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UNUSUAL MARKET ACTIVITY ANNOUNCEMENTS
A Study of Price Manipulation on the Indonesian Stock Exchange*

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We investigate stocks involved in the Unusual Market Activity (UMA) Announcements. The Indonesian Stock Exchange occasionally issues UMA announcements when it suspects that there are unusual price increases (positive UMAs) or price decreases (negative UMAs), as well as unusual increases in trading volumes. We believe that UMA announcements signal a high probability that stocks are being manipulated. We find no differences in fundamentals and trading variables between stocks in the UMA announcements and those not in the UMA announcements. Any stock is vulnerable to market manipulation. Stocks in the UMA announcements do not exhibit reversal patterns, suggesting that price effect is permanent. UMAs seem to convey relevant information, which is most likely in the form of insider type of information.

Keywords: emerging market; price manipulation; unusual market activity announcement

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Introduction

The story of market manipulation is plentiful; such practice is probably as old as the stock market per se. There are colorful instances of market manipulation, from the traditional era to the most recent one, the internet era. In the old era, such as on the Amsterdam Stock Exchange in the 17th century, manipulators spread out false news in local cafes, forcing other investors to sell or buy based on inaccurate information. The manipulators then traded in the opposite direction to earn profit. In the internet era, manipulative actions are facilitated by technology. The manipulators spread out false rumors using internet message boards. While the techniques harnessed are essentially the same, manipulations in internet era exert faster impacts and involve larger audiences, hence larger effects (Leinweber and Madhavan 2001).

Emerging markets, such as Indonesia, are more vulnerable to market manipulations for several reasons. First, law infrastructure and enforcement in emerging markets tend to be young and still weak. For instance, the Indonesian government already passed the Capital Market Law in 1995, in which there are rules against market manipulation. However, heretofore, there has been no criminal indictment for market manipulation cases. Second, corporate governance tends to be weak. Outside investors are constantly faced with potential for tunneling, revenues hiding, and other forms of expropriations. Conversations with market regulators, brokers, traders, and investors suggest that market manipulation is so prevalent on the Indonesian Stock Exchange. Although the manipulations are believed to be a significant impediment to the development of the stock market, the evidence on the manipulations, especially in emerging markets, has been anecdotal. There have been a few academic studies that provide evidence on the market manipulation in emerging markets.

The study of price manipulation is pivotal for several reasons. From the academic perspective, there is an ongoing debate as to whether price manipulation can be used to gain profit. If the market is efficient, arbitrageurs will quickly take advantage of any mispricing, moving prices into equilibrium conditions. The question is whether the market is as efficient as what described in the academic literature. The issue of efficiency as a necessary condition is of particular concern in emerging markets, such as the Indonesian Stock Exchange. Market infrastructure, disclosure, regulations, and the enforcement of regulations on the Indonesian market are arguably lower than those in developed markets. Even in a developed market, market manipulation is still an important issue.

Aggarwal and Wu (2006) present several arguments as to why this issue is still crucial, even in the developed markets. In the internet era, technologies could be an important channel for price manipulation, especially for the dissemination of false information. For example, Jonathan Lebed, a teenager in New Jersey, successfully manipu-

lated stocks 11 times by posting messages on the Yahoo Finance message boards, and made profit of $800,000. The results of market manipulation research, albeit being derived from the studies of penny stocks, may also be useful for analyzing larger cases of fraud such as Enron or WorldCom. Of course, studies of market manipulation are important in emerging markets where the market infrastructure has not developed, such as that shown in Pakistan (Khwaja and Mian 2003) and China (Walter and Howie 2003).

From the policy perspective, research on market manipulation could provide significant contributions. The regulator generally has an objective of maintaining a fair and efficient market. Research on market manipulation could provide insights into the characteristics of manipulated stocks and manipulation techniques, thereby helping regulators design more effective market surveillance (Cumming and Johan 2007; Jiang et al. 2005). Indonesia is well suited for such a study. As aforementioned, market infrastructure in Indonesia is not well developed compared to that in the developed markets. The Indonesian market is basically small, especially for its small cap stocks, which increases the probability of manipulation.

This paper attempts to investigate the issue of price manipulation on the Indonesian Stock Exchange. Direct evidence on market manipulation is difficult to obtain. As explained above, there has been no prosecution against market manipulation on the Indonesian market. Hence, we use indirect evidence on market manipulation by studying stocks involved in the announcements of Unusual Market Activity (UMA) by the Indonesian Stock Exchange (ISX). The ISX occasionally issues UMA announcements when the Exchange suspects unusual movements in listed stocks. While the ISX explicitly states that the announcements do not necessarily indicate the existence of manipulation, we believe that the announcements signal a high probability that the stocks announced are being manipulated. Therefore, we use the UMA announcements as a proxy for market manipulation. The ISX issues both positive and negative UMA announcements. In a positive UMA announcement, the ISX reveals that there have been unusual price and trading volume increases. Meanwhile, in a negative UMA announcement, the ISX states that there has been an unusual price decrease and trading volume increase. We investigate both types of UMA announcements.

We find that fundamental characteristics do not explain UMA stocks (stocks for which the Exchange issues UMA announcements) and control stocks or the rest of stocks listed on the ISX. UMA stocks tend to have slightly lower total assets, but similar profitability. Trading characteristics do not explain UMA stocks, except for total variance. Subsequently, UMA stocks are inclined to have similar trading liquidity. However, UMA stocks tend to have higher total variance compared to the rest of stocks. These findings

suggest that any stock is vulnerable to price manipulation.

When we investigate price movements and trading activities on the days leading to UMA announcements, we find significant positive (negative) abnormal returns on the days leading to positive (negative) UMA announcements. Trading volume, trading frequency, and price range increase significantly during this period. We compare our sample with matched stocks and abnormal return matched stocks. The matched stocks do not show price movements and trading activities as do the sample stocks. Abnormal return matched stocks show a similar pattern to that of sample stocks. Price movements and trading activities increase significantly in the event period (days leading to UMA announcements). In the last section, we find that UMA stocks do not exhibit price reversals. This pattern suggests that UMA announcements contain relevant information. Price manipulations in UMA announcements are more likely to involve relevant "inside" information.

The remainder of this paper is organized as follows. Next section discusses literature review. Section 3 explains the Unusual Market Announcements on the Indonesian Stock Exchange. Subsequently, Section 4 discusses the fundamental and trading characteristics of UMA stocks. In section 5, we investigate price movements and trading behavior in the periods of pre-, leading to, and post-UMA announcements. Section 6 conducts robustness checks by creating a matched portfolio based on abnormal returns. Then we investigate stock performance in the post-UMA announcement period in Section 7. Eventually, Section 8 concludes.

Literature Review

This study investigates the issues around stock manipulation, i.e., the characteristics of manipulated stocks, the trading characteristics of manipulated stocks before, during, and after being manipulated, the price movements of manipulated stocks, and the various ways of manipulating stocks. As described by Aggarwal and Wu (2006), manipulation can occur in a variety of ways such as: (1) actions taken by insiders that influence stock prices (e.g., accounting and earnings manipulations) and (2) the release of false information or rumors in Internet chat rooms. Aggarwal and Wu (2006) and Merrick et al. (2005) provide interesting descriptions of the anatomy of manipulation.

Jiang et al. (2005) and Mahoney (1999) examined stock pools of 1920s in the U.S. Stock pools consisted of agreements, often written, among a group of traders to delegate authority to a single manager to trade in a specific stock for a specific period of time and then to share the resulting profits or losses (Mahoney 199). After a lengthy investigation, the Senate Banking and Currency Committee (1932 to 1934) concluded that pools represented attempts to manipulate the prices of chosen stocks. This conclusion has

prompted the current anti-manipulation rules in the U.S.

