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IMPACT OF POLITICAL NEWS: EVIDENCE FROM RUSSIA

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Abstract

In recent times political events started to exert more and more significant impact on national financial systems due to sharpening of political problems in various countries. Undoubtedly, their influence can be followed in price dynamics of stocks which are trading in the securities market. The need to understand political news impact on the market as a whole and its separate industries is faced by investors and market agents for proper orientation in market environment. Since this issue provides rather controversial results in different studies, the authors set the aim to investigate the Russian market with the use of GARCH models. Such approach allowed determining precisely the political events' influence on return and volatility of market assets as well as leverage and clusterization effects. The obtained results may be beneficial for investors, operating in the Russian stock market, other market agents and specialists in the field of financial science.

Keywords: stock market; impact of political events; stock price dynamics; investment strategies.

JEL classification: G14.

1. INTRODUCTION

Undoubtedly, political events in contemporary world greatly affect stock market of every country. Their impact, which is fundamental for economy as a whole, can be found easily on micro- and macro-levels of economic system. In recent years there were a large number of significant political events that affected the majority of life fields inside and outside the country. Their essential exposure on prices of trading assets was also repeatedly admitted. That is why, the precise estimation of such events is a vital component of successful operating in the market for investors and market specialists.

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Important political events are usually implied as public authorities' decisions regarding the start of military operations, revolutions, executive power and legislature elections, enactment of key laws for a country, etc. Contemporary affected by the negative shocks, markets are very sensitive to such political news, especially nowadays, in a century of active globalization, due to modern communication technologies which enable investors to quickly obtain such information and react effectively.

Comprehension of the peculiarities of political news impact on price dynamics of market assets is essential for trading experts. It enables them to construct more effective investment strategies and promote a better weighted trading decision making. Moreover, it may help researchers in making more qualitative estimation models that develops the financial science. At the same time, it should be noticed that the features of such events' effect are still not enough studied. This fact is very actual for the immature Russian stock market.

It is generally known that in Russia political risks are rather substantial – for instance, it may be supported by the 67th place in the international rating of the Fund for Peace - Fragile States Index (The Fund for Peace, 2017) – that is why, political conjuncture is one the leading factors in investors' decision-making. The present study is devoted to the years of the highest political risks' pressure – it enables to see precisely the interconnection between political news and different Russian industries. The analysis of the period of YY2014-2015 demonstrates how strong investors' mood depends on political situation in Russia since this period is marked by significant political events which affected all the life spheres including the economy. Thus, political risks are one of the most important factors that influence investors' decisions in Russia.

In order to fill the gap in scientific knowledge, the authors set the following goal – to study the peculiarities of political factors' influence on price dynamics on Russian stock market. To be more precise, their impact on return and volatility of market indices is thoroughly analyzed. The objective of the paper is not only in studying the reaction of the market as a whole but also the separate industries are considered. The present research has a marked theoretical and practical significance which allows researchers and market experts to have the most accurate and clear idea of the impact design of political events on the Russian stocks' quotes.

2. DEGREE OF PROBLEM ELABORATION

During significant political events price dynamics of market assets has been a subject of numerous empirical studies in different countries. Unexpected political decisions spread panic in the stock markets – that hampers investors from exact estimation of fair assets' value. As a result, nowadays there are a number of academic papers directed to studying the peculiarities of stocks' price dynamics during meaningful political events. The majority of such papers are based on developed markets' data that enables to test the hypotheses properly due to longer operating life of stock markets.

For instance, Brown et al. analyzed the U.S. market and revealed the significant effect of political events on stocks' returns. Authors demonstrated that prices react stronger to negative news than to positive ones (Brown et al., 1988). Goonatilake and Herath based their research on the indices like S&P 500, DJIA and NASDAQ and confirmed the political news importance in contemporary financial world (Goonatilake and Herath, 2007).

Similar results were revealed on other developed markets. For instance, Chuang and Wang demonstrated the particular features of political shocks' influence on the return of stock market indices of leading countries, such as Nikkei 225, SBF-250, FTSE 30 and Dow Jones 30. The authors found the negative relation between political changes and returns of the Japanese, American, British and French stock markets (Chuang and Wang, 2009).

Resembling results were obtained on Hong Kong market. With the use of GARCH-M model it was shown that positive political news causes the higher return of the blue chips (Hong Kong companies, included in Hang-Seng index) than the red ones (stocks under control of state companies of China). As for negative political news, inverse relationship was found (Chan and Wei, 1996).

The impact of political events on the stock market dynamics has been studied also in the developing countries. However, the results are often too controversial. For example, Kongprajya assessed the impact of political risks on Thailand stock market. The result of GARCH model testing gave evidence of significant increase of daily SET return due to positive political news (and a corresponding decrease due to negative news) (Kongprajya, 2010).

Similar results were obtained on Pakistan market. On the basis of EGARCH (1.1)-in-mean model it was demonstrated that positive political news increases the return of KSE100 index and reduces its volatility. Negative news influences just inversely, reducing return and increasing volatility. Moreover, the news effect is asymmetric: negative political events have a greater impact on market dynamics (Suleman, 2012).

At the same time, the results of other markets' analysis are slightly different. For instance, El-Chaarani based his research on data of BSE index from 2005 to 2014. The author demonstrated that positive as well as negative news influences the index significantly, increasing and decreasing its return, correspondingly. Nevertheless, volatility is rising due to both types of news. Besides, analysis of EGARCH model revealed that negative political events play a greater role in causing market volatility (El-Chaarani, 2015).

