

# Pump-Dump Manipulation Analysis: The Influence of Market Capitalization and Its Impact on Stock Price Volatility at Indonesia Stock Exchange

*by Zaenal Arifin*

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## Pump-Dump Manipulation Analysis: The Influence of Market Capitalization and Its Impact on Stock Price Volatility at Indonesia Stock Exchange

Agus Riyanto  
Universitas Islam Indonesia

Zaenal Arifin\*  
Universitas Islam Indonesia

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### ABSTRACT

Stock investors have a number of manipulation techniques for personal profit. Pump-dump manipulation is one of the trade-based manipulation techniques that encourages an increase in trading volume that will ultimately increase stock prices. In the previous study, it was found that small capitalized stocks were more likely to be manipulated. This is because small-cap stocks tend to have cheaper share prices. In addition, another study found that pump-dump manipulation led to an increase in stock price volatility. This study used a sample of 149 companies listed on the Indonesia Stock Exchange in the period November 30, 2015, to December 30, 2015. This study found the existence of pump-dump manipulation in 14 different periods. The result of correlation test between trading volume and Cumulative Abnormal Return (CAR) proved positive during the next four trading days (t4). The results of this study also obtained evidence that small capitalized stocks have lower probability rates for pump-dump manipulation. This goes against our proposed hypothesis. While the impact of pump-dump manipulation on stock price volatility does not show significant difference test results. This study is expected to contribute to the study of stock investments in emerging-market exchanges. Capital markets in developing countries certainly have different characteristics with capital markets in developed countries so there needs to be a study of investment strategies in emerging markets

Keywords: Pump-Dump Manipulation, Market Capitalization, Stock Price Volatility, Trading Volume

### 1. INTRODUCTION

The manipulation of share price, according to Regulation No.8 of 1995 concerning capital market in Indonesia, is an action by any party, either directly or indirectly with the aim to create a false or misleading picture of trading activity,

market condition or stock price in Indonesia Stock Exchange. Allen and Gorton (1992) identify there are three forms of manipulation, namely; manipulation of action, information manipulation and trade manipulation. Manipulation of action is done by changing the value of the company's assets so that the stock price does not match the actual condition of the company. Manipulation of information is manipulation by giving or distributing false information with the aim of raising stock prices. The last type of manipulation is trade-based manipulation. Huang, Chen, and Cheng (2005) explain that trade manipulation occurs when manipulators trade directly in the stock exchange. Because it is done directly in the market, trading manipulation is a type of manipulation that is very difficult to detect because it deals with investor behavior that can be different in trading.

One form of trade-based manipulation is the pump-dump strategy. Allen and Gorton (1992) and Huang and Cheng (2015) argue that such manipulation occurs when investors buy stocks in large quantities so that the trading volume of these shares increases. The large purchases are made to attract other investors so that stock prices can rise rapidly. The pump-dump technique is done by buying stocks and selling stocks in two consecutive times (buy-buy and sell-sell).

There are a number of factors that influence the emergence of trade manipulation. One factor is stock market capitalization. Research conducted by Aggarwal and Wu (2006) proves that more than 50% of shares being manipulated is penny stock (small capitalization stock). Small capitalized stocks are easier to manipulate because they have a low price, so the manipulator does not require large capital to implement the pump-dump strategy. In addition, according to the firm size effect theory, small capitalized stocks can produce greater abnormal returns than large-cap stocks. This makes manipulators interested in manipulating small capitalized stocks.

Trading manipulation will affect the volatility of stock prices. Research by Gerace et al. (2014) found that stock manipulation has a significant effect on stock price volatility. The volatility of stock prices can be used by investors to know the magnitude of the increase and decrease in stock prices. Gerace, et al. (2014) explains that the manipulator seeks to raise the share price by force, resulting in considerable stock price fluctuations. In addition, the study by Huang, et al. (2005) explained that the increased volatility of stock prices resulting from manipulation may increase investment risk for investors.

