MARKET OVERREACTION AND PRICE REVERSALS IN JAKARTA STOCK EXCHANGE

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This paper provides a comprehensive examinations of short run market overreaction and price reversals at Jakarta Stock Exchange from April 1997 to August 2006 and performs stock forecasting to predict the trend line using two kind of technique that is moving average and exponential moving average. Moreover, researcher test investor's possibility to profit from overreaction phenomenon conducted by comparing cumulative abnormal return of loser stock with average relative bid ask spread using t-test for paired data and by applying simple trading rule.

The result does not indicate significant price reversal of winner stocks on first day after the event date, but loser stock experience positive abnormal return one day after the event. From profit making perspective, the result indicates that after considering transaction cost traders can not earn profit from these reversals.

Key words:
Market Overreaction, Price Reversals

INTRODUCTION

One of dominant theme in finance literature is hypothesis of concerning efficiency of capital market or Efficient Market Hypothesis (EMH) opened by Fama (1970). This hypothesis express that in efficient capital market, price of securities reflects all available information. Price change of stocks follow the pattern of random walk that is price change have the character of the random and cannot be predicted. Its implication is that investor cannot use the historical information to predict price change in the future in order to get abnormal return which are positive.

Still, besides research indicating that capital market is efficient, there are dissimilar financial research show the happening of price reversals in capital market. This price reversals mean change direction of stock price. Stocks which have bad performance at past will have the tendency to be good at period

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hereinafter. Contrary, stocks which are at one particular period have good performance tend to deteriorate at period hereinafter.

This reversals show the happening of overreaction phenomenon in stocks market. Overreaction hypothesis express that market react excessive to new news. This overreaction happen when investor tend to overweight recent information and underweight past data. This result of course oppose against the hypothesis of capital market efficiency.

The findings of this paper contribute empirical evidendence of overreaction behavior at Jakarta Stock Exchange (JSX). Section 2 persents a review of past empirical research in this area. Then section 3 focusses on a discussion of the data and the methodology employed in this study. The result of the study are discussed in section 4. Finally the conclusion of the study is presented in section 5.

LITERATURE REVIEW

One of the most influential papers on stock market overreaction is by DeBondt and Thaler (1985). Using American stocks market data from year 1926 up to year 1982, they found that stocks that experienced poor performance over the past three to five years tended to outperform prior-period winners during the subsequent three to five years.

Research finding the happening of reversal among other things is research conducted by Atkins and Dyl (1990), Bremer And Sweeney (1991), and Akhigbe, Gosnell and Harikumar (1998). They use the daily data to test the existence of price reversal. Research conducted by Albert and Henderson (1995) in American stocks market and Da Costa (1994) in Brazilian stock market find the consistent result with the research of DeBondt and Thaler by using monthly data.

While research which does not show the existence of reversal is research conducted by Kryzanowski and Zhang (1992) by using data of Toronto capital market. That way also with the research conducted by Brailsford (1992) at Australian stocks market. Using same method with the method used by DeBondt and Thaler, Brailsford found that winner portfolio experienced price reversal which significant statistically in examination period.

Examination on market overreaction phenomenon also conducted by Atkins and Dyl (1990), Bremer And Sweeney (1991), Cox And Peterson (1994), Park (1995) and Akhigbe, Gosnell, and Harikumar (1998). Specifically, they study stocks that experienced a large price change during a single trading day. This price change could be an increase or decrease of stock price.

Examination of overreaction in Jakarta Stock Exchange has ever conducted by Sartono (2000). He proposed three main hypothesis: overreaction hypothesis, uncertain information hypothesis and reverse anticipation puzzle. The results show that cumulative abnormal return behavior before and after an event diverge from the magnitude of event and event direction (whether it is positive or negative) to company size measured by its market capitalization.

DATA AND METHODOLOGY

This research aims to tests whether or not the Jakarta Stock Exchange overreacts in the short run. In particular, researcher examine subsequent returns to stocks whose prices rose or fell by large percentage in a single trading day. Examination will be conducted to stocks that experienced the largest in increase of

price referred to winner stocks and the largest decrease of price referred to loser stocks.

