Domestic and Foreign Financial Market Reaction to the Impact of the Bank of Japan's Financial Policy

By Dr. Yutaka Kurihara

Archi University, Japan

Abstract - This article examines the impact of news about the Bank of Japan's financial policy regarding the Japanese yen and U.S. dollar interest rates. In general, whether or not the news announcements from the financial authorities impact their own markets is related to the successful conduct of their policies. In Japan, a zero/low interest rate or quantitative easing policy has been conducted under severe economic conditions to combat deflation and recession for almost 10 years, so there is some possibility that evident changes in interest rates do not occur. Also, there is no consensus about effectiveness of new announcements. Empirical results show recent significant impact of the Bank of Japan announcements on not only Japanese interest rates but also on those of United States. These results have contributed to the recent success of financial policy in Japan.

Keywords : central bank; financial policy; interest rate; news announcement.

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Strictly as per the compliance and regulations of:

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Abstract - This article examines the impact of news about the Bank of Japan's financial policy regarding the Japanese yen and U.S. dollar interest rates. In general, whether or not the news announcements from the financial authorities impact their own markets is related to the successful conduct of their policies. In Japan, a zero/low interest rate or quantitative easing policy has been conducted under severe economic conditions to combat deflation and recession for almost 10 years, so there is some possibility that evident changes in interest rates do not occur. Also, there is no consensus about effectiveness of new announcements. Empirical results show recent significant impact of the Bank of Japan announcements on not only Japanese interest rates but also on those of United States. These results have contributed to the recent success of financial policy in Japan.

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I. INTRODUCTION

A large number of studies have been published about the reactions of money market interest rates to financial policy announcements. The impact of central banks' financial policies on markets, especially on interest rates, relates to the successful impact and effectiveness of the financial policies. Effective central bank communication should ensure that financial markets understand the central bank's interest rate policy; that is, how interest rates are linked to future inflation and output (Schmidt and Nautz, 2012).

Rudenbusch(1998), Kuttner(2001), Poole et al. (2002), Belke and Gros(2005), Thornton (2007),Hamilton (2008), Piazzesi and Swanson (2008),Beechey(2009), Valente (2009),and Berger and Nitsch(2011) have providedtheoretical and empirical results for this question.

This article examines the impact of financial policy news announcements on interest rates in Japan and the United States. Some articles have been published on this issue about the U.S. and some European financial markets.

Romer and Romer (2000) analyzed the case of the United States. Kevin and Auerbach (2010) examined the effects of macroeconomic news announcements from the Federal Reserve System (the Fed) and European Central Bank (ECB) on exchange rates. Syed (2010) examined the effects of financial policy actions from macroeconomic news announcements by the FED and ECB on domestic stock prices. Recently, Komain (2012) and Techarongrojwong (2012) provided evidence of risk spillovers in the stock and foreign exchange markets in emerging countries. Leon and Williams (2012), employing a matched-sample test of before- and after-intervention events, showed that the sterilized interventions were effective. Simwaka and Mkandawire (2012) showed that intervention can only have a temporary influence on exchange rates. Reitz and Taylor (2012) provided support for the coordination of foreign exchange market interventions. However, few studieshave examined the case of Japanese financial policy and its impact on Japanese financial markets.

Woodford (2010) proposed ways to include the conduct of financial policy in the forecasts of interest rates as the FED's communication method. Thornton (2009) and Monticini et al. (2011) showed that estimations of the relationship between interest rates and future interest rates based on the news from days when central bank news announcements are made leads to bias. These articles showed that interest rates and market-based measures of financial policy news respond simultaneously to all news and not just to news in financial policy announcements. Other articles have focused on these issues. However, there has been no consensus on this matter.

In Japan, a zero or low interest rate policy has been enacted. Kim and Le (2010) and Kurihara (2011) examined the effectiveness of intraday financial policies of the Bank of Japan (BOJ; i.e., the Japanese central bank). Also, after the subprime problems in 2007 and the Lehman shock in 2008, a huge amount of capital has flowed into the Japanese financial markets and Swiss franc markets in spite of the fact that the Japanese economy has not been in good condition in more than 20 years. Moreover, complex and unexpected movements are recently ongoing in the Japanese financial markets. The linkage among countries has become continuous. In this situation, on can expect that it is difficult for financial policy to

Author : Facility of Economics, Archi university, Japan.
E-mail : kurihara@vega.aichi-u.ac.jp

overcome deflation and recession and achieve economic growth.

