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Potential Arbitrage Analysis:
Based on the Fed's Reduction on the SMCCF and the Future Monetary Policy

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ABSTRACT
This article represents an analysis of the Fed's recent reduction on Secondary Market Corporate Credit Facility（SMCCF） and the future monetary policies on The Federal Open Market Committee (FOMC). And we try to explore potential arbitrage opportunities according to the impact of these policies. Based on these events, we made a simple hedging strategy longing the ETF in the real estate industry and shorting the ETF of investment-grade bonds. As a result, we have gained profit in both positions. Moreover, we almost didn't make a profit on the short side by the end of the transaction. Because the number of the holdings that the Fed started to sell was not too big, and the market needed time to respond to the policy change. At the end of this article, we conclude that the Fed's recent monetary policies effectively influenced the real estate and bond markets, especially during the pandemic period. Therefore, Fed needs to consider potential influence when making decisions. Besides the credit tools such as SMCCF make a more accurate and fast adjustment to the currency market, which provides investors with many opportunities to build a potential portfolio when the Fed changes its use of them.

Keywords: *SMCCF, FOMC, Hedge fund, Investment grade bonds, Real Estate*

1. INTRODUCTION

According to Thorbecke, the covid-19 had a very bad impact on the US economy [1]. Therefore, the US government tried to "save" the market. On March 23, 2020, the Federal Reserve established the Secondary Market Corporate Credit Facility (SMCCF) to support credit to employers by providing liquidity for outstanding corporate bonds circulating in the market. As Gilchrist mentions, SMCCF will buy us investment-grade corporate bonds and corporate bonds issued by US-listed exchange-traded funds on the secondary market [2]. Also, in July, the FOMC meeting gave that The Federal Open Market Committee (FOMC) voted to keep the current Fed Funds rate at about "zero levels. (0-0.25%). Also, FOMC will keep its commitment of about monthly 120 billion (2/3 are putting into the treasury market) in assert purchases until further achievement happens on its inflation. What's more, FOMC points out that they have reached some achievements.

According to Mizrach, Fed buys SMCCF effectively alleviates the background at the time of the outbreak of the shortage of liquidity in financial markets in the United States and provides support for the enterprise bonds [3]. Also, according to Becker and Benmelech, since 2020, the Federal Reserve has increased the quantity of the release bonds [4]. And the fed by SMCCF after buying corporate bonds, akin to put money into the financial market, improve the market confidence and the problem of insufficient environment the U.S. stock market liquidity. After the Federal Reserve announced it would establish a mechanism to support the corporate credit market, corporate bond prices halted their rapid decline.

As Xu mentions, SMCCF plays a huge role in the US bond market [5]. The significance of FED reducing holdings of SMCCF on the impact of the U.S. investment market: Under the impetus of the reopening and expansionary fiscal stimulus, the U.S. economy may be relatively easily more than full employment, inflation risk tends to be upward, so that the fed to control inflation out some measures, on June 2, the federal reserve announced, will gradually and orderly sell-off by last year during the outbreak by SMCCF buying corporate debt portfolio.

According to O'Hara and Haque, the Federal Reserve is trying to make the US market more stable [6, 7]. After the Federal Reserve decided to reduce its holdings of SMCCF, it brought downside risks to corporate bonds. Although the Federal Reserve did not formally reduce its holdings of SMCCF on a large scale, it inevitably impacted the market. For example, when the Federal Reserve announced this tool, the confidence of the corporate credit market was significantly improved even though the Federal Reserve did not have any operation. Some corporate bonds jumped on the day the policy was announced.

The FOMC meeting is really important too. What's more, Gürkaynak, Sack, and Swansonc estimated the impact of FOMC on the market [8]. Also, Lucca and Moench recorded the stocks market price before the FOMC meeting and proved that the FOMC meeting impacted the stocks market [9]. Both show that the FOMC meeting is a helpful tool to watch the stock market's future. And during this July, the FOMC didn't raise the Fed Funds rates but remained at "0 levels". Also, the FOMC didn't announce when they would stop purchasing 120 billion monthly bonds. The unemployment rate was 5.4% (July), and the inflation was higher and higher (5.4%yearly in July). All these show that the US economy is in the process of recovering but haven't fully recovered. And the economic assignment of inflation remains the same. This shows that the market still can play better in the future.

