



温州肯恩大学  
WENZHOU-KEAN UNIVERSITY

**The Impact of People's Bank of China's Decision During Covid-19 on Chinese Financial  
Stock market**

In Partial Fulfillment of the Requirements  
for the Bachelor of Science in Finance

by

CHEN, Zhiyan

1098488

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## Abstract

**COVID-19** has had a huge negative impact on the Chinese economy. As one of the institutions that issued relevant economic policies, the people's Bank of China decided to reduce the deposit reserve ratio on July 15, 2021, to improve the liquidity of the banking system. This paper aims to study the impact of the people's Bank of China's policy of reducing the deposit reserve ratio on the stocks of Chinese financial companies during the epidemic period.

The event study is used in this paper to analyze the data of 39 Chinese listed financial companies. By comparing the normal rate of return in the estimated period with the stock rate of return in the event period, this paper judges whether there is an abnormal rate of return and whether the abnormal rate of return is positive or negative, so as to study whether the measure of the people's Bank of China to reduce the deposit reserve ratio has an impact on the stocks of Chinese financial companies and whether the impact is positive or negative.

*Keywords:* People's Bank of China, deposit reserve ratio, financial stock market, event study, normal rate of return, abnormal rate of return.

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## Introduction

COVID-19 has seriously affected China's economy, China's economic output dropped by 6.8% over the first quarter of 2020. according to the articles of Dr. Zekai and Dr. feyyaz, the stocks in the Chinese market is seriously declined. In this case, the people's Bank of China made a policy of reducing the deposit reserve ratio by 0.5 percentage points on July 15, 2021. The bank deposit reserve ratio is the ratio of deposit reserves to total deposits, which is a part of the deposits that commercial banks and other financial institutions are required to pay to the central bank.

According to the money supply theory, reducing the deposit reserve ratio will make the stock price rise. However, due to the outbreak of the epidemic, there are uncertain factors in the relationship between the decision of the people's Bank of China to reduce the deposit reserve ratio and the change of financial companies' stock prices.

Using the data of 39 Chinese listed financial companies downloaded from CSMAR, this paper uses the event research method to study the relationship between the decision-making of the people's Bank of China and the stock price of financial companies. The date on which the people's Bank of China makes the decision is July 15, 2021, which is the event date. In addition, this paper calculates the normal rate of return of the sample company's stocks in the estimation period and the rate of return of the sample company's stocks in the event period, also, the abnormal rate of return by comparing the stock rate of return in the event period with the normal rate of return

of the shares is calculated. The existence of an abnormal rate of return indicates that the decision made by the people's Bank of China has an impact on the financial companies' stock price, the positive or negative abnormal return shows the positive and negative impact.

In view of the time relationship, this paper fails to study the long-term impact of the decision of the people's Bank of China on the stock price of financial companies, Besides, Due to large amounts of influencing factors, this study cannot control the variables well. However, by studying the relationship between the decision of the people's Bank of China and the stock price of Chinese financial companies, we can know whether the relationship between the two is in line with the money supply theory during the epidemic, Whether the epidemic has changed the relationship between the two events.

## Literature Review

### **The impact of Covid-19 and decisions made by the People's Bank during the period**

COVID-19 has had a devastating impact on China's economy. A large number of small and medium-sized enterprises have closed down, a large number of people are unemployed because of the epidemic. According to the research of Michael and Andrew, China's national economic output shrank by 6.8% year-on-year in the first quarter of 2020, which is the worst performance of China's economy since the implementation of national economic accounting in 1992. Chinese society is facing great challenges. The People's Bank of China is one of the institutions responsible for analyzing the current economic form and guiding the implementation of relevant policies in China. During COVID-19, the Chinese people's Bank has made many monetary policies, including extending the small loans and postponing debt service (Kerry, 2021), expanding refinancing, and rediscounting facilities. (Yunpeng, Qun & Zhou, 2021). During the crisis period, liquidity is crucial to the financial viability of the banking system. In order to improve the liquidity of the banking system, the people's Bank of China reduced the deposit reserve ratio by 0.5 points on July 15, 2021 (Kerry, 2021), reducing the deposit reserve ratio can enable banks to provide more credit, thus the liquidity of the banking system will be improved accordingly. Moreover, the people's Bank of China will inject a total of 1,75 trillion yuan into the banking system (Michael & Andrew, 2020)