Khwaja and Mian (2005) investigated a strategy of "pump and dump" price manipulation on the Pakistani Stock Exchange. When prices are low, colluding brokers trade among themselves to artificially raise prices and attract positive-feedback traders. Once prices have risen, the former brokers exit, leaving the latter to suffer the price fall. Using unique trade level data, they find that when brokers trade on their own behalf, the brokers earn an annual rate of return which is 50-90 percentage points higher than that earned by outside investors. This profit could not be explained by market timing or liquidity provision by brokers. This result has adverse implications to the capital markets, i.e., market reforms are hard to implement and emerging equity markets often remain marginal with few outside investors.

This study aims to shed light on the nature of stock manipulation using the Indonesian market. From the methodological perspective, Aggarwal and Wu (2006) is probably the closest to this paper. This paper identifies certain manipulation actions, in this case the Unusual Market Announcements, and then investigates stock trading activities in the pre-, during, and post-manipulation periods. However, our conclusion is probably closest to Jiang et al. (2005) and Mahoney (1999), who find that stock pools in U.S. are associated with inside and relevant information. This paper provides evidence that stocks in the UMA announcements do not experience reversals, suggesting that information contained in the UMA is permanent. We argue that the UMA announcements are more likely to contain inside information. From the sample perspective, this paper is probably closest to Khwaja and Mian (2005) who conducted a study on the Pakistani market, which is also an example of emerging markets. We believe that the Indonesian and the Pakistani markets share similarity with respect to emerging market characteristics.

Unusual Market Activity Announcements and Sample Selection

Starting in April 2008, the Indonesian Stock Exchange (ISX) has occasionally issued Unusual Market Activity (UMA) announcements. In 2008, there were 49 UMA announcements issued by the ISX. We use all 49 UMA announcements in 2008 as our sample. The announcements basically inform investors that there have been unusual market activities for certain stocks. While the ISX explicitly says that the announcements do not necessarily imply the existence of market manipulations for the stocks, we believe that the ISX has valid reasons to issue the announcements. We believe that the UMA announcements signal a high probability of manipulations in stocks involved.

The ISX issues both types of UMA announcements, i.e., positive and negative UMA announcements. In a positive UMA announcement, the ISX re-

veals that there have been unusual price and trading volume increases, compared to the previous period. Meanwhile, in a negative UMA announcement, the ISX reports that there has been an unusual price decrease and trading volume increase, compared to the previous period. The ISX officially mentions price and trading volume as the indicators of UMA announcements.

The UMA announcements use standard language. In the first sentence, the ISX states that there have been unusual price movement and trading activity in a certain stock. The next sentence states that the ISX has asked for confirmation from the company, and it announces the last published information on the stock. Then the ISX reveals that the Exchange is paying close attention to price movements and trading activities of the stock, and warns investors to: (1) pay attention to the company's response to the ISX's inquiry, (2) scrutinize the company's fundamentals and corporate actions to find out if some plans have not been approved by the stockholder meeting, and (3) consider all possibilities that may occur in the future before making investment decisions.

During 2008, the ISX issued 49 UMA announcements. Table 1 reports the distribution of UMA announcements based on months and types of UMA.

In 2008, the ISX issued positive UMAs more often than negative UMAs, i.e., 39 and 10, respectively.

Given asymmetric responses for negative and positive events, or buying and selling events, found in several

Table 1. **Distribution of UMA Announcements**

This table reports the Unusual Market Activity Announcements on the Indonesian Stock Exchange during 2008. UMA Positive announces that there are significant price increases, whereas UMA Negative announces that there are significant price decreases.

Month	Number of UMA Announcements	UMA Positive	UMA Negative
April	4	4	0
May	6	6	0
June	8	6	0
July	8	7	1
August	4	2	2
September	5	2	3
October	1	0	1
November	3	2	1
December	10	8	2
	49	**39**	**10**

studies,[1] we believe that separate analyses between negative and positive market manipulations should be conducted. However, most manipulation models, such as Aggarwal and Wu (2006), are focused on price-increasing type of manipulation. The positive and negative UMA announcements are suitable to investigate the asymmetric patterns found in previous studies. The asymmetric findings for positive and negative UMA announcements are expected to provide additional insights.

Fundamental and Trading Characteristics of Sample Stocks and Matched Stocks

Fundamental Characteristics

We create a matched portfolio comprised of 49 stocks in the same industry as the sample stocks, and which have the closest market capitalizations to those of the sample stocks. The average capitalization for the sample is Rp1.839 trillion, with standard deviation of around Rp3.38 tril-

Table 2. **Fundamental Characteristics of Matched, Sample (UMA), and All Stocks**

This table presents the fundamental characteristics of matched stocks, sample (UMA) stocks, and all stocks (excluding the sample stocks) by the end of 2007.

	Matched Stocks	Sample Stocks(UMA)	All Stocks (excluding sample stocks)
Total asset (Rp million)	3,688,758	**5,320,282**	6,542,549
Net Worth (Rp million)	1,021,479	**1,515,092**	1,407,203
Net Sales (Rp million)	2,016,105	**2,003,421**	2,433,282
Operating Profit (Rp million)	252,914	**215,827**	463,379
Net Profit (Rp million)	143,128	**106,889**	291,941
Current Ratio	11.70	**16.05**	2.89
Total Debt to Total Assets	0.60	**0.59**	0.67
Debt Equity Ratio	13.50	**1.67**	2.88
Return On Investment	0.08	**2.05**	0.10
Return On Equity	-345.39	**4.02**	-13.77
Operating Profit Margin	0.16	**1.40**	0.73
Net Profit Margin	0.37	**0.54**	0.59
Earnings Per Share (Rp)	59.30	**115.58**	259.66
Price Earnings Ratio	26.54	**-112.47**	31.91
Price to Book Value	13.95	**-0.49**	3.96
Number of Stocks	326	**43**	49

[1] For example, Cheuk et al. (2006) report that in Hong Kong, insider selling yields higher profit than insider buying.

lion. The biggest stock in our sample is Barito Pacific Tbk., whose capitalization is around Rp15.355 trillion. The smallest stock in our sample is Betonjaya Manunggal Tbk., with the capitalization of around Rp28.8 billion. If we truncate the three biggest stocks in our sample (Barito Pacific, Bakrie Sumatra Plantation, and Bakrie Brothers), the average capitalization drops to around Rp865 billion, with standard deviation of around Rp1.4 trillion. Table 2 reports the fundamental characteristics of sample, matched stocks, and all stocks listed on the ISX, excluding the sample stocks.

The sample and matched stocks seem to have similar fundamentals. The last column reports the averages of fundamentals for the rest of the companies listed on the ISX (excluding the sample stocks). Compared to the rest of the companies, the sample stocks tend to have smaller size as shown by

Table 3. **Regression Analysis on the Fundamental Differences for Sample (UMA) Stocks, Matched Stocks, and All Stocks**

This table presents the regression analysis to investigate whether there are fundamental differences between sample (UMA) stocks and matched stocks, and between sample stocks and all stocks. All stocks exclude the sample stocks. Dependent variable has a value of 1 for matched stocks and 0 for sample stocks, and has a value of 1 for all stocks (excluding the sample stocks) and 0 for sample stocks. P-values are in parentheses.

