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Original Paper

The Announcement Effect of Monetary Policy on the Corporate Bond Markets

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Abstract

This study investigates the impact of the central bank's monetary policy announcements on the perceptions of yield spread in corporate bond markets under the event of extreme events. These results highlight that the coronavirus pandemic has caused a market panic in the global economy. This caused investors to withdraw their money from bond markets, which caused a liquidity crisis in bond markets. The Fed announcements caused statistically significant tightening on US and global investment grades and high-yield corporate bond spreads. The Euro investment grade and high-yield corporate bond spread narrowed when the Fed took additional actions to provide more funds and expanded the buying scope to support market liquidity. These results suggest that forward guidance that emphasizes the Fed's monetary policy causes stronger information effects.

Keywords

corporate bond, announcement effect, monetary policy

1. Introduction

When there are extreme events in the sample, the financial market is exposed to stronger risk transmission, that is, the occurrence of extreme events increases the degree of risk spillover (Bouri et al., 2021; Chen et al., 2022). S&P 500 fell 33.92% from February 19 to March 23, triggering a panic in the global economic market. This panic also caused investors to withdraw their money from bond markets, which caused a liquidity crisis in bond markets. Figure 1 shows the yield spreads of the on-the-run 10-year US treasury from January 2019 to September 2020. The on-the-run US government bond yield spreads yield, representing the best liquidation of all bonds, rose sharply during March. The liquidity crisis also affects corporate bonds. Figure 2 illustrates the US-dollar denominated investment grade and high-yield, global investment grade and high-yield corporate bond all reached the highest points since the financial crisis in 2008. The Euro-dollar denominated investment grade and high-yield corporate bond also reached its highest points since the European debt crisis in early 2010 which is shown in Figure 2.

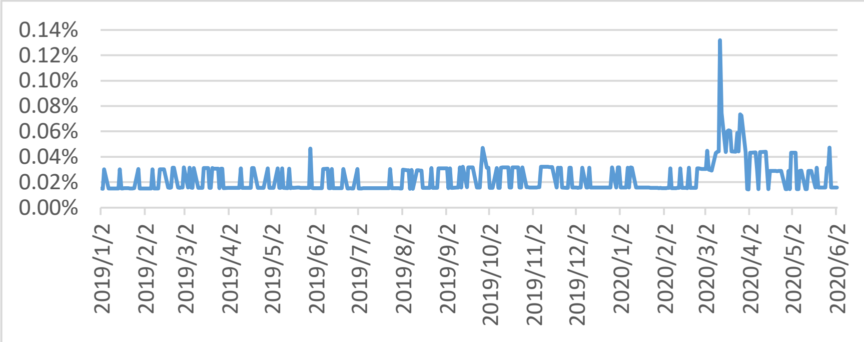

Figure 1. Yield Spreads of On-The-Run 10-Year US Treasuries

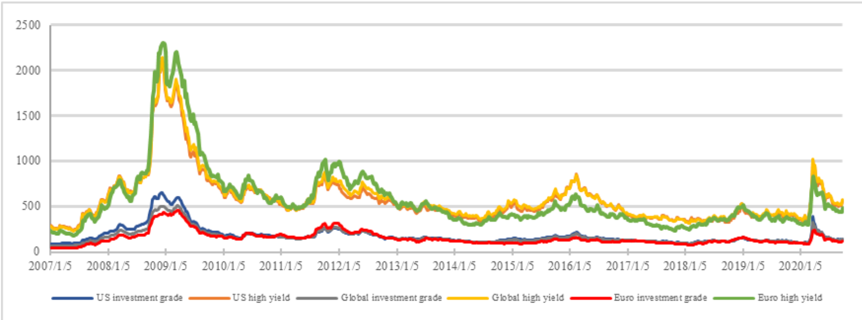

Figure 2. Corporate Bond Index Yield Spreads for Six Markets

The ongoing coronavirus pandemic has caused significant disruption in economic activity across the globe. The Fed announced a series of new measures to support the economy. For example, on March 23, the Fed established the Primary and Secondary Market Corporate Credit Facility to provide liquidity for outstanding corporate bonds. This is the first time that the Fed has purchased corporate bonds. The Fed took additional actions to provide up to $2.3 trillion, including the SMCCF on April 9, adding junk (high yield) bonds to the buying list (Note 1).