Population in this research is stocks of companies listed at Jakarta Stock Exchange from January 1997 to August 2006. The researcher use the following procedure to construct the final sample:

- All stocks traded on Jakarta Stock Exchange (JSX) during the period from April 1997 to August 2006 are candidates for inclusion in the sample.
- During that period, 40 months is selected randomly.
- For each trading day from selected month, daily return was calculated using formula:

$$R_{i,t} = \frac{P_{i,t} - P_{it-}}{P_{it-}}$$

Where:

Rit = Daily return of stock i at t.
Pit = Adjusted closing price of stock i on day t.
Pit-1 = Adjusted closing price of stock i on day t - 1.

- The researcher choose one stocks that experience the largest percentage increase in return to be included in the winner sample and one stocks that experience the largest percentage decrease in return to be included in the loser sample. Only one winner and one loser during one trading day to be selected because firm with highest percentage gains and losses should best exhibit overreaction behavior and provide the strongest empirical evidence.
- The researcher eliminate from further analysis those firms with incomplete data during estimation period from 70 trading days prior to the event day and 20 trading days after the event day.

The research instrument used in this study was historical data of stocks with observation period from April 1997 to August 2006. This included data on daily Jakarta Composite Index (IHSG), and daily closing price. All data are adjusted if company conducted corporate actions such as right issue, stock splits, stock dividends, cash dividend et cetera. The researcher gathered data regarding stock price, Jakarta Composite Index (IHSG), and company's information from database provided by Bloomberg at Indonesia Central Bank, Stock Exchange References Center, and JSX Statistics from 1997 to 2006 (A yearly report published by JSX).

Variable of Abnormal Return

This variable used to know the behavior of stock price after exhibiting large price changes during one single trading day. Researcher used two different approaches to measure abnormal return of winner and loser sample: the Mean-Adjusted Return and Market Model.

Mean-Adjusted Returns

The mean-adjusted returns model assumes that expected return for a given security, i, is equal to a constant , Ki, which can be estimated from observations of actual returns on the security during some time period other than the one being studied. Abnormal return is computed as

$$AR_{it} = R_{it} - K_i$$

$$K_i = \frac{1}{60} \sum_{t=-70}^{t=-11} Rit$$

where:

ARi,t = Abnormal return of stock i on day t.
Ri,t = Return of stock i on day t.
Ki, = Average daily return of stock i during 60 days estimation period, extending from day t = -

70 to day t = -11 before the security experienced the large loss or gain.

Market Model

In addition to the mean-adjusted returns, the researcher also employed the market model to estimate abnormal return. The market model employed as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

Where:

Ri,t =Return of stock i on day t.

αi =Average return during estimation period that can not be explained by market.

βi =Risk measure of stock sensitivity to market.

Rmt =Market return on day t estimated using formula:

$$R_{m,t} = \frac{JCI_t - JCI_{t-}}{JCI_{t-}}$$

JCI_t = Jakarta Composites Index on day t.

JCI_{t-} = Jakarta Composites Index on day t -1.

- εit = Error term

This Regression yield parameter α and β denoted $\hat{\alpha}$ and $\hat{\beta}$ that will be used in calculating expected return of stock during observation period. Expected Return of stock i on day t is measured with following equation:

$$\hat{R}_{it} = \hat{\alpha}_i + \hat{\beta}_i R_{mt}$$

where:

$\hat{R}_{it}$ = expected return of stock i on day t.

$\hat{\alpha}_i$ = expected alpha

$\hat{\beta}_i$ = expected beta

R_{mt} = Market return on day t

Abnormal return then calculated by subtracting expected return from actual return during observation window from t=- 5 to t=+ 20.

$$AR_{it} = R_{it} - \hat{R}_{it}$$

Where:

AR_{it} = abnormal return of stock i on day t

$R_{i,t}$ = actual return of stock i on day t

$\hat{R}_{it}$ = expected return of stock i on day t

Variable of Average Abnormal Return

The next step is calculating average abnormal return for winner and loser sample on day t using formula as follows:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{n} AR_{i,t}$$

where:

AAR_t = Average abnormal return on day t.

N = Number of winner or loser stocks.

$AR_{i,t}$ = abnormal return of stock i on day t.

Price Reversals of Winner Stock

To determine whether there is a market overreaction, the one sample t-test was used. The formula used will be as follows:

$$t_{winner,t} = \frac{AAR_{Winner,t}}{S_{Winner,t} / \sqrt{N}}$$

where:

$AAR_{Winner,t}$ = average abnormal return of winner portfolio on day t

$S_{Winner,t}$ = standard deviation of winner sample on day t.

