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The Impact of Corporate News on Stock Prices: Evidence from the Russian Stock Market

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Abstract

In the face of complex sanctions, Russian companies are looking for new mechanisms to ensure sustainability. An overcrowded corporate news backdrop could be the source for a significant decline in a company's market value or growth. Given the importance of information disclosure and corporate news for investors' expectations, we estimate the effect that four types of corporate news (Official publication of financial results for the quarters and for the year; M&A; Appointment of new persons; Dividend policy) impose on shares of three Russian companies in different industries: the financial, energy and high-tech sectors. In order to reflect corporate news' influence, we developed an index of corporate news for the companies concerned utilizing daily data ranging 2015–2021. By applying a vector error-correction model, we demonstrate that corporate news and corporate equities are related over the long run. Short-run results obtained with the Granger test suggest no evidence of causality. At the second stage, we construct impulse response functions that affirm the effect of corporate news on stocks. Corporate news has a high and positive effect on stock prices in the high tech and energy sectors, while the financial sector reacts in a mixed manner to corporate news, and the effect is weak. Obtained results serve as the basis for practical recommendations to individual and institutional investors, as well as to companies for market value management.

Keywords: corporate news, Russian stock market, stock price, index of corporate news, vicious cycle of influences between stocks

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Introduction

Contemporary investment environment is characterized by high dynamism and rapid reactions to info-events. In this framework, where institutional investors' trading in accordance with the news trends affects returns in the following weeks [1], monitoring corporate news is of mounting importance for investors.

Companies disclose different types of information. Some are mandatory disclosures, which vary across countries and mostly include financial statements, and some are voluntary disclosures. In our paper we focus on the second type of news. We examine the releases made by companies concerning their finances, changes in their capital structure, shifts in management setup, and dividend policy.

In an efficient market, information is presumably available to everyone at once [2], but this is not the case in reality. Asymmetry of information makes information an asset. News provides the market with signals that lead market agents to make certain decisions and determines the role of corporate news in shaping investors' opinions and evaluations. It serves as the basis of the stock market signal theory. According to this theory, information flows can either create or destroy a company's additional value [3].

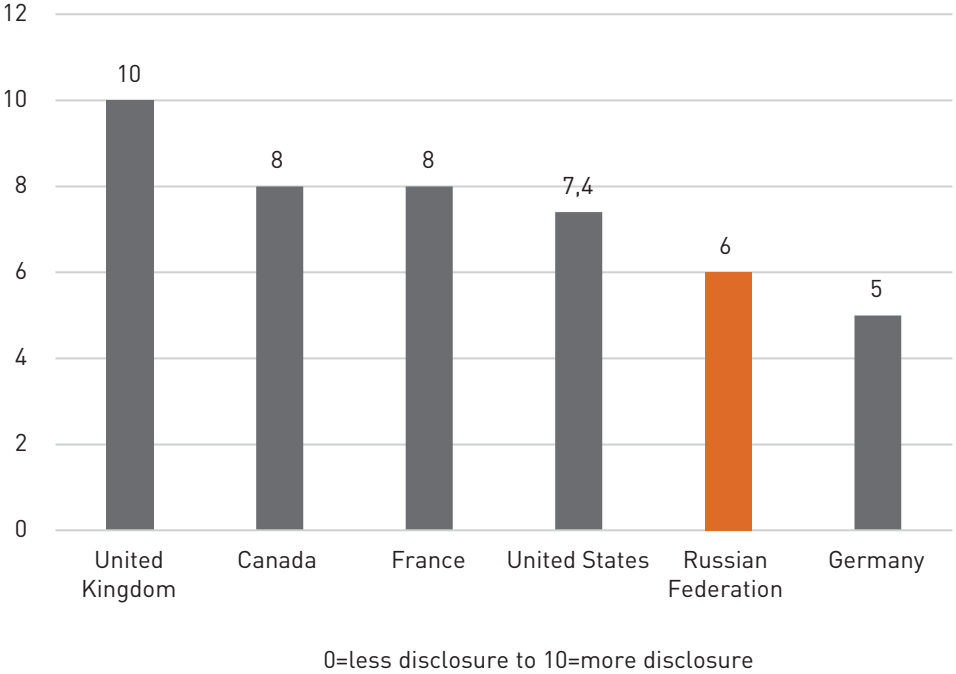
In the current paper, we seek to examine how a company's information openness, equivalent to extensive news coverage, contributes to investment inflows. We hypothesize that the effect of corporate news differs by structural breakdown for companies from different industries.