Wang and Lin have studied the main features of Taiwan stock market from 1984 to 2004. They indicated that different events have rather multidirectional effects. For example, the Congress sessions influenced stocks' return negatively but had no significant impact on volatility. Whereas the negative effect from the process of democratization led to increase of market volatility (Wang and Lin, 2009). Another research that covers political events on Indonesian market between 1999-2001 indicates to substantial multidirectional impact of these events. However, the majority of the events had no significant effect on stock market indices (Ismail and Suhardjo, 2001).

According to the mentioned above papers, political news has a significant impact on stock market dynamics of developed as well as developing countries. Despite the fact that results are obtained from analysis of different countries, some of outcomes are very similar. For instance, it was confirmed that positive and negative news has corresponding positive and negative impact on stocks' return dynamics. Nevertheless, this fact is rather prospective. At the same time, positive and negative political news may affect the market differently, depending on the country of examination. In some countries this news increases volatility, in other – influences asymmetrically which means that negative news has stronger effect on volatility.

Necessary to notice that on Russian market the degree of examining problem elaboration is very low. There is lack of researches; and the proper investigations cover only a narrow news spectrum, preventing from understanding the whole picture.

For example, Hayo and Kutan on the basis of RTS index return in a period of 1995-2001 analyzed the impact of news about Chechen War. However, applied GARCH model revealed insignificant effect of such news on index return and volatility (Hayo and Kutan, 2005). Goriaev and Sonin used similar methodology for examination of events, connected with Yukos affair, and demonstrated that the influence of such news has a strong negative nature. What is more, this negative effect applied not only to Yukos stocks but also to other Russian companies (Goriaev and Sonin, 2006). In one of the last similar papers on the Russian market the impact of conflict in eastern Ukraine on Russian index RTS and Ukrainian index PFTS between 2013-2014 was analyzed. Results revealed that conflict intensification significantly negatively influenced the return of both market indices (Hoffmann and Neuenkirch, 2015).

As can be seen, the results for the Russian market are based on the research of separate events and are somehow predictable. The results from other developing countries, which are substantially different, cannot be applied to Russian market directly without considering its specificity. Due to absence of research that covers wide news spectrum on Russian market, there is an undoubted need for such academic examination.

Contribution to existing knowledge of the present study consists of analysis of the most significant news impact on different sectors of the Russian economy and determining the most and the least sensitive to political risks industries.

3. DATA

In order to assess the Russian market's reaction to political news, authors chose key indices of examining market. MICEX index was used as a main indicator of whole market reaction. The index includes stocks of 50 largest and most liquid companies.

For more precise definition of market reaction nature to studied factors, it was decided to investigate the reaction of the group of industries' indices. This enables investors and market agents to understand the peculiarities of market reaction to political events more properly since companies from various industries may react to specific political news too differently. Thus, in the present research were also used MICEX industry indices: oil and gas (MICEX O&G), consumer (MICEX CGS), chemical and petrochemical (MICEX CHM), metallurgical and mining (MICEX M&M), engineering (MICEX MNF), telecommunications (MICEX TLC), energy (MICEX PWR), finance and banking (MICEX FNL), transport (MICEX TRN). The quotes were taken from the Bloomberg database; daily data was taken for calculations. Short description of industry indices is presented below (Moscow Exchange, 2017a), in Table no. 1:

Table no. 1 – Description of MICEX industry indices, as of 30.12.2015

	Number of companies	Market capitalization, USD	Share in MICEX index
MICEX O&G	12	30,341,690,448	49.93%
MICEX CGS	11	1,921,385,573	8.31%
MICEX CHM	6	1,320,757,189	2.19%
MICEX M&M	18	5,817,443,479	10.38%
MICEX MNF	5	279,067,162	0%
MICEX TLC	6	4,934,593,411	4.47%
MICEX PWR	25	1,773,860,603	1.96%
MICEX FNL	7	3,869,789,827	20.55%
MICEX TRN	4	457,315,903	0.24%

The period from January 9, 2014 to December 30, 2015 was chosen for testing. There was lots of meaningful political news in domestic and foreign media in this period. Due to the fact, that time period is quite short, a wider spectrum of political events was analyzed and market reaction was studied more thoroughly. It is very important because in several other papers political events were treated too narrowly. For instance, in Chuang and Wang research the authors comprehend political events only in the sense of a process of power transition from ruling parties, presidents, prime-ministers, etc. (Chuang and Wang, 2009). Similar narrow samples may be found in other empirical works, including the ones based on Russian market data. Large number of political events was excluded from samples and that, surely, distorted the obtained results.

Main sources of political news in Russia in examining period were the following events: process of Crimea annexation to Russia, war in the south-east of Ukraine, gas disputes between Ukraine and Russia, economic sanctions' implementation against Russia and reciprocal sanctions from Russia, and news about improvement/worsening of Russian political and economic relationships with non-CIS countries (mainly, U.S., EU and Turkey). In addition, in the sample of political news several other events were included: related to Russian military operation in Syria, "Kogalymavia" airliner crash over the Sinai Peninsula, assassination of politician Boris Nemtsov, etc. All in all, there were chosen 114 news events from 498 trading days in the sample that ensured the representativeness of obtained results.

For examination purposes, news was divided into 2 types: positive and negative. News classification was made depending on the direction of exerted impact on public and economy of the country. For example, intensification of war conflict in Ukraine was perceived as negative news but peace negotiations and other events that led to conflict de-escalation were perceived as positive news. Events that contributed to Crimea separation from Ukraine, including the referendum, were referred to negative news since they led to tension increase between Russia and other countries. The news about withdrawal of Ukrainian military forces from Crimea territory was perceived as positive event because of elimination of threat of direct military conflict between Ukraine and Russia. Events, connected to the worsening of relationships between Russia and other countries, were referred as negative political news, and conversely.