This study examines the presence or absence of pump-dump manipulation in Indonesia Stock Exchange by using a model developed by Allen and Gorton (1992). In this study, the authors also test whether the stock market capitalization affects the

emergence of manipulation and whether the pump-dump strategy affects the volatility of stock prices.

## 2. LITERATURE REVIEW

### **Pump-Dump Manipulation**

The efficient market hypothesis is a guideline that many investors use to make investment decisions. An efficient capital market according to Jogiyanto (2008) is a market whose security prices have reflected all relevant information. The sooner the new information is reflected in the price of the securities, the more efficient the market is. In an efficient capital market, it will be very difficult for investors to get a consistently high rate of return above normal (abnormal return).

An efficient capital market hypothesis is not fully proven. In the capital markets are often found anomalies that led to speculative behavior. Meier (2014) summarizes the various types of anomalies in the stock market. He found that some anomalies remain existed but there are some anomalies that are slowly disappearing. Harris (2003) explains that speculative actions by investors are caused by bluffers. Bluffer is a misleading trader who motivates profits to other investors by tricking them into an improper trade. Bluffer has two forms of fraud to other investors, namely Rumormongers and Price manipulator.

Manipulation, in dictionary Black's Law Dictionary, is defined as an illegal practice in an attempt to raise or lower stock prices by creating an active trading appearance. Baker and Kiyamaz (2013) argue that capital market manipulation deals with various aspects, such as trading volume, trading frequency, the magnitude of stock price fraction, and order size. Allen and Gorton (1992) explain that manipulation performed by manipulators has three forms, namely; action-based manipulation, information-based manipulation, and trade-based manipulation. Baker and Kiyamaz (2013) explain that there are three aspects of manipulation related to HFT (high-frequency trading), namely; Stuffing, Smoking, Spoofing.

According to Huang, et al (2005), any manipulation strategies performed during transactions can be categorized as trading-based stock manipulation. Meanwhile, Cumming and Johan (2008) suggested that there are several types of trading-based stock manipulation. Marking the close is to engineer demand or supply at or near the close of the trade, in order to establish a higher stock price on the next day of the trade. Pump-Dump Manipulation is a manipulator action to inflate the price of cheap stocks for sale at a higher price. Wash Sales is the act of manipulators buying and selling certain shares only to a group of members without any actual ownership change. Matching Order is the act of combining two similar and complementary investor orders for the same amount and share and at the same time.

A Pump-Dump Manipulation is a form of trade-based manipulation used by manipulators for the purpose of inflating stock prices. Allen and Gorton (1992) built a rational framework model showing that trade-based manipulation is possible for investors to do. Asymmetric liquidity is the theoretical basis for trade manipulation by improving stock liquidity through trading volumes.

In the pump-dump strategy, the manipulator takes stock buying action on the first day (t1) and second (t2) in large quantities and the highest bid price. The purchase of shares at the highest bid price is done to encourage stock liquidity. If the stock is sufficiently liquid and attracts other investors, then the manipulator proceeds with selling activity on the third (t3) and fourth (t4) days.

Previous research on pump-dump manipulation done by Khawaja and Mian (2006) explains that manipulation is not only done by an investor but also can be done by a broker. Wibowo (2010) proves that the brokers at the Indonesia Stock Exchange contribute to the occurrence of pump-dump manipulation. The pump-dump manipulation found in research relates to stock trading with foreign investors. Gunawan and Koesindartoto (2014) conducted a study of the existence of manipulation practices in the Indonesia Stock Exchange and found the type of manipulation at closing prices during the economic crisis period 2008-2009. Huang and Cheng (2015) found that the case of manipulation occurring on the Taiwan stock exchange is in the form of pump-dump manipulation. Recent research conducted by Ilalan (2015) proves that the form of pump-dump manipulation that can benefit manipulators is that using the buying and selling strategy in a period of four trading days (buy-buy and sell-sell)