As Raul Cruz Tadle mentions, political documents like FOMC and SMCCF release the information that affects the predictability of the finance market and benefits the estimate of the future rates [10]. Therefore, after the SMCCF and the FOMC meetings, we thought there could be a long-short trade according to the loose Fed Funds rates and the decrease in holdings of SMCCF. Therefore, the group mainly studies the impact on corporate bonds under the background of fed's proposal to reduce SMCCF holdings and the influence of real estate according to the FOMC meeting on July 28th. Then, the group discusses the investment strategies that investors can adopt, and explores the enlightenment of economic regulation that the government can get from the Fed's action.

The rest of our paper is written as follows. Section 2.1 shows the data that we collected. Section 2.2 explains the strategy that we used in the long-short trade. Section 3.1 reports the final result and the actual return of the Hedge trade. Section 3.2 describes the economic significance of this Hedging strategy. Lastly, Section 4 concludes this Hedge trade.

2. DATA AND RESEARCH METHOD

2.1 Data

We collected the US CPI index from June 2020 to August 2021 from the U.S. Department of Labor's website (https://www.bls.gov/cpi/), including the CPI, monthly CPI, and annual CPI. We also collected the daily closing price of the iShares iBoxx $ Investment Grade Corporate Bond ETF (LQD) from June 20, 2021, to August 12, 2021, and the daily closing price of the Vanguard Real Estate Index Fund ETF Shares (VNQ) from July 12, 2021, to August 12, 2021.

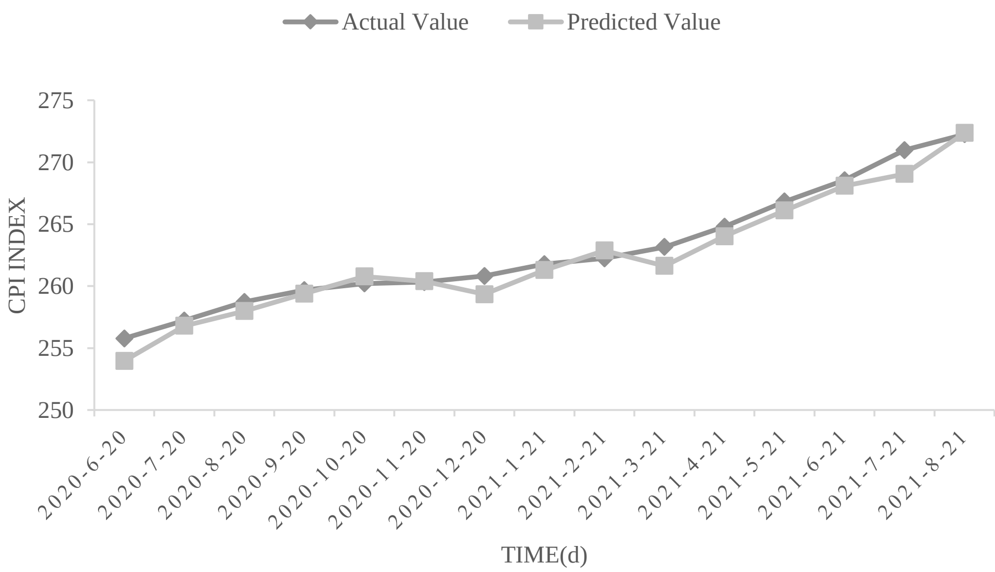

Figure 1. This figure depicts the actual and projected CPI for the US over a period of time, from June 2020 to August 2021. Data source: https://www.bls.gov/cpi/.