We conduct our research on the basis of specific company data rather than market indices due to several factors. First, an index cannot have corporate news, and it is exceedingly challenging to distinguish the impact of specific companies' news on the index's dynamics due to its composite structure. An index is significantly influenced by market news spanning specific industries or economies. News from a single company, even one with significant weight within an index, is not capable of dramatically affecting the entire index. Second, our methodology implies the introduction of a dummy variable for each specific company according to the days of press releases based on the analysis of informational publications of several types including financial, changes in the capital structure, changes in the management structure, dividend policy.

The current study is particularly relevant for publicly listed companies. Awareness of the impact of disclosure on market dynamics allows a company to engage in shaping investors' opinions and valuations, which in turn affect investments. A business's information transparency, tantamount to a great deal of news, facilitates investment inflow. Many companies utilize corporate and social media for this purpose. The abuse of this means is called greenwashing and can be illustrated by the well-known examples of Enron and British Petroleum, which we examine in more detail in the literature review.

Our motivation lies in the fact that the degree of importance of disclosure to investors depends on the institutional environment in which companies operate. If a high level of mandatory disclosure is legislated, then not much room is left for voluntary disclosure, thus, standing out becomes challenging. In comparison with other developed countries, the degree of disclosure in Russia is moderate, as seen in Figure 1. Generally, Russian companies are only obliged to publish accounting and financial information and statements of significant events [4].

Figure 1. Business extent of disclosure index in 2019



Source: World Bank Data [6].

Meanwhile, Krueger et al. [5] identified 29 countries that have introduced mandates for firms to disclose Environment Social Governance (ESG) information, including Australia (2003), China (2008), South Africa (2010), or the United Kingdom (2013). The authors also highlight that ESG reporting reduces the risk of negative ESG incidents and stock price crashes. Thus, we assume that Russian companies can benefit from ESG disclosure as it contains beneficial information for investors and demonstrates real effects. If a country's disclosure is poorly developed, the companies that follow best practices stand out significantly and attract the attention of investors. If there is a high level of disclosure in a country, investors are unwilling to pay a high premium for additional information. In Russia, the degree of disclosure is not high, so our research is particularly relevant in the context of Russian companies' data.

The contribution of the paper to the research literature corpus entails the fact that research on the topic is typically based on cases of companies involved in corporate scandals. In contrast, we would like to analyze the effect of daily, non-scandalous news. Furthermore, the topic is especially relevant for analysis in the Russian Federation since most of the available literature reviews European and US companies.

Literature review

Corporate news is an important channel of communication between a company and its investors. Released news can influence investor behavior, which will lead to a change in a company's financial performance.

According to efficient market hypothesis [7], prices on an efficient market provide accurate signals and fully reflect all available information. Therefore, stock prices will react to the information released in corporate news.

Researchers in their study [8; 9] revealed that the release of corporate news has an influence on stock closing prices. Another indicator that shows changes in investor behavior related to corporate news releases is abnormal returns [2; 10; 11]. An abnormal return describes the unusually large profits or losses generated by investment over a specified period. In several research papers [12; 13] stock price crash risk is used as an investor behavior proxy.

Corporate news can be used as tools to distort the real condition of a company. In April 2010, the largest oil spill occurred in the Gulf of Mexico after an explosion on the Deepwater Horizon oil drilling platform. The explosion occurred because of neglected safety issues and management failures of British Petroleum, despite the fact that the company was constantly undergoing inspections and published news that the company operations comply with safety standards. The company's financial condition worsened because of this incident, however, due to properly structured communication with the society during the crisis, it managed to cope with difficulties [14].