The pump-dump manipulation strategy has a high probability of succeeding in obtaining a cumulative abnormal return. This is because, through a buy-buy and sell-sell strategy, investors can gain cumulative benefits such as those found in Allen and Gorton (1992) research. Ilalan (2015) also proves that the effective application of pump-dump manipulation can be done by manipulators on two days of purchase and followed by two days of stock sales. However, Ilalan (2015) found that if the sales strategy is done for 3 days then more manipulators will get cumulative losses. Based on these studies, the authors propose the first hypothesis:

**H1:** There is pump-dump manipulation on the Indonesia Stock Exchange.

### **The Effect of Stock Capitalization Against Pump-Dump Manipulation**

Bodie, et al (2008) defines stock capitalization as the market value of the firm, which is the product of the number of shares outstanding with the stock price. Stock capitalization is typically used as a tick size in stock transactions. Tick price is the amount of change in stock price in a single increase or decrease in price. The

greater the stock capitalization the greater the stock price, the greater the tick price of the stock.

Aggarwal and Wu (2006) found that over 50% of manipulated stocks were small-cap stocks. Huang, et al. (2005) also found evidence that the stock being manipulated tended to have little capitalization. The greater the capitalization of shares, the greater the capital the manipulators need to manipulate. Moreover, in the anomaly of firm size effect, stocks with small capitalization provide a larger abnormal return compared to large capitalization stocks, so that small capitalized stocks are preferred by investors in manipulation.

Baker and Kiyamaz (2013) explain that manipulation is not only related to the capitalization of shares and capital required, but also with transaction costs and bid-ask spreads. They say that manipulators who manipulate large-capitalization stocks will get low profits because they require a larger transaction cost compared to small capitalized stocks. Based on the results of the above research, the authors propose a second hypothesis:

H2: Small capitalized shares have a higher likelihood of pump-dump manipulation in Indonesia Stock Exchange

### **Impact of Pump-Dump Manipulation Against Stock Price Volatility**

Bodie, et al (2008) defines the volatility of stock prices as the amount of distance between the increase and decrease in stock prices. Volatility is often regarded as a benchmark risk of a stock because of the higher the price volatility of a stock, the greater the risk to be borne by the investor.

Huang, et al. (2005) proved that the manipulated stocks showed a significant increase in price volatility. In addition, Huang and Cheng (2015) prove that pump-dump manipulation leads to increased volatility during the period of manipulation. Subsequent research conducted by Gerace et al (2014) showed that manipulation has a negative impact on market efficiency and stock price volatility. The study explains that during the period of manipulation, stock price volatility has increased significantly and the pattern is not normal. Baker and Kiyamaz (2013) explain that the suspending system (Circuit Breakers) can reduce price volatility caused by over-reaction or price manipulation. The system proved to be effective in reducing price volatility caused by price manipulation, overreaction, and speculation.

In the practice of price manipulation, manipulators will drive price increases at a certain point, but after the manipulator sells the stocks there can be a significant price decline. The increase and decline in prices that occurred in such a short time had an impact on increased volatility. This is because volatility is a picture of the

magnitude of the increase or decrease in price. Based on the above research, the author proposed the third hypothesis:

H3: Pump-dump manipulation has a positive effect on stock price volatility during the period of share price manipulation in Indonesia Stock Exchange.

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### 3. RESEARCH METHODS

This study uses a sample of stock companies listed on the Indonesia Stock Exchange and actively traded from 30 November 2015 to 30 December 2015. The reason for choosing the period because at the end of the year more manipulation is likely. This is in accordance with Aggarwal and Wu (2006) and Gunawan and Koesindartoto (2014) research results. Selected shares are shares that do not take corporate action, have no suspension during the study period, and have trading volume of more than 100 lots. This is because stocks that volume less than 100 lots are less desirable by investors and in certain periods do not have trading volume. Based on these criteria then selected 149 shares as the sample.