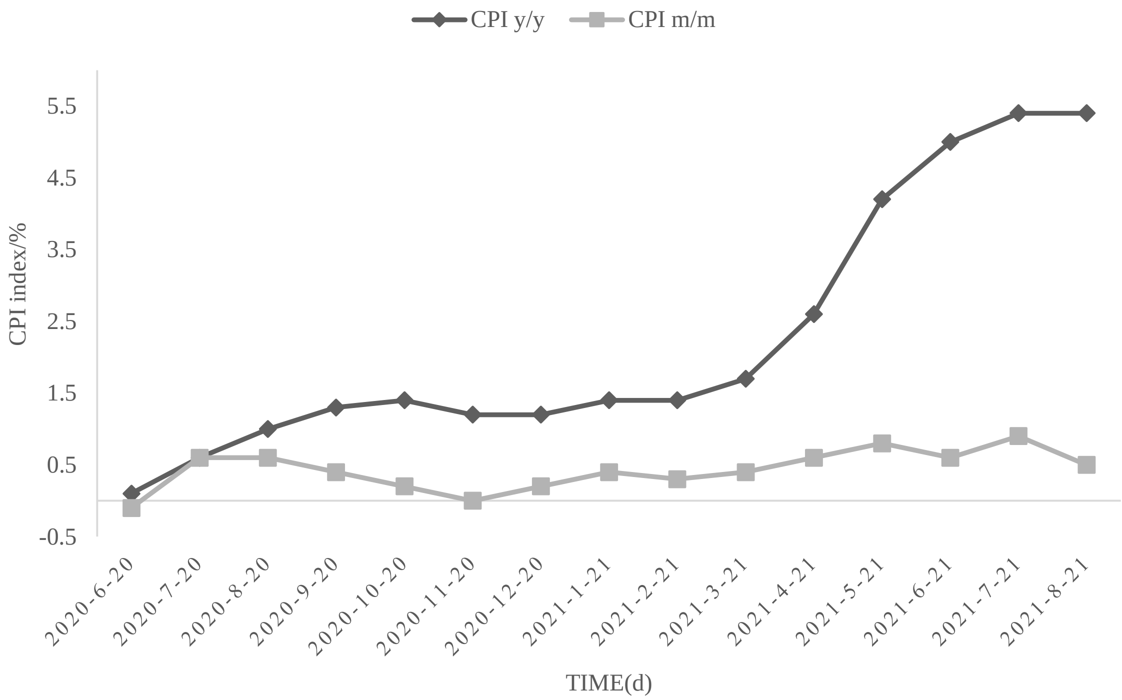

Figure 2. This figure depicts the monthly and annual CPI changes in the United States over a period of time, from June 2020 to August 2021. Data source: https://www.bls.gov/cpi/.

CPI is a price change indicator that reflects the prices of products and services related to people's lives. It is usually used as an important indicator to observe the level of inflation. For a long time (Figure 1 and Figure 2), The CPI in the United States has been on a rising trend, which indicates that the inflationary pressure in the United States is very heavy. It is clear that under the influence of COVID-19, the US government's various loose monetary policies to promote the economy has had a considerable impact on inflation. Perhaps with this in mind, the Federal Reserve announced on July 12th that it would begin to sell the corporate bonds held by SMCCF. However, it is clear from the diagram that the policy did not have any impact on inflation, so we think the fed in the future may take more drastic measures to control the high inflation in the United States. Perhaps they will be a lot of fast selling by SMCCF corporate bonds, it could bring the price of this kind of bond a greater impact.