Earlier, the spread of coronavirus inevitably also had a significant impact on the growth prospects of the euro area economies and has heightened market volatility. To ensure the sufficient liquidity of the financial system in the euro area and the stable operation of the money market, the ECB announced several policies to provide liquidity for outstanding corporate bonds. The ECB's Governing Council announced new instruments on March 12 and 18 to help the euro area through the extremely challenging time. For example, the ECB announced an additional net asset purchase program combined with the existing Asset Purchase Program (APP) of €120 billion on March 12, which focuses on euro bonds and remains until the end of 2020. On March 18, the ECB announced the Pandemic Emergency Purchase Program (PEPP), a new temporary APP for private and public sector securities of €750 billion. But the conditions in the euro area deteriorate considerably, the evaluation of the economic situation has darkened (Note 2).

Optimistically, the Fed announcement since March 23 seems to help stabilize the disruptions in credit markets. The dispersion of credit spread in the US corporate bond market rose substantially throughout March and halted with the Fed's March 23 announcements, suggesting that the Fed's measures are effective during the ongoing coronavirus pandemic (Miguel et al., 2020). In a recent study, several papers present evidence emphasizing the importance of a Fed information effect (Cieslak & Schrimpf, 2018; Jarociński & Karadi, 2020). Other studies supporting the informational advantage of central banks include Lunsford (2020), Bu et al. (2021), and Lakdawala and Schaffer (2019).

Similarly, the ECB emergency steps were intended to ensure that credit would continue to flow despite the coronavirus pandemic. However, the monetary policy has scarcely kept the financial sector liquid. The corporate bond spreads have widened materially during the coronavirus pandemic. At the same time, corporate bond issuance activity came to a virtual standstill in March (Note 3). The ECB’s new instruments for responding to the tremendous changes and shocks in the economy have made the task of maintaining price stability even more challenging (Note 4). In a recent study, Jordà et al. (2019) found a new phenomenon in which U.S. monetary policy is a powerful driver of global risk appetite. A comparison of the impact of ECB policies and Fed policies by Fratzscher et al. (2016) suggests a greater role for the Fed in promoting the global financial markets.

Friedman and Schwartz (1963) show that the US economy of US a stronger expansionary monetary policy in the financial market and high economic growth during the period 1867-1960. Florackis et al. (2014) show a strong correlation between the lack of market liquidity and a fall in the UK stock market. They concluded that monetary policy supplied market liquidity at a time of illiquidity in the stock market. There are strong signs of a positive relationship between Quantitative Easing (QE), the financial market, and the product of the economies (Geithner, 2014; Fratzscher et al., 2018).

Using QE as a monetary policy instrument to avoid depression in the economies of the US and UK shows that QE is important in the valuation of assets (Gali & Gambetti, 2014). In contrast, Laopodis (2013), and Asako and Liu (2013) concluded that there was a disconnection between the stock market and the monetary policy. Gambacorta et al. (2014) found no evidence of a relationship between unconventional monetary policy and the stock market for the Euro area, the UK, the USA, and others.

It can be seen that in the academic literature, there is an alternative view of how market participants may interpret changes in the stance of monetary policy. There are relatively few studies on the announcement effect of the central bank in the context of the sharp expansion of the yield spreads in the bond market. Thus, this study is mainly to analyze the announcement effect of the Central Bank during the coronavirus pandemic.

To investigate the impact of the measures released by the Fed and ECB on confidence in the corporate bond market. We analyzed six ICE yield spreads for corporate bonds. We focused on the sample period from 2019-01-02 to 2020-05-29 using the ICE BofA Option-Adjusted Spreads (OASs) (Note 5) daily data (in basis points). Since the spreads of corporate bonds are also affected by the current market sentiment, we use the stock market indices as an indicator of risk appetite and then analyze the impact of the Fed and the ECB's rescue policy on corporate bond OASs after controlling for the indicator of market risk sentiment.

2. Data and Methodology

We used daily stock indices from Bloomberg. The data are available for three stock markets: Standard & Poor's 500 Index (S&P500), Euro STOXX600 Index (STOXX600), and the Morgan Stanley Capital International Global Index (MSCI) from January 2019 to May 2020. The ICE BofA Option-Adjusted Spreads (OASs) are available for six corporate bonds, including the US investment grade (USIG), US high-yield (USHY), Euro investment grade (EUIG), Euro high-yield (EUHY), global corporate bond (GOBC), and the global high-yield corporate bond (HW00) from January 2019 to May 2020.