## **The impact of central banks decisions on financial stocks**

Generally, the central bank's monetary policy can have a significant impact on the stock market. Theoretically, since monetary policy has a significant impact on the condition and stability of the financial market by affecting asset prices and returns, the stock market will have a significant response in the short term (Charles, 2021).

According to Bernanke and Kutner's research on the impact of unexpected changes in monetary policy on stock prices, the stock market has a strong response to unexpected changes in fund interest rates. Specifically, the unexpected decline of 25 basis points in the federal funds rate was related to a rise of about 1% in the CRSP index (Bernanke & Kuttner, 2005). According to Chen's research, during the bear market, tightening monetary policy has a greater impact on the monthly stock return of the S & P 500 index and increases the possibility of turning to the bear market (Chen, 2007). Similarly, according to Zhang's article, the impact of monetary policy significantly affects the total stock market return. With regard to sectoral stock returns, the response to changes in discounted official interest rates is heterogeneous (Zhang, 2021). According to the above researches, the stock market can be affected by the central bank's monetary policies.

## **The impact of reserve requirement ratio reduction on the financial stock market before the epidemic**

For the changes in the deposit reserve ratio, many domestic and foreign scholars have put forward their own research hypotheses. According to Li's statement, there is a

negative correlation between the change of deposit reserve ratio and stock index, and the effect of deposit reserve ratio adjustment on the stock market will be affected by the market atmosphere at that time. According to Tarver's paper, the adjustment of the deposit reserve ratio has a lagging and unstable impact on the stock market (Tarver, 2021). According to Geng and Zhai's research, the emergence and development of the stock market has gradually changed the structure and demand of various currencies in the money market; On the other hand, with the deepening of the scale and influence of the stock market, the formulation of monetary policy is more or less affected by the fluctuation of the stock market (Geng and Zhai, 2015)

Wang uses the Granger causality test and impulse response function of the VAR model to analyze the impact of the change of the central bank's deposit reserve ratio on the Shanghai and Shenzhen 300 index. Their research shows that the change of deposit reserve ratio has a certain negative impact on the fluctuation of the stock market in the short term and has little impact in the long term (Wang, 2009). Bindseil draws a conclusion through research, the effect of deposit reserve ratio adjustment on stock price is uncertain; Moreover, the impact of its changes on stock returns in various industries is also asymmetric, and there is no law to follow (Bindseil, 1997)

In conclusion, previous studies have shown the impact of Covid-19 and decisions made by the People's Bank during the period, the impact of central banks decisions on financial stocks, and the impact of reserve requirement ratio reduction on financial

stock market before the epidemic. Although the above papers have described the impact of many central banks reducing the deposit reserve ratio on financial companies. However, affected by the epidemic situation, the situation can be different. Therefore, during the epidemic period, the impact of the people's Bank of China reducing the deposit reserve ratio on the stock market is a deficiency of previous studies. I will combine the research methods of the previous paper to study the relationship between the decision-making of the people's Bank of China and China's financial stock market.

## **Methodology**

### **Money supply theory**

According to the money supply theory proposed by Friedman Schwartz, the deposit reserve ratio decreases will lead the money supply increase. When the amount of money held by the public exceeds the amount of money that they are willing to hold, the public will use part of their money to buy financial assets. So, the mechanism of the theory is that the decrease of the deposit reserve ratio will cause an increase in the money supply, which will drive people to buy stocks with money that exceed their needs. Because of the relationship between supply and demand, the stock price will rise (Canto and Wiese,2018). Therefore, the hypothesis put forward in this article is that the decision to reduce the deposit reserve ratio put forward by the People's Bank of China during the epidemic will have a significant positive effect on the stock price.