This article uses the method of Thornton (2009) and Monticini et al. (2011) to investigate the impact of news from the BOJ not only on the Japanese yen but also on U.S. dollar interest rates. The paper is organized as follows. The next section shows theoretical analysis. Section III demonstrates empirical methods and data used here. Section IV shows the results and analyzes them. Finally, this article ends with a summary.

II. Theoretical Analysis and Empirical Method

In this section, a theoretical model that analyzes the impact of the central bank news announcements on interest rates is postulated. In general, financial policy announcements influence financial markets, especially interest rates in a short time, for example, at the moment of the announcement or on the same day. Given same-day or short-term effects, however, the standard approach is to measure the response of interest rates to unanticipated financial policy. Moreover, future forecasts of economic variables are influenced and formed by financial policy.

The idea employed here is based on Monticini (2011). The method is to compute the difference that should capture the news of the financial policy announcement given the assumption of market efficiency. Future price (N) at time t-1 is the conditional expectation of the spot price (r) at the maturity date (m) based on the information (I) at time t-1. According to this idea, it might be appropriate to employ this method.

$$E[r_m/I_{t-1}] = N_{m,t-1} \qquad (1)$$

News generated about financial policy announcements are given by a one-time day change in the conditional expectation.

$$\Delta N_t = E[r_m/I_t] - E[r_m/I_{t-1}] = N_{m,t} - N_{m,t-1} \qquad (2)$$

It should be noted that the market-based measures of financial policy news respond to all news about financial policy actions. Kurihara (2011) empirically examined, however, empirical methods and some explanation variables are different. The next section shows the empirical method for analyzing the impact of the BOJ financial policy news announcements on the Japanese yen and U.S. dollar interest rates.

III. Empirical Analysis

a) Recent Japanese Financial Policy

In the 1990s, Japan experienced serious economic and financial crises after the bubble economy (large increases in stock and land prices) burst in the late 1980s. To overcome these severe economic situations, the BOJ adopted the zero interest rate policy from February 1999 to August 2000. That is, the BOJ decided to "flexibly provide ample funds and encourage the uncollateralized overnight call rate to move as low as possible".

The zero interest rate policy contributed to economic recovery. The BOJ stopped the zero interest rate policy. However, the economy became bad again after that. The BOJ then conducted a more aggressive financial easing policy. That is, on March 19, 2001, the BOJ decided to increase the outstanding balance of the current accounts at the Bank. This is called a quantitative easing policy. The main operating target for financial market operations changed from the uncollateralized overnight call rate to the outstanding balance of the current account at the Bank. The target of the current account balance has been increased several times since then.

When a favourable sign occurred in the Japanese economy, the outstanding balance of current accounts at the BOJ was reduced toward the level of required reserves on March 9, 2006. However, to overcome deflation and to help the Japanese economy attain sustainable growth with price stability, the BOJ continues to make contributions by using a three-pronged approach of powerful financial easing: (1) enact comprehensive financial easing, (2) ensure financial market stability, and (3) provide support to strengthen the foundations for economic growth.

Since the big earthquake in March 11, 2011, the BOJ has been taking measures that focus on three major points: (1) maintaining the functioning of financial and settlement systems, (2) ensuring the stability of financial markets, and (3) supporting economic activity. In addition to these measures, the BOJ decided to engage in afunds-supplying operation to support financial institutions. The BOJ also decided to expand the range of eligible collateral for market operations to ensure that financial institutions in the disaster areas would have sufficient financing capacity.

b) Empirical Methods

In section II, some empirical tests are performed using daily data (Nikkei NEEDS). The sample period is from 1997 to 2012. The period is divided into three: (1) before the quantitative easing period (January 1, 1997–March 18, 2001), (2) the quantitative easing period (March 19, 2001–March 9, 2006), and (3) after the quantitative easing period (March 10, 2006–November 30, 2012). Future interest rates are for six months. Lamla and Lein (2011) found that the ECB affects financial markets: communication drives maturities greater than four months. To estimate the impact of the BOJ announcements on the Japanese yen and U.S. dollar, equations (3) and (4) are used for empirical analysis. Knütter and Wagner (2011) noted that globalization makes the strategy for reactive financialpolicy the favourable option in the situations, related to inflation targeting in the United States. Also,

the coordination channel has recently been established as an additional means by which foreign exchange market intervention maybe effective. However, no study has analyzed the case of Japan. The following empirical test is performed with the division of the sample period according to the policy change and globalization.