To avoid the occurrence of spurious regression, Said and Dickey's (1984) Augmented Dickey-Fuller unit root test was employed to analyze the stationarity of the variables. The test results show that the stock indices of S&P500, MSCI, and STOXX600 are nonstationary, but the daily returns of S&P500R, MSCIR, and STOXX600R are stationary and statistically significant at the 1% level. All first-order differences of OASs are stationary and statistically significant at the 1% level. Thus, we use daily returns and spread changes for the remainder of this study. Consider the following multiple linear regression model.

$$\mathrm{y} = \beta_0 + \beta_1 \mathrm{x}_1 + \beta_2 \mathrm{x}_2 + \cdots + \beta_k x_k + u \quad (1)$$

The homoscedasticity assumption is expressed in terms of the error variance as Var $(\mathrm{u}|\mathrm{x}_1, x_2, \ldots, x_k) = \sigma^2$. This study investigates the effect of Fed and ECB policy announcements on corporate bond spreads during the period of coronavirus pandemic when illiquidity occurred. For these purposes, multiple dummy variables were added from equation (1) to equation (2).

$$y_{f,t} = \beta_0 + \beta_1 \mathrm{R}_{m,t} + \beta_2 D_{i,t} + \mu_t \quad (2)$$

where $y_{f,t}$ is the spread change for bond f during period t, $\mathrm{R}_{m,t}$ is the stock market daily returns, and $D_{i,t}$ is a dummy variable indicating when the policy is announced and over a four-day period. We define a dummy variable by taking the value of one on the event day when the policy is announced; otherwise, it is equal to zero. For example, if the ECB announces the monetary policy on March 12, $D_{i,t}$ denotes whether the US investment-grade corporate bond spread experienced D_{312} increasing or decreasing during the 12th, 13th, 16th, and 17th of March. The dummy variable D_{318} takes a value of one on the dates during the 18th, 19th, 20th, and 23rd, and zero otherwise. The dummy variable D_{323} means that the Fed announces the monetary policy on March 23, and hence value one on the event date from 23rd to the 26th, and zero otherwise. We use the same event day as for the ECB and Fed first announcement except for the Fed announcement on April 9, due to the day off on the 10th and 13th for some securities markets. Hence, the dummy variable D_{409} presents that the Fed announces the monetary policy on April 9, the value one on the 9th and 14th of April, and zero otherwise. Including $\mathrm{R}_{m,t}$ in the equation control for the possibility that broad market movements might coincide with the announcement effect.

In this section, we focus on the spread changes resulting from the impact of the Fed and ECB policy announcements on US, Euro, and global corporate bonds. The OLS estimator is no longer the best unbiased linear estimator if heteroscedasticity is present. We use Breusch-Pagan (BP test) to test for heteroscedasticity using the OLS estimation of equation (2). The results of the BP tests indicate that all the OASs regressions reject the null hypothesis of homoscedasticity. Second, we used the Breusch-Godfrey test to test for the presence of serial correlation. If heteroscedasticity found in u and u is serially uncorrelated, then heteroscedasticity-robust test statistics are used. If a serial correlation is detected, the autoregressive conditional heteroscedastic (ARCH) model is employed.

Engle (1982) found that in most time-series models, residual variance is usually unstable. They proposed what is known as the ARCH model. Bollerslev (1986) extended the ARCH class models to allow for both longer memory and a more flexible lag structure, namely the generalized autoregressive conditional heteroscedasticity (GARCH) model. Empirically, the GARCH (1, 1) model can be used to solve the problem of heterogeneous variance and has become an important tool in financial analyses. The GARCH (1, 1) process is expressed as follows:

$$\varepsilon_t|\varphi_t \sim \mathrm{N}(0.h_t)\ ,\ h_t = a_0 + b_1\varepsilon^2{}_{\mathrm{t}-1} + c_1 h_{t-1} \tag{3}$$

where ε_t denotes a real-valued discrete-time stochastic process, φ_t is the information set of all information through time t, and h_t is the conditional variance. The goal of an event study is to determine whether a particular event influences an outcome. Savickas (2003) suggested a GARCH-based approach that addresses the conditional heteroskedastic behavior of volatility and the event-induced variance increase in the model and used a GARCH (1, 1) model with dummy variables to evaluate a simple test statistic that accounts for the stochastic behavior of volatility during both event and nonevent periods. Therefore, to explore the impact of specific events on the liquidity of different corporate bond markets, this study introduced dummy variables ($D_{j,t}$) to examine the effect of specific events on liquidity. The GARCH-based approach involves estimating the following model using the time series of spread changes $\Delta y_{i,t}$ and $R_{m,t}$ for corporate bond i and security return m, respectively.