	Regression Sample – Control	**Regression Sample – All Stocks**
Intercept	-0.343 (0.107)	0.861 (0.0001)
Total Asset	-5.84E-08 (0.142)	-1.634 (0.174)
Net Worth	9.62 (0.448)	2.41E-9 (0.943)
Sales	-4.903 (0.271)	1.01E-8 (0.195)
Operating Profit	0.00000125 (0.134)	3.778 (0.286)
Net Profit	-0.00000146 (0.2233)	-1.27E-8 (0.841)
Current Ratio	-0.000302 (0.904)	-0.00036 (0.681)
Leverage Ratio	0.447 (0.310)	0.083 (0.529)

Continued from **Table 3**

	Regression Sample – Control	Regression Sample – All Stocks
Debt Equity Ratio	0.038 (0.769)	0.0034 (0.739)
Return On Investment	-0.011 (0.807)	-0.002 (0.987)
Return On Equity	0.0099 (0.692)	0.000051 (0.9875)
Operating Margin	-0.056 (0.218)	-0.0021 (0.811)
Net Margin	0.090 (0.461)	0.0115 (0.245)
Earnings per Share	0.00029 (0.716)	0.000013 (0.516)
Price Earnings Ratio	-0.00079 (0.192)	-0.00046 (0.0475)
Price to Book Value	-0.031 (0.265)	-0.00372 (0.718)
R-sq	0.2502	0.0679
Adj R-sq	-0.0113	0.0003
F-value	0.96	1.00

smaller total assets, total net worth, and sales. The non-sample stocks also tend to have higher profitability than do sample stocks. Unfortunately, statistical tests fail to show significant differences. None of the fundamental variables show significant differences between sample stocks and matched portfolio and between sample stocks and the rest of the stocks.

Table 3 reports multivariate tests for fundamental variables between sample stocks and matched stocks and between sample stocks and the rest of the stocks. Again, the tests do not find significant differences.

Trading Characteristics

We investigate whether sample stocks have different trading characteristics from those of matched stocks and all stocks. Table 4 reports the descriptive statistics of trading variables of sample, matched, and all stocks (excluding the sample stocks).

Table 4. **Trading Characteristics of Sample (UMA) Stocks, Matched Stocks, and the Rest of the Stocks**

This table presents the trading characteristics of matched stocks, sample (UMA) stocks, and all stocks (excluding the sample stocks) by the end of 2007.

	All Stocks (excluding sample stocks)	Matched Stocks	Sample Stocks	F-value Sample – All Stocks	F-value Matched – Sample Stocks
Price (Rp)	2,348	1,288	704	1.74	1.13
Trading Volume (shares)	5,522,200	7,569,070	8,568,514	1.06	0.06
Trading Frequency	133	143	188	0.90	0.70
Beta	0.0846	0.0814	0.0853	0.04	0.81
Stock Variance	0.00168	0.00192	0.02618	7.96***	0.99
Residual Variance	0.25021	0.25196	0.24913	0.13	0.81
Trade Size	37,060	40,216	31,345	0.27	0.54
Number of Stocks	326	43	49		

Table 5. **Regression Analysis on the Trading Variable Differences for Sample Stocks, Matched Stocks, and All Stocks**

This table presents the regression analysis of fundamental differences between sample stocks and matched stocks, and between sample stocks and all stocks. The rest excludes sample stocks. Dependent variable has a value of 1 for matched stocks and 0 for sample stocks, and has a value of 1 for the rest and 0 for sample stocks. P-values are in parentheses

	Regression Sample–Control	Regression Sample–The Rest
Intercept	-0.435 (0.640)	0.749 (0.012)
Price	0.000026 (0.201)	0.0000028 (0.171)
Trading Volume	-8.98E-9 (0.359)	-8.944E-10 (0.459)
Trading Frequency	0.00125 (0.760)	-0.0000102 (0.861)

Continued from Table 5

	Regression Sample–Control	Regression Sample–The Rest
Beta	-1.454 (0.568)	-0.039 (0.962)
Stock Variance	-0.389 (0.372)	-0.767 (0.0079)
Residual Variance	3.775 (0.280)	0.482 (0.676)
Trading Size	0.00000313 (0.249)	2.3E-07 (0.391)
R-sq	0.0732	0.0286
Adj R-sq	-0.004	0.0101
F-value	0.95	1.55

Sample stocks tend to have lower prices. The average price of sample stocks is Rp704, which is approximately one-third of the average price of the rest of the stocks. Interestingly, trading volumes and trading frequency of sample stocks are on average higher than those of matched stocks and the rest of the companies. Betas of sample stocks tend to be similar to those of matched and the rest of the stocks. However, stock and residual variances of sample stocks are larger than those of matched stocks and the rest of the stocks. Meanwhile, trading size of sample stocks tends to be smaller. Unfortunately, statistical tests show a significant difference only for the stock variance.

Table 5 shows the results of multivariate tests for differences in trading characteristics between sample stocks and matched stocks and the rest of the stocks. Again, only the stock variance exhibits a significant regression coefficient.

Comparison with BAPEPAM Statements Regarding Market Manipulation

Our findings in this section partially support the BAPEPAM's (Indonesian Stock Market Supervisory Board) conjecture of manipulated stocks. The BAPEPAM officially describes a manipulated stock as follows: (1) market capitalization is less than Rp20 trillion, (2) the stock is illiquid, with the number of transactions fewer 30 times annually, (3) fundamentals are weak, (4) market price is low, less than Rp500, (5) the stock experiences

significant price and volume increases, up to more than 30 persent a day. Our findings show that the sample stocks tend to have lower market capitalizations and lower prices, consistent with the BAPEPAM's descriptions. However, the sample stocks tend to be more liquid, as shown by higher trading volumes and frequency. The fundamentals of sample stocks tend to be similar to other stocks. Unfortunately, the statistical power in our tests is low. Next section discusses the trading characteristics around the event of UMA announcement.

Price Movements and Trading Characteristics in the Pre-, During, and Post-Manipulation Periods

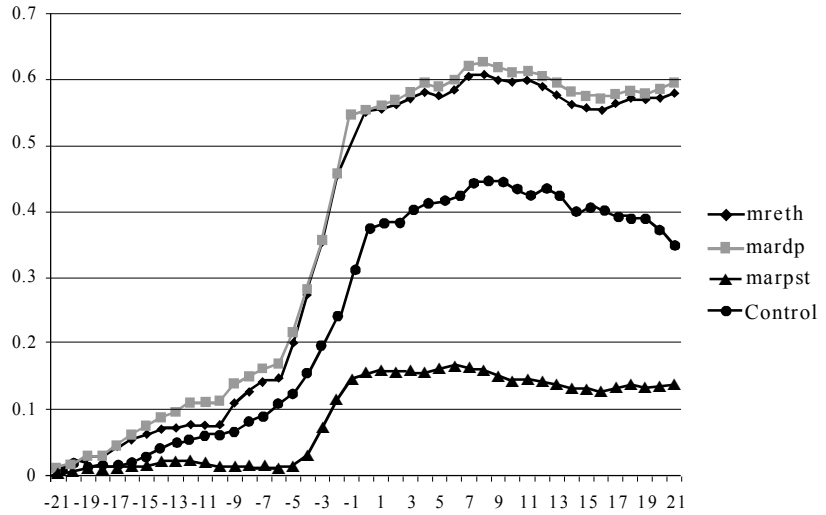
Descriptive Analysis

In this section, we investigate the trading patterns around the UMA announcements. We calculate the cumulative abnormal returns using market-adjusted, risk-and-market-adjusted (market model adjustment) and matched-stocks-adjusted models around the announcements. We re-

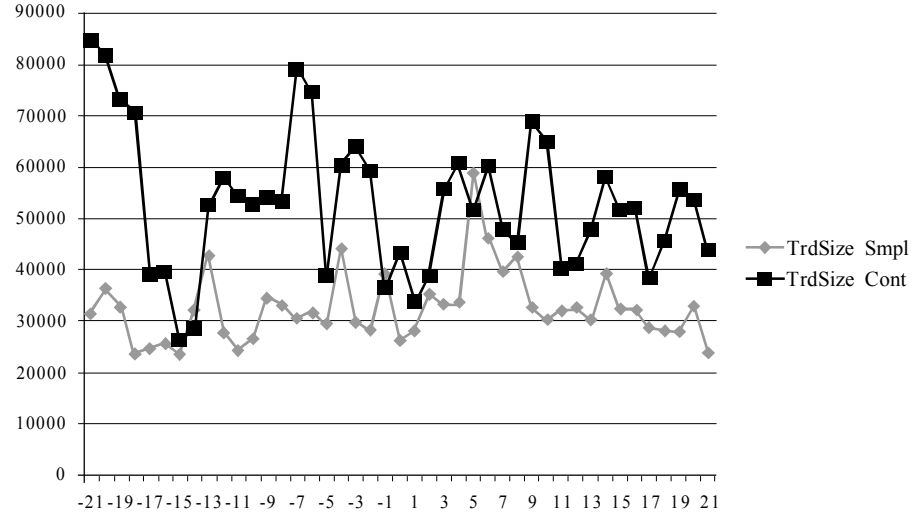
Figure 1. **Price Movements Around UMA Announcements**

