

# LARGE SHARE PRICE MOVEMENTS, REASONS AND MARKET REACTION

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*The objective of this paper is to examine the reasons of firm-level one-day share price shocks and post -shock reaction. Positive and negative shocks are defined and detected by using the official news providers, which are required to disclose price-sensitive information. No information that accompanied one-day share price shocks was found. It is suggested that irrational behavior by uninformed investors drives the stock market returns. The reaction to these large price movements has been investigated as part of the overreaction hypothesis and the results were supportive of short-term price reversal in the case of price declines.*

*Keywords:* large price movements, information and market efficiency, overreaction, price reversals, Macedonian Stock Market.

## 1. INTRODUCTION

In turbulent transition times many stock markets experience sharp falls and rises in security prices. The reasons of and reaction to such changes should generate renewed interest in the price behavior of security markets in the transition countries. According to the well-known efficient market hypothesis, introduced by Fama (1965), “*stock prices at any time fully reflect all available information*” (as cited by McKenzie, 2008, p. 206). It means that stock prices are unpredictable and that only rational asset pricing models can determine the expected stock returns. The evidence on the stock market and empirical studies showed that the stock prices are not unpredictable and that stock prices do not always reflect all available information. The opposite view of the stock market philosophy represented by Keynes (1936) is that the investor is not rational and

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is guided by short-run speculative motives. Investors are more interested in the speculative trading and short-run movements than in assessing the present value of future dividends and holding an investment for a significant period. The postulates of the efficient market hypothesis are that investors have a long-term perspective and they make rational calculation of the return on investment based on changes in the long-run income flows. Investors are interested in short-term gains and thus have very short-term planning horizons (Crotty, 1990).

Over the years, several inconsistencies with popular asset pricing models, the so called market anomalies, emerged. Lee et al., (2002) notes that in market fluctuations the events themselves are not so important, as the human reactions to those events. Bloomfield et al., (1991) explains that financial markets under-react to information in some cases or market price does not move upward far enough in reaction to good news, or does not move downward far enough in reaction to bad news, while they may overreact in other situations. In order to understand the inherent dynamics of financial markets Malliaris and Stein (1999) raised the following question: *“If price changes are induced by changes in information, can information concerning the shocks in fundamental factors explain the magnitude of the observed price volatility?”* Or there are other factors that can explain the variance of price changes. Cutler et al., (1989) in his research as well wonder if the information is the cause of market anomalies, then how is possible to reach excess returns with little or no news. Franke and Sethi (1998 p.2) argue *“that trajectories can easily exhibit complex dynamics, independently of any arrival of news”*.

If stock prices systematically overshoot, then their reversals should be predictable from past return data alone, with no use of any accounting data such as earnings (Debondt and Thaler, 1985). Debondt and Thaler, (1985) in their research in experimental psychology, found that *“most people overreact to unexpected and dramatic news”*. Motivated by this, Debondt and Thaler (1985) suggested two hypotheses to be tested: *“(1) Extreme movements in stock prices will be followed by subsequent price movements in the opposite direction, and (2) The more extreme the initial price movement, the greater will be the subsequent adjustment with the goal to test if the overreaction hypotheses is predictive”*. These empirical tests are the first attempt to use behavioral principle to predict new market anomaly.

Further empirical research in different markets can shed more light on the literature on overreaction. The emerging capital markets in transition countries have a short history. Macedonian capital market belongs to the newly created markets in transition countries. The purpose of the article is:

1. To define and detect large price movements on Macedonian stock market within the period 2005-2009.
2. To find out the reason of these movements and whether they are information accompanied?
3. To investigate the behavior of the prices after large price movements occur. An overreaction hypothesis is employed.

The following hypotheses are being tested:

$H_0$ : Expected abnormal return is zero for each stock for each day  $\tau$ . Neither price reversal nor price continuation occurs on the day  $\tau$ .

$H_1$ : Expected abnormal return is different from zero for each stock for each day  $\tau$ . Price reversal or price continuation occurs on the day  $\tau$ .

The remainder of the article is organized as follows. Section 2 presents the literature review. Section 3 reviews the methodology to define large price movements, information and abnormal returns. Section 4 describes the dataset of variables. In Section 5 the analyses of the results are presented, and Section 6 concludes.