$$\Delta y_{i,t} = \alpha_i + \sum_{v=1}^{q}\beta_i \Delta \mathrm{y}_{\mathrm{t}-v} + \omega_i R_{m,t} + \theta_i D_{j,t} + \varepsilon_{i,t},\ \varepsilon_{i,t}|\varphi_t \sim \mathrm{N}\big(0, h_{i,t}\big)$$

$$h_{i,t} = a_i + b_i\varepsilon^2{}_{i,\mathrm{t}-1} + c_i h_{i,t-1} + d_i D_{j,t} \tag{4}$$

where $\alpha_i, \beta_i, \omega_i, \theta_i$, a_i, b_i, c_i, and d_i are parameters to be estimated; $D_{j,t}$ is an indicator variable that equals 1 if j is an event day and 0 otherwise; φ_t is the set of information available at time t. In this framework, the mean of the spread changes the model residual $\Delta y_{i,t} - \alpha_i - \sum_{v=1}^{q}\beta_i \Delta \mathrm{y}_{\mathrm{t}-v} - \omega_i R_{m,t}$ during the event period, which is reflected in the estimate of θ_i.

3. Results and Discussion

3.1 Summary Statistics

Table 1 presents the summary statistics of the stock index daily returns over the sample period. The average daily returns of the S&P500 are slightly higher than those of MSCI and STOXX600. Figure 3 shows the security daily returns for the S&P500, STOXX600, and MSCI. Overall, the data suggest that all US, Euro, and global security markets were significantly affected by the liquidity crisis from March to April.

Table 1. Statistics for Indices Daily Returns

	S&P500R	STOXX600R	MSCIR
Mean	0.0563	0.0043	0.0326
Median	0.1106	0.0982	0.0846
Maximum	8.9683	8.0704	8.0587
Minimum	-12.7652	-12.1914	-9.9967
Std. Dev.	1.8051	1.4388	1.4518
n	352	352	352

The mean of average indices return is computed using the equation of $\bar{R}_j = \left[\prod_{i=1}^{T}(1 + R_{i,j})\right]^{1/T} - 1$.

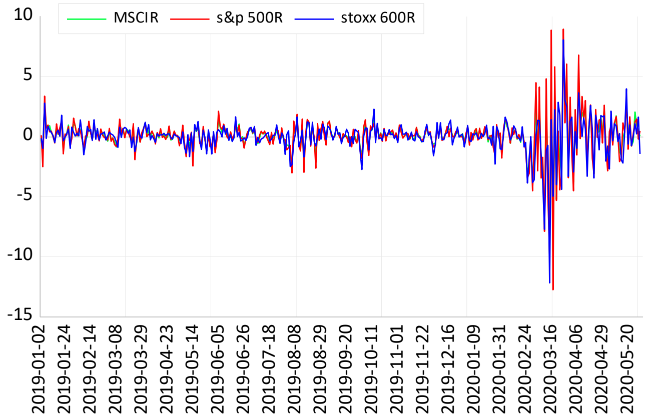

Figure 3. Daily Returns of S&P500, STOXX600, and MSCI

The statistics of all OASs are summarized in Table 2 Panel A, and the spread changes are summarized in Panel B. Panel A reveals a high-yield corporate bond with a higher average spread than investment grade corporate bond. For panel B of Table 2, we find the average spread changes are from 0.05 bp to 0.47 bp. The maximum spread changes for US, Euro, and global high-yield corporate bonds were 107 bp, 94 bp, and 100 bp, respectively. The time series of the OASs spreads and spread for all categories are shown from Figure 5 to Figure 8, respectively.

Table 2. Statistics of ICE BofA Option-Adjusted Spreads and Spread Changes

Panel A	USIG	USHY	EUIG	EUHY	G0BC	HW00
Mean	142.47	469.47	128.00	423.85	139.51	485.32
Median	125.00	408.00	113.00	3772.00	123.00	422.00
Maximum	401.00	1087.00	243.00	866.00	341.00	1094.00
Minimum	99.00	339.00	89.00	300.00	99.00	352.00
Std. Dev.	52.91	155.64	36.89	120.79	46.83	156.83
n	352	352	352	352	352	352
Panel B	ΔUSIG	ΔUSHY	ΔEUIG	ΔEUHY	ΔG0BC	ΔHW00
Mean	0.12	0.46	0.05	0.16	0.10	0.47
Median	0.00	-1.00	0.00	-1.00	0.00	-1.00
Maximum	48.00	107.00	29.00	94.00	33.00	100.00
Minimum	-28.00	-85.00	-14.00	-43.00	-17.00	-72.00
Std. Dev.	5.85	17.48	3.19	12.34	4.48	15.54
n	352	352	352	352	352	352

