

News Announcement Effect On Absolute Return Volatility Case Study : COMEX Gold Contract Return 2009-2011

Lee Marvin* and Achmad Herlanto Anggono**

The research is provided to give the examination of how scheduled news announcement on three regions (USA, European Union, and Japan) give impact to COMEX Gold Contract Futures absolute return volatility. The aims are to know what news could give the impact to the volatility and for how long the impact still remains. With intraday return and 39 scheduled news announcements, LAD estimation is used for the regression due to non-normal distribution of the data. Among 39 news announcement, EC Economic Sentiment and GDP news announcement have the greatest impact from Europe Union region, US contributes Job Situation, ISM Manufacturing Index, Philadelphia Federal Survey, and FOMC Announcement news releases give the most volatility change of return, while Japan has Tankan news announcement as its greatest impact to volatility. Continuous impact is also found from the significant news announcement.

Field of Research: Finance

1. Introduction

Investment decision and analysis are one of common topic in finance which has been discussed for years. Many professional careers, such as portfolio manager and financial planner, are focusly put much effort to learn how to make a wise investment decision based on their analysis to maximize their client's wealth. Vast options of investment instrument has made this branch of study very usefull to detect how the instrument has changed in profitability manner. In addition, fluctuative continuous changes in global economic condition and more access investment portal accross the globe could make analysis of investment essential not only for making profitable investment, but also how to protect them.

Since old times, one of investment option that put much people in consideration is commodities involved instruments, especially precious metal instrument, like gold. It has put people in attention from ordinary people who like to invest it in jewellery form, until government level which had put the whole economy to gold reserves they had by backing their currency to certain portion of gold carried by central bank. The evidence is clear, 52% of world's mined gold was used as jewellery and the second largest portion was official holdings for 18% in 2008 (Hewitt 2008). Several nations in European region and United States of America had ever backed their currency with this commodity and they had the biggest gold reserve in the world, making the currency is convertible to certain amount of gold. In 1971, US terminated the convertibility of its currency, referred as *Nixon Shock*, thus, making the gold literally uninvolved with US economy anymore.

*Mr. Lee Marvin, Undergraduate program School of Business and Management Institut Teknologi Bandung, Indonesia. Address: Jln. Ganeca 10 Bandung, Indonesia. E-mail: lee.marvin@sbm-itb.ac.id

**Ir. Achmad Herlanto Anggono, MBA, Lecturer School of Business and Management Institut Teknologi Bandung, Indonesia. Address: Jln. Ganeca 10 Bandung, Indonesia. E-mail: achmad.herlanto@sbm-itb.ac.id

Marvin & Anggono

In somewhat complicated history, gold is now commonly traded in USD worldwide. This evidence may contribute the cause of majorly developing gold backed investment instrument, such as gold contract created by CME group. This instrument is traded in COMEX (Commodity Exchange, Inc), a division of the NYMEX (New York Mercantile Exchange) and has the most liquid gold contract futures in the world. Such investment analysis of which concluded as investment decision could be affected by global economic condition which make profitability of certain investment changes. Therefore, news releases regarding interpretation about global economic condition somewhat needed to improve or adjust investment portfolio, like decision regarding investing in gold contract. Information technology development makes this possible to implement in short period of time for minutes even seconds. This kind of decision will lead to price shift of the instrument in the market caused by unbalance supply and demand, and affect the return of contract holder, thus making this analysis important. Several former research have been conducted to analyze the news releases effect to the return and volatility of gold contract, like Cai, Cheung, and Wong (2001) who has researched the effect of macroeconomic news announcement of US. They also stated that the returns reveal long memory volatility dependencies which means the effect of announced news to the return volatility is slowly diminished. This statement is rather contradictory with Efficient Market Hypothesis popularized by Fama(1970). Similar research also had been conducted by Barnhart(1989), Christie, Chaudry, and Koch(2000), also Roache and Rossi(2008).

This research is conducted on purpose to analyze the scheduled news releases effect on the return of the gold contract further than previous research. The term of announcement and releases will be used intermitently. While former research only used US scheduled news announcement, this research uses scheduled news from the 3 region of the world, which are America, Europe and Asia between 2009-2011. Scheduled news releases used to represent America region is USA scheduled news releases, while European Union releases represent Europe region. The most relevant news releases to represent Asia region should be Japan because it is the only asia country which is included in G7(International Monetary Fund 2012). The aims of this research are to know what news announcement could give the impact to the volatility and for how long the impact still remains. The data sample used for the paper is from January 2009-December 2011 with intraday 1 minute return interval and 39 scheduled news announcement from these three regions.