N = Sample size of winner portfolio

Price Reversals of Loser Stock

The test of price reversals for loser stocks following same procedure with those of winner portfolio. Comparing average abnormal return of loser stock for each day t after event date, the formula used will be as follows:

$$t_{loser,t} = \frac{AAR_{loser,t}}{S_{loser,t} / \sqrt{N}}$$

where:

$AAR_{Loser,t}$	=	average abnormal return of loser portfolio on day t
$S_{Loser,t}$	=	standard deviation of loser sample on day t.
N	=	Sample size of loser portfolio.

Profit From Price Reversals Phenomenon

To assess whether investors can earn systematic profits from reacting to the announcement, the researcher testing on loser sample. The researcher construct this comparison into some trading return intervals. Return interval 1 is one day after the event (t = 0), second return interval is day 1 to day 2 and so forth until return interval day t. For example, on day T=1 ACAR1 is compared with average relative bid-ask spread1. For return interval t > 1 average relative bid-ask spread is calculated by averaging relative spread of stock 1 according to its interval. This comparison use the test t for paired data with formula as follows:

$$t = \frac{\overline{X}_{CAR} - \overline{X}_{SP}}{S_p}$$

$$S_p = \sqrt{\frac{S^2_{CAR}}{n_1} + \frac{S^2_{SP}}{n_2}}$$

where:

$\overline{X}_{CAR}$	=	Average CAR of loser
$\overline{X}_{SP}$	=	Average relative spread of loser on day T.
S_p	=	standard deviation of pooled sample CAR and SP

Simple Trading Rule

The researcher assess whether investor can get profit as reaction from the event of degradation of stock price, and performs simple trading rule analysis. For each company, return is calculated with the following model:

$$\text{a. } Revret_{(t=0)} = \frac{(\text{closing bid price}_{i,t} - \text{closing ask price}_{i,t=0})}{\text{closing ask price}_{i,t=0}}$$

$$\text{b. } Revret_{(t=1)} = \frac{(\text{closing bid price}_{i,t} - \text{closing ask price}_{i,t=1})}{\text{closing ask price}_{i,t=1}}$$

where:

Revret (T)	=	Return measure of stock on day t
$\text{Closing bid price}_{i,t}$	=	Closing bid price of stock on day t (t = d 1 relative to the event date).
$\text{Closing ask price}_{i,t=0}$	=	Closing ask price of stock i on day t = 0 (event date).
$\text{Closing ask price}_{i,t=1}$	=	Closing ask price of stock i on day t = 1.

RESULTS AND DISCUSSION

Price Reversals of Winner Stocks

Observation window of winner stock is from t = - 5 up to t = + 20. Observation from t = -5 day before event date has a purpose to see whether the movement of stock price have been started before biggest price happened in one single trading day.

The mean of abnormal return of winner sample is based on calculation with mean adjusted model if t = 0 is 0.3335 with significance level 1%. The winner sample experience negative abnormal return for two successive days before t = t = 0 (-0.0036 and -0.0166) but, only abnormal return on one day before t = 0 which is significant with significance level 1%. The researcher does not observe the significant price reversal on first day after event.

The winner stocks experience negative abnormal return for 12 of 20 trading day after t = 0. But, only the return on t = 9 (-0.0060) and t = 19 (-0.00608) are statistically significance with 5% significance level. On t = 2, and t = 3 respectively, winner stocks experience

negative abnormal return (-0.0024, -0.0062), event though it is not statistically significant.

The result of test with market model indicates that the winner's stocks experience negative abnormal return for 9 of 20 trading day after t = 0, but it is not statistically significant.

Price Reversal of Loser Stocks

The observation of loser stocks is performed similar to that of the winner stocks that is from t = -5 up to t = +20 where t = 0 is when the lowest price decline occurs in one day trading.

The average abnormal return of loser stocks calculated using mean adjusted model on day t = 0 is -0.2002 while using market model is - 0.2766, both are significant with significance level of 1%. The greatest negative average abnormal return on t = 0, of course as a result of largest percentage decrease in price during one single trading day.