## **Research method**

This paper adopts the event research method. This paper selects 39 banks in all A-share markets as the research object. The event study method is applicable to study whether an event influences the stock price fluctuation in the market and whether the influence is positive or negative. This paper mainly studies whether the decision of the People's Bank of China affect the stock price of Chinese listed financial companies during the epidemic, so this method is suitable for this paper. The event research method studies the changes of the sample stock return before and after the event, and then explains the impact of the event on the sample stock price and return. The steps of the event research method in this article are as follows: firstly, determine the research event and event period. Secondly, select the research sample. Thirdly, calculate the normal return of the sample stock. Fourthly, calculate the abnormal return of the stock. Fifthly, sample statistical test. Finally, analyze the results.

the study event is determined at first. The research event in this paper is the day People's Bank of China reduces the deposit reserve ratio of financial institutions by 0.5 percentage, which is July 15, 2021. The research time of the event research method is divided into three periods: estimation period, event period, and post-event period. The estimation period is used to estimate the normal rate of return of the stock of the sample company. The event period refers to the occurrence day of the research event, which is mainly used to study the short-term impact of the event on the stock price of the listed company. The post-event period is used to study the long-term impact of the event on

the stock price of the listed company. This paper studies the short-term impact of the decision-making of the People's Bank of China during the epidemic on the stock prices of listed financial companies in China, Therefore, fifteen days before and after the event day is selected as the event period.

The normal rate of return refers to the rate of return of the stock when the event does not occur. This paper uses the market model to calculate the market rate of return.

The market model assumes there is a linear relationship between the market return and the return of a single stock and establishes a regression model. The formula is as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

$R_{it}$  represents the yield of stock  $i$  at  $t$ ,  $R_{mt}$  represents the market rate of return at  $t$ ,  $\varepsilon_{it} \sim (0, \sigma)$ .  $\alpha_i$  and  $\beta_i$  is estimated by OLS and the normal rate of return of the stock is calculated by  $E(\tilde{R}_{it}) = \tilde{\alpha}_i + \tilde{\beta}_i R_{mt}$ ,  $t \in (T_0, T_1)$

Abnormal rate of return refers to the difference between the actual rate of return of stocks and the normal rate of return during the event period. This paper uses the abnormal rate of return of a single stock, sample average abnormal return rate, cumulative abnormal return on a single stock, and sample cumulative average abnormal return.

the formula of an abnormal rate of return of a single stock  $AR_t$  is as follows:

$$AR_{it} = R_{it} - R_{mt}$$

$R_{mt}$  represents the market rate of return

Sample average abnormal return rate is to sum and average the abnormal return rate of stocks in the sample, the formula is as follows:

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{it}$$

The formula of cumulative abnormal return on a single stock  $CAR (t_1, t_2)$  is as follows:

$$CAR (t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$$

The formula of sample cumulative average abnormal return is as follows:

$$CAAR_t = \frac{1}{N} \sum_{i=1}^N CAR_{it}$$

If AAR and CAAR are significantly zero, it indicates that the event of reduction of the deposit reserve ratio put forward by the People's Bank of China has no effect on the stock price. If AAR and CAAR are not significantly zero, it indicates that the event has an impact on the stock price.

The single sample t-test is used to analyze the sample data in this paper. The single sample t-test is generally used to compare the sample mean and the overall mean, in order to analyze whether there is a significant difference between them. The test of this paper mainly compares the AAR and CAAR of the sample stock with zero.

The test hypothesis of AAR is  $H_0: AAR_t = 0$ ;  $H_1: AAR_t \neq 0$ .

The test hypothesis of CAAR is  $H_0: CAAR_t = 0$ ;  $H_1: CAAR_t \neq 0$

T value and SIG value can be calculated by SPSS and compared with 1%, 5%, and 10% respectively. If the sig value is less than these values, it indicates that the decision of the People's Bank of China to reduce the deposit reserve ratio during the epidemic has a significant effect on the stock price. The positive and negative AAR and CAAR values can be used to judge whether the event has a positive or negative impact on the stock price.