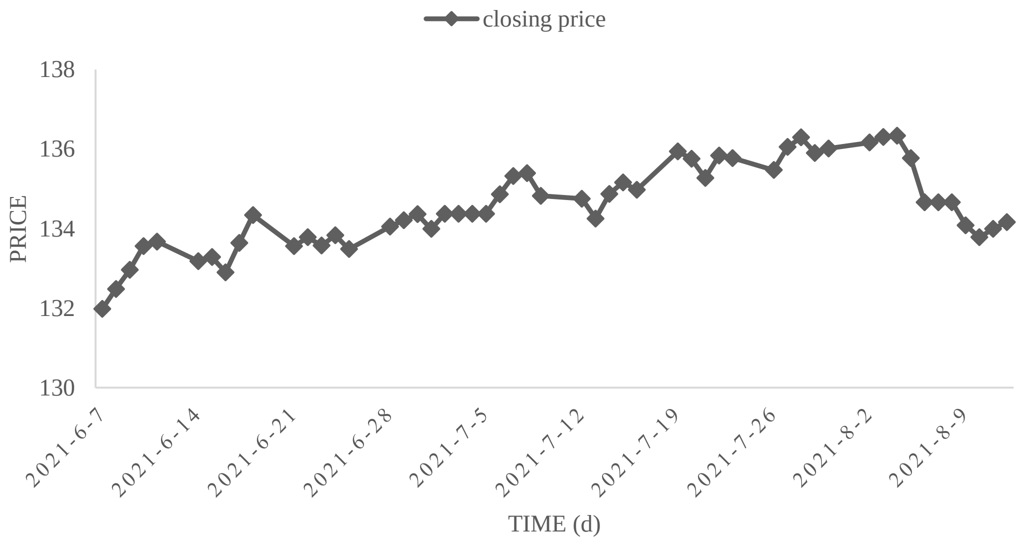

Figure 3. This figure depicts price changes in the LQD over a period of time, from June 2021 to August 2021. Data source: Yahoo Finance.

As can be seen from Figure 3, on July 13, the day after the Federal Reserve announced the start of selling corporate bonds held by SMCCF, the price of LQD had a significant decline. Then in the following ten days, the price of LQD began to pull back and fluctuate within a fixed range. We think this and the federal reserve has been sticking to the loose monetary policy have a certain relationship. The fed also said they would try to does not to affect the fund market in an effort to sell bonds, but after a period of time at the same time, we can clearly see that the market reaction is negative, shown in the starting August 4 LQD price falling, It is clear that it takes time for a policy to affect the market, and we believe that the LQD price action in Figure 3 better reflects the impact of the Fed's reduction of SMCCF on corporate bonds -- a negative, leading to a correction in bond prices

