statistics. Table 2provides the descriptive statistics about characteristic variables related to the balance sheet of enterprises, i.e., the control variables in our empirical analysis. The data on the corporate level all come from the Wind Database. To ensure the rationality of the results, the micro-enterprise data were cleaned by eliminating the enterprises under special treatment (ST), those in the financial and insurance industries and those with missing values. According to the descriptive statistics, there were 30,729 sample observations on the issuance dates from 2014 to 2018. The characteristic variables in Table 2 include enterprise scale, cash-assets ratio, income-assets ratio, fixed assets ratio, log of book-to-market ratio, debt-to-income ratio, and income-expenditure ratio. The descriptive statistics show that all these variables changed in reasonable ranges.

3.3. Empirical Results. Table 3 shows the regression results of formula (6), where the explained variable is stock yield (ΔR), the explanatory variable is unexpected IEOMP (*MPShock*), and the control variables are the characteristic variables of enterprises (Log *assets, Cash over assets, Earnings over assets, Fixed assets over assets,* Log *Market-to-Book, Debt over earnings, and Earnings over interest expenses*). The bracketed figures are Z-scores; *, **, and *** represent the significance levels of 10%, 5%, and 1%, respectively. To control the heteroscedasticity, the cluster-robust standard error was employed in our regression model.

Since the positive IEOMP represents the unexpected constructive IEOMP, the regression results in Table 3 suggest that, on the significance level of 5%, the negative coefficient indicates that the unexpected IEOMP significantly inhibits stock yield; that is, unexpected constructive IEOMP has an average negative effect on the corporate stock price. This means the unexpected IEOMP significantly affects the stock price of Chinese listed enterprises, evoking stock price fluctuation.

Table 3: Stock price effect of unexpected IEOMP.

Variable	ΔR
MP Shock	−4.105**
	(−2.535)
Log assets	5.577***
	(18.75)
Cash over assets	30.58***
	(6.407)
Earnings over assets	26.47***
	(4.037)
Fixed assets over assets	17.93***
	(9.518)
Log Market-to-Book	20.72***
	(26.57)
Debt over earnings	0.0180**
	(2.507)
Earnings over interest expenses	0.00614
	(1.253)
Constant	−4.105**
	(−2.535)
Time FE	Yes
Firm FE	Yes
Observations	30,729
Number of id	3,239

To sum up, it can be concluded that unexpected IEOMP has a significant effect on the stock price of Chinese listed enterprises: it could cause significant stock price fluctuation in these enterprises.

4. Discussion

4.1. Industrial Heterogeneity. Based on unexpected IEOMP, the representative stock price indices of several industries were regressed: the energy industry, medical health industry, optional consumption industry, and military and defense

Table 4: Unexpected IEOMP and stock price indices of different industries.

Variables	(1) Energy	(2) Medical health	(3) Optional consumption	(4) Military and defense
MP Shock	0.0827	−0.744	−0.279	−3.811***
	(0.626)	(−1.227)	(−0.699)	(−20.76)
Constant	2.073***	7.121***	4.066***	4.004***
	(10.79)	(6.567)	(6.521)	(8.138)
Observations	16	16	16	16
R-squared	0.053	0.143	0.070	0.880

industry. These indices were provided by China Securities Index. The estimation model is as follows:

$$\Delta R_t = \alpha_0 + \alpha_1 \times \text{MPShock}_t + \partial_t. \quad (7)$$

Table 4 summarizes the regression results of unexpected IEOMP (*MP Shock*) relative to the stock yield variables established on the selected industry indices. The results mainly reflect the different responses of these stock yield variables to unexpected IEOMP. In Table 4, the bracketed figures are t-values; *, **, and *** represent the significance levels of 10%, 5%, and 1%, respectively. To control the heteroscedasticity, the cluster-robust standard error was employed in our regression model.

The regression results show that the stock price of the military and defense industry in China is more sensitive to unexpected IEOMP than that of the other three industries. The regression coefficient of unexpected IEOMP relative to the stock yield established on the stock price index of China's military and defense industry was significantly negative at the significance level of 1%.

Overall, the unexpected IEOMP has a heterogenous effect on the stock price. The stock price indices of different industries respond differently to unexpected IEOMP. The fiercest response belongs to the stock index of China's military and defense industry.

After verifying the industrial heterogeneity of the influence of unexpected IEOMP over the Chinese stock market, the next step is to go deeper to the corporate level and explore how unexpected IEOMP affects the A-share listed Chinese military and defense enterprises.

4.2. Empirical Analysis on Listed Military and Defense Enterprises. To disclose the stock price effect of unexpected IEOMP in the military and defense industry, this paper screens the listed military and defense enterprises in China. The original samples were replaced with testing the robustness of the stock price effect of unexpected IEOMP on Chinese listed enterprises. The benchmark model for regression is formula (6).