This paper is divided into 5 parts: introduction, literature review, methodology, findings, and conclusion. Introduction explains about summary of the research. Second part is literature review which shows the list of supporting theory. Methodology shows how the research was being conducted, while findings explains about the result of the data analysis. The last part is conclusion which sums up all the result of data analysis.

2. Literature Review

Literature review is conducted to support the theoretical background of the research. Several previous findings from former research also included in this section to support the methodology used.

Marvin & Anggono

2.1 Efficient Market Hypothesis

The theory of market efficiency was explained by Fama (1970) which categorized market into 3 groups, which are *weak- efficient*, *semi-strong efficient market*, and *strong- efficient market*. A brief explanation of the theory is that *weak-efficiency market* only incorporates all information in past price, *semi-strongefficient market* incorporates *weak-form efficient market* and all public information, while *strong-form efficient market* incorporates *semi-strong efficient market* and all private information. This theory explains that the price of certain investment would adjust automatically when there is any news available that hasn't been adjusted to price.

While the theory could explain why investors couldn't beat market returns, there are evidence of violations of this theory, especially when the news is released. Several studies have been conducted, as explained by Baker and Nofsinger (2010 p.338), that news event releases violate the *semi-strong efficient* market. He refers to several studies indicating the cumulative abnormal returns (CARs) continue to drift up for "good news release" and down for "bad news release". This reference support this research to be conducted further more.

2.2 Previous Findings

There are also several reaserchers who already done some findings about news releases announcement effect:

- **Niederhoffer(1971)**

The publication is an early study of news releases announcements effects on financial assets return. It examined the effect of world events released, as a headline in several newspaper including *New York Time*, to stock price movement in *Dow Jones Industrial*. The sample used is daily price data from 1950-1966 as the sampled events were taken. It founded that world events were strong and compelling influence on stock prices and bad news could overreact market participant than good news. (*Published by The Journal Of Business*)

- **Barnhart(1989)**

The article analyzed the effect of unticipated parts of thirteen U.S. macroeconomics announcements to immediate reaction of commodity prices and two U.S. T-bill yields. The data used is from February 15, 1980-December 28, 1984 with daily prices from commodity barley, feeder cattle, cocoa, coffee, copper, corn, gold, live hogs, lumber, oats, silver, soybeans, soy meal, soy oil, wheat, 3 months T-bill, and 12 months T-bill. The foundings were stated that lumber prices and T-bill yields had its significant movement towards Federal surcharge rate, producer price index, and unemployment rate. Moreover, surprises of money supply, the Federal Reserve discount rate, manufacturer's order of durable goods, and housing starts had caused the most significant changes in commodity prices. (*Published by American Agricultural Economics Association*)

- **Ederington and Lee (1993)**

The journal showed the analysis of intraday votality patterns reacted by scheduled U.S. macroeconomic news release announcements. Treasury Bonds Futures, Eurodollar Futures, and Deutschemarks Futures five-minutes return standard deviation between November 7, 1988 to November 29, 1991 were used as sample

Marvin & Anggono

observations while, the nineteen monthly announcements covered in *The Week Ahead* section in *Business Week* were used as scheduled U.S. macroeconomics news release announcements observations. The conclusions explained that while the price adjustments occurs within first minutes of news announcements, volatility remained higher than normal day for fifteen minutes and slightly elevated for several hours. (Published by *The Journal of Finance*)

- **Christie, Chaudry, and Koch(2000)**

The writing explained responses of municipal bond, treasury bond, gold and silver futures prices toward monthly U.S. macroeconomics news announcements. Using dummy variables regression and BFL F-statistic (Brown and Forsythe modified Levene) to analyze intraday 15 minutes interval return from January 3, 1992 to December 29,1995, it showed that the response between metal and interest rates futures were significantly different, furthermore, the news releases strongly effect the interest rate futures, but have less effect on metal futures. (Published by *Journal of Economics and Business*)

- **Fair (2001)**

Tick data of five futures instruments(bond, stock and three exchange rate futures) and newswire data search were examined. There are 221 news events which are divided into three categories, monetary, price, and real events). Tick data from April 2, 1982 until March 31, 2000 is used to examine the effect of news announcement effect within 5 minutes interval. The result showed that it caused significant and rapid change of retruns and the author has postulated 7 effects the correlation of events that decrease 30 year U.S. Treasury Bond Price futures. (Published by *Journal of Business*)