As a result, 71 out of 114 news was related to negative news and 43 – to positive. This fact reflects the negative news background in the period of analysis. Thus, 2 dummy variables were included into econometric models – positive and negative news. There is no need to check the simultaneous effect of positive and negative news since there are only 2 days when both types of news were met.

Databases Thomson Reuters DataStream, SKAN Interfax and data source Center for Strategic and International Studies (2017) were used as sources for news information.

4. METHODOLOGY

GARCH models are used in the following paper as the main analysis instruments, since they allow estimating the news' impact on both return and volatility. GARCH models are able to describe several typical features of financial assets' volatility, mentioned by Mandelbroit (1963) and Fama (1965). Precisely, the fact that large (small) perturbances in absolute value are again followed by large (small) perturbances, which leads to creation of accumulation or volatility clusters. Besides, various GARCH models allows measuring different effects of shocks' influence on market return and volatility.

In the end of the paper the best GARCH model is chosen for every MICEX industry index that depicts and forecasts the index alterations in the most precise way. This allows distinguishing the degree of behavior difference of stocks in diverse industries of Russian economy.

Securities' return is defined as the difference between natural logarithms of daily closing prices of index:

$$R_t = LN(\frac{P_t}{P_{t-1}})$$

where R_t – index return in day t, P_t – closing price of index in day t, P_{t-1} – closing price of index in day t-1.

Standard GARCH model is widely known as a convenient method for volatility forecasting. GARCH (1.1) is the most used and widespread form of the model. Many researchers of impact of different news on market volatility and return use just this model due to its good predictive ability of volatility. GARCH models are employed in this paper according to Choudhry (1996), since these models enable to measure important statistical characteristics of stocks' return: volatility, skewness and kurtosis. This model best of all describes the industries where the asymmetrical effect of positive and negative news impact on volatility of returns is weak or nearly absent.

Employed in this research GARCH (1.1)-M model is interesting from the point that it includes all the GARCH model characteristics but additionally risk premium is used as one of the factors of main equation. In our case, risk premium is a conditional variance σ_t^2 – such model formulation was introduced by Engle *et al.* (1987). This model is used for detecting news impact on market return and volatility by many researchers (Chan and Wei, 1996; Kongprajya, 2010 and others).

Adequacy of GARCH (1.1) – M employment for volatility testing was proved by Engle in 1990 (Engle, 1990). However, several modifications were needed to be introduced for deeper estimation of news factors influence. GARCH (1.1)-M model is presented below in accordance with research specification for MICEX index:

$$MICEX_t = \alpha_0 + \alpha_1\sigma_t^2 + \alpha_2 MICEX_{t-1} + b_1 GOODN_t + b_2 BADN_t + e_t \quad (1)$$

$$\sigma_t^2 = c_0 + c_1\sigma_{t-1}^2 + c_2 e_{t-1}^2 + d_1 GOODN_t + d_2 BADN_t \quad (2)$$

In equation (1) and (2) there are 2 dummy variables of news: $GOODN_t$ equals 1 if there was positive political news in day t and 0 in other cases; $BADN_t$ equals 1 if there was negative political news in day t and 0 in other cases. Sign and magnitude of b_1 and b_2 coefficients demonstrate the direction and scale of impact of positive and negative news on stocks' return. Also sign and magnitude of d_1 and d_2 coefficients show the direction and scale of influence of different news types on stocks' volatility.

According to Engle and Bollerslev (1986), if the sum of c_1 and c_2 coefficients at lagged variance and squared lagged error term, correspondingly, (c_1+c_2) is equal to 1, then it means permanency of forecasting the conditional variance at all ultimate horizons and infinite variance for unconditional distribution of e_t. In other words, the closer (c_1+c_2) to 1, the higher the impact of current shock on future periods' volatility. If the aforementioned sum is higher than 1 (non-fulfillment of necessary condition of stationary), than the influence of the current shock on volatility is increasing with every next period. If the sum is less than 1, than the influence of current shock on volatility is decreasing with every next period. Thus, the sum of coefficients (c_1+c_2) is used in the present research for analysis of stability in time of the impact of political shocks on indices' market volatility.

Despite the fact that GARCH-M model is widely employed, it has one substantial restriction - imposition of symmetry, which means that the model has an assumption that negative shocks have the same effect as positive ones. As shown by a number of other studies, bad shocks have a stronger effect on market volatility than good ones (Braun et al., 1995). To account for this effect, EGARCH model, introduced by Nelson in 1991 (Nelson, 1991), may be used. The model has an assumption that negative shocks have a higher impact on market volatility in comparison with positive ones.

In the following case EGARCH (1.1)-M model specification is:

$$MICEX_t = \alpha_0 + \alpha_1\sigma_t^2 + \alpha_2 MICEX_{t-1} + b_1 GOODN_t + b_2 BADN_t + e_t \tag{3}$$

$$\log(\sigma_t^2) = c_0 + c_1\log(\sigma_{t-1}^2) + \gamma(e_{t-1}/\sigma_{t-1}) + \tau\,(|e_{t-1}|/\sigma_{t-1}) + d_1 GOODN_t + d_2 BADN_t \tag{4}$$

Variable e_{t-1}/σ_{t-1} includes the asymmetry effect. If $\gamma < 0$, positive events have a lower influence on market volatility than negative, and conversely. Coefficient c_1 represents the impact of volatility of past periods on current volatility – that is, stability of impact of past shocks on future volatility.