There are three variables used in this research. First, Pump-Dump Manipulation. The calculation of these variables uses a model developed by Allen and Gorton (1992), ie by buy-buy techniques at the highest bid price (ask/high) and sell-sell at the bid / low price. Second, Stock Capitalization is measured by taking the 40 largest capitalization stocks and 40 smallest capitalized stocks. Third, the Volatility of Stock Price as measured by the standard deviation of the stock returns of the pump-dump manipulation.

To test the hypothesis that there is pump-dump manipulation, we test the correlation between stock trading volume with cumulative abnormal return on four trading days. If the correlation between trading volume and cumulative abnormal return from t1 to t4 is positively significant then this proves that the manipulator has applied pump-dump manipulation and gain abnormal gain. To examine the effect of market capitalization on the possibility of pump-dump manipulation, a different test between large capitalized groups and small capitalized groups was associated with the occurrence or absence of dump-pump manipulation. To test whether pump-dump influences trade volume is done by different test of trading volume before manipulation (4 trading days) and after manipulation (4 trading days)

#### 4. RESEARCH RESULT AND DISCUSSION

##### Test Result on Pump-Dump Manipulation

To test for the presence of pump-dump manipulation, we used four-day trading data, which reflects two purchases followed by two sales. The use of the four-day period is consistent with the model developed by Allen and Gorton (1992). The observation period is from 30 November 2015 to 30 December 2015. In that period there are 16 cycles of four days of trading. The first cycle is from 30/11/15 to 03/12/2015, and the last cycle is from 23/12/15 to 30/12/15.

The first step to detect pump-dump manipulation is to calculate the cumulative abnormal return of stocks during the four trading days. Return is calculated based on the highest bid price at t1 and t2 and the lowest demand price at t3 and t4. The results of the identification found there were 222 stock-periods that resulted in a positive cumulative abnormal return.

The second step, calculating the correlation coefficient between stock trading volume and cumulative abnormal return (CAR) during the four-day trading cycle. The unit of time used in this calculation is in the change in units of 30 minutes. If the correlation is positive the pump-dump manipulation strategy performed by the manipulator has improved the liquidity of the stock, and the manipulator receives a positive cumulative abnormal return. If the correlation is negative the pump-dump manipulation strategy performed by the manipulator does not improve the stock liquidity and the manipulator must bear the negative CAR. Negative correlation results also show that pump-dump manipulation strategies cannot consistently provide a positive cumulative abnormal return for the manipulator. Test results of pump-dump manipulation can be seen in Table 1 below.

Table 1: Summary of Test Results on Pump-Dump Manipulation

Trading Date	Stock Code	Pearson Correlation	Sig (2-tailed)	Trading Date	Stock Code	Pearson Correlation	Sig (2-tailed)	Trading Date	Stock Code	Pearson Correlation	Sig (2-tailed)
3/12/15	ASMI	-0,133	0,372	17/12/2015	JPFA	0,193	0,199	22/12/2015	CSAP	0,092	0,548
	ASRI	0,219	0,139		JSMR	0,184	0,221		DMAS	-0,032	0,836
	BJTM	-0,160	0,282		JTPE	-0,183	0,223		INTP	0,246	0,103
	CTRA	0,162	0,277		KAEF	-0,254	0,088*		META	0,299	0,046**
	PNLF	0,248	0,093*		LPPF	0,417	0,004***		SSIA	0,215	0,156
	PTPP	-0,221	0,136		MAIN	-0,152	0,314	23/12/2015	ASMI	-0,214	0,158
	SDMU	0,248	0,093*		MIKA	-0,102	0,499		BDMN	-0,276	0,067*