## 2. LITERATURE REVIEW

Stock market overreaction refers to analyses of the behavior of stock returns after big price shocks in the literature. There are a number of studies focusing on share price returns following large price changes. DeBondt and Thaler (1985) are the forerunners of the overreaction hypotheses. The investors tend to overreact to extreme price changes due to the human tendency to overweight current information and underweight prior data (DeBondt and Thaler, 1985, 1987). Supportive evidence of the investor overreaction hypothesis is found in the studies of Howe (1986), Brown at al. (1988), Atkins and Dyl (1990), and Bremer and Sweeney (1991). Reversals are especially strong for price declines. Stocks associated with high probability of private information-based trading, uniformly accepted public news surprises, and low media coverage experience low post-earnings announcement drift, providing an example of how the presence of information (public or private) can affect post-event returns (Vega, 2006).

Subsequent price reversal patterns in the short term (ranging from one day to a full year using daily/weekly data) were mostly tested in the studies. Park

(1995) also provided qualified support on short term price movements following large price changes and finds that the apparent price reversals on the first day following a price shock disappear when mid-prices are used instead of closing transaction prices which are affected by the bid-ask bounce. Moreover, while the short-run pattern of abnormal returns following large price changes does suggest overreaction, the magnitude of the returns is not sufficient to exploit economically (Lasfer et al., 2003). The pattern of price reversals cannot, however, be unequivocally attributed to investor overreaction. The sensitivity of some of the findings suggests some fragility in the definition and measurement of large price changes and in economic significance of the overreaction. Brown et al. (1988) find mixed support for post-price shock reversals, reporting positive abnormal returns after both positive and negative price movements.

Arbel and Jaggi, (1982) find – consistent with the first empirical work performed on the subject - no evidence of any price reversals (noted exception: Taiwan). Their results indicate that the market absorbs the information causing stock prices to change almost immediately. Using monthly index returns from 16 countries Richards (1996 and 1997), found that this apparent anomaly of winner-loser reversal is not a small market phenomenon and that loser countries are not more risky than winner countries. January effects are found to be the reason of the overreaction (Jones, 1989). Chan (2003) constructs an index of news headlines for a random subset of Center for Research in Security Prices (CRSP) stocks, and finds momentum after news and reversal after no news, with the effect mostly driven by loser stocks. The entire daily Dow Jones news archive from 1979 to 2007 was used to study how presence of public news affects subsequent returns (Tetlock, 2010). Most studies investigating the reversal pattern were performed on US data, but Bremer et al. (1997) analyze all Nikkei 300 stocks. They discover the reversal pattern for the Japanese stock market, but conclude that investors cannot earn arbitrage profits. Ratner and Leal (1998) perform their research on emerging markets of Latin America and Asia (excluding South Africa, Indonesia and China). Lasfer et al. (2003), studying the price behavior of daily market indices of both developed and emerging markets worldwide, also fail to gather any evidence in favor of the price reversal hypothesis.

In the subsequent period the emphasis was put on intra-day data and the link of extreme events to public (published) information. Hamelink (1999) looks at stocks listed on the French stock exchange and discovers significant post-extreme return patterns. Taking the bid-ask spread into account, however, the overreaction hypothesis cannot be supported. Fehle and Zdorovtsov (2002) support his findings.

There is little or no relation between news and aggregate market returns (Schwert, 1981; Mitchell and Mulherin, 1994). Macroeconomic variables explain less than half of the variance in aggregate stock prices, and large market movements often do not coincide with new information of corresponding importance (Cutler et al., 1989). For individual firms, a model that includes aggregate economic developments, industry effects, and firm-specific news explains only a fraction of daily and monthly return variance (Roll, 1988). Shiller (1981) finds that volatility of stock returns is too high and cannot be explained just by changes in dividends. Volatility of the returns are high during market hours even after controlling for information release (French and Roll, 1986).

Savor (2012) analyzes what factors other than new public information may be a cause of large stock price movements and compares the investors in terms of how they respond to information and no information based price changes. The obtained results are consistent with the hypothesis that investors underreact to new information about the firm and overreact to price movements caused by other factors, such as shifts in investor sentiment or liquidity shocks (Savor, 2012). The recommendations are important to investors and it has been proven in a large body of literature. The studies show that recommendations result in significant contemporaneous stock price reactions, and that investors can profit by trading on recommendations even after they are released (Altinkilic and Hansen, 2009; Asquith et al. 2005; Loh and Stulz, 2011).