Alternative model was presented by Ding *et al.* in 1993 – APARCH model – that takes into consideration the asymmetry effect and the Taylor effect (Ding et al., 1993). Employment of this model in the following research is essential mostly for testing the asymmetry effect of EGARCH model. Moreover, it helps to obtain more robust estimates because EGARCH and APARCH models' structure has some differences (Karanasos and Kim, 2003). Particularly, such a method was used for model testing on Thai (Kongprajya, 2010) and Israeli stock markets (Alberg et al., 2008). In addition, this model enables to check some other parameters of EGARCH and GARCH models, such as: effect of stability of shocks' impact on volatility and presence of risk premium. This model is also constructed with the assumption of stronger influence of negative shocks on volatility.

APARCH (1.1)-M specification in our case with MICEX index is the following:

$$MICEX_t = \alpha_0 + \alpha_1\sigma_t^2 + \alpha_2 MICEX_{t-1} + b_1 GOODN_t + b_2 BADN_t + e_t \tag{5}$$

$$\sigma_t^\delta = c_0 + \beta_1(|e_{t-1}| - \gamma e_{t-1})^\delta + \beta_2\sigma_{t-1}^\delta + d_1 GOODN_t + d_2 BADN_t \tag{6}$$

Coefficient γ in the following model represents the leverage effect. In context of this research traditional leverage effect is used which means that negative shocks affect volatility more than positive ones. If $\gamma > 0$, then volatility increases more in presence of negative news. Coefficient δ represents Taylor effect (long memory effect) (Stastny, 2006), in which aggregate autocorrelation in absolute terms of return is usually higher than the same terms in returns squared. This effect was introduced by Taylor in 1986 and Engle in 1993. To sum up, δ coefficient shows the presence of long memory (stability of shocks' impact on volatility) in volatility of stocks' return.

After the analysis of all the models, the best ones for MICEX index and every industry index were selected on the basis of Akaike criterion (AIC) (Akaike, 1974) and Schwarz criterion (SC) (Schwarz, 1978):

$$AIC = \frac{2k}{n} - \frac{2l}{n}$$
$$SC = kln(n) - 2l$$

where l – value of logarithmic likelihood function of the model, k – number of estimated parameters.

The rule for both criteria is the same: the lower is criterion value, the better is model.

5. PRELIMINARY DATA ANALYSIS

Research conducting demanded preliminary analysis of indices' data for examination period. This analysis allowed confirming compliance of the model for testing impact of political events on market return and volatility.

Analysis of the used data appropriateness for testing GARCH models is presented in Table no. 2.

Table no. 2 – Indices' statistics

	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.
MICEX	0.00037	0.051218	-0.11419	0.01391	-0.929712	12.169	1808.895	0
CGS	0.00022	0.081863	-0.13527	0.01431	-1.327377	21.4669	7193.536	0
CHM	0.00153	0.05006	-0.08083	0.0135	-0.383967	6.69165	293.838	0
FNL	0.00035	0.12383	-0.1503	0.01901	-0.780033	15.3018	3177.854	0
M&M	0.00109	0.071935	-0.10478	0.01393	-0.552	11.1574	1400.42	0
MNF	-0.0005	0.073455	-0.14865	0.01771	-1.455057	16.825	4125.048	0
O&G	0.00061	0.040312	-0.08436	0.01439	-0.372567	5.3074	121.5061	0
PWR	-0.00018	0.075118	-0.17189	0.01661	-1.946853	27.3897	12607.08	0
TLC	-0.00065	0.132951	-0.13732	0.01841	-0.33399	14.6034	2791.778	0
TRN	-0.00093	0.086438	-0.16482	0.01865	-1.701166	17.8156	4775.594	0

Table no. 2 describes the examination of MICEX indices' distribution for normality. For every index there are presented: mean return, maximum and minimum return, standard deviation, coefficients of skewness and kurtosis, Jarque-Bera test and its p-value.

As coefficients of skewness and kurtosis, and Jarque-Bera test demonstrate, returns of industry indices are not normally distributed. It indicates to possible presence of ARCH effect in time series.

Table no. 3 shows the results of augmented Dickey-Fuller test that was employed to time series of indices' return.

Table no. 3 – Augmented Dickey-Fuller test for indices' stationarity

	MICEX	CGS	CHM	FNL	M&M	MNF	O&G	PWR	TLC	TRN
t-stat	-22.47	-22.14	-22.35	-20.65	-19.55	-21.16	-22.75	-22.56	-21.19	-19.34
Prob.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

As computation revealed, null hypothesis of a single root existence is rejected. This fact means that all the time series are stationary. Assumption of data stationary is required for fulfillment of necessary condition of GARCH models' stationary.

6. ESTIMATION OF NEWS IMPACT ON RETURN AND VOLATILITY OF MICEX INDICES

GARCH (1,1)-M, EGARCH (1,1) and APARCH models were tested for assessment of news effect on return and volatility of main MICEX index and industry ones. First of all, the impact of political news on indices was tested by GARCH (1,1)-M model. In Table no. 4 regressions' coefficients of GARCH (1.1)-M models for MICEX index and industry indices are presented.