Table 5 reports the regression results of formula 6 on listed military and defense enterprises. Note that the bracketed figures are Z-scores; *, **, and *** represent the significance levels of 10%, 5%, and 1%, respectively. To control the heteroscedasticity, the cluster-robust standard error was employed in our regression model.

Table 5: Stock price effect of unexpected IEOMP on listed military and defense enterprises.

Variables	(1) ΔR
MP Shock	−1.378***
	(−6.201)
Log assets	2.989
	(1.102)
Cash over assets	21.01
	(0.566)
Earnings over assets	−327.2*
	(−1.860)
Fixed assets over assets	−50.26
	(−1.104)
Log Market-to-Book	30.49***
	(3.417)
Debt over earnings	−0.0116
	(−0.428)
Earnings over interest expenses	0.0402*
	(1.721)
Constant	−191.1***
	(−2.920)
Time FE	Yes
Observations	352
Number of id	32

The regression results in Table 5 show that, on the significance level of 1%, the negative coefficient indicates that unexpected IEOMP significantly suppresses the stock yield of Chinese listed military and defense enterprises. In other words, unexpected IEOMP has a significant effect on the stock price of Chinese listed military and defense enterprises, causing stock price fluctuation in these enterprises. Since positive IEOMP represents the unexpected constructive IEOMP, the regression results indicate that stock price decline will occur in listed military and defense enterprises in the face of unexpected constructive IEOMP.

4.3. Robustness Test. To ensure the robustness of our conclusions, a robustness test was performed on the previous empirical analysis. By replacing the price index of monetary policy, this paper sets up a factor model following the approach of Nakamura and Steinsson [14] and employs the high-frequency identification strategy to obtain the unexpected IEOMP MPShock_swap. This variable was primarily founded on the data related to the interest rate swaps in China from 2014 to 2018. The time points were still the

Table 6: Unexpected IEOMP and stock price of listed enterprises.

Variables	ΔR
MP Shock_swap	−1.655***
	(−4.356)
Log assets	3.690
	(1.471)
Cash over assets	−9.196
	(−0.247)
Earnings over assets	−269.7
	(−1.509)
Fixed assets over assets	−55.90
	(−0.921)
Log Market-to-Book	33.45***
	(3.497)
Debt over earnings	−0.0129
	(−0.510)
Earnings over interest expenses	0.0367*
	(1.684)
Constant	−148.9**
	(−2.274)
Time FE	Yes
Observations	352
Number of id	32

release days of the China Monetary Policy Report. In addition, positive IEOMP represents the unexpected constructive IEOMP, while negative IEOMP represents the unexpected expansive IEOMP.

The explanatory variable was replaced, and the unexpected IEOMP MPShock_swap was introduced to test the robustness of the stock price effect of unexpected IEOMP on Chinese listed enterprises. The benchmark model for regression is a fixed effects model based on panel data:

$$\Delta R_{i.t} = \beta_0 + \beta_1 \text{MPShock\_swap}_t + \beta_2 Z_{i,t} + \alpha_i + \nu_t + \epsilon_{i,t}, \quad (8)$$

where the explained variable $\Delta R_{i.t}$ is the stock yield; the explanatory variable $MPShock\_swap_t$ is the unexpected IEOMP; α_i, and ν_t are individual fixed effects and time fixed effects, respectively; and$Z_{i,t}$ is control variables, all characteristic variables related to the balance sheet of enterprises.

The regression results of formula (8) are displayed in Table 6, where the bracketed figures are Z-scores;*, **, and *** represent the significance levels of 10%, 5%, and 1%, respectively. To control the heteroscedasticity, the cluster-robust standard error was employed in our regression model.

The regression results show that, on the significance level of 1%, the negative coefficient indicates that unexpected IEOMP significantly reduces the stock yield of Chinese listed military and defense enterprises. That is, unexpected IEOMP has a significant effect on the stock price of Chinese listed military and defense enterprises, bringing stock price fluctuation to these enterprises, whereas positive IEOMP represents the unexpected constructive IEOMP, the regression results indicate that stock price decline will occur in listed military and defense enterprises in the face of unexpected constructive IEOMP.

All in all, it can be concluded that unexpected IEOMP has a significant effect on Chinese listed military and defense enterprises and induces stock price fluctuation in these enterprises. This is consistent with our empirical conclusion, indicating that the conclusion is highly robust.