The significantly negative average cumulative abnormal returns for days 4 through 20 are found in the study of Cox and Peterson (1994) and the conclusions are that large one-day price declines are more pronounced of negative performance than of positive performance. The large price changes accompanied by a public announcement display price continuation is found in two studies (Pritamani and Singal, 2001; Larson and Madura, 2003). Their finding supports the notion that uninformed events are associated with overreaction, whereas informed events are associated with underreaction (Lasfer et al., 2003).

Caginalp and Balenovich (1999) postulated asset flow theory as an alternative explanation for the dynamics of stock prices around large price declines. Other reasons for overreaction like, too many traders are “caught short” or “underinvested”, and there is a subsequent stampede to buy are found by Duran and Caginalp (2007). A number of researchers try to explain these

phenomena by assuming investor behavior is driven by behavioral biases (Kahneman et al. 1998; Barberis et al. 1998).

### 3. METHODOLOGY

The definition of ‘large’ price changes is not uniform in the existing literature. Various researchers use different definitions. For example, Howe (1986) defines “large” price changes as those weekly price changes exceeding 50 percent. Brown et al. (1988) and Park (1995) define “large” changes with reference to the market model residuals. Atkins and Dyl (1990) choose the stocks with the largest one-day price change in the 300-day window. The study of Bremer and Sweeney (1991) base the results on the stocks that recorded a daily price decrease of at least 10 percent.

Some studies of significant price events (Pritamani and Singal, 2001) use returns scaled by volatilities instead of absolute thresholds. The logic behind this approach is that what constitutes a significant price change is not the same for high-volatility stocks and for low-volatility stocks (Savor, 2012). However, return volatility is not exogenous. It reflects the industry a firm operates in and the degree to which investor sentiment or liquidity shocks affect trading activity in the stock (Savor, 2012).

The second measure or dynamic trigger values based upon firms expected return and volatility (Wong 1997; Lasfer et al. 2003) is more appropriate to be used in this study. Price limitations are defined by the Macedonian Stock Exchanges’ Board of Directors (static limit  $\pm 10\%$ ). The static limit was changed in 2007 to  $\pm 5\%$  (MSE, 2007).

We define as large price increase, a positive price shock one where the return on a particular day exceeds the average market daily return by two standard deviations ( $R_{it} > \mu_i + 2\sigma_i$ ). On the other hand, large price decreases or negative price shocks are those where the return on a particular day lies two standard deviations below the average market daily return ( $R_{it} < \mu_i - 2\sigma_i$ ). Sample mean return  $\mu_i$  and sample standard deviation  $\sigma_i$  of stock  $i$  are estimated over the sample period.

The reasons for large price changes can be driven by a number of factors, but for the purpose of this study we will focus on new information. The information is considered to be only the one publicly available to all investors. We use “price sensitive information” as a proxy for the presence of public

information in this study. “Price sensitive information” according to The Law on Securities, shall mean “*data of a precise nature relating directly or indirectly to an issuer of securities and which, if it were made public, would either be likely to have a significant effect on the prices of such issuer’s securities or an investor’s decision to purchase, sell or hold such securities*”. Listed companies are legally required to publish this information on the website SEI - NET, System for Electronic Information (<http://seinet.com.mk/>).

We apply a standard event study approach to calculate the post-shocks abnormal returns, AR<sub>it</sub>, which is similar to that of MacKinlay (1997) as follows:

$$AR_{it} = R_{it} - E(R_{it}) \quad (1),$$

where R<sub>it</sub> is the daily return on the stock *i* and

$$E(R_{it}) = (1/T) \sum_{j=1}^T R_{ij} \quad (2),$$

E (R<sub>it</sub>) is the average return of stock *i* within the sample period.

The mean abnormal return across event observations on day  $\tau$  denoted as  $\overline{AR}_{\tau}$  is the sum of individual abnormal returns on day  $\tau$  divided by the number of events,

$$\overline{AR}_{\tau} = \frac{1}{N} \sum_{i=1}^N AR_{i,\tau} \quad (3),$$

where N is the number of events.