	SHID	-0,070	0,642		MLPL	0,391	0,007***		BKSL	0,477	0,001***
4/12/15	BIKA	-0,830	0,580		MPPA	0,081	0,594		BMTR	-0,035	0,821
	SDMU	0,146	0,327		PGAS	-0,214	0,154		BSDE	-0,005	0,976
	SOCI	0,557	0,000***		PLAS	-0,052	0,731		ERAA	0,251	0,097*
7/12/15	ARNA	0,247	0,094*		PPRO	0,121	0,423		GGRM	-0,015	0,925
	BIKA	-0,192	0,196		PTBA	-0,320	0,030**		ICBP	0,098	0,522
	SHID	0,310	0,034**		PTPP	-0,198	0,187		INTP	0,121	0,427
	SOCI	0,186	0,210		SHID	-0,255	0,087*		ISAT	-0,291	0,052*
8/12/15	AKRA	0,148	0,319		SMBR	-0,277	0,062*		JSMR	0,083	0,587
	ASMI	-0,080	0,591		TINS	0,019	0,898		LINK	-0,291	0,052*
	BOLT	0,035	0,814		TLKM	0,287	0,053*		NIRO	0,083	0,587
	DAJK	-0,051	0,732		TRIS	0,113	0,455		PGAS	-0,006	0,968
	KREN	-0,046	0,760		UNTR	0,028	0,852		SMGR	-0,277	0,065*
	LPPF	0,255	0,084*		WTON	0,401	0,006***		SMRA	-0,021	0,892
	LSIP	0,360	0,013**	18/12/2015	ACES	0,301	0,045**		SSIA	-0,115	0,452
	MAPI	0,039	0,793		ADHI	0,098	0,521		TURI	0,118	0,439
	SHID	0,092	0,541		AKRA	0,409	0,005***	28/12/2015	ASMI	-0,057	0,703
	SRIL	0,401	0,005***		ALDO	-0,081	0,597		BDMN	0,160	0,281
10/12/15	AKRA	0,010	0,945		APIC	-0,054	0,724		BHIT	0,342	0,019**
	BOLT	-0,187	0,213		APLN	0,464	0,001***		BKSL	0,356	0,014**
	GIAA	0,459	0,001***		ASRI	0,185	0,224		BMTR	-0,036	0,808
	KREN	-0,156	0,300		BBCA	-0,268	0,075*		CTRS	-0,315	0,031**
	MAPI	0,107	0,479		BBNI	0,164	0,282		ERAA	0,123	0,411
	SSMS	0,132	0,381		BBRI	0,133	0,383		GGRM	-0,018	0,903
11/12/15	ASMI	0,154	0,311		BCIP	0,101	0,511		HMSP	0,089	0,552
	SSMS	0,127	0,405		BEST	0,169	0,269		IMPC	0,177	0,234
15/12/2015	META	-0,127	0,407		BIKA	0,016	0,918		SCMA	-0,092	0,538
16/12/2015	APIC	-0,025	0,874		BKSL	0,367	0,013**		SMRA	0,531	0,000***
	ASMI	0,126	0,410		COWL	0,176	0,249		SSIA	0,015	0,923
	BMTR	0,011	0,942		CTRA	0,167	0,274		TURI	-0,061	0,689
	COWL	0,212	0,161		DMAS	-0,072	0,637	29/12/2015	APIC	0,041	0,797
	DOID	0,158	0,299		ERAA	-0,328	0,028**		BABP	0,509	0,000***
	GZCO	0,443	0,002***		GGRM	-0,011	0,942		BBRI	0,272	0,065*
	ICBP	0,192	0,206		GJTL	0,365	0,014**		BDMN	0,101	0,501
	INCO	0,102	0,505		GREN	0,201	0,186		BHIT	0,109	0,201