### **data collection**

The data selected in this paper are from CSMAR

Data is collected from 39 most representative companies listed since January 3, 2017.

To November 3, 2021.

## Analysis and Findings

the AAR and CAAR of the stocks in the sample were tested by a single sample and bilateral T-test. The results are as follows:

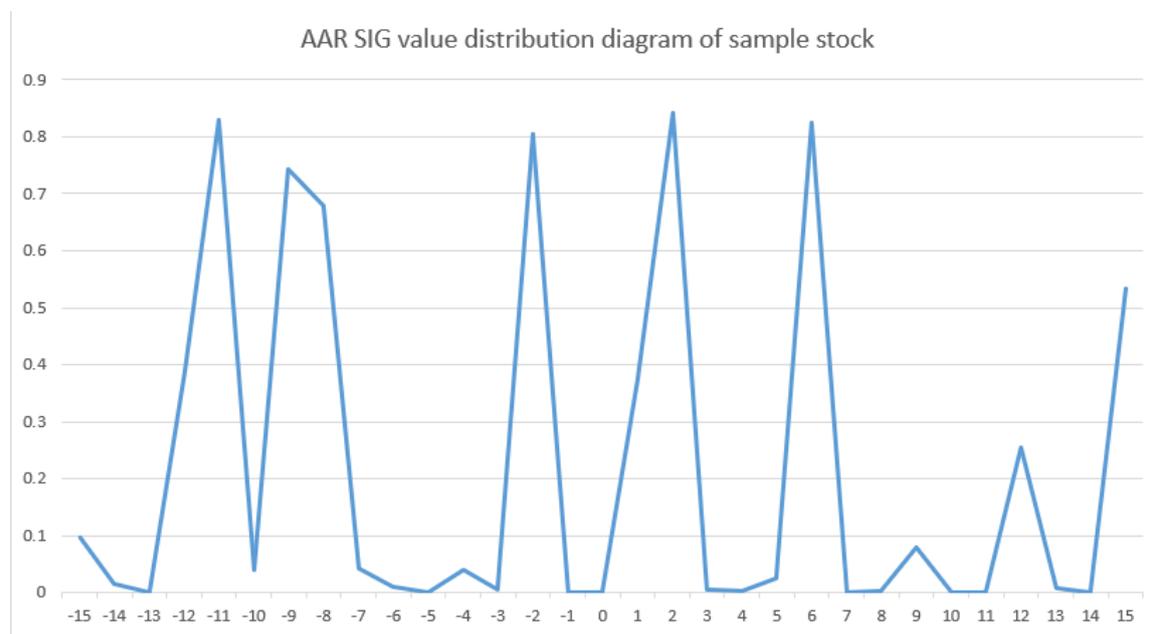
date	AAR	N	t value	sig	star	CAAR	t value	sig	star
-15	0.0037	39	1.702	0.0967	*	0.0037	1.702	0.0967	*
-14	0.008	39	2.5557	0.0146	**	0.0117	3.1317	0.0033	***
-13	-0.0163	39	-6.1028	0	***	-0.0046	-1.1275	0.2664	
-12	-0.0021	39	-0.8751	0.3869		-0.0068	-1.2014	0.2368	
-11	-0.0004	39	-0.2167	0.8296		-0.0071	-1.544	0.1307	
-10	0.0058	39	2.1366	0.039	**	-0.0013	-0.3143	0.755	
-9	-0.0008	39	-0.3297	0.7434		-0.0021	-0.3793	0.7065	
-8	0.0005	39	0.4152	0.6802		-0.0016	-0.2646	0.7927	
-7	0.0052	39	2.1057	0.0417	**	0.0036	0.5916	0.5575	
-6	-0.0049	39	-2.7405	0.0092	***	-0.0013	-0.2066	0.8374	
-5	-0.0119	39	-5.3357	0	***	-0.0132	-1.8979	0.0651	*
-4	-0.0058	39	-2.1226	0.0402	**	-0.019	-2.246	0.0304	**
-3	-0.0092	39	-2.8953	0.0062	***	-0.0282	-2.7155	0.0098	***
-2	0.0006	39	0.2472	0.806		-0.0276	-2.713	0.0099	***
-1	-0.0105	39	-5.6454	0	***	-0.0381	-3.6103	0.0009	***
0	0.0108	39	3.9889	0.0003	***	-0.0273	-2.7801	0.0083	***
1	-0.0017	39	-0.9019	0.3726		-0.0289	-2.9712	0.0051	***
2	0.0004	39	0.2013	0.8415		-0.0285	-2.6202	0.0125	**
3	-0.0062	39	-3.0615	0.004	***	-0.0347	-2.9294	0.0056	***
4	-0.0072	39	-3.137	0.0032	***	-0.0419	-3.3019	0.0021	***
5	0.0046	39	2.3324	0.0249	**	-0.0373	-2.7683	0.0086	***
6	0.0003	39	0.2222	0.8253		-0.0371	-2.8349	0.0072	***
7	-0.0102	39	-3.9091	0.0004	***	-0.0473	-3.1653	0.003	***
8	-0.0071	39	-3.2938	0.0021	***	-0.0544	-3.3171	0.002	***
9	0.0039	39	1.8025	0.0792	*	-0.0505	-3.2561	0.0023	***
10	-0.0152	39	-6.3402	0	***	-0.0656	-4.3599	0.0001	***
11	-0.0117	39	-5.6331	0	***	-0.0773	-5.2854	0	***
12	0.0024	39	1.1549	0.2552		-0.0749	-5.2783	0	***
13	-0.0031	39	-2.871	0.0066	***	-0.078	-5.2754	0	***
14	-0.009	39	-4.7542	0	***	-0.087	-5.3911	0	***
15	0.0007	39	0.629	0.533		-0.0863	-5.3112	0	***