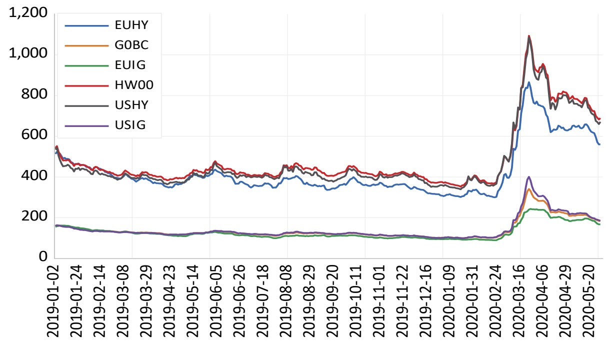

Figure 5. OASs Spreads for US, EU, and Global Corporate Bond Corporate Bond

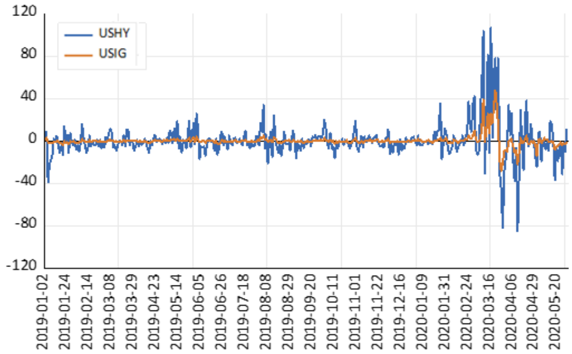

Figure 6. OASs Spread Changes for US

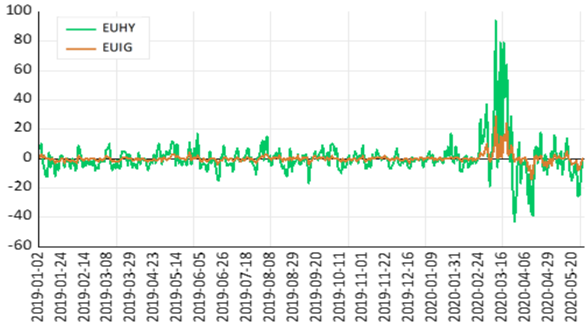

Figure 7. OASs Spread Changes for Euro Corporate Bond Corporate Bond

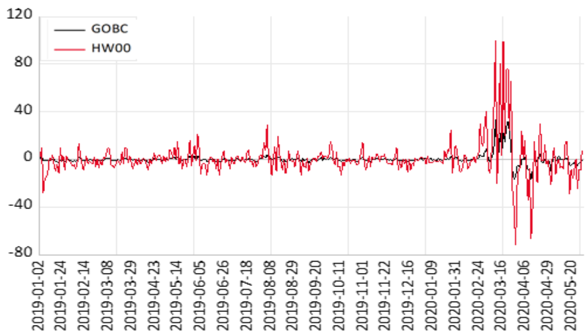

Figure 8. OASs Spread Changes for Global Corporate Bond

3.2 Regression Results and Discussion

The results of the BP tests indicate that all the OASs regressions reject the null hypothesis of homoscedasticity. We used the Breusch-Godfrey test for the presence of serial correlation. The results reveal that most of the OAS's regressions are serially correlated, with the exception that the US investment grade is uncorrelated. Finally, we use the GARCH-based model to evaluate the ECB and Fed announcement effect on five corporate bond markets and use OLS with heteroscedasticity-robust test statistics to estimate US investment grade corporate bonds. The regression results of corporate bonds in the euro area are presented in Table 3.

First, we study the announcement effect on the Euro investment grade and high-yield corporate bonds after controlling for STOXX600 stock daily returns. Columns A and B show that the coefficients of D_{312} and D_{318} are positive, which implies that within about 4 days after the announcement of the ECB monetary packages, it seems that the Euro corporate bond spreads cannot be reduced. In contrast, the coefficient of D_{323} on the ΔEUHY regression is negative, implying that the Euro high-yield corporate bond spreads is shrinking relative to non-event days. The coefficients of D_{409} on the ΔEUIG and ΔEUHY regressions are significantly negative, implying that US monetary actions might have an announcement transmission effect on the Euro corporate bond market.