This figure shows the price movements around UMA Announcements from days -21 to +21 around the announcements. Mreth is daily return. Mardp is market-adjusted abnormal return (return – market return). Marpst is risk-and-market-adjusted abnormal return. Risk-and-market-adjustment abnormal return is constructed using the market model which is estimated by utilizing data for one year leading to the announcement day. Control is matched stocks' abnormal returns (Return on the sample stocks – Return on matched stocks)

Panel A. Positive UMA Announcements



Panel A. Negative UMA Announcements



strict the period from days -21 to +21 relative to the announcements. Figure 1 shows the price movements on the days around announcements for positive and negative UMAs. For positive UMAs (Panel A), prices tend to stabilize after the announcements whereas for negative UMAs (Panel B), prices tend to decline further. These results indicate that unusual price movements convey information rather than pure market manipulations. In market manipulations, Aggrawal and Wu (2006) show that the manipulators drive prices to a high level in the manipulation period. The prices are still at the high level in the post-manipulation period, as the manipulators sell their shares. Finally, the prices decrease as their true values are revealed. However, Jiang et al. (2005) find that conditional on trading volumes, stock pools show a continuation pattern. This finding implies that stock pools convey information (insider trading, in this case) rather than pure or noisy price manipulations.

Table Table 6 reports the market-adjusted abnormal returns on the days surrounding UMA announcements. For positive UMAs, stock prices start increasing significatly on day -5. On this day, the stock return is around 4 persent, which is statistically significant at 1 persent level. Price increase continues until day -1. During the five days leading to announcements, stocks increase by more than 30 persent. This number is economically and statistically significant. On the post-announcement days, stock prices move insignificantly. For negative UMAs, stock prices start decreasing on day -3, but the movements tend to be weaker as shown by the weak statistical significances. During five days leading to negative UMA announcements, the cumulative negative return reaches the level of -20 persent. This figure seems to be eco-

nomically significant, although it is weaker statistically than that for positive UMAs. Similar to positive UMAs, price movements in the post-announcement period are statistically insignificant.

Table 6. **Abnormal Returns around UMA Announcement Days**

This table reports the abnormal returns during days -15 to +15 relative to UMA announcements. Abnormal return is calculated using the market-adjusted method ($Return_{it}$ – Market $return_t$).

	Positive UMA			Negative UMA		
Days	**Abnormal Return**	**Cum. Abnormal Return**	**P-value**	**Abnormal Return**	**Cum. Abnormal Return**	**P-value**
-15	0.0135	0.0135	0.1261	0.0029	0.0029	0.8216
-14	0.0122	0.0257	0.1295	-0.0274	-0.0244	0.1585
-13	0.0084	0.0341	0.2522	-0.0117	-0.0362	0.4321
-12	0.0136	0.0477	0.1547	-0.0114	-0.0475	0.3079
-11	0.0015	0.0492	0.8702	0.0030	-0.0445	0.7939
-10	0.0027	0.0518	0.7776	-0.0248	-0.0694	0.3914
-9	0.0259	0.0777	0.0117	-0.0402	-0.1096	0.0975
-8	0.0111	0.0888	0.2452	-0.0278	-0.1374	0.0572
-7	0.0107	0.0995	0.3043	-0.0345	-0.1719	0.0137
-6	0.0079	0.1074	0.3611	-0.0052	-0.1771	0.6629
-5	0.0480	0.1554	0.0076	-0.0280	-0.2051	0.1936
-4	0.0656	0.2210	0.0007	-0.0476	-0.2527	0.1185
-3	0.0759	0.2969	0.0003	-0.0714	-0.3241	0.0297
-2	0.0994	0.3963	0.0000	-0.0432	-0.3674	0.0964
-1	0.0897	0.4860	0.0000	-0.0615	-0.4288	0.2330
0	0.0062	0.4921	0.6597	0.0202	-0.4086	0.6447
1	0.0066	0.4988	0.4673	-0.0366	-0.4452	0.1046
2	0.0096	0.5084	0.4049	0.0054	-0.4398	0.6814
3	0.0118	0.5201	0.1945	0.0215	-0.4183	0.4404
4	0.0137	0.5338	0.1859	-0.0275	-0.4458	0.1311
5	-0.0060	0.5278	0.6723	0.0392	-0.4066	0.1003
6	0.0106	0.5384	0.3887	0.0122	-0.3944	0.3173
7	0.0216	0.5601	0.0744	0.0080	-0.3863	0.7769
8	0.0058	0.5659	0.6151	0.0147	-0.3716	0.5971
9	-0.0091	0.5568	0.4960	-0.0315	-0.4030	0.0375

Continued from Table 6

Days	Positive UMA			Negative UMA		
	Abnormal Return	Cum. Abnormal Return	P-value	Abnormal Return	Cum. Abnormal Return	P-value
10	-0.0075	0.5493	0.5912	-0.0088	-0.4119	0.3206
11	0.0019	0.5512	0.8421	-0.0019	-0.4138	0.9456
12	-0.0062	0.5450	0.4755	0.0063	-0.4074	0.7158
13	-0.0103	0.5347	0.2718	-0.0060	-0.4135	0.7529
14	-0.0133	0.5214	0.0882	0.0335	-0.3799	0.2538
15	-0.0078	0.5136	0.3357	-0.0094	-0.3893	0.7289

To examine whether there are certain patterns associated with unusual market activities, we further investigate trading volumes, trading values, trading frequency, price volatility, and return volatility around the event days. Appendix 1 to 4 show the activities around event days.

We observe noticeable findings for the trading characteristics of sample stocks, i.e., trading volumes and frequency increase dramatically from day -5 to day -1. We also observe a significant increase in price range from day -5 to day -1. Trading size does not seem to change during the same days.

We further define more formally the pre-, leading to, and post-UMA announcement periods, and investigate price movements and trading characteristics during these periods. Unlike Aggarwal and Wu (2006) who have actual manipulation data that enable them to identify the starting and ending dates of manipulations, we do not have actual manipulation data. We rely on the visual inspection of Figures 1 and 2 to determine the pre-, leading to, and post-UMA announcement periods. Specifically, we define the period of pre-UMA announcements as days -21 to -6, the period of leading to UMA announcements as days -5 to 1, and the period of post-UMA announcements as days +1 to +7. We also define days +8 to +50 as the "normal" period, in which we believe the effect of UMA announcements has diminished.[2]

Table 7 reports the descriptive statistics of price movements and trading variables in the pre-, leading to, and post-UMA announcement periods. For

[2] Aggarwal and Wu (2006) report the length of manipulation period; the mean is 308.33 days, the median is 202 days, the standard deviation is 332.07 days, the maximum is 1,373 days, and the minimum is two days. The length of our observation in this paper is definitely shorter than that utilized by Aggarwal and Wu (2006).

positive UMAs, the mean of cumulative returns from days -5 to -1 is 41 persent, while the cumulative abnormal return with market-adjusted model is 38 persent and the cumulative return with risk-and-market-adjusted model is 13.8 persent. These numbers are statistically significant at 1 persent level. While the average is positive, we still observe negative numbers for cumulative returns or abnormal returns although these numbers are small. For negative UMAs, the means of cumulative numbers from days -5 to -1 are 27 persent for cumulative returns, 23 persent for CAR with market-adjusted

Table 7. **Descriptive Statistics for Returns, Abnormal Returns, and Trading Variables on the Days Leading to UMA Announcements**

This table presents the descriptive statistics for Returns, Abnormal Returns, and Trading Variables on the days leading to (defined as day -5 to day -1) UMA Announcements. Market-adjusted abnormal return is calculated as return – market return. Risk-and-market-adjusted abnormal return is calculated as return minus expected return constructed from the market model. Parameters in market model are estimated using the data for one year leading to the announcement day. Price range is calculated as follows: {(Daily Highest Price – Daily Lowest Price) / Average of Daily Highest and Lowest Price} x 100 persent. Daily trading size is calculated as daily trading volume divided by daily trading frequency. ***, **, and * mean significant at 1 persent, 5 persent, and 10 persent, respectively. Significance is reported only for return variables.