The cumulative abnormal return for stock *i* from day  $\tau_1$  to day  $\tau_2$  denoted as  $CAR_i(\tau_1, \tau_2)$  is simply summed daily abnormal returns over day  $\tau_1$  to day  $\tau_2$ :

$$CAR_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{i,\tau} \quad (4).$$

The sample average cumulative abnormal return across event observations from day  $\tau_1$  to day  $\tau_2$  denoted as  $\overline{CAR}(\tau_1, \tau_2)$  is the sum of mean abnormal return over day  $\tau_1$  to day  $\tau_2$ :

$$\overline{CAR}(\tau_1, \tau_2) = \sum_{t=\tau_1}^{\tau_2} \overline{AR}_t = \frac{1}{N} \sum_{i=1}^N CAR_i(\tau_1, \tau_2) \quad (5).$$

These abnormal returns are accumulated over 1, 3, 5, and 10 days following the price shock by adding them up over these periods.

#### 4. DATA

The modern history of the Macedonian capital market is associated with structural changes in the 1990s, crossing the country's transition to free market economy (Angelovska, 2014). Although many regional markets passing through the same transition period were established earlier, the Macedonian Stock Exchange was launched in September 1995. The following years of the Macedonian Stock Market were turbulent and the growth was along with the economic development and intensification of reforms.

In developed economies stock prices move in highly firm-specific ways that convey information about changes in firms' marginal value of an investment. "In contrast, stock prices in low-income countries tend to move up and down *en masse*" (Durned et al., 2004, p.2). This is because non fundamental trading strategies are more used in the capital markets in developing countries than in developed countries.

The data comprise the daily returns on all 10 stocks listed on the MBI10, a weighted index using closing prices and published by the Macedonian Stock Exchange, as of the beginning of January 2005. The daily returns are computed based on the closing price of each trading day. The sample period extends from January 2005 to December 2009. In this period, the Macedonian Stock Exchange witnessed its first bull and bear market and the stocks have experienced either extreme capital gains, or extreme capital losses. The trading volume on the Macedonian Stock Exchange before 2005 was very low and the investors were barely aware of the stock market.

The investors in Macedonia and other transition countries that moved in a similar way paid a very expensive investments lecture about the behavior of the stock market. After this period the trading volume was again low and the



investors that experienced high losses lost their interest in financial assets. In Table 1 a description of the dataset is shown. The data are extracted from the official site of the Macedonian Stock Exchange ([www.mse.mk](http://www.mse.mk)).

*Table 1. Summary statistics of daily returns in the sample (2005-2009)*

	Mean Daily Return	Maximum Value	Minimum Value	Standard Deviation
<b>Alkaloid</b>	0.08	9.52	-10.53	2.52
<b>Beton</b>	0.19	12.50	-23.63	3.34
<b>Granit</b>	0.18	9.53	-10.53	3.22
<b>Kom. bank</b>	0.10	9.53	-10.53	2.46
<b>Makpetrol</b>	0.09	22.33	-16.67	2.93
<b>Replek</b>	0.16	21.36	-23.38	2.39
<b>Stop.banka Bitola</b>	0.02	9.53	-16.82	2.28
<b>Makstil</b>	0.07	3.27	-8.33	4.89
<b>Toplifikacija</b>	0.09	0.95	-14.17	2.87
<b>Z.K.Bitola</b>	0.20	22.62	-17.37	3.38
<b>MBI 10</b>	0.08	8.09	-10.28	1.87

Source: Author's calculations.

## 5. EMPIRICAL RESULTS

We calculate the positive and negative large price changes that exceed  $\pm \mu_i + 2\sigma_i$  across the companies. The magnitude of the shocks differ among the stocks listed on MBI 10, determined by the volatility measured in standard deviation.

The positive shocks range between 4.58 percent and 9.83 percent and similarly, the negative shocks range between -9.7 percent and -4.54 percent. The number of calculated positive and negative shocks and the frequency are reported in Table 2.

Positive price shocks outnumber negative ones by close to 25%. All shocks, positive and negative are fully driven by no-information. The first positive share price shocks are found at the end of February and beginning of March 2005. The question of whether there were any publicly available information arises.

No published “price sensitive information” was found to have accompanied the calculated price positive and negative shocks. Moreover, we found published information where the companies announce that they had no price sensitive information.