	JPFA	0,573	0,000***		ICBP	0,309	0,039**		BMTR	0,051	0,733
	PLAS	0,107	0,486		INDF	-0,028	0,857		BOLT	-0,046	0,757
	SHID	0,308	0,805		INKP	0,254	0,092*		BSDE	0,404	0,005***
	TMPI	0,211	0,165		INTP	0,182	0,231		CTRP	0,278	0,058*
	UNTR	0,051	0,738		ISAT	-0,156	0,306		IMPC	0,232	0,116
17/12/2015	ALDO	-0,036	0,812		JPFA	-0,134	0,380		KOPI	-0,010	0,948
	ANTM	0,305	0,039**		JSMR	0,089	0,560		LINK	0,629	0,000***
	APIC	-0,062	0,682		KAEF	0,013	0,932		MNCN	0,146	0,328
	APLN	0,146	0,334		KRAS	0,166	0,274		PTPP	0,095	0,527
	ASII	0,265	0,075*		MLPL	0,381	0,010***		SSIA	-0,116	0,438
	ASRI	0,082	0,588		PGAS	0,084	0,584		TMPI	0,049	0,746
	BBCA	0,372	0,011**		PLAS	0,023	0,882		TURI	-0,162	0,275
	BBNI	-0,018	0,904		PWON	0,438	0,003***		UNTR	0,070	0,641
	BBRI	0,203	0,175		ROTI	-0,137	0,371	30/12/2015	ALDO	0,088	0,558
	BBTN	-0,210	0,161		SDMU	0,072	0,637		BBRI	0,423	0,002***
	BEST	0,055	0,715		SHID	0,104	0,524		BMRI	0,311	0,033**
	BIKA	-0,229	0,125		SMRA	-0,249	0,098*		CTRP	0,224	0,131
	BJBR	-0,002	0,992		TLKM	0,307	0,041**		CTRS	-0,257	0,082*
	BMRI	0,455	0,001***		TURI	0,138	0,368		GREN	0,591	0,000***
	BMTR	-0,113	0,454		UNVR	0,294	0,050**		IMPC	0,271	0,142
	BSDE	0,330	0,025**	21/12/2015	ARTI	-0,104	0,498		INCO	0,387	0,007***
	COWL	0,263	0,077*		ASMI	0,044	0,773		LINK	0,500	0,000***
	CPIN	-0,032	0,831		BIKA	-0,069	0,651		LSIP	0,407	0,004***
	CTRA	0,235	0,116		CSAP	0,108	0,482		MAIN	0,604	0,000***
	ERAA	-0,080	0,599		DMAS	-0,054	0,724		MNCN	0,330	0,023**
	GGRM	-0,166	0,271		JSMR	-0,202	0,184		NRCA	0,038	0,800
	GREN	-0,050	0,742		META	0,483	0,001***		PTPP	0,646	0,000***
	ICBP	0,182	0,225		PWON	0,247	0,102		PWON	0,388	0,007***
	INCO	0,103	0,497	22/12/2015	ALDO	0,323	0,030**		SOCI	0,303	0,039**
	INDF	-0,215	0,150		ASMI	-0,004	0,979		TINS	0,465	0,001***
	INKP	0,183	0,253		BIKA	-0,191	0,208		TURI	-0,289	0,049**
	INTP	0,280	0,060*		BMTR	0,038	0,802		UNTR	0,532	0,000***

From table 1 above it can be seen that out of 222 stock-trading days that there may be manipulation, there are 73 stock-day trading proven to have pump-dump manipulation. From the table can also be seen that from 16 trading days, 14 trading

days of which there is pump-dump manipulation. Thus it can be concluded that there is pump-dump manipulation in Indonesia Stock Exchange. The results of this study in accordance with the results of research Wibowo (2010), which found that on the Indonesia Stock Exchange there is pump-dump manipulation. The results of this study are in accordance with the development of pump-dump manipulation model by Allen and Gorton (1992), where  $t_1$  and  $t_2$  manipulators buy shares at the highest price and they will gain cumulative gain when selling the shares at the lowest prices at  $t_3$  and  $t_4$ . The results also prove that pump-dump manipulation can occur in a very short period of four days. This is in line with the findings of Illan (2015) which proves that manipulators are more likely to earn cumulative profits by buying and selling strategies within two days. However, the findings are different from those of Khawaja and Mian (2006) who found pump-dump manipulation occurred for four weeks.

### **The Effect of Share Capitalization on Pump-Dump Manipulation**

The second hypothesis states that there is an effect of stock market capitalization on the probability of pump-dump manipulation. Table 2 below shows the results of the test.

