The US macroeconomic news announcements and the within-month effects on the Bucharest Stock Exchange

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THE US MACROECONOMIC NEWS ANNOUNCEMENTS AND THE WITHIN-MONTH EFFECTS ON THE BUCHAREST STOCK EXCHANGE

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Abstract
Within-month anomalies and influence of macroeconomic news announcements are important characteristics of a stock market. In this paper we investigate their presence on Bucharest Stock Exchange. We find significant within-month effects and a considerable impact of some US macroeconomic news announcements. It results also that within-month effects are in fact caused by macroeconomic news announcements.

Keywords: Within-month effects, Macroeconomic news announcements, Romanian capital market
JEL Classification: E00, G02, G14

INTRODUCTION

The within-month effects are calendar anomalies materialized in significant differences between the return of stock returns from various periods of a month. As other calendar anomalies, the within-month effects could play an important role in the investment decisions. They could be also used as arguments against the Efficient Market Hypothesis (EMH) which stipulated that past prices of stocks couldn't be used to predict the future prices (Fama 1970).

In the last decades several forms of the within-month effects were revealed by empirical researches. Some studies found a Turn-of-the-month (TOM) effect characterized by significant differences between the stock returns from the so called TOM period which included the first trading days of a month plus the last trading days from the precedent month and the stock returns from the so called rest of the month (ROM) period which includes the days not belonging to TOM period (Ariel, 1987; Lakonishok and Smidt, 1988). Kohers and Patel (1999) discovered the Third-month effect, consisting in the differences between the stock returns from three segments associated to a calendar month: first segment (TM_1) from 28^{th} of the previous month to 7^{th} of the current month, second segment (TM_2) from 8^{th} to 17^{th} of the current month and the third segment (TM_3) from 18^{th} to 27^{th} of the current month. Ariel (1987) identified the Half-of-the month effect defined as the tendency of stock returns to be higher in the first half of a month (HM_1) in comparison with the second half (HM_2).

Since their discovery, several attempts were made to explain the within-month effects, such: Pay Day Hypothesis, Window Dressing Hypothesis and Earning Announcement Hypothesis. Pay Day Hypothesis considers that in general at the end of a month many investors need cash money for different payments: the dividends, the interests or the wages of their employees. They withdraw that money from the market and then reinvest it at the beginning of the new month (Ogden, 1990). The Window Dressing Hypothesis linked some within-month effect with the tendency of some investors to keep in their portfolios, at the end of a month, where their performances are analyzed, only stocks with high returns, in order to show favourable results. When the new month starts they will buy back the stocks they sold (Lakonishok et al., 1991). The Earning Announcement Hypothesis explained the changes in the return of stock returns from the last days of a month by the impact of the announcements about the firms results (Peterson, 1990).

Another explanation of the within-month effects is based on the impact of clustered US macroeconomic news announcements (Gerlach, 2007; Nikkinen et al., 2007a; Nikkinen et al., 2007b). Bollerslev et al. (2000) revealed the significant influence of the macroeconomic news announcements on the stock markets. Nikkinen et al. (2007a) sustained the macroeconomic news announcement hypothesis arguing that macroeconomic news announcement which contains information about the stocks values are in general scheduled and well known for the investors in advance. They are also usually released on certain days of months or quarters following certain patterns. Nikkinen and Sahlstrom (2004) found for some European stock markets that US macroeconomic news announcements have a greater effect than the domestic announcement. Such results are in concordance with the findings that US stock markets represent a leading source of information for many European stock markets, especially for the small ones (Susmel and Engle, 1994).

In this paper we investigate if the US macroeconomic news announcements could be an explanation for the within-month effects from the Bucharest Stock Exchange (BSE). For this purpose we study both the presence of within-month effects and the impact of the US macroeconomic news on the returns of one of the main indexes of BSE. We also analyse the possibility that macroeconomic news announcements lead to within-month effects.

The rest of the paper is organized as follows. The second part describes the data and methodology

employed in our investigation. The third part presents the empirical results and the fourth part concludes.