Given the significant increase in stock prices, MSE sent a letter to companies asking for information about the possible existence of price-sensitive information that could affect the growth of the stock price of the company.

Table 2. Description of positive and negative shocks

	No.of positive shocks (+)	No.of negative shocks (-)	% of all shocks	% of all shocks
Alkaloid	45	40	3.78%	3.36%
Beton	66	35	5.54%	2.94%
Granit	60	36	5.03%	3.02%
Kom. bank	42	37	3.52%	3.10%
Makpetrol	43	42	3.61%	3.52%
Replek	32	0	2.68%	0.00%
Stop.banka Bitola	40	32	3.36%	2.68%
Makstil	4	22	0.34%	1.85%
Toplifikacija	49	37	4.11%	3.10%
Z.K.Bitola	52	42	4.36%	3.52%
MBI 10	42	33	3.52%	2.77%

Source: Author’s calculations.

To investigate the possibility of our results being driven by price jumps in a particular year of our sample period, we split data into each calendar year in the sample period. The frequencies of the positive and negative shocks are reported in Table 3.

There are annual differences across the companies throughout the sample period and the positive shocks are noticed in the period 2005-2007 when the bubble was boiled and more negative after 2007 when bubble busted. The post-shock abnormal returns, the mean abnormal return and the cumulative abnormal return across event observations are calculated.

Table 3. Annual distribution of positive and negative shocks

	2005		2006		2007	
	Event (+)	Event (-)	Event (+)	Event (-)	Event (+)	Event (-)
Alkaloid	33.33	27.50	4.44	7.50	28.89	7.50
Kom. banka	50.00	32.43	16.67	13.51	7.14	5.41
Makpetrol	20.93	14.29	16.28	4.76	20.93	11.90
Granit	38.33	25.00	11.67	5.56	25.00	19.44
Beton	21.21	25.71	15.15	5.71	37.88	14.29
Toplifikacija	14.29	5.41	6.12	2.70	38.78	24.32
Makstil	0.00	13.64	25.00	18.18	25.00	27.27
Replek	31.25	0.00	21.88	0.00	28.13	0.00
Z.K.Pelagonija	23.08	9.52	25.00	16.67	34.62	21.43
Stop.banka Bitola	30.00	6.25	25.00	15.63	12.50	12.50
MBI10	33.33	12.12	2.38	3.03	14.29	12.12
	2008		2009			
	Event (+)	Event (-)	Event (+)	Event (-)		
Alkaloid	13.33	42.50	20.00	15.00		
Kom. banka	7.14	24.32	16.67	24.32		
Makpetrol	16.28	40.48	25.58	28.57		
Granit	10.00	36.11	15.00	13.89		
Beton	9.09	28.57	16.67	25.71		
Toplifikacija	14.29	40.54	26.53	27.03		
Makstil	0.00	22.73	50.00	18.18		
Replek	9.38	0.00	9.38	0.00		
Z.K.Pelagonija	7.69	28.57	9.62	23.81		
Stop.banka Bitola	10.00	46.88	22.50	18.75		
MBI10	16.67	48.48	33.33	24.24		

Source: Author's calculations.

In Table 4 the frequency of price continuations and price reversals occurring on days 1, 2, and 3 and days 1-3, 1-5 and 1-10 following the day of large price increases ( $R_{it} > \mu_i + 2\sigma_i$ )/decreases ( $R_{it} < \mu_i - 2\sigma_i$ ) are shown.

In the analysis of the post-shock abnormal return and the cumulative abnormal return, we find differences across the cases of negative and positive price shocks. The stock market behavior that follows negative shocks has a different pattern and values show a higher frequency of price reversals than for price continuations over the short-term period. The negative shocks are

followed by positive returns, thus supporting the overreaction hypothesis (Panel A).

Table 4. Distribution of price continuations and reversals

Panel A	(AR<0)	(AR>0)		(CAR<0)	(CAR>0)
Day 1	0.405	0.595	Days 1-3	0.4725	0.5275
Day 2	0.403	0.597	Days 1-5	0.285	0.715
Day 3	0.353	0.647	Days 1-10	0.453	0.547
Panel B	(AR>0)	(AR<0)		(CAR>0)	(CAR<0)
Day 1	0.625	0.375	Days 1-3	0.669	0.331
Day 2	0.607	0.393	Days 1-5	0.631	0.369
Day 3	0.419	0.581	Days 1-10	0.455	0.545

Panel A. Price continuations and price reversals after a large one-day decline:

Continuation: AR<0, Reversal: AR>0; Continuation: CAR<0, Reversal: CAR>0.