The test results in table 2 show that there is a significant average difference between the probability of pump-dump manipulation of the largest capitalization stock and the smallest capitalization stock. Large-cap stocks have a probability of 0.48 for manipulation while small capitalized stocks are only 0.25. Thus, the second hypothesis is rejected because it is a large capitalized stock that has a greater probability of manipulation. These results are inconsistent with the results of Huang's research, et al. (2005) who found that 50% more of the manipulated stocks had small firm capitalization. These results also contradict the findings of Aggarwal and Wu (2006) and Bouraoui, et al (2013). These different findings may be due to the relatively small value of the stock market capitalization in the Indonesia Stock Exchange. Although the shares are included in the large capitalization group the value remains relatively small so it can still be manipulated.

Table 2: Pump-Dump Manipulation Test Results of 40 Largest and Smallest Stock Capitalization

Group Statistics					
	Stock Market Capitalization	N	Mean	Std. Deviation	Std. Error Mean
Pump-dump manipulation	Large Cap	40	,48	,506	,080
	Small Cap	40	,25	,439	,069

Independent Samples Test											
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	90% Confidence Interval of the Difference		
										Lower	Upper
Pump-dump manipulation	Equal variances assumed	12,574	,001	2,126	78	,037	,225	,106	,049	,401	
	Equal variances not assumed			2,126	76,466	,037	,225	,106	,049	,401	

### Impact of Pump-Dump Manipulation on Stock Price Volatility

The third hypothesis states that pump-dump manipulation affects stock price volatility. Hypothesis testing is done by comparing the volatility of stock prices four days before manipulation and four days when manipulation occurs. The test used is paired sample t-test. The test results are shown in Table 3 below.

Table 3 Test Result of Impact of Pump-Dump Manipulation on Volatility of Stock Price

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Tmin4	,0160649	73	,05728263	,00670442
	T4	,0095160	73	,00632971	,00074084

		N	Correlation	Sig.
Pair 1	Tmin4 & T4	73	,250	,033

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	90% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Tmin4 - T4	,00654893	,05603348	,00655822	-,00437899	,01747686	,999	72	,321

The above test results show that stock price volatility before pump-dump manipulation has a larger mean value compared to when pump-dump manipulation occurs. However, t-test results show that the difference is not significant. Thus, the hypothesis that pump-dump manipulation effect on stock price volatility is rejected.

The results of this study differ from the results of research conducted by Huang, et al (2005), Aggarwal and Wu (2006), Gerace, et al (2014) and Huang and Cheng (2015) who found an increase in stock price volatility during manipulation. The difference in the results may be due to different models of analysis or hypothesis testing models.

## 5. CONCLUSION

The results of this study prove that there is pump-dump manipulation in the short term, ie for four days, on the Indonesia Stock Exchange. But pump-dump manipulation does not always consistently give a cumulative advantage to manipulators. The results of this study are consistent with previous research conducted by Allen and Gorton (1992), Khwaja and Mian (2006), Wibowo (2010), Huang and Cheng (2015) and Illan (2015). The study also found that pump-dump

manipulation occurs on the eve of market closing time. These results are in accordance with research conducted by Gunawan and Koesindartoto (2014).

The results of this study also obtained evidence that small capitalized stocks have lower probability rates for pump-dump manipulation. This goes against our proposed hypothesis. This finding could be due to the relatively small capitalization value of stocks on the Indonesia Stock Exchange.

Finally, this study found no evidence that pump-dump manipulation affects stock price volatility. These results contradict the results of research conducted by Huang, et al (2005), Aggarwal and Wu (2006), Gerace, et al (2014) and Huang and Cheng (2015). One of the causes of these findings is due to the short periods used in comparing volatility levels. Some previous studies have compared volatility rates with considerable time spans, such as 2 weeks and even one month.

The results of this study are expected to be used as a consideration for investors who want and are investing in emerging market capital.

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