A. Positive UMA Announcements

	Mean	Median	Std Dev	Min	Max
Daily Return	0.4088***	0.4299	0.3142	-0.4206	1.3531
# of positive return	37				
CAR (Market Adjusted)	0.3858***	0.4281	0.3237	-0.4211	1.4037
# of positive CAR	35				
CAR (Risk and Market Adj)	0.1370***	0.0911	0.1849	-0.2993	0.6181
# of positive CAR	35				
Daily Trading Volume	19,411,756	2,573,300	28,499,709	0	100,352,800
Daily Trading Frequency	453	215	529	0	1,732
Daily Trade Size	29,876	19,828	35,666	1,722	188,918
Price Range (%)	10	10	5	3	24
Closing Price	725	486	1,123	25	5,870

Continued from Table 7

B. Negative UMA Announcements

	Mean	Median	Std Dev	Min	Max
Daily Return	-0.272***	-0.3415	0.2384	-0.4735	0.3459
# of negative return	10				
CAR (Market Adjusted)	-0.2369**	-0.2768	0.2641	-0.5399	0.3915
# of negative CAR	9				
CAR (Risk and Market Adj)	-0.0097	-0.0174	0.1234	-0.1778	0.2644
# of negative CAR	5				
Trading Volume	30,712,960	4,594,150	5,424,4525	90,500	174,656,500
Trading Frequency	701	159	1,111	4	3,558
Trade Size	52,019	31,434	49,792	14,548	176,499
Price Range	12%	10	12	1.96	39
Closing Price	209	123	212	74	672

model, and 0.9 persent for CAR with risk-and-market-adjusted model. CAR with risk-and-market-adjusted model seems to be less robust, as evidenced by weak statistical results. CAR with risk-and-market-adjusted model is not statistically significant within 10 persent level.

For comparison, we also calculate the trading variables from days +8 to +21, the period we argue as a normal period. We report the descriptive statistics in Table 8. Initial observation seems to suggest a reversal pattern in the normal period for positive UMAs. Stocks with positive UMAs turn out to be fewer than those in the UMA periods. For instance, with the market-adjusted model, we have 35 stocks with positive CARs in the UMA periods. In the normal period, stocks with positive CARs decrease into 12 stocks (suggesting that the rest have negative CARs in the normal period). Unfortunately, statistical power is weak. Only CARs with the risk-and-market-adjusted model show significant results within 10 persent level. For negative UMAs, we observe a continuation pattern. The number of negative CARs in the normal period is almost at the same level as that in the UMA periods. Trading activities, as shown by trading volumes and frequency, decrease in the normal period. For example, daily trading volumes in the normal period

decrease almost half of those in the UMA periods (10 million shares versus 19 million shares for positive UMAs, and 22 million shares versus 30 million shares for negative UMAs). Price range also decreases in the normal period compared to that in the UMA periods. The patterns for trading size and price are not clear.

Table 8. Descriptive Statistics for Returns, Abnormal Returns, and Trading Variables on Normal Days

This table presents the descriptive statistics for Returns, Abnormal Returns, and Trading Variables on normal days (defined as days +8 to +21) after UMA Announcements. Market-adjusted abnormal return is calculated as return – market return. Risk-and-market-adjusted abnormal return is calculated as return minus expected return constructed from market model. Parameters in market model are estimated using data for one year leading to announcement day. Price range is calculated as follows: {(Daily Highest Price – Daily Lowest Price) / Average of Daily Highest and Lowest Price} x 100 persent. Daily trading size is calculated as daily trading volume divided by daily trading frequency. ***, **, and * mean significant at 1 persent, 5 persent, and 10 persent, respectively. Significance is reported only for return variables.

A. Positive UMA Announcements

	Mean	Median	Std Dev	Min	Max
Daily Return	-0.0194	-0.0348	0.2726	-0.7577	0.7542
# of positive return	15				
CAR (Market Adjusted)	-0.0209	-0.0523	0.2857	-0.7246	0.7779
# of positive CAR	12				
CAR (Risk and Market Adj)	-0.0231*	-0.0164	0.0776	-0.2217	0.2163
# of positive CAR	10				
Daily Trading Volume	10,816,505	1,876,750	18,303,776	0	61,763,000
Daily Trading Frequency	277	102	456	0	1,855
Daily Trade Size	29,884	15,085	29,243	500	101,000
Price Range (%)	6%	6	3	0	13
Closing Price	901	399	1,367	25	6,350

Continued from Table 8

B. Negative UMA Announcements

	Mean	Median	Std Dev	Min	Max
Daily Return	-0.3558**	-0.2494	0.3942	-1.2411	0.1333
# of negative return	9				
CAR (Market Adjusted)	-0.2056*	-0.1689	0.3457	-1.0535	0.1932
# of negative CAR	8				
CAR (Risk and Market Adj)	-0.0515*	-0.0384	0.0834	-0.2450	0.0469
# of negative CAR	7				
Trading Volume	22,409,128	995,803	47,887,753	1,017	154,644,786
Trading Frequency	379	52	551	1	1,234
Trade Size	37,454	21,842	38,771	5,250	136,644
Price Range	7%	6	5	0	19
Closing Price	15				

Regression Tests

We formally examine the differences in returns and trading activities in the periods of pre-UMA, leading to UMA, and post-UMA announcements. Tables 9 and 10 report the results for both positive and negative UMA announcements.

Table 9 shows that trading activities increase significantly on the days leading to UMA announcements (day -5 to day -1). For example, for positive UMAs, market-adjusted abnormal returns on the days leading to UMA announcements are about 7.62 persent higher than those in the 'normal' period (days +8 to +50). Trading volumes and frequency increase around 200 persent compared to those in the 'normal' period. Price range also increases by about 89 persent for the same period. On the days post-UMA announcements, the regression coefficients on abnormal returns show positive signs. For instance, the coefficient on a3 shows that market-adjusted abnormal returns from days 0 to +7 are around 0.97 persent higher than those in the 'normal' period. Abnormal returns in the post-UMA announcement period tend to decrease relative to those in the leading-to-UMA-announcement period, but still at a higher level than those in the normal period. Trading volumes and frequency in the post-UMA an-

nouncement period still exhibit high levels, although they are lower than those on the days leading to UMA announcements.