Panel B. Price continuations and price reversals after a large one-day advance:

Continuation: AR>0, Reversal: AR<0; Continuation: CAR>0, Reversal: CAR<0.

Source: Author's calculations.

Across the positive events we notice a reversal pattern of continuation or positive shocks are followed by positive returns (Panel B). The post-shock abnormal return and the cumulative abnormal return (following the shocks) seem to provide some support for the price reversal hypothesis in the cases of day 3 and days1-10. The settlement of the securities transactions is carried out on the third business day (T + 3) after the day the transaction is concluded (MSE). This can offer an explanation of why the reversal occurs in the case of large positive price movements during the third day. Some investors are just satisfied with the 3 day earning, but there is still shift in the demand by the investors that think prices will rise and again continuum happens.

According to conventional finance theory all investors are rational individuals who intent on maximizing their utility. If the investors have rational expectations they would only trade when new information is released that alters their perception of the value of the share under consideration. But very often share prices alter when there is little or no new information released that could be used to justify the changes. The only rational explanation for these price changes is that they are the product of investment decisions made by irrational or uninformed investors who base their investment decisions on observations of others' actions and the behavior of the share price itself.

For uninformed or irrational investors, the price of the share and the rate with which it alters are particularly strong signals to trade. Uninformed traders are strongly influenced by the recent trades, and are more likely to buy (sell) when previous trades have been bought (sold) (Easley, Kiefer and O'Hara (1997a, b)).

## 6. CONCLUSIONS

The results of this study are based on a sample of 10 firms listed on the MBI10 index over the five-year period from January 2005 to December 2009. We begin our inquiry into return behavior after large price movements by selecting large price changes, as a mean plus/minus two standard deviations. Positive and negative price shocks are detected within sample period and no good or bad news supported these events. The investors on the Macedonian capital market seem that are supporters of non-fundamental trading strategies. To support the non-rational behavior of the stock market, an overreaction hypothesis is tested.

The results indicate that the Macedonian stock market appears to have overreacted; stock prices tend to be reversed after large price changes especially in the case of price decreases. The results are consistent with previous studies that documented evidence supportive to investors' overreaction hypothesis and especially strong price reversals in the post-negative shocks.

Evidence of price continuation becomes more important for positive price shocks, because investors are trend chasers and think that prices will continue to rise. The sharp increase or decrease that does not have to be information-supported serves as a signal. The puzzling price pattern following major price shocks on the Macedonian stock market may be explained by behavioral principles, the issue we address in further research.

## REFERENCES

1. Altinkilic, O., Hansen, R. S., (2009): On the information role of stock recommendation revisions, *Journal of Accounting and Economics* 48, 17-36.
2. Angelovska, J. (2014): Month Related Seasonality on the Macedonian Stock Market, *Business and Economics Research Journal*, 5(1), 143-150.
3. Arbel, A., Jaggi, B. (1982): Market Information Assimilation Related to Extreme Daily Price Jumps, *Financial Analysts Journal*, 38, 60-66.