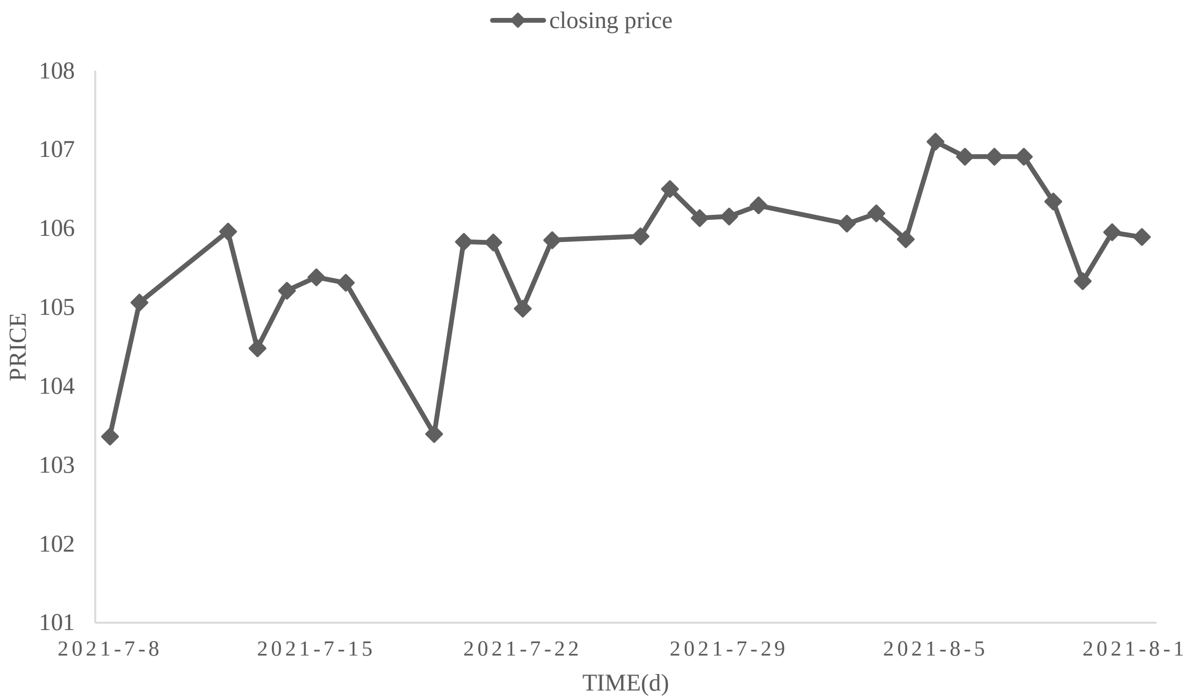

Figure 4. This figure depicts the price changes of VNQ over a period of time, from June 2021 to August 2021. Data source: Yahoo Finance.

VNQ is an ETF in the field of real estate trust, and its price is linked to the prosperity of the real estate market. In the context of inflation, real estate is a relatively good investment product that can offset the impact of inflation. In addition, it can be seen from Figure 4 that the price of VNQ has generally maintained a rising trend since July 12. And the fed's policy of continuing to increase its holdings of agency mortgage-backed securities by at least $40 billion a month, announced at the FOMC meeting in July, will continue to support VNQ price growth.

2.2 Methodology

2.2.1 Event-driven strategy

For this portfolio, we use an event-driven strategy. The main method of this strategy is to obtain excess investment returns by fully grasping trading opportunities based on advanced mining and in-depth analysis of events that may cause abnormal price fluctuations of investment products. This trading strategy requires investors through the communication industry, the rumor verification rules, data statistics, analysis, data mining, logic judgment, and a series of reasonable means. Analyzing the early may affect investment goods prices of the event to be published content and time range, and in combination with the market hot spot and trend of the market, based on clear before buy on dips to events, Event after the clear sell high as the main principle of short - and medium-term investment strategy.

2.2.2 Portfolio and arbitrage analysis

In this article, considering that fed start to sell its holding of SMCCF on July 12, the price of the investment-grade corporate fund may have an upward trend. In this way, we short the LQD (Blackrock institutional trust company N.A-Ishares iboxx USD investment-grade corporate bond ETF), which includes many investment-grade corporate bonds the next day.

On the other hand, inflation has continued to increase since July 12, as we mentioned before. This suggests a good opportunity to invest in real estate since real estate is an effective asset against inflation. Moreover, at the FOMC meeting, the committee indicated that it would continue to buy at least 40 billion US dollar MBS (housing mortgage support securities) monthly. This is also a piece of good news for real estate. As a result, the price of equities in the real estate market may enjoy an increase. So, we take the long position on VNQ (Vanguard Real Estate ETF), whose price is linked to the prosperity of the real estate market.

2.2.3 portfolio returns

The hedged portfolio return of the long position (R_L) is shown in Eq. (1)

$$R_L = \frac{P_{L,t} - P_{L0}}{P_{L0}} \tag{1}$$

where $P_{L,t}$ is the price of the long position of the hedged portfolio (VNQ) at time t, P_{L0} is the original purchase price of VNQ.

The hedged portfolio returns of the short position (R_S) is shown in Eq. (2),

$$R_S = \frac{P_{S0} - P_{S,t}}{P_{S0}} \tag{2}$$

where $P_{S,t}$ is the price of the short position of the hedged portfolio (LQD) at time t, P_{S0} is the original purchase price of LQD.