The empirical method is generalized method of moments (GMM), which is a robust estimator in that, unlike maximum likelihood estimation, GMM does not require information about the exact distribution of the disturbances. Hansen's J statistics test is also performed. This test checks whether or not the model's moment matches the data. In a GMM context, when there are more moment conditions than parameters to

be estimated, this chi-square test can be used to test the over-identifying restrictions.

Also, this article employs the generalized autoregressive conditional heteroskedasticity (GARCH) model to examine the effect of Bank of Japan's financialpolicy. GARCH is designed to model and forecast conditional variances. The variance of the dependent variable is modelled as a function of past values of the dependent variable and independent or exogenous variables. To control other activity of the central bank that do affect interest rate, the expectation of exchange rate (EXPECT) is included in the equations. It is assumed to be the same as the real value in the future (5 days after the announcement).

$$\Delta R^{Yen}{}_t = \alpha_0 + \alpha_1 announcement + \alpha_2 announcement * \Delta N_t + \alpha_3 \Delta N_t + \alpha_4 \Delta R^{Yen}{}_{t-1} + \varepsilon_t \tag{3}$$

$$\Delta R^{USD}{}_t = \alpha_0 + \alpha_1 announcement + \alpha_2 announcement * \Delta N_t + \alpha_3 \Delta N_t + \alpha_4 \Delta R^{Yen}{}_{t-1} + \varepsilon \tag{4}$$

Where $\Delta R^{Yen}{}_t$ and $\Delta R^{USD}{}_t$ are the change in each currency's interest rates (interbank rates). $\Delta N_t = E[r_m/I_t] - E[r_m/I_{t-1}] = N_{m,t} - N_{m,t-1}$ is the futures measure of news. *Announcement* in these equations is a 1 or 0 dummy variable that is equal to one on days of the

BOJ's announcements and zero otherwise. It should be noted that the measure of news, ΔN_t, occurred on all days to avoid possible bias in estimates of the BOJ news as well as an intercept shift on the announcement days. Finally, ε_t is the error term.

c) *Results*
The results are reported in Table 1a (GMM) and 1b (GARCH).

Table 1a : Estimated Results for Equations (3), (4), and (5)(GMM)

Equation	α_0	α_1	α_2	α_3	α_4	J-test	D.W.	Adj.R^2
Before								
(3)	-0.000 (0.80)	-0.003 (0.80)	-0.76 (0.74)	-0.004 (0.12)	-0.23 (3.41E-08)	3.62	1.77	0.34
(4)	-0.000 (0.65)	0.008 (0.67)	-0.25 (0.79)	-0.001 (0.20)	-0.31 (4.65E-07)	3.65	1.70	0.29
During								
(3)	-0.000 (0.55	-0.005 (0.14	-0.12 (0.96	0.03 (0.07	-0.36 (2.90-29	3.22	1.50	0.41
(4)	-0.000 (0.62	-0.005 (0.90)	-0.72 (0.83	-0.002 (0.16	-0.25 (3.94-09)	3.12	1.36	0.40
After								
(3)	0.000 (0.85	-0.008 (0.30)	-16.80 (0.005	0.06 (0.08	-0.16 (1.08E-10)	4.08	1.84	0.55
(4)	-0.0004 (0.84)	-0.16 (1.30E-07)	268.22 (1.37E-15)	0.05 (0.08	0.44 (0.02)	3.35	1.70	0.54

Note : Numbers in parentheses are *p*-values. The Chow test rejects the null of no structural break at the 5% level.

Table 1b : Estimated Results for Equations (3), (4), and (5)(GARCH)

Equation	α_0	α_1	α_2	α_3	α_4	J-test	EXPECT	D.W.	Adj.R^2
Before									
(3)	-0.000 (0.80)	-0.003 (0.79)	-0.75 (0.74)	-0.004 (0.11)	-0.23 (3.40E-08)	3.63	-0.005 (0.13)	1.77	0.34
(4)	-0.000 (0.66)	0.008 (0.66)	-0.25 (0.78)	-0.001 (0.20)	-0.30 (4.65E-07)	3.65	0.008 (0.65)	1.71	0.29
During									
(3)	-0.000 (0.54	-0.004 (0.14	-0.12 (0.95)	0.03 (0.07)	-0.37 (2.91-29	3.22	-0.003 (0.13)	1.50	0.40

(4)	-0.000 (0.61	-0.005 (0.89)	-0.72 (0.83	-0.002 (0.15	-0.25 (3.92-09)	3.13	0.002 (0.57)	1.36	0.41
After									
(3)	0.000 (0.84)	-0.008 (0.31)	-16.81 (0.004)	0.06 (0.08)	-0.14 (1.10E-10)	4.08	-0.002 (0.08)	1.88	0.60
(4)	-0.0004 (0.83)	-0.1 (1.30E-07)	268.20 (1.36E-15)	0.05 (0.08)	0.43 (0.02)	3.34	0.001 (0.66)	1.69	0.54

Note : Numbers in parentheses are p-values. The Chow test rejects the null of no structural break at the 5% level.