4. Asquith, P., Mikhail, M. B., Au, A. S. (2005): Information content of equity analyst reports, *Journal of Financial Economics*, 75, 245-282.
5. Atkins, A., Dyl, E. (1990): Price reversals, bid-ask spreads, and market efficiency, *Journal of Financial and Quantitative Analysis*, 25, 535-47.
6. Barberis, N., Shleifer, A., Vishny, R. (1998): A model of investor sentiment, *Journal of Financial Economics*, 49.
7. Bloomfield, R., Libby, R., Nelson, M. W. (1991): Underreactions, overreactions and moderated confidence, *Journal of Financial Markets*, 3, 113-137.
8. Bremer, M., Sweeney, R. J. (1991): The reversals of large stock-price decreases, *Journal of Finance*, 46, 747-754.
9. Bremer, M., Hiraki, T., Sweeney, R. J. (1997): Predictable patterns after large stock price changes on the Tokyo Stock Exchange, *Journal of Financial and Quantitative Analysis*, 33, 345-365.
10. Brown, K., Harlow, W. V., Tinic, S. M. (1988): Risk aversion, uncertain information, and market efficiency, *Journal of Financial Economics*, 22, 355-385.
11. Brown, K., Harlow, W. V., Tinic, S. M. (1993): The risk and required return of common stock following major price innovations, *Journal of Financial and Quantitative Analysis*, 28, 101-106.
12. Caginalp, G., Balenovich, D. A. (1999): Asset Flow and Momentum: Deterministic and Stochastic Equations, *Philosophical Transaction: Mathematical, Physical and Engineering*, 357, 2119-2133.
13. Chan, W. S., (2003): Stock price reaction to news and no-news: Drift and reversal after headlines, *Journal of Financial Economics*, 70, 223-260.
14. Crotty, J. R. (1990): Owner-manager conflict and financial theories of investment instability: A critical assessment of Keynes, Tobin, and Minsky, *Journal of Post-Keynesian Economics*, 12, 519-542.
15. Cox, D.R., Peterson, D.R. (1994): Stock returns following large one-day declines: evidence on short-term reversals and long-term performance, *Journal of Finance*, 49, 255-267.
16. Cutler, D. M., Poterba, J. M., Summers L. H. (1989): What Moves Stock Prices? *Journal of Portfolio Management* 15, 4-12.
17. De Bondt, W. F. M., Thaler R. (1987): Further evidence on investor overreaction and stock market seasonality, *Journal of Finance*, 42, 557-81.
18. De Bondt, W. F. M., Thaler, R. (1985): Does the stock market overreact? *Journal of Finance*, 40, 793-805.
19. Durnev, A., Li, K., Morck, R. Yeung, B. (2004): Capital markets and capital allocation: implications for economies in transition, *Economics in Transition*, 12, 593-634.

20. Duran A., Caginalp G. (2007): Overreaction diamonds: Precursors and aftershocks for significant price changes, *Quantitative Finance*, 7 (3), 321–342.
21. Fama, E. (1965): The Behavior of Stock Market Prices, *Journal of Business*, 38, 34-105.
22. Franke, R., Sethi, R. (1998): Cautious trend-seeking and complex asset price dynamics, *Research in Economics*, 52, 61-79.
23. Fehle, F., Zdorovtsov, V. (2002): Large Price Declines, News, Liquidity and Trading Strategies: An Intraday Analysis, March, *University of South Carolina Working Paper*.
24. French, K., Roll, R. (1986): Stock return variances: the arrival of information and the reaction of traders, *Journal of Financial Economics*, 17, 5-26.
25. Hamelink, F. (1999): Systematic Patterns Before and After Large Price Changes: Evidence from High Frequency Data from the Paris Bourse, *Working Paper*, Groupe HEC Paris.
26. Howe, J. S. (1986): Evidence on Stock Market Overreaction, *Financial Analysts Journal*, 42, 74-77.
27. Easley, D., Kiefer, N., O'Hara, M. (1997a): The Information Content of the Trading Process, *Journal of Empirical Finance*, 4, 159-186.
28. Easley, D., Kiefer, N., O'Hara, M. (1997b): One Day in the Life of a Very Common Stock, *Review of Financial Studies*, 10, 805-835.
29. Larson, S. J. and Madura, J. (2003): What Drives Stock Price Behavior Following Extreme One-Day Returns, *Journal of Financial Research*, 26, 113-127.
30. Lasfer, M. A., Melnik, A., Thomas, D. (2003): Stock Price Reaction in Stressful Circumstances: An International Comparison, *Journal of Banking and Finance*, 27, 1959-1977.
31. Lee, W., Jiang, C., Indro, D. (2002): Stock market volatility, excess returns, and the role of investor sentiment, *Journal of Banking and Finance*, 26, 2277-2299.
32. Loh, R. K., Stulz, R. M., (2011): When are analyst recommendation changes influential? *Review of Financial Studies*, 24, 593-627.
33. Kahneman, D., Hirshleifer D., Subrahmanyam, A. (1998): A theory of overconfidence, self-attribution, and security market under- and overreaction, *Journal of Finance*, 53, 1839-1886.
34. Keynes, J.M. (1936): *The General Theory of Employment, Interest, and Money*, Cambridge University Press.
35. Jones, S. L. (1989): Reaction to the Overreaction Hypothesis, *Journal of Financial Economics*, 25, 75-97.
36. Macedonian Stock Exchange - 2007 - Year of Records. [www.mse.mk](http://www.mse.mk)