Table no. 4 – Estimation of GARCH-M models

		MICEX	O&G	CGS	CHM	M&M
Mean	α_0	-0,001101	0,000109	-0.004112**	-0,000253	0,000321
	α_1	-8,256185	5,684104	13.40414**	3,170259	3,925174
	α_2	0,066079	0,026337	0,068468	0,006258	0.160456***
	b_1	0.014806***	0.014704***	0.011936***	0.008451***	0.00849***
	b_2	-0.015083***	-0.014304***	-0.009273***	-0.008446***	-0.010881***
Variance Equation	c_0	1.16E-05***	1.07E-05**	2.81E-05***	3.34E-05**	1.39E-05***
	c_1	0.780194***	0.842519***	0.514308***	0.738555***	0.825393***
	c_2	0.107093***	0.085735**	0.226955***	0.043548*	0.087476***
	d_1	-2.38E-05**	-2.52E-05**	-3.51E-05**	-3.99E-05***	-3.42E-05***
	d_2	5.15E-05***	2.10E-05**	0.000165***	3.95E-05**	2.46E-05**
	Log likelihood	1529,768	1519,6	1539,278	1513	1532,707
	D-W stat	2,139487	2,094683	1,986869	1,970969	1,993609

		MNF	TLC	PWR	FNL	TRN
Mean	α_0	-0,000754	-0,003037	-0.003637*	-0,001179	-0,002078
	α_1	3,533009	7,013559	9.788713*	14,55257	1,822588
	α_2	0,095597	0.111942**	0.094844*	0.11998**	0,014722
	b_1	0.006921***	0.015967***	0.007295***	0.012985***	0.007885***
	b_2	-0.010082***	-0.015625***	-0.013117***	-0.015895***	-0.008845***
Variance Equation	c_0	4.27E-05***	1.87E-05***	2.16E-05***	8.37E-05***	7.75E-05***
	c_1	0.390004***	0.746324***	0.532082***	0.199541***	0.287575***
	c_2	0.530309***	0.12717***	0.270023***	0.494189***	0.591223***
	d_1	4,25E-06	-1,17E-05	8,01E-06	-3.77E-05*	3,15E-06
	d_2	7.59E-05**	0.000116***	0.000214***	0.000335***	3,38E-05
	Log likelihood	1399,349	1387,49	1455,315	1514,532	1350,409
	D-W stat	2,024924	2,101472	2,10634	2,070819	1,957867

**** Significant at the 1% level; ** Significant at the 5% level; * Significant at the 10% level.*

The main model equation is the following:

$$R_t = \alpha_0 + \alpha_1\sigma_t^2 + \alpha_2 R_{t-1} + b_1 GOODN_t + b_2 BADN_t \tag{7}$$

$$\sigma_t^2 = c_0 + c_1\sigma_{t-1}^2 + c_2 e_{t-1}^2 + d_1 GOODN_t + d_2 BADN_t \tag{8}$$

The equation shows that positive political news influences positively the return of the market as a whole and the return of every industry index. That is, the rise of indices in a day with positive news is stably higher than the prices' increase a day before. Correspondingly, negative news exerts negative influence. It is important to note that everywhere coefficients are significant at the 5% level. Dummy variable of favorable political news positively affects MICEX index daily return with a coefficient of 0.0148. Dummy variable of unfavorable news negatively affects MICEX index daily return with a coefficient of -0.015. This result is rather predictable since all the analyzed studies researchers obtained similar conclusion regarding the impact of positive and negative news on securities' return. It should be noted that since in the present paper significant number of news is devoted to Ukrainian war, the deduced result is in line with Hoffmann and Neuenkirch study about the negative impact of Ukrainian conflict intensification on return of Russian stock market (Hoffmann and Neuenkirch, 2015).

It also can be admitted that positive news has the strongest effect on companies of oil and gas (0.0147), telecommunications (0.016) and financial (0.015) sectors. The weakest influence of positive news is on engineering (0.007) and energy (0.0073) industries. It is very interesting that negative news exerts the strongest influence on the same industries that are in the positive news case: oil and gas (-0.0143), telecommunications (-0.016) and financial sectors (-0.016). The steadiest to negative news effect industries are consumer (-0.009), petrochemical (-0.0085) and transport (-0.0089) sectors.

Variance coefficients in the main equation are insignificant except for consumer and energy industries. According to the model, there is a risk premium in these sectors. Since both coefficients are positive, then volatility influences the return positively. Therefore, investors' risks are compensated by high incomes.

Coefficients C_1 and C_2 in front of σ_{t-1}^2 and e_{t-1}^2 variables in the conditional variance equations are significant for all industries. Significance of these coefficients tells about accuracy of GARCH models employment on the used data. The sum of C_1 and C_2 in all regressions is below 1, although oscillating between 0.7 and 0.93. It means that stability in time prevails in shocks' impact on volatility. Since the sum of C_1 and C_2 coefficients is below 1 (stationary condition), political news shocks' impact on volatility of MICEX indices return is steadily decreasing over time.