Tables 2a and 2b report on the 5 days following the announcements. The empirical methods are GMM (Table 2a) and GARCH (Table 2b).

Table 2a : Estimated Results for Equations (3), (4), and (5) (GMM)

Equation	α_0	α_1	α_2	α_3	α_4	J-test	D.W.	Adj.R^2
Before								
(3)	0.008 (0.91)	-0.002 (0.88)	-0.72 (0.70)	-0.001 (0.13)	-0.20 (3.12E-08)	3.45	1.72	0.31
(4)	-0.002 (0.63)	0.009 (0.59)	-0.22 (0.86)	-0.001 (0.16)	-0.30 (4.69E-08)	3.61	1.68	0.26
During								
(3)	-0.000 (0.50)	-0.006 (0.13)	-0.10 (0.92)	0.03 (0.06)	-0.29 (2.95-30)	3.24	1.51	0.45
(4)	-0.000 (0.59)	-0.004 (0.91)	-0.73 (0.84)	-0.002 (0.15)	-0.22 (3.84-09)	3.13	1.39	0.41
(5)	-0.000 (0.55)	-0.004 (0.85)	-0.82 (0.84)	0.000 (0.16)	-0.23 (3.01-08)	3.24	1.83	0.42
After								
(3)	0.000 (0.82)	-0.007 (0.29)	-16.82 (0.004)	0.06 (0.07)	-0.15 (1.09E-11)	4.10	1.86	0.56
(4)	-0.0004 (0.86)	-0.16 (1.15E-06)	159.91 (1.40E-15)	0.05 (0.07)	0.45 (0.04)	3.39	1.74	0.56

Note : Numbers in parentheses are p-values. The Chow test rejects the null of no structural break at the 5% level.

Table 2b : Estimated Results for Equations (3), (4), and (5) (GARCH)

Equation	α_0	α_1	α_2	α_3	α_4	J-test	EXPECT	D.W.	Adj.R^2
Before									
(3)	0.007 (0.90)	-0.002 (0.87)	-0.72 (0.71)	-0.001 (0.13)	-0.20 (3.11E-08)	3.43	-0.005 (0.14)	1.71	0.31
(4)	-0.001 (0.61)	0.009 (0.58)	-0.23 (0.86)	-0.001 (0.16)	-0.30 (4.67E-08)	3.59	0.007 (0.66)	1.68	0.27
During									
(3)	-0.000 (0.48)	-0.006 (0.14)	-0.10 (0.92)	0.03 (0.05)	-0.28 (2.93-30)	3.24	-0.002 (0.12	1.52	0.46
(4)	-0.000 (0.57)	-0.004 (0.91)	-0.73 (0.83)	-0.001 (0.15)	-0.22 (3.81-09)	3.13	0.002 (0.58)	1.38	0.44
(5)	-0.000 (0.55)	-0.004 (0.83)	-0.81 (0.83)	0.000 (0.16)	-0.25 (3.00-08)	3.24	0.003 (0.58)	1.83	0.41

	After								
(3)	0.000 (0.80)	-0.007 (0.27)	-16.85 (0.004)	0.06 (0.07)	-0.13 (1.09E-11)	4.07	-0.002 (0.08)	1.87	0.56
(4)	-0.0004 (0.87)	-0.13 (1.11E-06)	159.91 (1.40E-15)	0.05 (0.07)	0.43 (0.04)	3.35	0.001 (0.66)	1.74	0.54

Note : Numbers in parentheses are p-values. The Chow test rejects the null of no structural break at the 5% level.

First, the BOJ's recent news announcements are significant in spite of the fact that interest rates have been quite low. The announcements impact not only domestic markets but also U.S. markets. The existence of a statistically significant response of financial market interest rate appears to be a result of the predictability of the interest rate change. On the other hand, before the quantitative policy period, it would appear that BOJ news announcements had no significant effect on U.S. interest rates. Of course, the BOJ did not intend to influence interest rates in other countries, which is beyond the role of the BOJ. However, considering the greater integration of financial markets internationally, the results should be predictable and are important to consider.