(\* , \* \* , \* \* \* are significant at the levels of 10%, 5% and 1%, respectively)

According to the data in the table, the AAR and CAAR of Chinese financial companies changed significantly before and after the day when the People's Bank of China decided to decrease the deposit reserve ratio. In the period of (-5,15), the CAAR of Chinese financial companies was significantly less than zero continuously, and there was no significant difference between the CAAR and zero on the 6th, 8th,

9th, 10th, 13th, and 15th days before the People's Bank of China decided to reduce the deposit reserve ratio. CAAR was significantly greater than zero at 10% on the 15th and 5th day before the People's Bank of China decided to lower the deposit reserve ratio and was significantly greater than zero at 5% on the 4th day before the People's Bank of China decided to lower the deposit reserve ratio. In the period of (-3,15), CAAR is significantly greater than zero at the 1% level, indicating that the stock prices of Chinese financial companies decrease before and after the day when the People's Bank of China decided to decrease the deposit reserve ratio.

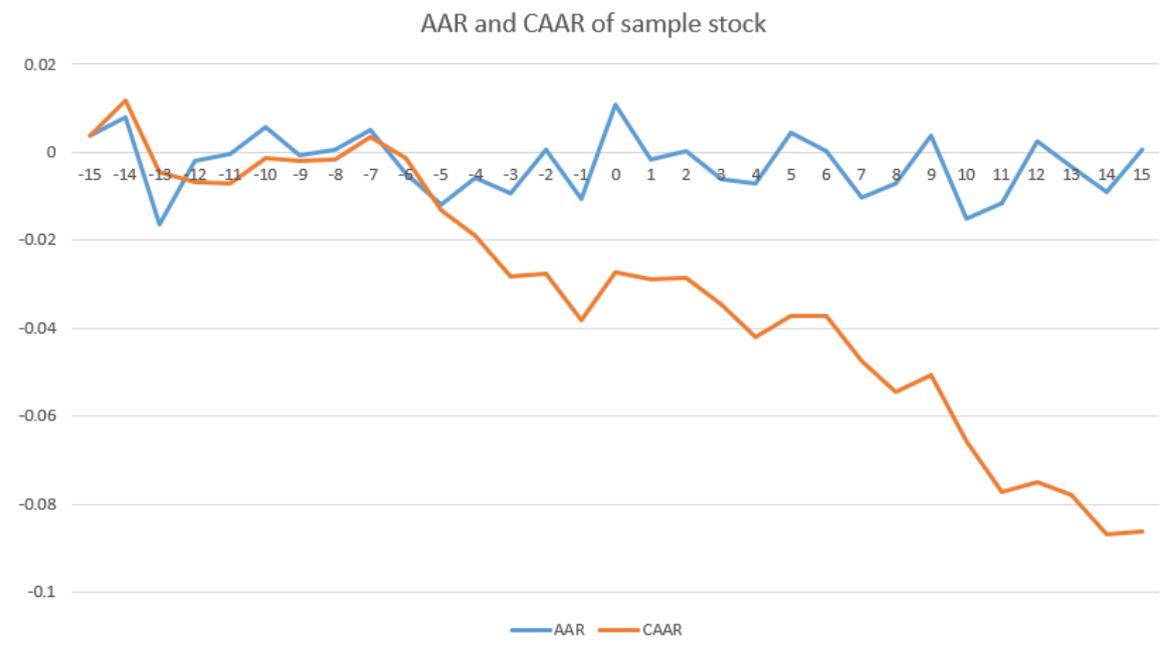
AAR sig value distribution diagram of sample stock is as follows:



Combined with further analysis of the table and chart, sig values of sample stocks are all less than 0.01 when  $t = -13, -6, -5, -3, -1, 3, 7, 8, 9, 10, 11, 13, 14$ , indicating that AAR of sample stocks is significantly negative in these trading days. From the sample

stock, the SIG value curve of AAR shows no obvious characteristics. The stock prices of the sample stocks fluctuated somewhat before and after the event.

Average abnormal return rate, AAR and cumulative average abnormal return, CAAR of sample stocks



According to the chart, in the period of (-15, 15), the CAAR of Chinese financial companies decreased, and the decreasing trend became increasingly obvious. Chinese financial companies' AAR hovers around zero at the period of (10,10).