DATA AND METHODOLOGY

In our investigation we employ daily closing values of BET-C, an index which describes the evolution of all the big companies listed on BSE excepting the investment funds. Our sample covers a time periods from 3rd January 2002 to 30th June 2011. We calculate the returns using the formula:

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

where:

- R_t is the return on the day t;
- P_t is the closing value of BET-C on the day t.

We analyze the presence of the within-month effects by employing a regression with dummy variables. In the case of TOM effect we take into consideration, following Nikkinen et al. (2009) a TOM period from -9 to +9 (the last nine trading day of a month and first nine trading days of the following month). We apply the model the model used by Szakmary and Kiefer (2004) described by the equation:

$$R_t = \sum_{i=-9}^{9} \alpha_i TOM_{i,t} + \beta_0 ROM_t + \varepsilon_t \quad (2)$$

where R_t is the return of BET-C on day t; i refers to the trading day of TOM period; $TOM_{i,t}$ is a dummy variable corresponding to day i, taking the value 1 on day i and zero otherwise; ROM_t is another dummy variable taking the value 1 on the ROM period and zero otherwise.

We investigate the presence of the third month effect by employing the regression:

$$R_t = \sum_{i=1}^{3} \gamma_i TM_{i,t} + \nu_t \quad (3)$$

where $TM_{i,t}$ is a dummy variable taking the value 1 in the TM_i period and zero otherwise.

The presence of half of the month effect on BSE is analyzed using the regression:

$$R_t = \sum_{i=1}^{2} \gamma_i HM_{i,t} + \eta_t \quad (4)$$

where HM_i is a dummy variable taking the value 1 on the HM_i period and zero otherwise.

We employ another regression with dummy variables to study the impact of the US macroeconomic news announcements on BET-C returns. Following Nikkinen et al. (2007b) we use a list of scheduled macroeconomic news with anticipated importance: reports on manufacturing and non-manufacturing of the Institute for Supply Management (ISM), Employment, Producer Price Index, Retail Sales, Import and Export Price Index, Gross Domestic Product, Consumer Confidence and Employment Cost Index. We use the following regression:

$$R_t = \lambda_0 + \sum_{i=1}^{N} \lambda_i MACRONEWS_{i,t} + \omega_t \quad (5)$$

where $MACRONEWS_{i,t}$ is a dummy variable for i macroeconomic news, taking the value of 1 in the days when i occurs and 0 otherwise.

Finally, we analyze if the US macroeconomic news announcements explain the within-month effects. Following Nikkinen et al. (2009) we use the following regression equations:

$$resid_t = \sum_{i=-9}^{9} \alpha_i TOM_{i,t} + \beta_0 ROM_t + \varepsilon_t \quad (6)$$

$$resid_t = \sum_{i=1}^{3} \gamma_i TM_{i,t} + \nu_t \quad (7)$$

$$resid_t = \sum_{i=1}^{2} \gamma_i HM_{i,t} + \eta_t \quad (8)$$

where $resid_t$ represents the residuals of Equation (5). If the US macroeconomic news announcements are the reason for the within-month effects, then the coefficients for the dummy variables should not be statistically significant.

For all the regressions we use GARCH terms to correct the heteroskedasticity if Breusch - Pagan and White's tests find it.

EMPIRICAL RESULTS

The results of Equation (2), presented in the Table 1, reveal significant positive abnormal returns between TOM_{-2} and TOM_2. Out of this interval we also found significant positive returns for TOM_{-4} and TOM_{-7}. These findings suggest the presence of TOM effect on BSE.

The Third-month effect was investigated by Equation (3). The results, displayed in the Table 2, suggest a significant Third-month effect in which the returns from TM_1 are significantly higher than from the other two periods.

The Table 3 presents the results of Equation (4), by which we analyzed the presence of the Half-of-the month effect on BET-C returns. We find a significant Half-of-the month effect in which the returns from HM_1 are much higher than those from HM_2.

We investigated the impact of US macroeconomic news announcements on BET-C returns using the Equation (5). The results, reported in the Table 4, show that reports on manufacturing of ISM, Consumer Price Index and Gross Domestic Product have a significant influence on BSE.