The impact of dummy variable of positive political events on volatility is significant for oil and gas, consumer, petrochemical, metallurgical, finance and banking industries and for MICEX index itself (others are insignificant). Positive political news reduces the volatility in these industries and Russian stock market as a whole. The coefficients are too small in magnitude and close to each other, that is why, it is very hard to distinguish where volatility is reduced the most from positive shocks' impact. Similar result was obtained in Pakistani stock market where positive news reduces volatility in market as a whole as well as in the majority of economy industries (Suleman, 2012). However, in various studies researchers gained reverse results – positive news increases market volatility (Chan and Wei, 1996; Kongprajya, 2010; El-Chaarani, 2015)

There are much more dummy variables of negative news that are significant. Almost all coefficients in front of the negative political events' variables are positive and significant at the 5% level, except for coefficient of transport industry which is insignificant. Negative news exerts the highest influence on financial sector (0.000335), energy (0.000214), retail (0.000165) and telecommunications (0.000116). Moreover, the impact of negative political news on volatility of these industries is much higher in absolute terms than positive events' influence. Affected by negative shocks, other industries' volatility increases, on average, by 100 times less. Positive reaction of Russian market's volatility towards negative news is typical for the majority of financial markets (Chan and Wei, 1996; Kongprajya, 2010; El-Chaarani, 2015; Suleman, 2012 and others)

As a result, a group of industries, which behavior is very similar to the MICEX index, can be defined: oil and gas, chemical and petrochemical, and metallurgical sectors. Metallurgical and oil and gas industries have 10% and 50% shares in the MICEX index (Moscow Exchange, 2017b), that is why they mostly explain its dynamics. Besides, it is very interesting that finance and banking sector (21% share of MICEX index) repeats the dynamics of total index only in reacting to positive news.

Results of EGARCH model employment also enabled to define several important patterns. Obtained results are presented below in Table no. 5.

Table no. 5 – Estimation of EGARCH model

		MICEX	O&G	CSG	CHM	M&M
Mean	α_0	0,001511	0,000886	-0,00171	0,000359	0,000859
	α_1	5,629718	4,652857	3,689439	5,013998	4,968063
	α_2	0,032194	0,002297	0.086529*	-0,00506	0.167575***
	b_1	0.013879***	0.014669***	0.011653***	0.008813***	0.008729***
	b_2	-0.01473***	-0.01474***	-0.00526***	-0.00816***	-0.00915***
Variance Equation	c_0	-12.2641***	-0.62252***	-1.4364***	-1.7621**	-11.759***
	c_1	0.854272***	0.936832***	0.867546***	0.809069***	0.294688**
	γ	0,005669	-0,0125	-0.17855***	0.063378*	0,041729
	τ	0.434516***	0.11672***	0.245191***	0.103667**	0.4162***
	d_1	-0.70795***	-0.26998***	-0.29742**	-0.26115**	0,145154
	d_2	0.580911***	0,017567	0.701816***	0.270778***	0.504988***
	Log likelihood	1529,966	1518,21	1557,995	1474,316	1479,284
	D-W stat	2,097098	2,048228	2,065717	1,955785	2,021235

		MNF	TLC	PWR	FNL	TRN
Mean	α_0	-0,00046	-0,002	-0,00228	-0,00091	-0,00274
	α_1	2,031439	4,556118	6,765753	4,345299	0,842537
	α_2	0.132913**	0.117523***	0,056611	0.123115***	0,046762
	b_1	0.006709***	0.015444***	0.007552***	0.01339***	0.008149***
	b_2	-0.00987***	-0.01473***	-0.01144***	-0.01498***	-0.00954***
Variance Equation	c_0	-3.05256***	-1.05006***	-2.29034***	-2.78945***	-3.0959***
	c_1	0.709436***	0.895227***	0.790536***	0.720878***	0.69008***
	γ	-0.11475***	-0.15835***	-0.11557***	0,003408	-0.19179***
	τ	0.704202***	0.167292***	0.443119***	0.497893***	0.637715***
	d_1	0,215587	-0,13859	0,040108	-0,21463	0,13665
	d_2	0.446182***	0.395953***	0.952847***	0.95437***	0.324372***
	Log likelihood	1503,249	1593,316	1564,676	1357,179	1458,942
	D-W stat	2,096605	2,118923	2,003251	2,085426	1,68684

**** Significant at the 1% level; ** Significant at the 5% level; * Significant at the 10% level.*

Main equation of the model is the following:

$$R_t = \alpha_0 + \alpha_1\sigma_t^2 + \alpha_2 R_{t-1} + b_1 GOODN_t + b_2 BADN_t + e_t \quad (9)$$

$$\log(\sigma_t^2) = c_0 + c_1\log(\sigma_{t-1}^2) + \gamma(e_{t-1}/\sigma_{t-1}) + \tau\,(|e_{t-1}|/\sigma_{t-1}) + d_1 GOODN_t + d_2 BADN_t \quad (10)$$

All dummy variables are significant in the main equation, and the behavior of these variables mostly repeats the behavior of analogous variables in GARCH-M model. Telecommunications, oil and gas, and financial sectors here also explain the main trends in return dynamics of MICEX index in response to positive and negative political news. The indices of chemical and petrochemical, metallurgical, transport and energy industries have a weaker reaction to both types of news appearance.

As for news impact on volatility, negative events exert significant positive influence on volatility in all industries except for oil and gas. Metallurgical (coefficient = 0.51) and consumer (0.7) sectors are the closest to MICEX index (0.58) in terms of coefficient in front of dummy variable representing negative news effect. The highest impact of negative political events is experienced by financial and energy sectors, which is similar to their behavior in previously analyzed model. Petrochemical (0.27), engineering (0.45) and transport (0.32) sectors are the most stable to negative news, as in previous model. Although, the difference between the first and the last places of news impact is much higher in that model.

Positive news is significant only in oil and gas (-0.27), consumer (-0.3) and chemical (-0.26) industries. They reduce index volatility and have nearly equal strength of impact. Coefficient of positive political events of MICEX index (-0.7) is much lower than the significant ones from aforementioned 3 industries (their total share in index equals 60%).