Second, the results of one day time lag's case (Tables 1a and 1b) fit better than the ones for 5 days after the announcement. The coefficients of 5 days are smaller than those for one-day lags in general. Jones et al. (1998) suggested that the release of news information can result in a volatility shock that persists beyond the date of the announcement. Marshall et al. (2012) showed that the persistence to the market might occur because of to the clustering of information arrivals, market sentiment, or gradual learning. Bauwens et al. (2005) showed that post announcement volatility can be attributed to heterogeneity of interpretations of the news content that can lead to delayed surprise reactions and closing of positions based on prior anticipations. However, this article showed that the ability of current misalignments to signal shifts might exist but may be diminished.

Finally, is little difference between GMM and GARCH. However, the results are not very conclusive.

IV. CONCLUSIONS

This article provides empirical evidence that the BOJ's recent news announcements have significant impact on interest rates not only Japan but also in the United States. Regardless of the low or almost zero interest rates in Japan and the strange phenomenon that the yen appreciates greatly in spite of the recession and the large accumulated debt in Japan, financial markets have responded effectively to the BOJ's policy announcements. Of course, market participants sometimes misperceive future interest rates or market conditions. However, central bank communication has surely been improved.

Other empirical methods and analyses are necessary. Madura and Tucker (1992) and Aggarwal and Schirm (1998) showed asymmetry on the volatility of foreign exchange rate reactions to the announcements of policy information. Kuttner (2001) noted that changes in the overnight rate affect longer term rates only to the extent that they lead to revisions in expectations of future overnight rates; the more persistent the change, the larger the effect on expectations, and mean revision in the short-term interest rate provides smaller responses for bonds that are longer out of the yield curve. Moreover, as suggested by Beechey (2009), empirically, financial policy announcement scan change real interest rates, inflation expectations, and inflation risk premium, and the effects can cancel each other out. Marshall et al. (2012) showed that some macroeconomic impact on foreign exchange implies volatility. They suggested that market participants with extremely high levels of volatility were associated with the market laws and therefore signal attractive entry levels for some traders.

Silvia and Iqbal (2011) suggested that financial and fiscal policies have a stable, short- and long-run relationship with economic confidence and real GDP. Siregar and Lim (2010) showed that countercyclical and macro prudential regulations are needed to attain sound economic growth. Suardi and Chang (2012) showed that purchases and sales of U.S. dollars interventions produced correlation asymmetry in the United States but not in Japan and Germany. Some additional facts may have to be taken into account. Further research is needed in this field.

REFERENCES RÉFÉRENCES REFERENCIAS

1. Aggarwal, R., &Schirm, D. C. (1998). Asymmetric impact of trade balance news on asset prices, *Journal of International Financial markets, Institutions and Money*, *8*, 83-100.
2. Bauwens, L., Omrane, B., & Giot, P. (2005). News announcements, market activity and volatility in the Euro/Dollar FX market, *Journal of International Money and Finance*, 15, 1108-1125.
3. Beechey, M. J. (2009). The high-frequency impact of news on long-term yields and forward rates: Is it real? *Journal of Monetary Economics*, *56*, 535-544.