We performed the Equations (6), (7) and (8) to analyze if the within-month effects identified on BET-C returns are caused by the US macroeconomic news announcements. The results, presented in the Tables 5, 6 and 7, suggest the effect of US macroeconomic news announcements lead to the within-month anomalies.

CONCLUSIONS

This paper approached two important aspects of the Romanian capital market: the within-month effects and the US macroeconomic news announcements impact. We identified three significant within-month anomalies: Turn-of-the-month, Third-month and Half-of-the month effects. We also found that some US macroeconomic news announcements played a major role in the BSE evolution. However, our investigation revealed that in fact within-month effects are generated by the US macroeconomic news announcements. These results are in line with earlier studies which tested the hypothesis of clustered macroeconomic news announcements as an explanation of some seasonal anomalies (Gerlach, 2007; Nikkinen et al., 2007a; Nikkinen et al., 2007b; Nikkinen et al., 2009).

The findings of this paper could be taken into consideration in the analysis of BSE characteristics. They could be also viewed as evidences of the fact that in the last decade the Romanian capital market became integrated in the international financial system.

The investigation about the relationship between the macroeconomic news announcements and the within-month effects should be extended to other stock markets from the Eastern Europe.

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APPENDIX

Table 1 - Presence of TOM effect on BET-C returns

Variable	Coefficient	Std. Error	z	p-value
TOM_{-9}	0.13009	0.0989312	1.3150	0.18853
TOM_{-8}	0.0770237	0.100039	0.7699	0.44134
TOM_{-7}	0.190555	0.0993549	1.9179	0.05512*
TOM_{-6}	-0.0288553	0.0960794	-0.3003	0.76393
TOM_{-5}	0.0749429	0.0961957	0.7791	0.43594
TOM_{-4}	0.249519	0.0979306	2.5479	0.01084**
TOM_{-3}	0.149211	0.100428	1.4857	0.13735
TOM_{-2}	0.271032	0.0960519	2.8217	0.00478***
TOM_{-1}	0.5497	0.0914221	6.0128	0.00001***
TOM_1	0.250409	0.0987622	2.5355	0.01123**
TOM_2	0.268539	0.0983264	2.7311	0.00631***
TOM_3	0.0457677	0.0995878	0.4596	0.64582
TOM_4	0.0111159	0.0955517	0.1163	0.90739
TOM_5	0.0975428	0.0952509	1.0241	0.30581
TOM_6	-0.0775431	0.0956442	-0.8107	0.41751
TOM_7	-0.00378366	0.0963429	-0.0393	0.96867
TOM_8	0.138821	0.0919002	1.5106	0.13090
TOM_9	0.121687	0.0929864	1.3087	0.19065
ROM	0.174497	0.0557062	3.1325	0.00173***
ARCH(0)	0.0555418	0.0133469	4.1614	0.00003***
ARCH(1)	0.237028	0.0256242	9.2501	0.00001***
GARCH(1)	0.762972	0.0235369	32.4161	0.00001***

Table 2 - Presence of the Third-month effect on BET-C returns

Variable	Coefficient	Std. Error	z	p-value

TM_1	0.18221	0.0395866	4.6028	0.00001***
TM_2	0.125179	0.0386899	3.2354	0.00121***
TM_3	0.0773052	0.0396308	1.9506	0.05110*
ARCH(0)	0.0583589	0.014868	3.9251	0.00009***
ARCH(1)	0.212242	0.0263378	8.0584	0.00001***
GARCH(1)	0.786637	0.024447	32.1773	0.00001***

Table 3 - Presence of Half-of-the month effect on BET-C returns

Variable	**Coefficient**	**Std. Error**	**z**	**p-value**
HM_1	0.160641	0.0322589	4.9797	0.00001***
HM_2	0.0975365	0.0316533	3.0814	0.00206***
ARCH(0)	0.0576448	0.0148464	3.8827	0.00010***
ARCH(1)	0.211452	0.0264947	7.9809	0.00001***
GARCH(1)	0.787598	0.0245962	32.0211	0.00001***