5. Conclusions

The military and defense industry plays a crucial role in China's national strategy and economic development. Stock price fluctuation affects the future opportunities for investment and value growth, as well as the liquidity risks of enterprises. Given these two facts, this paper empirically analyzes and tests the stock price effect of unexpected IEOMP in the military and defense industry. Our analysis enables Chinese military and defense enterprises to build a more robust market mechanism for the military and defense market, open more effective channels for the industrial chain, capital chain, and private capital, and drive the national economy with the sci-tech results of defense. Through the analysis, the authors encouraged policymakers to keep an eye on the price fluctuation in the stock market and important economic information from stock price fluctuation in order to effectively identify the potential risks in the future economy and to improve the predictability of the feedback mechanism of monetary policy. To cope with abnormal fluctuations in the stock market, the designers of monetary policy can combine multiple monetary policy instruments according to the features of the stock market and implement targeted and interval regulations in the context of macro prudence.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] J. Sui and B. Liu, "Mixed-frequency identification of unexpected monetary policy non-neutrality: information effects of actions and language," *The Journal of World Economy*, vol. 43, no. 11, pp. 176–200, 2020.

[2] X. Wang, L. Zhu, and K. Wang, "Does China's monetary policy concern asset prices: based on the markov regime-switching BEKK multivariate GARCH model," *Journal of Financial Research*, vol. 449, no. 11, pp. 1–17, 2017.

[3] Y. Yuan and W. Hu, "Can contractionary monetary policy curb stock market bubbles?" *Economic Research Journal*, vol. 52, no. 10, pp. 82–97, 2017.

[4] X. Zhu and L. Zhou, "Monetary policy surprises and stock returns: evidence from media forecasts," *Journal of Financial Research*, vol. 1, pp. 102–120, 2018.

[5] R. Gong, "Information asymmetry, overconfidence, and stock price changes," *Journal of Financial Research*, vol. 492, no. 6, pp. 152–169, 2021.

[6] B. Guo and R. Zhou, "Information interaction, investment decisions, and stock prices: analysis based on institutional

investor information networks," *Journal of Financial Research*, vol. 472, no. 10, pp. 188–206, 2019.

[7] F. Jiang, Y. Hu, and N. Huang, "Textual information of central bank monetary policy report, macroeconomy and stock market performance," *Journal of Financial Research*, vol. 492, no. 6, pp. 95–113, 2021.

[8] W. Zou, X. Wang, and X. Xie, "Financial market response to central bank communication: event study on stock market," *Journal of Financial Research*, vol. 476, no. 2, pp. 34–50, 2020.

[9] K. G. Lunsford, "Policy language and information effects in the early days of federal reserve forward guidance," *The American Economic Review*, vol. 110, no. 9, pp. 2899–2934, 2020.

[10] H. Ai and D. Kiku, "Volatility risks and growth options," *Management Science*, vol. 62, no. 3, pp. 741–763, 2016.

[11] C. Cao, T. Simin, and J. Zhao, "Can growth options explain the trend in idiosyncratic risk?" *Review of Financial Studies*, vol. 21, no. 6, pp. 2599–2633, 2008.

[12] G. J. Jiang, D. Xu, and T. Yao, "The information content of idiosyncratic volatility," *Journal of Financial and Quantitative Analysis*, vol. 44, no. 1, pp. 1–28, 2009.

[13] M. Jarociński and P. Karadi, "Deconstructing monetary policy surprises—the role of information shocks," *American Economic Journal: Macroeconomics*, vol. 12, no. 2, pp. 1–43, 2020.

[14] E. Nakamura and J. Steinsson, "High-frequency identification of monetary non-neutrality: the information effect," *Quarterly Journal of Economics*, vol. 133, no. 3, pp. 1283–1330, 2018.

[15] C. Carvalho, F. Nechio, and F. Yao, "Monetary policy and real exchange rate dynamics in sticky-price models," 2019.

[16] G. Rocheteau, R. Wright, and C. Zhang, "Corporate finance and monetary policy," *The American Economic Review*, vol. 108, no. 4-5, pp. 1147–1186, 2018.

[17] R. S. Gürkaynak, B. P. Sack, and E. T. Swanson, *Do Actions Speak Louder than Words? the Response of Asset Prices to Monetary Policy Actions and Statements*, The Response of Asset Prices to Monetary Policy Actions and Statements, 2004.

[18] F. Ippolito, A. K. Ozdagli, and A. Perez-Orive, "The transmission of monetary policy through bank lending: the floating rate channel," *Journal of Monetary Economics*, vol. 95, pp. 49–71, 2018.

[19] P. Jeenas, *Monetary Policy Shocks, Financial Structure, and Firm Activity: A Panel Approach," Financial Structure, and Firm Activity*, A Panel Approach, 2018.

[20] P. Ottonello and T. Winberry, "Financial heterogeneity and the investment channel of monetary policy," *Econometrica*, vol. 88, no. 6, pp. 2473–2502, 2020.

[21] A. K. Ozdagli, "Financial frictions and the stock price reaction to monetary policy," *Review of Financial Studies*, vol. 31, no. 10, pp. 3895–3936, 2018.