It can also get evidence from Granger causality tests. The Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another (Granger, 1969). Briefly, it shows the relationship of cause and effect between underlying variables. In Table 4 Panel A, when five lags are applied, the hypothesis that ΔUSHY does not Granger causality of ΔEUHY can be rejected at the 1% level of significance, and the hypothesis that ΔEUHY does not Granger causality of ΔUSHY can be rejected at the 1% level of significance. Thus, we found the bidirectional causality between ΔUSHY and ΔEUHY. When five lags are applied, Panel B(C) shows the hypothesis that ΔUSIG(ΔUSHY) does not Granger causality of ΔEUHY(ΔEUIG) can be rejected at the 1% level of significance, and the hypothesis that ΔEUHY(ΔEUIG) does not Granger causality of ΔUSIG(ΔUSHY) can be rejected at the 1% level of significance, implying the bidirectional causality between ΔUSIG(ΔUSHY) and ΔEUHY(ΔEUIG). In Panel D, when five lags are applied, the hypothesis that ΔUSIG does not Granger causality of ΔEUIG can be rejected at the 5% level of significance, and the hypothesis that ΔEUIG does not Granger causality of ΔUSIG can be rejected at the 1% level of significance, implying the bidirectional causality between ΔUSIG and ΔEUIG.

Table 3. Regression Results of Euro Corporate Bond Spread Changes

Δy_t	**ΔEUIG (A)**	**ΔEUHY (B)**
Mean Equation：		
Constant	-0.06	-0.05
Δy_{t-1}	0.36 ***	0.3 ***
STOXX 600R	-0.72 ***	-4.54 ***
D_{312}	5.64	23.07 **
D_{318}	2.52	13.18 *
D_{323}	1.97	-6.86
D_{409}	-8.18 **	-24.81 *
Variance Equation：		
Constant	0.4 **	14.3
ε^2_{t-1}	0.24 ***	0.27 **
ht-1	0.61 ***	0.4
D_{312}	59.82 ***	274.27
D_{318}	-26.23	29.37
D_{323}	7.73	130.63
D_{409}	24.24	-30.8 **
N	352	352
Adjusted R^2	54.6%	68.8%

Note. This model Using the GARCH (1, 1) as follows, $\Delta y_{i,t} = \alpha_i + \sum_{v=1}^{q} \beta_i \Delta y_{t-v} + \omega_i R_{mj,t} + \theta_i D_t + \varepsilon_{i,t}$, $\varepsilon_{i,t}|\varphi_t \sim N(0, h_{i,t})$, $h_{i,t} = a_i + b_i \varepsilon^2{}_{i,t-1} + c_i h_{i,t-1} + d_i D_t$, The ***, **, * indicate significance at 1%, 5% and 10%, respectively.

Second, controlling for S&P500 daily returns, Table 5 reveals the announcement effect of the Fed on US investment grade and high-yield corporate bond spread changes. Columns B shows that the coefficients of D323 and D409 on ΔUSIG are approximately -19.14 and -14.45. Columns A shows that D409 was estimated to be approximately -49.23 less than the remaining spread changes of ΔUSHY with the same levels of the other variables. This is evidence that the positive effect announcements of the Fed on March 23 and April 9 might be expected to reduce the yield spread for both the US investment grade and the high-yield corporate bond market. Dispersion in the bond market rose substantially throughout March and halted with the Fed's March 23 announcements (Miguel et al., 2020).

Table 4. Pairwise Granger Causality Tests

Null Hypothesis:		**F-Statistic**
Panel A	ΔUSHY does not Granger Cause ΔEUHY	3.4 ***
	ΔEUHY does not Granger Cause ΔUSHY	16.5 ***
Panel B	ΔUSIG does not Granger Cause ΔEUHY	4.9 ***
	ΔEUHY does not Granger Cause ΔUSIG	20.7 ***
Panel C	ΔUSHY does not Granger Cause ΔEUIG	3.2 ***
	ΔEUIG does not Granger Cause ΔUSHY	8.1 ***
Panel D	ΔUSIG does not Granger Cause ΔEUIG	2.6 **
	ΔEUIG does not Granger Cause ΔUSIG	11.9 ***

Note. The ***, ** indicate significance at the 1% and 5%, respectively.

Finally, by controlling MSCI daily returns, Table 5 also reveals the announcement effect of the central bank on global investment grade and high-yield corporate bonds. Columns C and D show that the coefficients of D_{312} and D_{318} are positive, meaning that the increase in credit spreads happened for all credit ratings. Announcements of the ECB monetary packages do not seem to reduce Euro corporate bond spreads. The coefficients of D_{323} and D_{409} on ΔGOBC are negative and statistically significant at the 1% level, indicating that the Fed monetary policy might reduce global corporate bond spreads. The coefficient of D_{409} on ΔHW00 is negative and statistically significant at the 1% level, indicating that the global high-yield corporate bond spreads has narrowed. This finding is similar to those of Fratzscher et al. (2016) that ECB unconventional monetary policies seem to play a more limited role in driving global financial market development than Fed actions do.