- **Cai, Cheung, and Wong(2001)**

The research committed by one of Professor in Department of Economics and Finance at City University of Hong Kong examines the intraday return volatility on gold futures price which is traded in COMEX between January 1994 until December 1997. The news announcement used in this research were 23 U.S. macroeconomic news announcement. The findings stated that employment reports, gross domestic products, consumer price index, and personal income have the greatest impact and the returns also showed long-memory volatility dependencies. (Published by *The Journal of Futures Markets*)

- **Roache and Rossi(2008)**

The paper used releases of macroeconomics announcements in U.S. and Europe region to examine 12 commodity futures prices return volatility changed. The author concluded that commodities futures were not just financial assets and gold was not just another commodity. Some commodities futures price were influenced by surprise element of macroeconomics news releases. (Published by *International Monetary Fund Research Department*)

3. Methodology

3.1 Data

Dataset collection of this research contains two sets of data. The first set is gold data contract price which is purchased from <http://disktrading.is99.com> with 1 minute price

Marvin & Anggono

interval. While the second data set is from <http://www.econoday.com> which provide the list of date and time of news announcement. Base time used is ET (Eastern Time in US) and there are alternative time for European Union and Japan news release time because of daylight saving time system in US. The summary of data collection is shown at table 1.

From table 1, there are 14 groups of time interval to analyze, which are 04.00 a.m. ET, 05.00 a.m. ET, 06.00 a.m. ET, 07.45 a.m. ET, 08.30 a.m. ET, 08.45 a.m. ET, 09.15 a.m. ET, 10.00 a.m. ET, 14.00 a.m. ET, 14.15 a.m. ET, 06.30 p.m. ET, 06.50 p.m. ET, 07.30 p.m. ET, and 07.50 p.m. ET.

3.2 Regression Model

The used research variables for this research regression model will be following one of research conducting by Ederington and Lee (1993) due to the similarity of availability of the data. This research only used the news announcement time of which will be assigned into dummy variables as independent variables of regression. The dependent variable is taken from the gold contract price. The determined variables are explained as follow:

- **Dependent Variable:**

Absolute value of the difference between the actual return R_{jt} of COMEX Gold Contract for the five minutes interval j on day t and the mean return \bar{R}_j for interval j from January 2009- December 2011.

Marvin & Anggono

Table 1: Data Collection Table

Variables	Time Issuance	Frequency	Period
COMEX GC	NA	1 Minute	January 2009 – December 2011
European Union News Releases			
EC Economic Sentiment	05.00 a.m. ET / 06.00 a.m ET	Monthly	January 2009 – December 2011
ECB Announcement	07.45 a.m. ET / 08.45 a.m. ET	Monthly	January 2009 – December 2011
Gross Domestic Product	05.00 a.m. ET	Quarterly	January 2009 – December 2011
Gross Domestic Product Flash	05.00 a.m. ET	Quarterly	January 2009 – December 2011
Harmonized Index of Consumer Price	05.00 a.m. ET / 06.00 a.m ET	Monthly	January 2009 – December 2011
Harmonized Index of Consumer Price Flash	05.00 a.m. ET / 06.00 a.m ET	Monthly	January 2009 – December 2011
Industrial Production	05.00 a.m. ET / 06.00 a.m ET	Monthly	January 2009 – December 2011
Unemployment Rate	05.00 a.m. ET / 06.00 a.m ET	Monthly	January 2009 – December 2011
M3 Money Supply	04.00 a.m. ET / 05.00 a.m. ET	Monthly	January 2009 – December 2011
Merchandise Trade	05.00 a.m. ET / 06.00 a.m ET	Monthly	January 2009 – December 2011
Producer Price Index	05.00 a.m. ET / 06.00 a.m ET	Monthly	January 2009 – December 2011
Retail Sales	05.00 a.m. ET / 06.00 a.m ET	Monthly	January 2009 – December 2011
US News Releases			
Consumer Price Index	08.30 a.m. ET	Monthly	January 2009 – December 2011
Durable Goods Orders	08.30 a.m. ET	Monthly	January 2009 – December 2011
Existing Home Sales	10.00 a.m. ET	Monthly	January 2009 – December 2011
FOMC Meeting Announcement	14.15 a.m. ET	8 times a year	January 2009 – December 2011
FOMC Meeting Minutes	14.00 a.m. ET	8 times a year	January 2009 – December 2011
Gross Domestic Product	08.30 a.m. ET	Monthly	January 2009 – December 2011
Housing Starts	08.30 a.m. ET	Monthly	January 2009 – December 2011
Industrial Production	09.15 a.m. ET	Monthly	January 2009 – December 2011
International Trade	08.30 a.m. ET	Monthly	January 2009 – December 2011
ISM Manufacturing Index	10.00 a.m. ET	Monthly	January 2009 – December 2011
Jobless Claim	08.30 a.m. ET	Weekly	January 2009 – December 2011
Employment Situation	08.30 a.m. ET	Monthly	January 2009 – December 2011
New Home Sales	10.00 a.m. ET	Monthly	January 2009 – December 2011
Philadelphia Fed Survey	10.00 a.m. ET	Monthly	January 2009 – December 2011
Personal Income and Outlays	08.30 a.m. ET	Monthly	January 2009 – December 2011
Producer Price Index	08.30 a.m. ET	Monthly	January 2009 – December 2011
Retail Sales	08.30 a.m. ET	Monthly	January 2009 – December 2011
Japan News Releases			
Consumer Price Index	06.30 p.m. ET / 07.30 p.m. ET	Monthly	January 2009 – December 2011
Gross Domestic Product	06.50 p.m. ET / 07.50 p.m. ET	Quarterly	January 2009 – December 2011
Industrial Production	06.50 p.m. ET / 07.50 p.m. ET	Monthly	January 2009 – December 2011
Unemployment Rate	06.30 p.m. ET / 07.30 p.m. ET	Monthly	January 2009 – December 2011
Merchandise Trade	06.50 p.m. ET / 07.50 p.m. ET	Monthly	January 2009 – December 2011
Producer Price Index	06.50 p.m. ET / 07.50 p.m. ET	Monthly	January 2009 – December 2011
Retail Sales	06.50 p.m. ET / 07.50 p.m. ET	Monthly	January 2009 – December 2011
Tankan	06.50 p.m. ET / 07.50 p.m. ET	Quarterly	January 2009 – December 2011
Tertiary Index	06.50 p.m. ET / 07.50 p.m. ET	Monthly	January 2009 – December 2011