Sometimes distortion can lead to irreparable consequences. For example, Enron has hidden its large debts from the public and investors for several years using market value accounting and chain of special-purpose entities (parties) [15]. These methods allowed Enron to represent its transactions and investments as successful despite the fact that many of them were unprofitable. Disclosure of this deception led to a drop in Enron's share price, and to Enron's inability to pay its debts. On December 2, 2001, Enron filed for bankruptcy.

In order to determine whether news has an impact on a company's financial performance, we first need to define the contents of corporate news. Antweiler and Frank [2] collected the news from the Wall Street Journal and divided the news into 7 groups. Authors found that news about corporate governance (electing new CEO and etc.), earning reports, financial issues (dividend payments and etc.), operational issues (new contracts and products) have influence on Average Standardized Cumulative Abnormal Returns (ASCARs) in a 5-day window (2 days before and 2 days after the publication). Similarly, Strycharz, Strauss and Trilling [9] note that news about stock market, products, social activities, and business influence stock price fluctuations within a 17-day period.

Carretta et al. [16] used Italy's major financial newspaper as a source of news. Author document that news about corporate governance, corporate financial situation and their joint interaction have an impact on stock returns. The effect depends on the company's profitability at the time of the news publication, the content of the news (positive or negative) and the tone of the news (weak or strong).

Influence on financial performance of corporate news about environment were confirmed by the following studies [13; 17]. Flammer [18] found that negative stock market reaction to eco-harmful behavior has increased over time, while the positive reaction to eco-friendly initiatives has decreased.

Nam and Seong [19] found that corporate news about a firm in a particular industry will affect the stock price of not only that firm but also other firms in that industry. However, they did not find any difference in the effect of corporate news on firms from different industries.

Strycharz, Strauss and Trilling [9] analyzed 3 different Dutch companies from 3 different sectors: financial sector, technological sector, energy sector. The results show that the impact of news on companies in the technology and energy industry is stronger and more resilient than on those in the financial sector.

Methodology

We apply the index method to construct a corporate news index. It includes several types of news: financial, changes in capital structure, changes in management structure, dividend policy. We have chosen the index approach after considering papers that attempt to assess the effect of corporate news on the stock market returns. Carretta et al. [16] defined the category of news, and analyses the impact of the news, determining an index value between –1 and 1. Similarly, Capelle-Blancard and Petit [20] conduct an empirical analysis of the ESG news index that consists of over

30 000 news. Besides, Carlini et al. [21] consider different news characteristics: tone, media coverage and degree of certainty.

Given the high frequency of initial data and necessity of analysing the response to certain effects, we employ the Vector Autoregressive Approach. The rationale for focusing on this methodology is that the VAR model is one of the most advanced and responsive models for multi-dimensional time series analysis. The approach is particularly suitable for describing the dynamic behavior of financial time series. The model is described as follows:

$$\begin{pmatrix} y_t \\ x_t \end{pmatrix} = \begin{pmatrix} a_{11}\, a_{12} \\ a_{21}\, a_{22} \end{pmatrix} \begin{pmatrix} y_{t-1} \\ x_{t-1} \end{pmatrix} + \begin{pmatrix} \in_{y,t} \\ \in_{x,t} \end{pmatrix}, \qquad (1)$$

where $\in_{y,t}$ and $\in_{x,t}$ are two white-noise variables (correlated or uncorrelated). Depending on the presence of data cointegration, the VAR model can be superseded by the VECM model. An empirical study revealed the presence of data cointegration, hence this study is completely based on the Vector Error Correction Model.

To assess the impact of corporate news, we apply the following steps: First, we construct a corporate news index for each company under study based on published financial reports and press releases. Second, we estimate the impact of this indicator on the stock price by applying a k-dimensional Vector Error Correction Model (VECM). The VAR(p) process can be described as:

$$\nabla X_t = \Pi_{[k\times k]} \mathrm{X}_{t-1} + \Gamma_1 \nabla \mathrm{X}_{t-1} + \ldots$$
$$+\Gamma_{p-1} \nabla X_{t-p+1} + \varepsilon_t, \qquad (2)$$

where $\Pi_{[k\times k]}\mathrm{X}_{t-1}$ indicates an error correction term, $\Pi_{[k\times k]}$ stands for long run relationships, $Rank\left(\Pi_{[k\times k]}\right)$ represents number of cointegration.