3. EMPIRICAL RESULTS

3.1 Hedge performance

In this trade, we long 1000 shares of VNQ and shorted 1000 shares of LQD on July 12, and ended the trade on August 12. The closing prices of VNQ and LQD on July 12 are 105.96 and 134.75 separately. And the figures were 106.18 and 134.18 separately on August 12. The whole profit is 790 dollars. The returns on both sides are represented as follows. As we can see in the picture, before July 19, the return on the short side is positive. However, this figure didn't turn positive until August 6. The return on the long side was always positive. At the end of this trade, we have gained profit on both sides. The profit on the long position was larger than the profit on the short position.

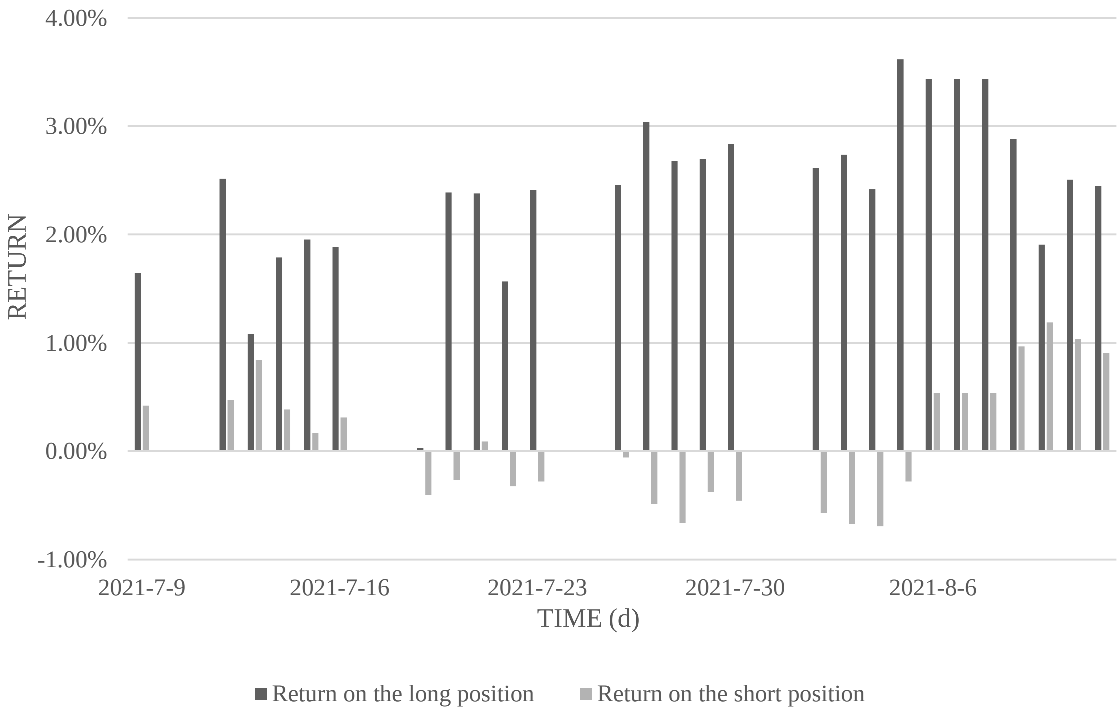

Figure 5. This figure depicts the daily change in earnings of this hedge from July 13, 2021, to August 12, 2021

3.2 Economic significance of the hedging strategy

After we made the trade, we almost didn't make a profit on the short side before August 6. The main reason may be the market needs time to respond to the policy change. Moreover, the number of the holdings that the fed started to sell is not too big since the fed wanted to exit the bond market gracefully, resulting in liquidity questions.

On the other hand, with Fed's slow exit movement the inflation didn't get controlled at the same time. In addition, at the FOMC meeting on July 28, the committee indicated that it wouldn't increase the interest rate in a short time. Considering the risks to the economic outlook remain, the committee also thought it was not a good time to TAPER now and it would continue to buy a 10-year Treasury bond and MBS. As a result of a series of relatively loose monetary policies, inflation did continue to increase since July 28. The increasing inflation combined with the committee's promise of buying MBS monthly push up the price of equity in the real estate market. Therefore, we have made a profit on the long position as well.