Table 5. Regression Results of US and Global Corporate Bond Spread Changes

Δy_t	ΔUSHY (A)	ΔUSIG (B)	ΔGOBC (C)	ΔHW00 (D)
Mean Equation：				
Constant	0.02	-0.12	-0.05	-0.05
Δy_{t-1}			0.34 ***	
S&P 500R	-5.67 ***	-0.87 ***		
MSCIR			-1.04 ***	-7.42 ***
D_{312}	35.95 ***	17.38 ***	11.23 ***	34.73 ***
D_{318}	41.75 ***	34.5 ***	16.04 ***	43.85 ***
D_{323}	-9.99	-19.14 ***	-8.51 ***	-9.17
D_{409}	-49.23 ***	-14.45 ***	-7.12 ***	-34.67 ***
Variance Equation：				
Constant	19.66		0.24 ***	2.27 **
ε^2_{t-1}	0.47 *		0.25 ***	0.23 ***
ht-1	0.46 ***		0.58 ***	0.71 ***
D_{312}	-56.11		-9.34 **	-49.65
D_{318}	480.23		18.06	406.56
D_{323}	839.05		7.85	72.62
D_{409}	911.27		8.08	-85.82
N	352	352	352	352
Adjusted R^2	63.5%	74.1%	79.0%	72.9%

Note. Column A, C, and D use the GARCH (1, 1) model as follows. $\Delta y_{i,t} = \alpha_i + \sum_{v=1}^{q} \beta_i \Delta y_{t-v} + \omega_i R_{mj,t} + \theta_i D_t + \varepsilon_{i,t}\Delta$, $\varepsilon_{i,t}|\varphi_t \sim N(0, h_{i,t})$, $h_{i,t} = a_i + b_i \varepsilon^2_{i,t-1} + c_i h_{i,t-1} + d_i D_t$, Column B uses the OLS. The ***, **, * indicate significance at 1%, 5%, and 10%, respectively.

However, a result of an unexpected directional sign may be due to either the policy being disappointing for market participants or that the selected event day does not have enough time to react by the market. In the face of huge global unexpected fluctuations, all countries must implement effective monetary policies to stabilize the global financial market. For example, the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, the Federal Reserve, and the Swiss National Bank announced a coordinated action to further enhance the provision of liquidity via the standing US dollar liquidity swap line arrangements, commenced on 23 March 2020. The swap lines among these central banks serve as an important liquidity backstop to ease strains in global funding markets (Note 6).

4. Conclusions

Based on our analysis we draw the following conclusions: First, the coronavirus pandemic has caused a market panic in the global economy. Second, the yield spreads of US-dollar denominated investment Grade and high-yield corporate bond, global investment grade and global high-yield corporate bond have reached historical highs since the 2008 financial crisis. The Euro-dollar denominated investment grade and the high-yield corporate bond have reached their highest since the European debt crisis in early 2010. This caused investors to withdraw their money from bond markets, which caused a liquidity crisis in bond markets. Due to the liquidity crises, the ECB and the Fed announced several policies to provide liquidity for outstanding corporate bonds. Third, after the Fed announced its policy on March 23, not only US investment grade corporate bonds but also global corporate bond spreads were reduced. The Fed's additional policy, which added junk bonds to the buying list on April 9, also caused statistically significant tightening on the US and global investment grade and high-yield corporate bond spreads, even when the Euro investment grade and high-yield corporate bond spreads narrowed.

References

Asako, K., & Liu, Z. (2013). A statistical model of speculative bubbles, with applications to the stock markets of the United States, Japan and China. *Journal of Banking and Finance*, *37*(7), 2639-2651. https://doi.org/10.1016/j.jbankfin.2013.02.015

Bollerslev, T. (1986). Generalized Autoregressive Conditional Heteroskedasticity. *Journal of Econometrics*, *31*(3), 307-327. https://doi.org/10.1016/0304-4076(86)90063-1

Bouri, E., Saeed, T., Vo, X. V., & Roubaud, D. (2021). Quantile connectedness in the cryptocurrency market. *Journal of International Financial Markets, Institutions & Money*, *71*. https://doi.org/10.1016/j.intfin.2021.101302

Bu, C., Rogers, J., & Wu, W. (2021). A unified measure of Fed monetary policy shocks. *Journal of Monetary Economics*, *118*, 331-349. https://doi.org/10.1016/j.jmoneco.2020.11.002

Chen, Y., Wang, C., & Zhu, Z. (2022). Toward the integration of European gas futures market under COVID-19 shock: A quantile connectedness approach. *Energy Economics*, *114*. https://doi.org/10.1016/j.eneco.2022.106288