The loser stocks experience positive abnormal return for 8 days respectively after t = 0. The highest average abnormal return is on t = 1 that is 0.0351 calculated using mean adjusted model and 0.0416 calculated using market model. Both are statistically significant with significance level 1%. The test for abnormal return calculated using mean adjusted model indicates positive abnormal return for 8 days after t = 0, but it is not statistically significant. While , the result of test for abnormal return calculated using market model indicates positive abnormal return for 15 days after t = 0, but only on t = 3, 8, 12, and 13 which statistically significant with significance level 5%.

Stock Forecasting

There are several motivations for trying to predict stock market prices. The most basic of these is financial gain. Any system that can consistently pick winners and losers in the dynamic market place would make the owner of the system very wealthy. Thus, many individuals including researchers, investment professionals, and average investors are continually looking for this superior system which will yield them high returns. There is a second motivation in the research and financial communities. It has been proposed in the Efficient Market Hypothesis (EMH) that markets are efficient in that opportunities for profit are discovered so quickly that they cease to be opportunities. The EMH effectively states that no system can continually "beat" the market because if this system becomes public, everyone will use it, thus negating its potential gain.

Technical analysis is essentially the search for recurrent and predictable patterns in stock prices. The idea behind technical analysis is that share prices move in trends dictated by the constantly changing attitudes of investors in response to different forces. Using price, volume, and open interest statistics, the technical analyst uses charts to predict future stock movements. Technical analysis rests on the assumption that history repeats itself and that future market direction can be determined by examining past prices. Thus, technical analysis is controversial and contradicts the Efficient Market Hypothesis. However, it is used by approximately 90% of the major stock traders.

Price charts are used to detect trends. Trends are assumed to be based on supply and demand issues which often have cyclical or noticeable patterns. There are a variety of technical indicators derived from chart analysis which can be formalized into trading rules or used as inputs to neural networks. Some technical indicator categories include filter

indicators, momentum indicators, trend line analysis, cycle theory, volume indicators, wave analysis, and pattern analysis. Indicators may provide short or long term information, help identify trends or cycles in the market, or indicate the strength of the stock price using support and resistance levels.

Moving averages are one of the oldest and most popular technical analysis tools to predict stock prices. Moving averages smooth a data series and make it easier to spot trends, something that is especially helpful in volatile markets. They also form the building blocks for many other technical indicators and overlays.

The moving average averages stock prices over a given length of time allowing trends to be more visible. Several trading rules have been developed which pertain to the moving average.

Below is the forecasting result of loser stock that experience the lowest abnormal return 0.9167 (BCA Bank-BBCA).

The Simple Moving Average

The result of calculations using closing prices of BCA Bank (BBCA) start at day 40, that is the first day possible to calculate a 40-day simple moving average. As the calculation continues, the newest day is added and the oldest day is subtracted. The 40-day SMA for day 41 is calculated by adding the prices of day 2 through day 41 and dividing by 40. The averaging process then moves on to the next day where the 40-day SMA for day 42 is calculated by adding the prices of day 3 through day 42 and dividing by 40.

All moving averages are lagging indicators and will always be "behind" the price. The price of BBCA is trending down, but the simple moving average, which is based on the previous 40 days of data, remains above the price. If the price were rising, the SMA would most likely be below as we can see on the chart from day 41. Because moving averages are lagging indicators, they fit in the category of trend following indicators. When prices are trending, moving averages work well. However, when prices are not trending, moving averages can give misleading signals. In order to reduce the lag in simple moving averages, researcher use exponential moving averages (or EMA also called exponentially weighted moving averages). EMA's reduce the lag by applying more weight to recent prices relative to older prices. The weighting applied to the most recent price depends on the specified period of the moving average.

Exponential Moving Average (EMA)

As we'll see, the calculating and EMA is much harder than calculating an SMA. The important thing to remember is that the exponential moving average puts more weight on recent prices. As such, it will react quicker to recent price changes than a simple moving average. Here's the calculation formula.

Researcher calculate Exponential Moving Averages as a period-based EMA. A period-based EMA has a parameter that represents the duration of the EMA.

By giving more weight to recent prices, it can be seen that the exponential moving average is consistently closer to the actual price. EMA picks up on the trend quicker than the SMA.