In this model leverage effect is defines as γ coefficient in front of variable that is a ratio of lagged residuals to lagged conditional standard deviation. This coefficient is negative and significant in consumer, engineering, telecommunications, energy and transport industries. It means that negative news shocks have a higher impact on market volatility in these sectors. Chemical and petrochemical industry demonstrated significant reverse leverage effect – in this sector positive news has a higher effect, which is a rare fact since various researchers showed that in the majority of cases market volatility reacts greater to negative news (Brown et al., 1988; Suleman, 2012; El-Chaarani, 2015 and others). That is reasoned by the economic situation in Russia in 2014-2015. Chemical sector was very positively appreciated by investors because companies in this industry are export-oriented and also have low dependency of oil prices – due to significant ruble devaluation, these companies' profits considerably increased. Index of chemical and petrochemical industry (MICEX CHM) was the only one which augmented in 2014-2015 that is additional supportive evidence.

According to this model, three main sectors of Russian stock market (oil and gas, metallurgical, finance) lack the leverage effect, and consequently, total MICEX index too. Such an effect may be conditioned on peculiar significance of these sectors for the Russian economy: share of oil&gas sector in whole market capitalization is about 50%, the other 2 sectors are also very important in forming the market. This may explain the leverage effect that is close to the market's one.

Coefficient C_1 is significant in every model; its magnitude is above 0 and close to 1 - effect of volatility clusterization is confirmed for all industries.

Important results were also obtained by APARCH model (Table no. 6). This model was applied mainly for verification of the results of leverage effect in EGARCH model and effects of volatility clusterization.

Table no. 6 – Estimation of APARCH model

		MICEX	O&G	CSG	CHM	M&M
Mean	α_0	-2,29E-05	0,000236	-0,00209	0,001185	0,000276
	α_1	3,515726	6,018152	6,338499	7,054308	7,01403
	α_2	0,050169	0,018571	0.093535*	-0,00073	0.142763***
	b_1	0.014339***	0.014611***	0.01228***	0.009536***	0.00921***
	b_2	-0.01576***	-0.01459***	-0.00644***	-0.00779***	-0.01059***
Variance Equation	c_0	0,000531	9,88E-05	0,001158	2,70E-06	2,43E-07
	β_1	0.083834**	0.086155**	0.143494***	0,037412	0,046143
	γ	0.659984**	0,087913	0.749108***	-0.37441*	-0.2359*
	β_2	0.83751***	0.862867***	0.73343***	0.81559***	0.844929***
	d_1	-0,00106	-0,00022	-0,00143	-6,13E-06	-8,64E-07
	d_2	0,001071	0,000137	0,00384	3,10E-06	2,13E-07
	δ	1.146402**	1.482063*	1.048797***	2.477169***	2.939293***
	Log likelihood	1532,83	1546,061	1519,731	1545,115	1574,036
	D-W stat.	2,113715	2,078814	2,069703	1,957296	1,961852

		MNF	TLC	PWR	FNL	TRN
Mean	α_0	-0,00114	-0,00222	-0.003*	-0,00012	-0,00227
	α_1	3,406661	5,070238	10.80113**	1,431815	2,133827
	α_2	0.109698*	0.135217***	0,046506	0.119574**	0,056483
	b_1	0.006935***	0.015389***	0.007712***	0.012784***	0.008607***
	b_2	-0.0101***	-0.01506***	-0.01231***	-0.01532***	-0.00942***
Variance Equation	c_0	0,000465	0,001248	0,007208	7,20E-08	0,001702
	β_1	0.451288***	0.089379**	0.241977***	0.573179***	0.391138***
	γ	0.180383***	0.997576**	0.363908***	0,009028	0.409077***
	β_2	0.419465***	0.82469***	0.601538***	0,0865	0.362087***
	d_1	0,000217	-0,00083	0,002889	-6,18E-08	-3,77E-05
	d_2	0,000542	0,003259	0,013636	8,45E-07	0,000376
	δ	1.470813***	1.003825**	0.730238***	3.643219***	1.294071***
	Log likelihood	1501,55	1397,289	1467,11	1465,95	1359,117
	D-W stat.	2,046963	2,15013	2,001377	2,078584	1,73622

**** Significant at the 1% level; ** Significant at the 5% level; * Significant at the 10% level.*

Main model equation is the following:

$$R_t = \alpha_0 + \alpha_1 \sigma_t^2 + \alpha_2 R_{t-1} + b_1 GOODN_t + b_2 BADN_t + e_t \tag{11}$$

$$\sigma_t^\delta = c_0 + \beta_1 (|e_{t-1}| - \gamma e_{t-1})^\delta + \beta_2 \sigma_{t-1}^\delta + d_1 GOODN_t + d_2 BADN_t \tag{12}$$

This model demonstrates the same results of positive and negative news impact on return as the previous models. However, variables of news effect on volatility are insignificant in all cases. Similar insignificant results were obtained by other researchers that used APARCH model (Kongprajya, 2010). But it was not in principle in case of the present model, since it was applied for definite specific purposes.

APARCH model was found to be more sensitive to leverage effect than EGARCH model. Besides, APARCH revealed all the leverage effects of EGARCH. Moreover, all leverage effects in APARCH are of the same direction as in EGARCH. APARCH model demonstrated at the 10% significance level that positive news has a higher impact on volatility of metallurgical index than negative.

Thus, it may be stated that consumer, engineering, telecommunications, energy and transport sectors have the leverage effect. That is, negative news impact is higher in comparison with positive events. It can also be mentioned that there is a reverse leverage effect in petrochemical industry, which means the higher effect of positive news.