Table 9. **Regression Results in the Pre-, Leading to, and Post-Positive UMA Announcement Periods**

We report the regression results for the following model: Variables $_{i,t} = \alpha_0 + \alpha_1$ Dummy1 + α_2 Dummy2 + α_3 Dummy3 + e_{it}. Variables we are interested in are: Return, market adjusted CAR, risk and market adjusted CAR, Daily Trading Volume, Daily Trading Frequency, Daily Price Range, and Daily Trading Size. The definitions of the variables are as follows:

Daily Trading Volume $_{i,t}$ = Daily Trading Volume $_{i,t}$ / Average of Daily Trading Volume $_{(i)}$ from days -21 to +50; Daily Trading Frequency $_{i,t}$ =Daily Trading Frequency $_{i,t}$ / Average of Daily Trading Frequency $_{(i)}$ from days -21 to + 50; Price Range $_{i,t}$ = (Maximum price $_{i,t}$ – Minimum Price $_{i,t}$)/ Average of Maximum Price $_{i,t}$ and Minimum Price $_{i,t}$

Dummy1=1 for days -21 to -6, and zero otherwise; Dummy2=1 for days -5 to -1, and zero otherwise; Dummy3=1 for days 0 to +7, and zero otherwise. p-values are in parentheses

	Return	Abnormal Return (Market Adjusted)	Abnormal Return (Risk and Market Adj.)	Trading Volume	Trading Frequency	Price Range	Trade Size
α_0	-0.0033	-0.00049	-0.0012	0.799	0.8262	0.9146	27,923
	(0.060)	(0.775)	(0.161)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
α_1	0.0124	0.0111	0.0019	0.0564	0.0731	0.0571	1,927
	(0.0001)	(0.0003)	(0.214)	(0.618)	(0.461)	(0.253)	(0.4273)
α_2	0.0836	0.0762	0.0285	2.1708	2.1887	0.8911	2,166
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.543)
α_3	0.0104	0.0097	0.0035	1.4903	1.3137	0.6067	2,114
	(0.009)	(0.014)	(0.085)	(0.0001)	(0.0001)	(0.0001)	(0.510)
R^2	0.108	0.093	0.054	0.0884	0.1037	0.0939	0.0005
Adj R^2	0.107	0.092	0.053	0.0872	0.1025	0.0925	-0.001
F-value	100.16	84.56	46.40	77.61	92.59	70.54	0.34
N	2,477	2,477	2,456	2,405	2,405	2,046	2,564

For negative UMA announcements, as expected, we observe significant decreases in abnormal returns on the days leading to UMA announcements. For example, using the market-adjusted model, abnormal returns in this period are around 1.08 persent lower than those in the 'normal' period. In the post-UMA announcement period, the abnormal returns are about the same as those in the 'normal' period. The regression coefficient on α_3 tends

Table 10. **Regression Results in the Pre-, Leading to, and Post-Negative UMA Announcement Periods**

We report the regression results for the following model: Variables$_{i,t}$ = α_0 + α_1 Dummy1 + α_2 Dummy2 + α_3 Dummy3 + e_{it}. Variables we are interested in are: Return, market adjusted CAR, risk and market adjusted CAR, Daily Trading Volume, Daily Trading Frequency, Daily Price Range, and Daily Trade Size. The definitions of the variables are as follows: Daily Trading Volume$_{i,t}$ = Daily Trading Volume$_{i,t}$ / Average of Daily Trading Volume$_{(i)}$ from days -21 to +50; Daily Trading Frequency$_{i,t}$ = Daily Trading Frequency$_{i,t}$ / Average of Daily Trading Frequency$_{(i)}$ from days -21 to +50; Price Range$_{i,t}$ = (Maximum price$_{i,t}$ – Minimum Price$_{i,t}$) / Average of Maximum Price$_{i,t}$ and Minimum Price$_{i,t}$
Dummy1 = 1 for days -21 to -6, and zero otherwise; Dummy2 = 1 for days -5 to -1, and zero otherwise; Dummy3 = 1 for days 0 to +7, and zero otherwise. p-values are in parentheses

	Return	Abnormal Return (Market Adjusted)	Abnormal Return (Risk and Market Adj.)	Trading Volume	Trading Frequency	Price Range	Trade Size
α_0	-0.0143	-0.0691	-0.0021	0.8637	0.7461	0.919	42,045
	(0.0001)	(0.047)	(0.187)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
α_1	-0.0055	-0.0108	-0.0033	-0.1745	0.1994	0.0701	-9,666
	(0.410)	(0.095)	(0.255)	(0.630)	(0.489)	(0.545)	(0.190)
α_2	-0.0435	-0.0435	-0.00005	2.501	2.721	0.751	10,416
	(0.0001)	(0.0001)	(0.991)	(0.0001)	(0.0001)	(0.0001)	(0.328)
α_3	0.0196	0.0122	0.0016	1.619	1.328	0.531	18,756
	(0.019)	(0.132)	(0.653)	(0.0004)	(0.0003)	(0.0001)	(0.029)
R^2	0.108	0.093	0.054	0.0884	0.1037	0.0939	0.0005
Adj R^2	0.107	0.092	0.053	0.0872	0.1025	0.0925	-0.001
F-value	100.16	84.56	46.40	77.61	92.59	70.54	0.34
N	2,477	2,477	2,456	2,405	2,405	2,046	2,564

to be weak. Trading activities are also significantly higher on the days leading to UMA announcements, and continue to be so in the post-UMA announcement period compared to those in the 'normal' period. We also observe a similar pattern for price range, while the pattern for trading size is not clear.

Regression Results for Matched Stocks

We perform equivalent regression tests for matched stocks. As defined in the previous section, matched stocks are taken from the same industries as of UMA stocks, have the closest size to UMA stocks, but do not experience UMA announcements. Table 11 reports the regression results for matched stocks.

In general, matched stocks show weak regression results, indicating that there is not enough variation in the data on matched stocks. As expected, we do not observe clear patterns in the behavior of returns and trading activities on the days around UMA an-

Table 11. **Regression Results in the Pre-, Leading to, and Post-UMA Announcement Periods for Matched Stocks**

We report the regression results for the following model: Variables $_{i,t} = a_0 + a_1$ Dummy1 $+ a_2$ Dummy2 $+ a_3$ Dummy3 $+ e_{it}$. Variables we are interested in are: Return, market adjusted CAR, risk and market adjusted CAR, Daily Trading Volume, Daily Trading Frequency, Daily Price Range, and Daily Trade Size. The definitions of the variables are as follows:

Daily Trading Volume $_{i,t}$ = Daily Trading Volume $_{i,t}$ / Average of Daily Trading Volume $_{(i)}$ from days -21 to +50; Daily Trading Frequency $_{i,t}$ =Daily Trading Frequency $_{i,t}$ / Average of Daily Trading Frequency $_{(i)}$ from days -21 to + 50; Price Range $_{i,t}$ = (Maximum price $_{i,t}$ – Minimum Price $_{i,t}$)/ Average of Maximum Price $_{i,t}$ and Minimum Price $_{i,t}$

Dummy1=1 for days -21 to -6, and zero otherwise; Dummy2=1 for days -5 to -1, and zero otherwise; Dummy3=1 for days 0 to +7, and zero otherwise. p-values are in parentheses

	Return	Abnormal Return (Market Adjusted)	Abnormal Return (Risk and Market Adj.)	Trading Volume	Trading Frequency	Price Range	Trade Size
α_0	-0.0015	-0.00802	-0.0006	0.879	0.8604	0.962	49,725
	(0.181)	(0.0001)	(0.209)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
α_1	-0.0011	0.0028	-0.0008	-0.0256	0.0206	0.112	7,277
	(0.571)	(0.017)	(0.362)	(0.826)	(0.843)	(0.054)	(0.376)
α_2	0.0034	0.0021	-0.00004	0.4096	0.369	0.022	1,734
	(0.283)	(0.275)	(0.976)	(0.026)	(0.025)	(0.813)	(0.892)
α_3	0.00012	0.0023	-0.0006	0.4520	0.501	0.083	-605
	(0.962)	(0.146)	(0.595)	(0.263)	(0.0002)	(0.271)	(0.954)
R^2	0.0006	0.0024	0.0005	0.005	0.0065	0.0022	0.0005
Adj R^2	-0.0004	0.0013	-0.0006	0.004	0.0054	0.0006	-0.0011
F-value	2,805	2.25	0.48	4.89	5.86	1.39	0.29
N	1,804	2,805	2,805	2,706	2,706	1,864	1,883

nouncements. Abnormal returns and trading activities on the days leading to UMA announcements are not significantly different from those in the normal period. Some coefficients are significant at 5 persent level, but we suspect that there is not any economic meaning. Given the large sample size used in the regressions, we should expect to obtain significant coefficients, although the economic meaning may not be relevant. This section concludes that UMA stocks show distinctive trading characteristics from those for non-UMA stocks.