If there are r co-integration vectors, $\Pi_{[k\times k]}$ can be expressed as:

$$\Pi_{[k\times k]} = \alpha_{[k\times r]} \beta'_{[r\times k]}, \qquad (3)$$

where α stands for the speed of adjustment parameters that are interpreted as the weight of each co-integration vector in a given equation and β stands for the long-run relationship coefficient.

Data

In our research of the corporate news' impact on stock prices we use several companies from different industries. We suppose that this effect can be extrapolated to different industries for the largest players.

- Oil and gas industry: Gazprom;
- Information Technology: Yandex;
- Financial sector: Tinkoff Bank.

Gazprom, Yandex, Tinkoff have the biggest shares in their respective industries in the Russian Federation. According to the statistical aggregator of search engine usage data Radar.Yandex [22], Yandex's share in this market averaged 60% in 2021. Gazprom is the world leader in natural gas production; it accounts for 12% of global and 68% of Russian gas production [23], which undoubtedly indicates its leading position both in Russia and abroad. Tinkoff Bank is the third largest bank in Russia in terms of the number of active clients [24]. Moreover, in 2021 Central Bank of Russia adds Tinkoff Bank to the list of systemically important credit institutions in Russia.

There are several reasons why we do not use Sberbank as an example from the financial sector. First, Sberbank has a developed ecosystem that includes various companies – from a marketplace to a logistics firm [25]. Second, the large number of products integrated under a single brand affect the frequency of a company's news releases. Daily news publication prevents the identification of the most significant ones and complicates the assessment of their effect on stock [26].

These companies are present in most of the largest stock indices in Russia. For example, the shares of these companies are included in the Moscow Exchange Blue Chip Index. The index is calculated on the basis of transaction prices and quotations of the 15 most liquid shares on the Russian stock market [27]. Moreover, the stocks of Tinkoff, Gazprom and Yandex are also incorporated in the RTS Index. It is a price-weighted, market capitalization-weighted composite index of the Russian stock market, including the most liquid shares of the largest Russian issuers from the main sectors of the economy, which are represented on the Moscow Exchange [28].

These companies can be compared by different multipliers. The first one is the EBITDA margin. This common financial indicator measures the profitability of a business, assesses an organization's ability to meet its obligations, and is used by financial analysts to determine the value of a business. Table 1 presents a comparison of EBITDA margins of Tinkoff, Gazprom and Yandex.

Table 1. Tinkoff, Gazprom, Yandex: EBITDA margin, 2019–2020 (%)

Company	2019	2020
Tinkoff	39.25	38.11
Ydex	27.36	29.56
Gazprom	30.58	14.74

The companies' EBITDA margin levels are positive and are on an approximately the same level. In 2020, Gazprom demonstrated a 2-fold drop of this indicator. This can be explained by a short-term shock caused by the oil crisis [29].

The next indicator that was used for comparison is Return On Assets (ROA). It is a financial coefficient that characterizes the return on the use of all assets of the organization, and the efficiency of property use. It shows how much net profit per monetary unit is generated by each unit of

assets available to the company. The higher the ROA ratio, the more efficient the company is in generating profits with its assets. This means that the company generates more income with less investments. Table 2 presents a comparison of this multiplier.

Table 2. Tinkoff, Gazprom, Yandex: ROA, 2019–2020 (%)

Company	2019	2020
Tinkoff	6.23	5.14
Yandex	4.41	4.93
Gazprom	5.50	0.58

Source: Finrange [30].

Again, the value of this indicator for the companies is positive and is approximately at the same level. Its average values range from 4 to 6%. However, we can again observe a strong change in the ROA of Gazprom, which may be caused by the shock year for oil companies in 2020.

The book value of a company's stock is the total assets of a company minus its liabilities. Thus, book value per share is the stake of the owner of one share in the net company assets. Table 3 contains the values of this indicator for the companies in question.