### Conclusion

This paper uses the event study method to select 39 Chinese financial companies from 2017 to 2021 as research samples, then conducts a single sample t-test on the AAR and CAAR of the stock of the sample Chinese financial companies, Also, this paper studies the impact of the People's Bank of China's reduction of the deposit reserve

ratio on China's financial stock market during the epidemic. The conclusion is that the stock prices of China's financial companies are falling before and after the People's Bank of China cut the deposit reserve ratio. This conclusion is contrary to the money supply theory. This paper believes that the reason is that it is a special situation that appears during the epidemic. It is the epidemic that led to the decline of the stock price of Chinese financial companies, However, the measure of the People's Bank of China to reduce the deposit reserve ratio did not achieve good results. It failed to raise the stock price of Chinese financial companies and improve the situation.

### **Limitations and Contributions**

There are some limitations that need improvements and contributions in this paper.

The first limitation is that the stocks of Chinese financial companies will be affected by many other factors except the policy of the People's Bank of China. Therefore, it is impossible to control the variables well and judge whether the rise or fall of the stocks of Chinese financial companies is caused by the policies of the people's Bank of China.

The second limitation is that the paper only studies the short-term impact of the decisions of the People's Bank of China on Chinese financial companies. Due to time constraints, this paper fails to collect data after 2021, Therefore, this paper cannot

judge the long-term impact of the decisions of the People's Bank of China on Chinese financial companies.

The third limitation is that there are only 39 Chinese financial listed companies are selected as samples in this paper, which is relatively small, Therefore, there will be occasional existence.