*GDP news in US is actually issued quarterly however, there is GDP advance, preliminary, and final data which is issued subsequently making the data to be issued monthly.

• Independent Variables

Series of dummy variables D_{kt} where $D_{kt} = 1$ if announcement k is made on day t and $D_{kt} = 0$ otherwise from January 2009-December 2011.

In summary, the regression format will be:

$$| R_{jt} - \bar{R}_j | = a_{oj} + \sum_{k=1}^K a_{kj} D_{kt} + e_{jt} \quad (1)$$

Marvin & Anggono

3.3 Data Processing

Analytical methods used in this research are descriptive and quantitative analysis method by using an econometric model from Ederington and Lee (1993). While the estimator of the equation (1) is not explained by the referenced author, OLS (Ordinary Least Squares) will be used first, if there is an indication of violation in the estimator assumption, more robust estimator, like LAD (Least Absolute Deviation) will be used. The step of data processing is explained briefly as follow:

- Time series data which is COMEX gold contract 1 minute price will be adjusted into 5 minutes return and divided into 14 groups according into time which is scheduled news announcement is shown to be existed. So, there will be 14 set of time series data, which are times series of 5 minutes return on 04.00 a.m. ET-04.05 a.m. ET, 05.00 a.m. ET -05.05 a.m. ET, and so on. The return calculation will be calculated with the following equation:

$$R_t = \ln \frac{P_t}{P_{t-1}} \quad (2)$$

Where:

P_t = the closing price at time t

P_{t-1} = the closing price at time t-1

- Build the dependent variable which is explained by Ederington and Lee (1993) from 14 groups of time point.
- Build the dummy variables from news announcement data for independent variables by signing the variables by value of 1 on every 5 minutes interval on announcement day starting from time of announcement to rest of the day, value of 0 will be signed to the variables otherwise.
- Each group of dependent variables will be tested by unit root test to indicate whether the data is stationer or not.
- If data tested is proved to be stationer, parameter estimation by OLS will be conducted and the residual of model will be tested by classic assumption test, which is normality test, autocorrelation test, and heteroscedasticity test.
- Normality test used in this research is Jarque Bera test of normality. It computes the skewness and kurtosis measures of the OLS residuals and uses the formula 3 to compute the statistic. It is said that JB statistic follows the chi-square distribution with 2 degrees of freedom and expected to be 0 if the data tested is fit in gaussian distribution(Gujarati 2004 p.148).

$$JB = n \left[\frac{S^2}{6} + \frac{(K-3)^2}{24} \right] \quad (3)$$

Where:

JB = Jarque Bera statistic

n = sample size

S = skewness coefficient

K = kurtosis coefficient

- The autocorrelation test used in this research is Breusch-Godfrey F-test of which the data could be categorized as free from autocorrelation if the

Marvin & Anggono

probability is above α level. In this research, 5% significant level is used to reject null hypothesis.