Table 3. Tinkoff, Gazprom, Yandex: book value per share, 2019–2020 (%)

Company	2019	2020
Tinkoff	482.08	637.29
Yandex	600.15	965.23
Gazprom	618.13	626.13

The average values are in the same range. This indicates an approximately equal ratio of net assets per share across companies. Moreoverover the period under review, the values of the indicators increased significantly, with the exception of Gazprom, which was more severely affected by the oil crisis in 2020.

Finally, these companies have their own press centers that publish major corporate news. The sites of the press centers have archives, as well as a filter by type of publication, which allows to conveniently search and segment corporate news. The following types of corporate news were selected for analysis:

- Financial reports. Official publication of financial results for the quarters and for the year.
- Mergers and acquisitions. Corporate news related to the acquisition and sale of company assets.
- Appointment of new persons. Appointments of persons to the board of directors, top management of the company or its major divisions.
- Dividend policy. Corporate news related to dividend policy announcements.

The first three types of news can be found in the archives of the Tinkoff, Yandex, and Gazprom press centers. The last type, related to dividend policy, is relevant only for Tinkoff and Gazprom, since Yandex does not pay dividends. However, we also include this type of news in our research data due to its direct impact on investor expectations, since dividend policy affects share profitability.

The sample includes daily data for 6 years (1 January 2015 – 31 October of 2021, total number of observations – 1673). The rationale for this is the absence of long-lasting crises during this period. We consider the dynamics of the RTS index for the specified period in Figure 2.

Figure 2. RTS index January 2015 – October 2021

Source: Finam [31].

The figure demonstrates that the RTS index overcame the market decline caused by the first wave of the coronavirus infection that started in February 2020. It was one of the biggest stock market declines, and was recovered in less than a year [32]. In contrast, the global stock market has been recovering from the aftermath of the 2008 crisis for six years. The highlighted time interval is characterized by more stable dynamics of the stock market. Also, during these years, the use of corporate news in the analyzed companies became more common.

Table 4 represents the description of all the variables used.

We find that corporate news has an extended effect on companies' stock price, as was revealed by Antweiler and Frank [2]. Authors highlight that publication of corporate news leads to abnormal returns in a 5-day window (2 days before and 2 days after the publication).

Results and discussion

To determine the order of integration for each time series, we employ the Dickey-Fuller test (Table 5). The null hypothesis of this test is the presence of a unit root, in other words, non-stationarity of the series.

Table 4. Description of variables

Name	Description	Source
price_g	Gazprom stock price (GAZP)	Yahoo! Finance [33]
price_t	Tinkoff stock price (TCSG)	Yahoo! Finance [33]
price_y	Yandex stock price (YNDX)	Yahoo! Finance [33]
dummy_g	The publication of a certain type of corporate news by Gazprom's press-center, where 0 is absence of news, 1 is presence of news	Press Center of Gazprom [34]
dummy_t	The publication of a certain type of corporate news by Tinkoff's press-center, where 0 is absence of news, 1 is presence of news	Press Center of Tinkoff [35]
dummy_y	The publication of a certain type of corporate news by Yandex's press-center, where 0 is absence of news, 1 is presence of news	Press Center of Yandex [36]

Table 5. Results of Dickey-Fuller test

	Intercept with trend		Output
Variable name	Level	First difference	
Dummy Gazprom	2.55	–21.66***	I = 1
Price Gazprom	0.87	–37.03***	I = 1
Dummy Yandex	3.23	–18.14***	I = 1
Price Yandex	0.79	–41.49***	I = 1
Dummy Tinkoff	2.89	–21.61***	I = 1
Price Tinkoff	3.62	–29.82***	I = 1

Table 6. Optimal number of lags

	Gazprom		Yandex		Tinkoff	
Lag	AIC	SC	AIC	SC	AIC	SC
0	11.69	11.69	17.99	17.99	9.80	9.81
1	5.84	5.86	11.39	11.41	3.04	3.06
2	5.82*	5.85*	11.37	11.40*	3.02	3.05*
3	5.82	5.86	11.38	11.42	3.01	3.05
4	5.82	5.88	11.37	11.43	3.01	3.07
5	5.82	5.89	11.37*	11.44	3.01	3.08
6	5.83	5.91	11.37	11.45	3.01	3.09
7	5.83	5.93	11.37	11.47	3.01	3.11
8	5.83	5.94	11.37	11.48	3.00*	3.11

We tested stocks of companies with trend inclusion, as all variables are trend assets. The order of integration of all variables is one, which confirms the application of Vector Autoregression as the primary modelling method. The rationale for this is the requirement for the same order of variable integration.