37. Malliaris, A. G. and Stein, J. L. (1999): Methodological issues in asset pricing: random walk or chaotic dynamics, *Journal of Banking & Finance*, 23, 1605-1635.
38. MacKinlay, A. C. (1997): Event Studies in Economics and Finance, *Journal of Economic Literature*, 35, 13-39.
39. MacKinlay, A. C., Richardson, M. (1991): Using generalized method of moments to test mean-variance efficiency. *Journal of Finance*, 46, 511-27.
40. McKenzie, M. D. (2008): *Asia-Pacific financial markets: Integration, innovation and challenges*, Vol. 8. Elsevier.
41. Mitchell, M., Mulherin, J. (1994): The Impact of Public Information on the Stock Market, *Journal of Finance*, 49, 923-950.
42. Park, J. (1995): A market microstructure explanation for predictable variations in stock returns following large price changes, *Journal of Financial and Quantitative Analysis*, 30, 241-256.
43. Pritamani, M., Singal, V. (2001): Return Predictability Following Large Price Changes and Information Releases, *Journal of Banking & Finance*, 25, 631-656.
44. Ratner, M., Leal R. (1998): Evidence of Short-Term Price Reversals Following Large One Day Movements in the Emerging Markets of Latin America and Asia, *Working paper*, Rider University, New Jersey, US.
45. Richards, A. (1997): Winner-Loser Reversals in National Stock Market Indices: Can They Be Explained? *Journal of Finance*, 52(5), 241-256.
46. Richards, A. (1996): Volatility and Predictability in National Stock Markets: How do Emerging and Mature Markets Differ? *IMF Staff Papers*, 43(3), 461-501.
47. Roll, R. (1988):  $R^2$ , *Journal of Finance*, 43, 541-566.
48. Russel, P. S., Torbey, V. M. (2002): The Efficient Market Hypothesis on Trial: A Survey, *Business Quest Journal*, January, 1-19
49. Keynes, J. M. (1936): *The General Theory of Employment, Interest, and Money*, Cambridge University Press.
50. Savor, P. G. (2012): Stock Returns after Major Price Shocks: The Impact of Information, Available at SSRN: <http://ssrn.com/abstract=1306233> or <http://dx.doi.org/10.2139/ssrn.1306233>
51. Shiller, R. (1981): Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends? *American Economic Review*, 71.
52. Schwert, W. (1981): The Adjustment of Stock Prices to Information About Inflation, *Journal of Finance*, 36, 15-29.
53. Tetlock, P. C. (2010): Does public financial news resolve asymmetric information? *Review of Financial Studies*, 23, 3520-3557.
54. Vega, C. (2006): Stock price reaction to public and private information, *Journal of Financial Economics*, 82, 103-133.



55. Wong, M. C. S. (1997): Abnormal Stock Returns Following Large One-day Advances and Declines: Evidence from Asian-Pacific Markets, *Financial Engineering and Japanese Markets*, 4, 71-177.

## VELIKE PROMJENE U CIJENI DIONICA, RAZLOZI I REAKCIJE TRŽIŠTA

### Sažetak

Cilj ovog rada je ispitati razloge jednodnevnih naglih promjena cijena dionica poduzeća i reakcija na tržišni šok. U radu se definiraju i identificiraju pozitivni i negativni šokovi, pri čemu se koriste službeni izvori informacija, koji moraju objavljivati informacije o kojima ovisi cijena. Nisu otkrivene informacije povezane s jednodnevnim šokovima, odnosno naglim promjenama u cijenama dionica. Smatra se da iracionalno ponašanje neinformiranih investitora utječe na povrate na financijskom tržištu. Reakcije na velike promjene u cijenama dionica istraživane su kao dio hipoteze o pretjeranoj reakciji i rezultati su hipotezu potvrdili u slučaju kratkotrajnog preokreta u cijeni, odnosno u slučaju kada cijene padaju.