- The last assumption to be fulfilled is that the residual should be *homokedastic* or the variance of the residual should be not time-varying variance (Gujarati 2004 p.336). The test used is ARCH test that results F-statistic which is asymptotically distributed as chi-square distribution with degree of freedom q. The result could be categorized as heteroscedastic if the p-value from the F-statistic lower than α level. this research, 5% significant level is also used to reject null hypothesis. Equation (4) shows the formula of ARCH test.

$$e_t^2 = \beta_0 + \left(\sum_{s=1}^q \beta_s e_{t-s}^2\right) + v_t \quad (4)$$

Where:

e_t^2 = squared residuals at t (t = 1,2,...,q)

β_i = parameter of regression (i = 1,2,...,q)

v_t = disturbance error term at t (t=1,2,...,q)

- If the model cannot pass classic assumption test, LAD parameter estimator will be used to analyzed every decile of the data. Independent variables from previous group regression will be included into the next group regression if it is still significant below 5% significant level ($\alpha = 5\%$) to detect if there is any drift given from the previous group independent variables to the current analyzed regression model. This action is conducted due to prevent specification bias which is including unnecessary variables/overfitting the model. This action could prevent inefficiency in α which could leads to loss of significancy of each parameter.

4. The Findings

4.1 News Announcement Effect

After preparing both dependent variables and independent variables into 14 available groups, Augmented Dickey Fuller Test is used to measured the unit root of the data. From the results of the test, all of dependent variables can be concluded to be stationer. T-statistics indicate high negative value and the probability are zeros. This test shows that mean for all series of groups are constant across the sample time frame. Therefore, there is no need to difference the variables for further use of data. The data is already suitable for next step of process. The detailed is provided in table 2.

Marvin & Anggono

Table 2: Unit Root Test Result

Dependent Variables*	t-statistic	Probability	Remarks
R0400	-17.82781	0.0000	Stationer
R0500	-24.66221	0.0000	Stationer
R0600	-25.22710	0.0000	Stationer
R0745	-17.18822	0.0000	Stationer
R0830	-26.98863	0.0000	Stationer
R0845	-25.06968	0.0000	Stationer
R0915	-25.08470	0.0000	Stationer
R1000	-12.42988	0.0000	Stationer
R1400	-10.30248	0.0000	Stationer
R1415	-18.99312	0.0000	Stationer
R1830	-15.06190	0.0000	Stationer
R1850	-6.835183	0.0000	Stationer
R1930	-23.45987	0.0000	Stationer
R1950	-11.97049	0.0000	Stationer

* Dependent variables is assigned as symbol of Rtime which indicates the absolute excess return of COMEX gold contract in considered time interval. R0400 means absolute excess return in 04.00 a.m. ET period, R0500 for 05.00 a.m. ET period, and so on.

Table 3 provide the classic assumption linear regression test result. All of the regression model which is estimated by OLS across time interval cannot pass the test. It indicates that the estimator couldn't estimate regression parameter well enough, thus LAD estimator will be used instead.

Table 3: Classic Assumption Linear Regression Test

Dependent Variables	Normality Test		Autocorrelation Test		Heteroscedasticity Test	
	Jarque Bera	Probability	F-statistic	Probability	F-statistic	Probability
R0400	352966.9	0.000000**	13.79054	0.000000**	0.009836	0.921000
R0500	4187.239	0.000000**	6.286622	0.002000**	9.241738	0.002400**
R0600	433235.0	0.000000**	3.502337	0.030600**	0.021241	0.884200
R0745	41431.47	0.000000**	6.104451	0.002300**	0.000330	0.985500
R0830	7459.424	0.000000**	2.767205	0.063500	0.008881	0.924900
R0845	5410.888	0.000000**	6.106683	0.002300**	2.605383	0.106900
R0915	10481.32	0.000000**	4.394841	0.012700**	0.306052	0.580300
R1000	2506.317	0.000000**	11.20807	0.000000**	13.96091	0.000200**
R1400	3641.275	0.000000**	13.49849	0.000000**	0.008934	0.924700
R1415	690300.1	0.000000**	13.31684	0.000000**	0.005039	0.943400
R1830	4016.930	0.000000**	6.952639	0.001000**	0.316986	0.573600
R1850	1016.189	0.000000**	15.20168	0.000000**	2.173769	0.140900
R1930	4178.813	0.000000**	6.283989	0.002000**	0.000205	0.988600
R1950	1008.010	0.000000**	12.55248	0.000000**	0.356170	0.550800

* Dependent variables is assigned as symbol of Rtime which indicates the absolute excess return of COMEX gold contract in considered time interval. R0400 means absolute excess return in 04.00 a.m. ET period, R0500 for 05.00 a.m. ET period, and so on.