In the current research we tested 3 models: the impact of the relevant corporate news on Gazprom, Yandex and Tinkoff shares. Consequently, we consider a pair of indicators for each company: stock price and corporate news index. Furthermore, we measure the degree to which company stocks depend on one another in the short term (Granger test).

Given the sensitivity of VAR and VECM approaches to the number of lags, we applied the Lag Length criteria test. Based on the Likelihood ratio (LR), Final Prediction Error (FPE), Hannan-Quinn Criterion (HQ), Akaike's Information Criterion (AIC), Schwarz Criterion (SC) we define the optimal number of lags for each model (Table 6).

The basic information criteria are Akaike's Information Criterion (AIC), Schwarz Criterion (SC) (presented in Table 6), but the decision to select a criterion was based on the majority of criteria. Consequently, for Gazprom and Yandex we chose the 2nd lag order, while for Tinkoff bank we applied the 8th lag.

The Johansen cointegration test defines the presence of long-term relationships between the variables. Results of the test are presented in Table 7.

Table 7. Results of Johansen cointegration test

Gazprom				Yandex		Tinkoff	
Data trend	Test type	Trace	Max-Eig	Trace	Max-Eig	Trace	Max-Eig
None	No intercept, no trend	1	1	2	2	2	2
None	Intercept, no trend	1	1	1	1	2	2
Linear	Intercept, no trend	1	1	1	1	2	2
Linear	Intercept, trend	1	1	1	1	2	2
Quadratic	Intercept, trend	1	1	1	1	1	1

Table 8. Results of cointegration

Variable	Coefficient of corporate news	Standard errors	t-statistics	Critical value of t-statistics on 1% level	Output
Gazprom	–5969.93	152.63	–39.28	2.58	Significant at 1% level
Yandex	–34619.60	1865.73	–18.56	2.58	Significant at 1% level
Tinkoff	–5499.94	401.846	–13.6867	2.58	Significant at 1% level

Test results indicate the presence of pairwise cointegration if values of Trace and Maximum Eigenvalue statistics coincide. We observe the presence of cointegration in each company surveyed, which implies a long-run relationship between the corporate news index and stock price. Consequently, we apply the Vector Error Correction model for further analysis. For each autoregressive equation we include an intersection and a linear trend (option 4). Surprisingly, Tinkoff has two long-run relationships, which suggests the existence of both reporting effects on the company's stock performance and vice versa. Since positive press releases about the bank's updates and developments are promoting growth of company stock, the company is working increasingly more intensively on its media presence.

Table 9. Results of Granger causality test

Model 1			Model 2				
Dependent variable	Probability value Corporate news does not affect company`s stock price	Interpretation (short run)	Dependent variable	Independent variable Gazprom	Yandex	Tinkoff	Interpretation (short run)
Gazprom	0.1237	Absence of short-run effect	Gazprom	–	0.0222	0.8444	Gazprom => Yandex
Yandex	0.6554	Absence of short-run effect	Yandex	0.9410	–	0.0296	Yandex => Tinkoff
Tinkoff	0.7363	Absence of short-run effect	Tinkoff	0.0079	0.3992	–	Tinkoff => Gazprom

The cointegration equation quantifies the impact of the corporate news index on the stock price and the significance of this impact. Table 8 represents simulation results.

The coefficient estimate derived in the cointegration equation is not a direct reflection of the obtained effect. As a consequence, at this stage we can only determine the significance of the effect of corporate news on companies' stock prices. The results confirm the existence of the effect of report and corporate news in the long run, but the impact of these findings can be determined further by using the impulse response function.