Cieslak, A., & Schrimpf, A. (2019). Non-monetary news in central bank communication. *Journal of International Economics*, *118*, 293-315. https://doi.org/10.1016/j.jinteco.2019.01.012

Engle, R. F. (1982). Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of United Kingdom Inflation. *Econometrica*, *50*(4), 987-1007. https://doi.org/10.2307/1912773

Florackis, C., Kontonikas, A., & Kostakis, A. (2014). Stock market liquidity and macro-liquidity shocks: Evidence from the 2007-2009 financial crisis. *Journal of International Money and Finance*, *44*, 97-117. https://doi.org/10.1016/j.jimonfin.2014.02.002

Fratzscher, M., Duca, M. L., & Straub, R. (2016). ECB Unconventional Monetary Policy: Market Impact and International Spillovers. *IMF Economic Review*, *64*(1), 36-74. https://doi.org/10.1057/imfer.2016.5

Fratzscher, M., Duca, M. L., & Straub, R. (2018). On the international spillovers of US quantitative easing. *The Economic Journal*, *128*, 330-377. https://doi.org/10.1111/ecoj.12435

Friedman, M., & Schwartz, A. J. (1963). *A Monetary History of the United States 1867-1960* (2nd ed., p. 860). Princeton University Press, Princeton.

Gali, J., & Gambetti, L. (2014). The effects of monetary policy on stock market bubbles: some evidence. In *Working Paper No. 19981* (p. 38). NBER, Boone. https://doi.org/10.3386/w19981

Gambacorta, L., Hofmann, B., & Peersman, G. (2014). The Effectiveness of Unconventional Monetary Policy at the Zero Lower Bound: A Cross-Country Analysis. *Journal of Money, Credit and Banking*, *46*(4), 615-642. https://doi.org/10.1111/jmcb.12119

Geithner, T. F. (2014). *Stress Test: Reflections on Financial Crises* (1st ed., p. 592). Crown Publishing Group, New York, NY.

Granger, C. W. J. (1969). Investigating Causal Relations by Econometric Models and Cross-spectral Methods. *Econometrica*, *37*(3), 424-438. https://doi.org/10.2307/1912791

Jarociński, M., & Karadi, P. (2020). Deconstructing monetary policy surprises—The role of information shocks. *American Economic Journal: Macroeconomics*, *12*(2), 1-43. https://doi.org/10.1257/mac.20180090

Jordà, Ò., Schularick, M., Taylor, A. M., & Ward, F. (2019). Global Financial Cycles and Risk Premiums. *IMF Economic Review*, *67*(1), 109-150. https://doi.org/10.1057/s41308-019-00077-1

Lakdawala, A., & Schaffer, M. (2019). Federal Reserve private information and the stock market. *Journal of Banking and Finance*, *106*, 34-49. https://doi.org/10.1016/j.jbankfin.2019.05.022

Laopodis, N. T. (2013). Monetary policy and stock market dynamics across monetary regimes. *Journal of International Money and Finance*, *33*, 381-406. https://doi.org/10.1016/j.jimonfin.2012.09.004

Lunsford, K. G. (2020). Policy language and information effects in the early days of Federal Reserve forward guidance. *American Economic Review*, *110*(9), 2899-2934. https://doi.org/10.1257/aer.20181721

Miguel, F. E. C., Julian, K., & Mahdi, E. (2020). *Corporate Bond Spreads and the Pandemic*. The Economy Blog of the Federal Reserve Bank of St. Louis.

Said, S., & Dickey, D. (1984). Testing for Unit Roots in Autoregressive Moving Average Models with Unknown Order. *Biometrica*, *71*(3), 599-607. https://doi.org/10.1093/biomet/71.3.599

Savickas, R. (2003). Event-Induced Volatility and Tests for Abnormal Performance. *Journal of Financial Research*, *26*(2), 165-178. https://doi.org/10.1111/1475-6803.00052

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Notes

Note 1. https://www.federalreserve.gov

Note 2. https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog200319~11f421e25e.en.html

Note 3. https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog200403~54ecc5988b.en.html

Note 4. https://www.ecb.europa.eu/mopo/intro/html/index.en.html

Note 5. Rather than looking at yields, investors typically look at bond spreads. The ICE BofA OASs are the calculated spreads between a computed OAS index of all bonds in a given rating category and a spot Treasury curve. An OAS index is constructed using each constituent bond's OAS, weighted by market capitalization. When the last calendar day of the month takes place on the weekend, weekend observations will occur as a result of month-ending accrued interest adjustments. The OASs data were obtained from https://fred.stlouisfed.org, https://indices.theice.com

Note 6. https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200320_1~be7a5cd242.en.html