** Indicates that the residual of OLS estimator regression doesn't pass the test

Table 4 provides significant variables accros time interval form the regression model. All of the model is estimated with LAD estimator. The starred column indicates that the time used when Daylight Saving Time occurs.

From table 4, it can be seen that the news are seperated into 3 parts of region which are news from European Union (EU news), US (US news), and Japan (JP news). There are 24 variables of 38 variables which has significant level of 5% to absolute return volatility of COMEX gold contract futures (GC). EU news contributes 10 out of 12, US news contributes 9 out of 17, and JP news contributes 5 out of 9.

Marvin & Anggono

EU news are majorly announced on 05.00 a.m ET, while the earliest news is announced on 04.00 a.m. ET which is M3 Money Supply news. This earliest announced news is proved to be insignificant to the absolute return volatility of GC. On the other hand, EC Economic Sentiment, Gross Domestic Product(GDP), Gross Domestic Product Flash(GDPF), Harmonized Index of Consumer Price (HICP), Industrial Production, and Retail Sales which are announced on 05.00 a.m. ET is significantly show their influence to the volatility. However, several news shows its inconsistency of significant level at its Daylight Saving Time, which are GDPF, HICP, and Industrial Production. In period 06.00 a.m. ET period, Harmonized Index of Consumer Price Flash (HICPF), Merchandise Trade, and Producer Price Index news (PPI) start showing its significant level below 5 %. This may be caused by the period of announcement itselfs (between November to March) is the moment that these news has become more important than other period. Continuous effect of GDP, HICP, Merchandise Trade, and Industrial Production are exist to the next period of news announcement when ECB Announcement is released. Afterwards, the effect is diminished replaced with news from US region. Interestingly, several EU news, such GDP and Retail Sales show different sign of coefficient between the period of each regression model. This inconsistency can't be explained by the regression model, although more detail investigation should be done to investigate what has cause the news to be able to reduce the absolute return volatility of GC.

US news majorly announced on 08.30 a.m. ET with Durable Goods Order (DGO), Gross Domestic Product (GDP), Employment Situations, and Retail Sales news are significant at 5% level. Employment Situation continues its influence until 09.15 a.m. ET moreover, Housing Starts news continues its influence further than Employment Situation making it has the longest continuous effect until 02.00 p.m. ET when FOMC Minutes is announced. ISM Manufacturing Index follows Housing Starts news from its announcement schedule at 10.00 a.m. ET. Philadelphia Fed Survey, FOMC Minutes , and FOMC Meeting Announcement only show the 5 % significant level when their announcement occur. Interestingly, Housing Starts and ISM Manufacturing Index also show different coefficient accross the period. The case is similar with EU news, this evidence also indicates that more investigation should be done to the news announcement variables.

Several later period news announcement come from JP news and majorly announced at 06.50 p.m. ET. Consumer Price Index (CPI) news has the consistent significant influence between regular time and Daylight Saving Time, although the continuous effect is different. Between announced JP news at 06.50 p.m. ET period, only Tankan news shows its consistency of significant influence, while the others (Merchandise Trade, Retail Sales, and Tertiary Index news) only show their significant influence on Daylight Saving Time. From JP news, Tankan announcement also show different sign of coefficient accross period.