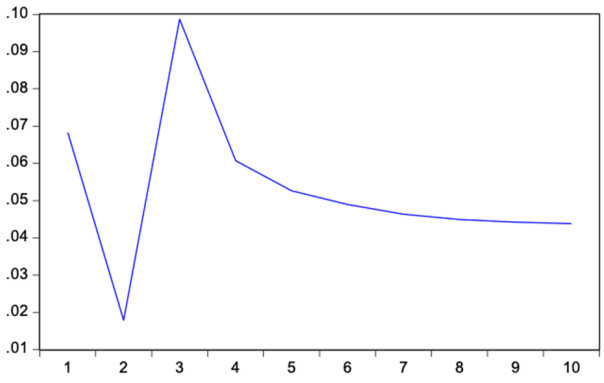
We employ the Granger causality test to determine the short-term effect. The results of the test are presented in Table 9.

The three models demonstrate the lack of effect of corporate news in the short run. As part of the analysis, we test for short-run causality between company stocks. The results of the tests show a vicious circle of causality. Gazprom shares the influence of Yandex shares, while Yandex shares influence Tinkoff-Bank shares. The rationale for this is the formation of a spill-over effect in the Russian stock market. The energy sector reacts first to external shocks, followed by the high-tech sector, which affects the energy sector unilaterally. The empirical evidence is in line with the study by Yin et al. [37], who documented the spill-over effects between commodity and industrial sectors that extend to the IT and financial sectors.

This sample does not include major macroeconomic shocks (with the exception of the 2020 pandemic, after which equities recovered fairly quickly), implying that the relationship in the short-term during crisis years may differ.

We apply the Impulse Response Function to depict the effect of corporate news index on the stock price (Figure 3).

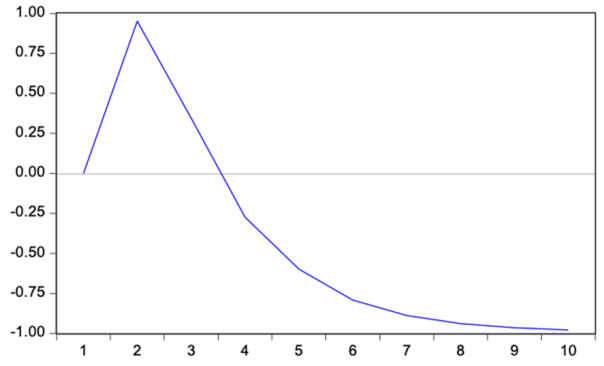
Figure 3. Response of Gazprom stock price to information disclosure



Gazprom's response following the release of news and reports is positive, implying a positive investor reaction to company performance. Meanwhile, the most significant effect (around 0.1) is achieved only after a few days, indicating asymmetry of information in the stock market, as well as a consistent rise due to the corporate news.

Figure 4 reveals the effect of corporate news on Yandex shares.

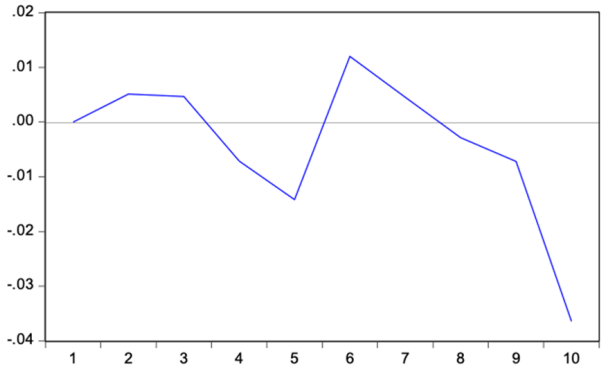
Figure 4. Response of Yandex stock price to information disclosure



Compared to energy sector stocks, high-tech assets are more volatile. As a consequence, the effect of corporate news is higher in absolute values and much more quickly processed by the market. As early as the fourth day, the effect loses significance as it crosses the zero mark. The rationale for this is the higher volatility of high-tech shares in comparison with oil and gas.