4. BelkeA, & Gros, D. (2005) Asymmetries in trans-Atlantic monetary policy making: Does the ECB follow the Fed? *CESifo Working Paper*, 1428.
5. Berger, H., & Nitsch, V. (2011). Too many cooks? Committees in monetary policy, *Southern Economic Journal*, *78*(2), 452-475.
6. Hamilton, J. D. (2008). Assessing monetary policy effects using daily federal funds futures contracts, *Federal Reserve Bank of St. Louis Review*, 90(4), 377-393.
7. Jones, C., Lamont, O., & Lumsdaine, R. (1998). Macroeconomic news and bond market volatility, *Journal of Financial Economics*, *15*, 1108-1125.
8. Kevin, A., & Auerbach, A. (2010). International macroeconomic announcements and intraday Euro exchange rate volatility, *Journal of the Japanese and International Economies, 24*(4), 552-568.
9. Kim, J. S.,& Le, T. A. (2010). Secrecy of Bank of Japan's yen intervention: Evidence of efficacy from intra-daily data, *Journal of the Japanese and International Economics*, *24*(3), 369-394.
10. Knütter, R., & Wagner, H. (2011). Optimal monetary policy during boom-bust cycles: The impact of globalization, *International Journal of Economics and Finance*, *3*(2), 34-44.
11. Komain, J. (2012).Linkages between Thai stock and foreign exchange markets under the floating regime, *Journal of Financial Economic Policy*, *4*(4), 305-319.
12. Kurihara, Y. (2011). The relationship between exchange rate and stock prices during the quantitative easing policy in Japan, *International Journal of Business, 11*(4), 375-386.
13. Kuttner, N. K. (2001). Monetary policy surprise and interest rates: Evidence from the Fed funds futures market, *Journal of Monetary Economics*, *47*(3), 523-544.
14. Lamla, J. M., & Lein, S. M. (2011). What matters when? The impact of ECB communication on financial market expectations, *Applied Economics, 43*, 4289-4292.
15. Leon, H., & Williams, O. H. (2012). Effectiveness of intervention in a small emerging market: An event study approach, *Applied Financial Economics, 22,* 1811-1814.
16. Marshall, A., Musayou, T., Pinto, H., and Tang, L. (2012). Impact of news announcements on the foreign exchange implied volatility, *Journal of International Financial markets, Institutions & Money*, *22*(4), 719-730.
17. Madura, J., & Tucker, A. (1992). Trade deficit surprises and the ex ante volatility of foreign exchange rates, *Journal of International Money and Finance*, *11,* 492-501.
18. Monticini, A., Peel, D., &Vaciago, G. (2011). The impact of ECB and FED announcements on the Euro interest rates, *Economics Letters, 113*, 139-142.
19. Poole, W., Rache, C., &Thornton, D. L. (2002). Market anticipations of monetary policy actions, *Federal Reserve Bank of St. Louis Review*, *84*(4), 65-94.
20. Piazzesi, M., & Swanson, E. (2008). Futures prices and risk-adjusted forecasts of monetary policy actions, *Journal of Monetary Economics*, *55*(4), 677-691.
21. Reitz, S., & Taylor, M. P. (2012). FX intervention in the Yen-US dollar market: A coordination channel perspective, *International Economics and Economic Policy*, *9*(2), 111-128.
22. Romer, D. C., &Romer, D. H. (2000). Federal reserve information and the behaviour of interest rates, *American Economic Review*, *90*, 429-457.
23. Rudenbusch, B. G. (1998). Do measures of monetary policy in a VAR make sense? *International Economic Review*, *39*(1), 907-931.
24. Schmidt, S., & Nautz, D. (2012). Central bank communication and the perception of monetary policy by financial market experts, *Journal of Money, Credit, and Banking, 44*(2-3), 323-340.
25. Silvia, J., & Iqbal, A. (2011). Monetary policy, fiscal policy, and confidence, *International Journal of Economics and Finance*, *3*(4), 22-35.
26. Simwaka, K., & Mkandawire, L. (2012). The efficiency of official intervention in the foreign exchange market in Malawi, *African Development Review*, *24*(2), 125-136.
27. Siregar, Y. R., & Lim, S. C. (2010). The role of central banks in sustaining economic recovery and in achieving financial stability, *Journal of Advanced Studies in Finance, 1*(1), 83-99.
28. Suardi, S., &Chang, Y. (2012). Are changes in foreign exchange reserves a good proxy for official intervention? *Journal of International Financial Institutions & Money*, *22*(4), 678-682.
29. Syed, H. M. (2010). Simultaneous monetary policy announcements and international stock markets response: An intraday analysis, *Bank of Finland Research Discussion Paper.*
30. Techarongrojwong, Y. (2012). The stock market reaction to the U.S. quantitative easing announcements: Evidence in emerging stock market, *The Business Review*, *20*(1), 172-179.
31. Thornton, L. D. (2007). The unusual behavior of the federal funds rate and treasury yields: A conundrum or an instance of Goodhart's Law? *Federal Reserve Bank of St. Louis Working Paper,* 2007-039D.
32. Thornton, L. D. (2009). The identification of the response of interest rates to monetary policy actions using market-based measures of monetary policy shocks, *Federal Reserve Bank of St. Louis Working Paper,* 2009-037A.
33. Valente, G. (2009). International interest rates and US monetary policy announcements: Evidence from

Hong Kong and Singapore, *Journal of International Money and Finance*, *28*(6), 920-940.

34. Woodford, M. (2010). *Interest and prices: Foundations of a theory of monetary policy*, Princeton University Press.

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