Do Abnormal Returns Drive Unusual Market Announcements?

One may argue that the announcements are driven more by surveillance variables used by the Exchange rather than by genuine manipulation variables. For instance, the Exchange may use price movement as a variable to scrutinize a possible market manipulation. [3] If a stock experiences an unusual price movement, the stock will be picked by the Exchange. The Exchange then will issue an Unusual Market Activity announcement for the stock. Our investigation may be biased since we base our analysis not on genuine manipulation variables, but more on variables used by the Exchange to choose the stocks.

To investigate the possibility of such an endogeneity problem, we create a portfolio that consists of stocks that have the highest values for suspected surveillance variables. Our intuition leads to two surveillance variables used by the Exchange: (1) price movement and (2) trading volume. The Exchange will probably pick stocks that experience unusual price movements and/or unusual trading volumes. Specifically, we calculate the cumulative eight days of daily abnormal returns for stocks listed on the ISX (days -5 to 1), then we sort the stocks based on the cumulative abnormal returns. We exclude stocks already included in the sample. We then pick 50 stocks that experienced the highest five days of cumulative abnormal returns in 2008 (excluding stocks already included in the sample). We call this portfolio the abnormal-return-matched portfolio.

The five-day average of cumulative abnormal returns for the sample is around 38 persent (market adjusted). It turns out that such cumulative abnormal returns are not unusual on the Indonesian market. We observe that over 70 stocks experience the cumulative abnormal returns of higher than 38 persent (market adjusted). This result seems to suggest that the Exchange does not pick stocks for UMAs based solely on the abnormal returns. We then select 50 stocks with the highest market-adjusted cumulative abnormal returns over five days. The average abnormal returns for these stocks is 70 persent, with the minimum value of 48

[3] The Exchange mentions specifically the price movements and the trading volumes in the statements of UMA announcements.

Table 12. Regression Results in the Pre-, Leading to, and Post-UMA Announcement Periods for Abnormal-Return-Matched Stocks

We report the regression results for the following model: Variables $_{i,t} = a_0 + a_1$ Dummy1 $+ a_2$ Dummy2 $+ a_3$ Dummy3 $+ e_{it}$. Variables we are interested in are: Return, market adjusted CAR, risk and market adjusted CAR, Daily Trading Volume, Daily Trading Frequency, Daily Price Range, and Daily Trade Size. The definitions of the variables are as follows:

Daily Trading Volume $_{i,t}$ = Daily Trading Volume $_{i,t}$ / Average of Daily Trading Volume $_{(i)}$ from days -21 to +50; Daily Trading Frequency $_{i,t}$ =Daily Trading Frequency $_{i,t}$ / Average of Daily Trading Frequency $_{(i)}$ from days -21 to + 50; Price Range $_{i,t}$ = (Maximum price $_{i,t}$ – Minimum Price $_{i,t}$)/ Average of Maximum Price $_{i,t}$ and Minimum Price $_{i,t}$

Dummy1=1 for days -21 to -6, and zero otherwise; Dummy2=1 for days -5 to -1, and zero otherwise; Dummy3=1 for days 0 to +7, and zero otherwise. p-values are in parentheses

	Return	Abnormal Return (Market Adjusted)	Abnormal Return (Risk and Market Adj.)	Trading Volume	Trading Frequency	Price Range	Trade Size
α_0	-0.0016	-0.00044	-0.0029	0.6601	0.6509	0.8578	43,685
	(0.284)	(0.769)	(0.317)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
α_1	0.0139	0.0118	0.011	0.5125	0.5088	0.0855	-7,338
	(0.0001)	(0.0001)	(0.070)	(0.003)	(0.0001)	(0.1919)	(0.211)
α_2	0.0935	0.0938	0.0207	2.6846	3.0387	0.9041	-15,810
	(0.0001)	(0.0001)	(0.033)	(0.0001)	(0.0001)	(0.0001)	(0.061)
α_3	-0.0053	-0.0065	-0.0047	0.8532	0.7724	0.428	-6,330
	(0.159)	(0.082)	(0.528)	(0.0001)	(0.0001)	(0.0001)	(0.378)
R^2	0.102	0.102	0.0024	0.0297	0.0604	0.0568	0.0026
Adj R^2	0.101	0.101	0.0015	0.0288	0.0596	0.0552	0.0009
F-value	129.75	129.68	2.74**	34.98	73.57	35.47	1.54
N	3,436	3,436	3,391	3,436	3,436	1,771	1,798

persent, the maximum value of 176 persent, and the standard deviation of 27 persent.

We directly jump to regression results equivalent to the analyses conducted on the sample. Table 12 reports the findings.

By construction, we expect to have significantly positive returns and positive abnormal returns on the days leading to the "event date." This is indeed the result observed from the table. Dummy2 shows significantly positive returns and abnormal returns. Dummy3 shows negative coefficients, although the statistical power seems to be low. Variables for trading activities, such as trading volume and trading frequency,

show significant results, consistent with those for sample stocks. The magnitudes of the coefficients are also comparable to those of UMA stocks. The findings in this section suggest that UMA stocks and abnormal-return-matched portfolio share similarity in their trading characteristics. In the next section, we investigate the performances of sample stocks, matched stocks, and abnormal-return-matched stocks, and show that UMA stocks show a distinctive pattern of price performance in the post-event period.

Performance of UMA Stocks in the Post-Announcement Period

In this section, we examine the stock performance in the post-announcement period. If stocks are manipulated, such as driven up (or down) to a level unjustified by their fundamentals, then we expect to have price reversals in the post-announcement

Table 13. **Performance in the Post-Announcement Period**

This table reports the stock performances in the post-announcement period for stocks in positive UMAs, negative UMAs, matched stocks, and abnormal-return-matched stocks. Post-announcement period is defined as days 0 to +50. We run following regression model:

Excess Return $_{i,t} = \gamma_0 + \gamma_1$ Market Excess Return $_t + \gamma_2$ SMB$_t + \gamma_3$HML$_t$ + e$_{it}$

Portfolios of small and big stocks are constructed by sorting stocks listed on the Indonesian Stock Exchange. We divide the stocks into three groups based on size: small, middle, and big. We then delete the middle-sized group. Portfolios of high and low book to market value are constructed in a similar way. We use30-day Sertifikat Bank Indonesia (securities issued by the Indonesian Central Bank) as the risk-free asset. Jakarta Composite Index is used as the proxy for market return. P-values are in parentheses.

	Positive UM		**Negative UMA**		**Matched Stocks**		**Abnormal Return Matched Stocks**	
γ_0	-0.0009	-0.0016	-0.0051	-0.0052	-0.0026	-0.0029	-0.0049	-0.0051
	(0.5011)	(0.2892)	(0.1973)	(0.2068)	(0.0095)	(0.0049)	(0.0001)	(0.0001)
γ_1	0.5742	0.5267	1.1409	1.1180	0.6774	0.6438	0.4214	0.4003
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
γ_2		-0.1776		-0.1109		-0.0979		-0.0979
		(0.2211)		(0.7651)		(0.3125)		(0.4255)
γ_3		0.5379		0.4336		0.1993		0.2402
		(0.0001)		(0,2432)		(0.0277)		(0.0532)
R^2	0.0279	0 .0367	0.1545	0.1584	0.0877	0.0899	0.0219	0.0234
Adj R^2	0.0274	0.0352	0.1520	0.1510	0.0872	0.0885	0.0215	0.0222
F-value	55***	24***	63***	21***	191***	66***	57***	20***
N	1,910	1,910	343	343	1,995	1,995	2,549	2,549

period. If UMA announcements reflect noisy manipulations, then we will expect to have negative abnormal returns for positive UMA stocks and positive abnormal returns for negative UMA stocks in the post-announcement period. Alternatively, if UMA announcements reflect relevant information, then we expect to have no reversal in the post-announcement period. Table 13 reports the regression results using Fama and French's three-factor model (1996).