The contribution of this paper is that it discusses the impact of the People's Bank of China's policy of reducing the reserve requirement ratio on the stocks of Chinese financial companies during the epidemic. So far, no paper has discussed the relationship between the reduction of deposit ratio by the People's Bank of China and the stocks of Chinese financial companies during the epidemic. The emergence of the epidemic makes the relationship between many events special. The conclusion drawn in this paper is contrary to the money supply theory, thus reflecting the particularity of things during the epidemic. This paper can provide some inspiration.

## Reference

Zekai S, Feyyaz Z(2020) *Coronavirus (covid-19) and stock markets: the effects of the pandemic on the global economy* Retrieved from

<https://dergipark.org.tr/en/pub/asead/issue/54055/72181>

Kerry L (Feb 2021) *COVID-19 and the Chinese economy: impacts, policy responses and implications* Retrieved from

<https://www.tandfonline.com/doi/full/10.1080/02692171.2021.1876641>

Yunpeng S, Qun B, Zhou L (Feb 2021) *Coronavirus (Covid-19) outbreak, investor sentiment, and medical portfolio: Evidence from China, Hong Kong, Korea, Japan, and U.S* Retrieved from

[https://www.sciencedirect.com/science/article/pii/S0927538X20306752?dgcid=rss\\_sd\\_all](https://www.sciencedirect.com/science/article/pii/S0927538X20306752?dgcid=rss_sd_all)

Michael F, Andrew T (Aug 31 2020) *The People's bank of China's response to the coronavirus pandemic: A quantitative assessment* Retrieved from

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7456622/>

Charles P (2021) *How Monetary Policy Affects Your Investments* Retrieved from

<https://www.investopedia.com/articles/investing/052813/how-monetary-policy-affects-your-investments.asp>

Bernanke B, Kuttner K (May 03 2005) *What Explains the Stock Market's Reaction to Federal Reserve Policy?* Retrieved from

<https://onlinelibrary.wiley.com/doi/full/10.1111/j.1540-6261.2005.00760.x>

- Chen S (Apr 2007) *Does Monetary Policy Have Asymmetric Effects on Stock Returns?* Retrieved from [https://www.jstor.org/stable/4494266?seq=1#metadata\\_info\\_tab\\_contents](https://www.jstor.org/stable/4494266?seq=1#metadata_info_tab_contents)
- Zhang Z (Aug 2021) *Stock Returns and Inflation Redux: An Explanation from Monetary Policy in Advanced and Emerging Markets* Retrieved from <https://www.imf.org/wpiea2021219-print-pdf>
- Tarver E (Aug 10 2021) *What happens if the Federal Reserve lowers the reserve ratio?* Retrieved from <https://www.investopedia.com/ask/answers/071415/what-happens-if-federal-reserve-lowers-reserve-ratio.asp>
- Geng Z, Zhai X (Mar 27 2015) *Effects of the Interest Rate and Reserve Requirement Ratio on Bank Risk in China: A Panel Smooth Transition Regression Approach* Retrieved from <https://www.hindawi.com/journals/ddns/2015/571384/>
- Wang L (Oct 19,2009) *The Effect of Government Policy on China's Stock Market* Retrieved from <http://citeseerx.ist.psu.edu>
- Bindseil U (1997) *Reserve Requirements and Economic Stabilization* Retrieved from <https://www.bundesbank.de>
- Canto V, Wiese A (2018) *Money Supply Theory* Retrieved from <https://www.sciencedirect.com/topics/economics-econometrics-and-finance/money-supply-theory>
- David A. M, Thomas M & Diana B *Public Banks and Covid-19* Retrieved from <https://www.queensu.ca/devs/david-mcdonald/public-banks-and-covid-19>

Meles A, Salerno D, Sampagnaro G and Fu M (June 2021) *The going-public decision and firm risk* Retrieved from

<https://www.sciencedirect.com/science/article/pii/S1572308921000425>