Besides, δ coefficient's significance and magnitude confirmed the volatility clusterization in all industries. And the variable of conditional variance of energy industry index in the main model equation demonstrated positive and significant result – volatility exerts a positive influence on index return in this model.

The best model was chosen by application of AIC and SC methods. In Table no. 7 there are AIC and SC criteria values for every model. The smallest values for every index by every parameter are highlighted by light grey.

Table no. 7 – Models' testing by AIC and SC methods

	Micex		
	GARCH-M	EGARCH	APARCH
AIC	-5,833108	-5,860077	-5,876535
SC	-5,778558	-5,767072	-5,775075
	CHM		
AIC	-5,87677	-5,875503	-5,875964
SC	-5,790953	-5,783765	-5,774503
	TLC		
AIC	-5,531703	-5,551669	-5,563666
SC	-5,447153	-5,458664	-5,462206
	TRN		
AIC	-5,380988	-5,411407	-5,410109
SC	-5,296438	-5,318402	-5,308649

	O&G			CGS		
	GARCH-M	EGARCH	APARCH	GARCH-M	EGARCH	APARCH
AIC	-5,982634	-5,973104	-5,976546	-6,020121	-6,051585	-6,055648
SC	-5,898084	-5,880099	-5,875086	-5,935571	-5,95858	-5,954187
	M&M			MNF		
AIC	-5,954651	-5,897075	-5,950628	-5,580921	-5,591985	-5,581576
SC	-5,8701	-5,80407	-5,849168	-5,496371	-5,498979	-5,480116
	PWR			FNL		
AIC	-5,803144	-5,834134	-5,844998	-5,127878	-5,406129	-5,436605
SC	-5,718594	-5,741129	-5,743537	-5,043327	-5,313124	-5,335145

Both criteria confirmed the best models in the following cases:

- GARCH-M model: oil and gas, metallurgical, chemical and petrochemical sectors;
- EGARCH model: engineering and transport;
- APARCH model: telecommunications, finance and banking, energy sectors.

Two models were chosen for MICEX index and consumer industry: MICEX index – GARCH-M and APARCH; consumer sector – EGARCH and APARCH.

7. CONCLUSION

As the following research demonstrated, political news has a significant impact on price dynamics of financial assets of Russian stock market. Results, obtained by econometric GARCH models, enabled to find several important patterns of peculiar news influence.

First of all, it was confirmed that positive political events exert significant impact on return increase of Russian stock market, and negative events – on return decrease. Increase of MICEX index quotes in a day with positive news is consistently higher than price increase a day before. Correspondingly, in the case of negative news market returns decrease significantly in a day of their appearance.

Models estimation on separate industries also confirmed that in all sectors in the days with positive or negative news, indices return increased or decreased, correspondingly. Thus, positive news caused the increases of stocks' prices, negative events – reduced them. It was true for every sector of Russian market, not only for the market as a whole. Moreover, the present research allowed detecting industries that are the most sensitive to political news. The highest effect of reaction to positive as well as negative news was demonstrated by oil and gas, finance and banking, and telecommunications sectors. For the first two industries this result can be explained by their peculiar significance for the Russian economy. This fact may cause their strong reaction to political events in the country. Besides, all the 3 sectoral indices consist of just a few most liquid stocks which due to their high liquidity are more sensitive to various political events. At the same time, less liquid stocks (for instance, of metallurgical sector) react more to the corporate news within the company.

The research also helped to reveal features of leverage effect on Russian market. That is, negative political news has the higher impact on volatility. This fact is quite expected since negative political events create stress situations on the market. However, the magnitude of their influence differs by industries. It also may be explained by different significance of these sectors for national economy. However, the magnitude of their effect in the Russian market differs for sectors – it is conditioned on industries' significance difference for the national economy.

Besides, it was shown that there is a difference between sectors' sensitiveness to negative and positive news. Negative news increases industry indices volatility in all cases. The highest impact of negative news is on volatility of companies of consumer, energy and financial sectors. It may be admitted that the stocks of the consumer and energy industries are low liquid ones – then, they are more sensitive to price deviations. As for the most significant representative of financial sector (PJSC "Sberbank"), it historically has high volatility since its stocks are operated by speculators (beta coefficient is higher than 1).

As for positive political events, it was shown that they reduce market index volatility. The following result is an evidence of stabilization effect of positive news on Russian market. Despite the fact that not all models indicated this outcome, APARCH model's employment enabled to find this effect for MICEX index. Similar impact of positive political news releases on volatility was also found in some industries. Positive events reduced volatility in oil and gas, consumer and petrochemical sectors. Moreover, GARCH-M model demonstrated this effect in metallurgical and finance industries. In addition, chemical and petrochemical industry revealed a significant reverse leverage effect (positive news had a higher impact than negative) – that is conditioned on the sector's attractiveness in line with economic situation in Russia in the analyzed period.

In addition, volatility clusterization was found for MICEX index and all the sectors. Its presence means that shocks' effect, steadily decreasing, influences not only the volatility of current period but also the volatility of next periods. In other words, periods with high volatility are followed by periods with increased volatility; periods with low volatility are followed by periods with decreased volatility.

As it can be seen, the employment of 3 different GARCH models enabled to assess the effect of political news more thoroughly. Some of the findings, revealed by one model, cannot be obtained by the other two. The results may be useful for individual and institutional investors and other market agents since they enable to construct more precise expectations towards possible market fluctuations in forming of trading strategies. Developing the financial science, they will also contribute to introduction of more proper theoretical and applied models by researchers in fields of financial markets and market engineering.

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