Fed's reduction on SMCCF and the mild monetary policies at the FOMC meeting has shown the fed's struggle on the balance of restraining inflation and stimulating the economy. The fed did want to tighten policy compared with what it did last year, but it didn't want to affect the economy. Its reduction on SMCCF was an attempt. This policy was just a small step. According to the policies it released at the FOMC, the fed still needs time to start TAPER.

4. CONCLUSION

This article analyzes the impact of the fed's reduction on SMCCF and the monetary policy at the FOMC meeting. We made an arbitrage strategy based on these two events, using real estate as a hedge for the investment-grade corporate bond market. As a result, we made a profit on both sides, which suggests these monetary policies are effective and did influence the real estate and bond markets.

In practice, we found that many monetary policies are very effective, and the market responds quickly to them, especially during the pandemic period. During such a special time, people are very sensitive to any policy change, which may enlarge the effect of the policy. It is a good time for the investor to build trades based on monetary policies. Moreover, the credit tools such as SMCCF make a more accurate and fast adjustment to the currency market, which means investors can seek many opportunities when the Fed changes its use of them.

In theory, our article helps to explain how bond and stock markets are affected by government regulation. The fed's actions to stimulate the economy and restrain inflation in the meantime may exert different impacts on the bond market and stock market. Fed needs to consider potential influence when making decisions.

Our article leaves one question unanswered: Why Fed's reduction plan's impact on the investment-grade bond is not very significant? The total price change on LQD from July 12 to August 13 is only 0.57. Is there any other factor that affects the price of LQD? In the future, we may analyse the potential Influencing factors of LQD.

REFERENCES

[1] Willem, T., The impact of the COVID-19 pandemic on the U.S. economy: Evidence from the stock market, Journal of Risk and Financial Management, 2020, vol. 13, pp. 233-233. DOI: https://doi.org/10.3390/jrfm13100233

[2] Gilchrist, S., Wei, B., Yue, Z., Zakrajsek, E., The fed takes on corporate credit risk: An analysis of the efficacy of the SMCCF, Federal Reserve Bank of Atlanta Working Paper Series, 2020. DOI: https://doi.org/10.29338/wp2020-18

[3] Mizrach, B., Neely, C.J., Secondary market corporate credit facility supports main street, Economic Synopses, 2020, No. 17. DOI: https://doi.org/10.20955/es.2020.17

[4] Becker, B., Benmelech, E., The resilience of the U.S. corporate bond market during financial crises, NBER Working Paper, 2021, No. w28868. DOI: https://doi.org/10.3386/w28868

[5] Xu, H., Is fed an elephant or a bellwether? The impacts of SMCCF on US corporate bond market, SSRN Working Paper, 2013. DOI: http://dx.doi.org/10.2139/ssrn.3752790

[6] O'Hara, M., Zhou, X.A., Anatomy of a liquidity crisis: Corporate bonds in the COVID-19 crisis, Journal of Financial Economics, 2021, vol. 142, pp. 46-68. DOI: https://doi.org/10.1016/j.jfineco.2021.05.052

[7] Haque, S.M., Varghese, R., Credit in a crisis: Effects of the fed's corporate bond market intervention, SSRN Working Paper, 2021. DOI: http://dx.doi.org/10.2139/ssrn.3870678

[8] Gurkaynak, R.S., Sack, B., Swanson, E.T., Do actions speak louder than words? The response of asset prices to monetary policy actions and statements, International Journal of Central Banking, 2004. DOI: https://doi.org/10.2139/ssrn.633281

[9] Lucca, D.O., Moench, E., The pre-FOMC announcement drift, The Journal of Finance, 2014, vol. 70, pp. 329-371. DOI: https://doi.org/10.1111/jofi.12196

[10] Tadle, R.C., FOMC minutes sentiments and their impact on financial markets, Journal of Economics and Business, 2021, forthcoming. DOI: https://doi.org/10.1016/j.jeconbus.2021.106021