Table 4 - Impact of the US macroeconomic news announcements on BET-C returns

Variable	**Coefficient**	**Std. Error**	**z**	**p-value**
const	0.104796	0.0271247	3.8635	0.00011***
NAPM: Manufacturing	0.390836	0.09749	4.0090	0.00006***
NAPM: Non-manufacturing	0.0385484	0.104016	0.3706	0.71094
Employment	0.110139	0.102878	1.0706	0.28436
Retail Sales	-0.057856	0.103395	-0.5596	0.57578
Producer Price Index	0.133401	0.371051	0.3595	0.71920
Import and Export Price Index	-0.141436	0.370295	-0.3820	0.70249
Consumer Confidence	-0.0381559	0.100307	-0.3804	0.70366
Consumer Price Index	0.196231	0.115623	1.6972	0.08967*
Employment Cost Index	0.0158378	0.200632	0.0789	0.93708
Gross Domestic Product	-0.342088	0.167441	-2.0430	0.04105**
ARCH(0)	0.0555409	0.014363	3.8670	0.00011***
ARCH(1)	0.214241	0.0264605	8.0966	0.00001***
GARCH(1)	0.785759	0.0243749	32.2364	0.00001***

Table 5 - Impact of the US macroeconomic news announcements on the TOM effect

Variable	**Coefficient**	**Std. Error**	**z**	**p-value**
TOM_{-9}	0.0218352	0.100378	0.2175	0.82780
TOM_{-8}	-0.0567755	0.100604	-0.5643	0.57252
TOM_{-7}	0.183516	0.0992408	1.8492	0.06443*
TOM_{-6}	-0.140302	0.0968993	-1.4479	0.14764
TOM_{-5}	-0.0384596	0.0966191	-0.3981	0.69059
TOM_{-4}	0.0138022	0.0990269	0.1394	0.88915
TOM_{-3}	-0.0141868	0.10024	-0.1415	0.88745
TOM_{-2}	0.0936811	0.0951698	0.9844	0.32494
TOM_{-1}	0.0202815	0.0933943	0.2172	0.82808
TOM_1	0.114802	0.0981762	1.1694	0.24226

TOM_2	0.0202547	0.0985904	0.2054	0.83723
TOM_3	-0.113077	0.100916	-1.1205	0.26250
TOM_4	-0.152759	0.0968662	-1.5770	0.11479
TOM_5	0.0281545	0.0960225	0.2932	0.76936
TOM_6	-0.14375	0.0967232	-1.4862	0.13723
TOM_7	-0.0519063	0.0968372	-0.5360	0.59195
TOM_8	-0.0102364	0.0933989	-0.1096	0.91273
TOM_9	0.0265487	0.0944636	0.2810	0.77867
ROM	0.0842131	0.056115	1.5007	0.13343
ARCH(0)	0.0537414	0.01358	3.9574	0.00008***
ARCH(1)	0.219542	0.0255603	8.5892	0.00001***
GARCH(1)	0.780458	0.0234803	33.2388	0.00001***

Table 6 - Impact of the US macroeconomic news announcements on the Third-month effect

Variable	**Coefficient**	**Std. Error**	**z**	**p-value**
TM_1	0.00896618	0.0389037	0.2305	0.81773
TM_2	0.0350745	0.0383696	0.9141	0.36065
TM_3	-0.0463498	0.0390604	-1.1866	0.23538
ARCH(0)	0.0551229	0.0141515	3.8952	0.00010***
ARCH(1)	0.213712	0.026024	8.2121	0.00001***
GARCH(1)	0.786288	0.0239783	32.7917	0.00001***

Table 7 - Impact of the US macroeconomic news announcements on the Half-of-the month effect

Variable	**Coefficient**	**Std. Error**	**z**	**p-value**
HM_1	0.0109991	0.0320558	0.3431	0.73151
HM_2	-0.0102969	0.0312047	-0.3300	0.74142
ARCH(0)	0.055866	0.0143499	3.8931	0.00010***
ARCH(1)	0.21511	0.0263869	8.1521	0.00001***
GARCH(1)	0.78489	0.0242919	32.3107	0.00001***