Simple Versus Exponential

From afar, it would appear that the difference between an exponential moving average and a simple moving average is minimal. For this example, which uses only 40 trading days, the difference is minimal, but a difference nonetheless. The

exponential moving average is consistently closer to the actual price.

From day 40 to day 80, the EMA was closer to the price than the SMA. The average absolute difference between the simple moving average and the current price was 202.74 and the exponential moving average had an average absolute difference of 196.44. This means that on average, the exponential moving average was 196.44 point above or below the current price and the simple moving average was 202.74 points above or below the current price.

A comparison of a 40-day EMA and a 40-day SMA for BBCA also shows that the EMA picks up on the trend quicker than the SMA. By giving more weight to recent prices, the EMA reacted quicker than the SMA and remained closer to the actual price.

Stock Forecasting and Abnormal Return of BBCA Stock

Technical analysis is the attempt to forecast prices or price trends based on a study of past prices. It was in widespread use before the age of fully disclosed financial information, which in turn enabled fundamental analysis to develop. Therefore, technical analysis predates fundamental analysis.

Because moving averages follow the trend, they work best when a security is trending and are ineffective when a security moves in a trading range. With this in mind, investors and traders should first identify securities that display some trending characteristics before attempting to analyze with moving averages.

The price movement of BBCA is trending down resulting in negative abnormal return for 13 day after t=0 calculated using mean adjusted model and 9 day calculated using market model. This result is in line with the trend pattern shown by SMA and EMA that decline.

The two model of calculating abnormal return (i.e. market model and mean adjusted) generate almost similar result. But abnormal return calculated using mean adjusted model generate more negative values after t = 0. In this research, mean adjusted model probably considered more appropriate since in examining daily returns, the explanatory power of market model is less significant for daily data than for example monthly data.

Profit Making Potential During the Price Reversals

If short run market overreaction occurs at Jakarta Stock Exchange, shown by price reversals for winner and loser stocks, it need a furthermore examination to know whether this reversal phenomenon can be exploited by investor take profit. One thing that an investor must consider is the existence of transaction cost. The existence of a spread between bid and ask prices affects investor's ability to profit from predictable changes in stock prices.

The researcher examines the probability of investor to take profit from this overreaction by two ways. First, comparing average cumulative abnormal return with average relative bid-ask spread. Second, calculating and comparing measure of return by implementing simple trading rule in reversal period.

The test to see whether investor gains profit from overreaction is only performed on loser stock with consideration as follows:

1. In analysis of price reversal above, the stocks which experience reversal after event date is loser stocks (t=1) while the winner stocks indicate price

reversal on the ninth and nineteenth day.
2. The analysis of simple trading rule which will be performed is following model in Akhigbe study, Gosnell dan Harikumar (1998) that is to purchase stock when the price is low and sold when it is high and it might be done on loser stocks.
3. The practice of short-sell stock is prohibited at Jakarta Stock Exchange.

Comparison of ACAR with Average Relative Bid-Ask Spread

Researcher compare ACAR with Average relative bid ask spread during five return interval after t = 0. The purpose of this comparison is to observe whether the chance to take profit is proportional with the minimum transaction cost.

Based on calculation which performed for loser stocks with mean adjusted model on period after the event, the strongest reversal occurs on t = 1. In the above test of abnormal return of loser portfolio on t = 1 is -0.17059 with spread 0.107017. The spread between ACAR and average relative bid-ask spread is -0.278. It is different significantly from 0 with degree of freedom 1% but the value is negative. It means, that high abnormal return on t = 1 can not cover the minimum transaction cost which reflected in bid-ask spread.

On each return interval after t = 1, average relative bid ask spread remains greater than average cumulative abnormal return. On t = 1-2, average relative bid-ask spread is above ACAR, that is 0.241. Moreover, the return on third, forth and fifth interval of ACAR is smaller than average relative bid-ask spread that are 0.223, 0.222, and 0.219 respectively.

The test with market model indicates the similar result period after event, the strongest reversal occurs on t = 1. In the above test of abnormal return loser on t = 1 is -0.17193 with spread 0.107017. The margin between ACAR and mean of bid-ask spread is -0.279. It is different significantly from 0 with significance level 1% but the value is negative. It means, that high abnormal return on t = 1 cannot cover the minimum transaction cost which reflected in bid-ask spread.