Regression results show that the intercepts of Fama-French's three-factor model for UMA stocks are negative, but statistically insignificant. There is no price reversal for UMA stocks. Results for matched stocks and abnormal-return-matched stocks clearly show a different direction. There is a reversal pattern for these stocks in the post-UMA announcement period. These results imply that UMA announcements contain relevant information. Unusual Market Activities do not seem to be noisy manipulations. As in Jian et al. (2005), who report the price continuation in the post-stock-pool-formation period, it seems that UMA stocks convey relevant information, which is likely to be the "insider type" of information. This pattern creates difficulties in disentangling costs and benefits associated with price manipulation. On one hand, price manipulation helps improve market efficiency, but on the other hand, price manipulation is unfair to other investors and reduces liquidity.

Conclusion

This paper investigates price and trading behavior of stocks involved in the UMA announcements by the ISX. The ISX issues UMA announcements when it suspects the prevalence unusual price and trading volume activities. Although the ISX explicitly states that the announcements do not necessarily imply stock manipulations, we argue that the UMA announcements signal a high probability of price manipulations. We find that abnormal returns and trading activities increase (decrease) on the days leading to positive (negative) UMA announcements. Trading characteristics of UMA stocks are different from those of matched stocks, but similar to those of abnormal-return-matched stocks. Further investigation shows that, unlike the matched stocks and the abnormal-return-matched stocks that experience reversal patterns in the post-UMA announcement period, the UMA stocks show insignificant price movements in the post-UMA announcement period. This result suggests that there are permanent price changes resulting from relevant information. Price manipulation, specifically the information-based price manipulation, is likely to involve relevant information.

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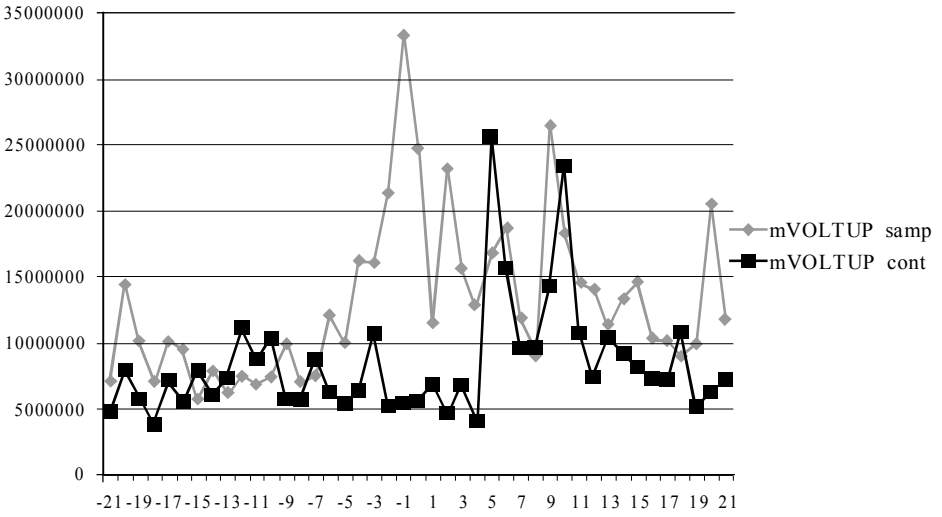
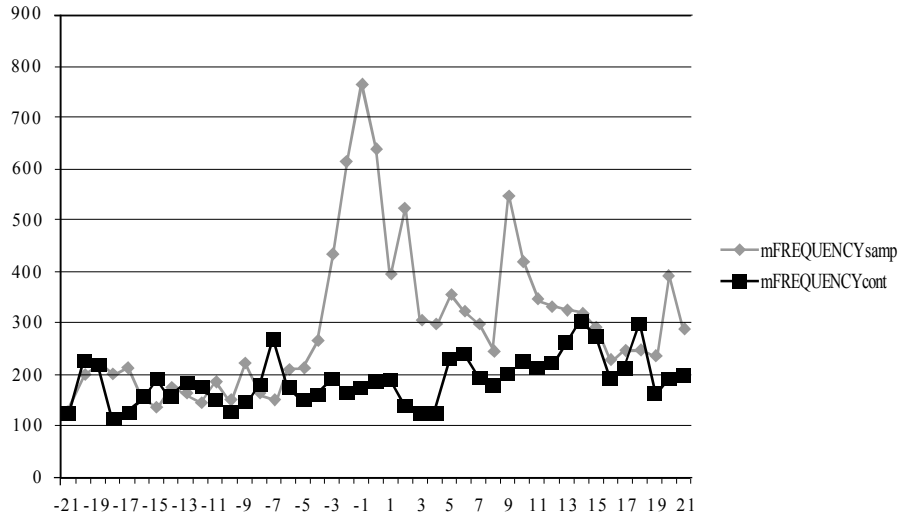
APPENDIX 1. Trading Volume in the Event Days for the Sample

This figure shows the daily trading volumes for sample stocks (samp) and for matched stocks (cont) around UMA announcements.



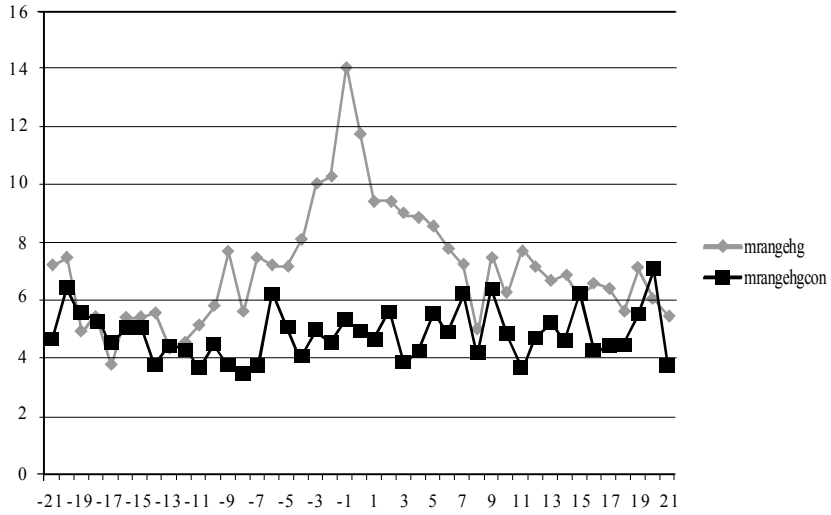
APPENDIX 2. Trading Frequency in the Event Days for the Sample

This figure shows the daily trading frequency for sample stocks (samp) and for matched stocks (cont) around UMA announcements.



APPENDIX 3. Daily Price Range in the Event Days for the Sample

This figure shows the daily price range for sample stocks (samp) and for matched stocks (cont) around UMA announcements. Price range is calculated as follows: {(Daily Highest Price – Daily Lowest Price) / Average of Daily Highest and Lowest Price} x 100 persent.



APPENDIX 4. Daily Trading Size in the Event Days for the Sample

This figure shows the daily trading size for sample stocks (samp) and for matched stocks (cont) around UMA announcements. Daily trading size is calculated as daily trading volume divided by daily trading frequency.