Marvin & Anggono

Table 4: News Announcement Variables Across Time Interval

Variables Name	04.00	05.00	06.00***	07.45	08.30	08.45***	09.15	10.00	14.00	14.15	18.30	18.50	19.30***	19.50***
European Union News Releases														
ECB Announcement	N/A	N/A	N/A	0.001046*	0.001051	0.000420**	0.000524	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EC Economic Sentiment	N/A	-0.000312**	-0.000215*	0.000114	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gross Domestic Product	N/A	0.000547**	-0.000151*	0.000653**	-0.000552	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gross Domestic Product Flash	N/A	0.000341*	-0.000179	-0.000221	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Harmonized Index of Consumer Price	N/A	-0.000276**	-0.000120	-0.000255*	0.000581	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Harmonized Index of Consumer Price Flash	N/A	-0.000194	-0.000122*	0.000194	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Industrial Production	N/A	-0.000131*	0.000160	0.000165	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unemployment Rate	N/A	0.000126	-0.000202	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M3 Money Supply	-0.000267	-9.62E-05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Merchandise Trade	N/A	-0.000105	-0.000236*	0.000482**	0.000199	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Producer Price Index	N/A	6.64E-05	0.000296**	0.000522**	0.000475	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Sales	N/A	-0.000279**	0.000402*	0.000206	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
US News Releases														
Consumer Price Index	N/A	N/A	N/A	N/A	0.000565	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Durable Goods Orders	N/A	N/A	N/A	N/A	0.000737*	0.000169	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Existing Home Sales	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.000191	N/A	N/A	N/A	N/A	N/A	N/A
FOMC Meeting Announcement	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.004790**	0.000166	N/A	N/A	N/A
FOMC Meeting Minutes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000262*	0.000222	N/A	N/A	N/A	N/A
Gross Domestic Product	N/A	N/A	N/A	N/A	0.000205*	0.000257	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*The variables coefficient is significant at 5% significant level

** The variables coefficient is significant at 1% significant level

***This time interval only exist when daylight saving time system in US occurs.

This table only provide the largest coefficient of each news announcement which is calculated with LAD Estimator with 10 quantiles, form more detailed calculation result, please contact author.

Marvin & Anggono

Table 4: News Announcement Variables Across Time Interval(contd.)

Variables-Name	04.00	05.00	06.00***	07.45	08.30	08.45***	09.15	10.00	14.00	14.15	18.30	18.50	19.30***	19.50***
Housing Starts	N/A	N/A	N/A	N/A	0.000270*	0.000490*	-0.000322*	0.000463*	0.000409*	0.000259	N/A	N/A	N/A	N/A
Industrial Production	N/A	N/A	N/A	N/A	N/A	N/A	7.32E-05	N/A	N/A	N/A	N/A	N/A	N/A	N/A
International Trade	N/A	N/A	N/A	N/A	-0.000294	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ISM Manufacturing Index	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000979**	-0.000242**	0.000438	N/A	N/A	N/A	N/A
Jobless Claim	N/A	N/A	N/A	N/A	-7.28E-05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Employment Situation	N/A	N/A	N/A	N/A	0.002195**	0.002511**	0.000947**	-0.000184	N/A	N/A	N/A	N/A	N/A	N/A
New Home Sales	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000979	N/A	N/A	N/A	N/A	N/A	N/A
Philadelphia Fed Survey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000721**	0.000467	N/A	N/A	N/A	N/A	N/A
Personal Income and Outlays	N/A	N/A	N/A	N/A	0.000266	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Producer Price Index	N/A	N/A	N/A	N/A	-0.000350	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Sales	N/A	N/A	N/A	N/A	0.000862*	0.000339	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Japan News Releases														
Consumer Price Index	0.000213	-0.000293*	-	0.000337**	0.000770*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gross Domestic Product	-9.04E-05	N/A	9.88E-05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Industrial Production	0.000142	N/A	0.000155	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Merchandise Trade	-0.000290*	N/A	0.000238	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Producer Price Index	0.000243	N/A	0.000253	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail Sales	-0.000323*	N/A	0.000310	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tankan	0.000501*	N/A	0.000839**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tertiary Index	-	0.000247**	N/A	-0.000195	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*The variables coefficient is significant at 5% significant level

** The variables coefficient is significant at 1% significant level

***This time interval only exist when daylight saving time system in US occurs.

This table only provide the largest coefficient of each news announcement which is calculated with LAD Estimator with 10 quantiles, form more detailed calculation result, please contact author.

5. Conclusion

There are 24 news out of 38 news released significantly give impact to absolute return volatility (ARV) of COMEX Gold Contract Futures. The 10 out of 38 news releases are from European Union news releases which are ECB Announcement, EC Economic Sentiment, Gross Domestic Product, Gross Domestic Product Flash, Harmonized Index of Consumer Price, Harmonized Index of Consumer Price Flash, Industrial Production, Merchandise Trade, Producer Price Index, and Retail Sales news releases. US region shows 9 news releases which give similar impact which are Durable Goods Orders, FOMC Meeting Announcement, FOMC Meeting Minutes, Gross Domestic Product, Housing Starts, ISM Manufacturing Index, Employment Situation, Philadelphia Fed Survey, and Retail Sales news releases, while there are 5 news releases from Japan region, which are Consumer Price Index, Merchandise Trade, Retail Sales, Tankan, and Tertiary Index news.

releases.variables. The most affectious news releases to absolute return volatility are EC Economic Sentiment and Gross Domestic Product news releases from European Union, Employment Situation, ISM Manufacturing Index, Philadelphia Fed Survey, and FOMC Announcement from US region, and also Tankan news releases from Japan region.