Average bid ask spread for the period after T=1 is greater than average cumulative abnormal return. But none of that value is positive which mean that transaction cost is bigger that the value of profit making potential.

Simple Taring Rule Analysis

Examination concerning possibility to take profit from the reversals is conducted by applying simple trading rule for loser stocks.

The objective of Simple Trading Rule analysis is to know the probability of investor gaining profit from price reversal. This analysis is performed for loser sample on different return interval. Since the strategy is formulated on the short-run price reversals following large price changes on a given day, the profits would depend on when the investor recognize the event, when investors enter into and close out the position, and at what price the transaction occur (Park 1995, 253). Due to limitation of data, the researcher can not get thick by thick data and assumes that the investor performs this strategy using closing price both for bid price and ask price. Therefore in the test of investor it is assumed that:

1. Purchasing stocks having greatest price decline on closing ask price at t = 0 and selling at closing bid price on t = 1 up to t = 5.
2. Purchasing stock having greatest price decline on closing ask price when t = 1

and selling it on closing bid price on t = 2 up to t = 5.

If the stock reversal is strong enough, hence the returns during reversal period called Revret(t) will have positive value and investor might enjoy the profit. Yet, if the market is efficient, the value of Revret(t) will be same or less than zero which indicate that the profit from reversal still less compared with minimum transaction cost.

The role of bid-ask spread is also of interest in the light of research by Keim (1989), which suggests that systematic shifts from trading at bid prices to trading at ask prices may partially account for various temporal patterns in stocks return (e.g., the return-of-the-year effect, the weekend effect, etc.). A similar shift also might explain price reversals that appear to be the result of overreaction on the stock market.

Researcher conduct test for average profit when investor purchase loser stock with ask price at t = 0 and selling at first to fifth day on the bid price. The result shows average abnormal return of loser sample on the event date is -0.20022. Average return from first to fifth day after the event do not show positive average return that different from 0 and statistically significant. Similar result shown when investor buy at t=1. Another test conducted but with assumption investor buy loser stock with ask price at t = 1 and selling at second to fifth day on the bid price. The result show that by conducting simple trading rule from t = 2 to t = 5, average return show negative value and significant at 1%. The test indicates that average abnormal return which follow the largest price decline is not enough to cover transaction cost. Of course the transaction cost gets higher when added with commission cost then average abnormal return will become less.

The simple trading rule in this research performs for short term period. The same methodology can be used for long term period by exploiting the direction of the trend calculated by moving averages. But, because past price data is used to form moving averages, they are considered lagging, or trend following, indicators.

The advantage of moving average system of this type (i.e., buying and selling when prices break through their moving average) is that investor will always be on the "right" side of the market: prices cannot rise very much without the price rising above its average price.

The classic interpretation of a moving average is to use it in observing changes in prices. Using simple trading rule for long term period a buy and sell signal can be done by interpreting this trend. Investors typically buy when the price of an instrument rises above its moving average and sell when it falls below its moving average.

CONCLUSION

The study primarily analyses short-run market overreaction and the respective price reversals at the Jakarta Stock Exchange. In particular, researcher examine subsequent returns to stocks whose prices rose or fell by large percentage in a single trading day.

The researcher does not observe the significant price reversal of winner stocks on first day after event. Loser stock experience positive abnormal return one day after the event. For loser stocks, mean difference between cumulative abnormal returns and average percentage bid-ask spreads generates negative value for five return interval observed. Cumulative abnormal returns that are less than bid-ask spread indicates that investor can not exploit this price reversals phenomenon

by implementing trading strategy that is buying loser stocks and sell it when the price is reverse, because it can not cover the transaction cost represent in bid-ask spread.

By implementing simple trading rule, average return from first to fifth day after the event does not show positive average return that different from 0 and statistically significant.

Future research can be conducted by implementing different methodology in constructing winner and loser portfolio. One way is by stratifying the portfolios of winner and loser stock based on the firm size, and percentage decrease or increase. Other research can be made by observing the chance for investor to taking profit if market overreaction phenomenon occurs. That a more extensive study be made about the relations of price reversals and Monday effect, Friday effect, bid ask spread and so on. Future research in this area could be extended also to other stock markets in an effort to find more evidence in favor of the overreaction hypothesis and also to find plausible explanation for the presence of this anomaly with reference to investor psychology.

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