The impact of the news releases could be either negative or positive impact to absolute return volatility of COMEX gold contract futures. From European Union region, Gross Domestic Product and Retail Sales news releases have positive sign coefficient at its announcement time occur (negative sign for Retail Sales), but it has turned into negative signed (positive sign for Retail Sales) coefficient when continuous impact of these news is exist. It means that these news give more volatility to absolute return when they were announced but, reduce the volatility to the next period of announcement (it happens otherwise for Retail Sales news releases effect). Housing Starts and ISM Manufacturing Index news releases from US region show similar pattern with Europe Region of which give more volatility to absolute return of absolute return on news releases period and reduce the volatility afterwards especially at the end of its affectious period. This event is also similar with Consumer Price Index news release from Japan region. News announcement impact which has highest impact to ARV in US region (also highest among 3 region) is Job Situation with 0.002195 additional ARV, the second highest impact to ARV comes from Japan region which is Tankan news announcement with 0.000839 addition in 5 minutes interval. From Europe Union region, Gross Domestic Product news announcement has the highest impact (0.000653) to ARV.

There is continuous impact to the next period of news releases event from European Union, US, and Japan news announcement releases. The detailed analysis provided in chapter 4 has explained that EC Economic Sentiment, Gross Domestic Product, Harmonized Index of Consumer Price, Merchandise Trade, Producer Price Index, and Retail Sales news releases from Europe Region have continuous impact to absolute return volatility until 08.30 a.m. ET where US region news releases start to be announced. US region news releases which have continuous impact are Housing Starts, ISM Manufacturing Index, and Employment Situation news releases of which impact has dissapeared when Japan region news releases are announced at 06.30 p.m. ET. Only Consumer Price Index news releases from Japan region which has continuous impact to absolute return volatility until the last period of news releases of the day.

References

- Baker, HK & Nofsinger, JR (eds) 2010, *Behavioral Finance Investors, Corporations, and Markets*, John Willey & Sons, New Jersey.
- Barnhart, SW 1989, 'The Effects of Macroeconomic Announcements on Commodity Prices', *American Journal of Agricultural Economics*, vol. 71, no. 2, pp. 389-403.
- Cai, J, Cheung, YL, & Wong, MCS 2001, 'What moves the gold market?', *Journal of Futures Markets*, vol. 21, issue 3, pp. 257-278.
- Christie, DR, Chaudhry, M, & Koch, TW 2000, 'Do Macroeconomics News Releases Affect Gold and Silver Prices?', *Journal of Economics and Business*, vol. 52, pp. 405-421.
- Ederington, LH & Lee, JH 1993, 'How Markets Process Information : News Releases and Volatility', *The Journal of Finance*, vol. 48, no. 4 (Sep.1993), pp.1161-1191.
- Fama, EF 1970, 'Efficient Capital Markets: A Review of Theory and Empirical Work', *Journal of Finance*, vol. 25, issue 2, pp. 383-417.
- Gujarati, DN 2004, *Basic Econometrics*, 4th edn, McGraw-Hill/Irwin, New York.
- Hewitt, Mike 2008, *Two Methods for Estimating the Price of Gold*, viewed 30 July 2012, <http://dollardaze.org/blog/?post_id=00479&cat_id=20>.
- Niederhoffer, V 1971, 'The Analysis of World Events and Stock Prices', *The Journal of Business*, vol. 44, no. 2 (Apr.1971), pp. 193-219.
- Roache, SK & Rossi, M 2009, *The Effects of Economics News on Commodity Prices: Is Gold Just Another Commodity?*, WP/09/140, International Monetary Fund, viewed 20 July 2012, <<http://www.iadb.org/intal/intalcdi/pe/2009/03913.pdf>>.
- International Monetary Fund 2012, *World Economic Outlook Database, April 2012*, viewed 27 July 2012, <[http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/weoselco.aspx?g=119&sg=All+countries+%2f+Advanced+economies+%2f+Major+advanced+economies+\(G7\)](http://www.imf.org/external/pubs/ft/weo/2012/01/weodata/weoselco.aspx?g=119&sg=All+countries+%2f+Advanced+economies+%2f+Major+advanced+economies+(G7))>