Figure 5 captures the impact of corporate news on Tinkoff shares.

Figure 5. Response of Tinkoff stock price to information disclosure



The results indicate a mixed performance of financial sector stocks. The effect is also diminished after the fourth day of observations and the absolute values are low, which may be due to the frequency of press releases and financial reports (more for the banking system); as a result, the effect of a single news or report is quite low.

Robustness check

The model robustness investigation includes two main tests – for heteroscedasticity and autocorrelation. A comparison table of the resulting models is provided at the end of the subsection. Table 10 shows the results of the LM autocorrelation test.

Table 10. Results of LM autocorrelation test

	Gazprom		Yandex		Tinkoff	
Lags	LM-Stat	Prob	LM-Stat	Prob	LM-Stat	Prob
1	4.36	0.36	21.32	0.00	2.22	0.69
2	2.64	0.62	26.49	0.00	8.36	0.08
3	1.34	0.85	23.88	0.00	11.23	0.02
4	5.27	0.26	13.47	0.01	6.30	0.18
5	3.78	0.44	9.48	0.05	2.89	0.58
6	2.50	0.65	8.26	0.08	6.51	0.16
7	0.53	0.97	2.02	0.73	3.56	0.47
8	4.72	0.32	6.12	0.19	18.78	0.00
9	1.33	0.86	6.38	0.17	11.68	0.02
10	9.97	0.04	6.22	0.18	8.59	0.07
11	2.42	0.66	17.27	0.00	10.91	0.03
12	4.13	0.39	8.60	0.07	6.55	0.16

The null hypothesis of the test is the absence of autocorrelation. If first-order autocorrelation is detected, the rest of the results, regardless of values, will also have correlated errors. We observe no autocorrelation for Gazprom and Tinkoff Bank stocks, while Yandex errors are correlated. This implies that we obtain more stable and predictable results in Tinkoff and Gazprom in comparison with Yandex.

We use the White test to test heteroscedasticity. The results of the test are presented in Table 11.

Table 11. Results of White test

Gazprom			Yandex			Tinkoff		
Chi-sq	df	Prob	Chi-sq	df	Prob	Chi-sq	df	Prob
214.06	81	0.00	280.75	60	0.00	1760.57	567	0.00

The null hypothesis of the test is homoscedasticity, or variance constancy. In all three cases, the null hypothesis is rejected, implying that there is a heteroscedasticity problem in the simulation.

The summary table allows for a comparison of models in a general format (Table 12).

Table 12. Summary of results

Comparison criterion	Gazprom Conclusion	Yandex Conclusion	Tinkoff Conclusion
Lag length criteria	2nd lag	2nd lag	2nd lag
Cointegration	Presence of 1 cointegrating vectors	Presence of 1 cointegrating vectors	Presence of 2 cointegrating vectors
Type of model	VECM	VECM	VECM
Heteroskedasticity	Heteroskedasticity is confirmed	Heteroskedasticity is confirmed	Heteroskedasticity is confirmed
Autocorrelation	Autocorrelation is not confirmed	Autocorrelation is confirmed	Autocorrelation is not confirmed
Impulse response function results	Significant for 10 days, positive effect	Significant for 3 days, positive effect	Significant for 3 days, weak mixed effect

The table reflects the robustness of the research results and the existence of differences in the effect of corporate news by sector: the lowest and mixed response is from the financial sector, while the response from the energy sector is positive and meaningful over a 10-day period. In addition, financial sector companies show the largest positive response, the reason for this is the significant response and liquidity of this blue chip.

Conclusion

This paper assesses the impact of corporate news on shares of selected companies in the financial, energy and high-tech sectors. The authors have developed a special index of corporate news that provides an accurate estimate of the effects. The index includes four types of corporate news, including financial news, mergers and acquisitions, changes in management structure, and dividend policy. Consequently, the index provides comprehensive information on selected companies. We apply a vector error-correction model to estimate the effects in the long-run and a Granger causality test in the short-run. To obtain quantitative estimates, we constructed impulse response functions.

The models show that corporate news and corporate equities are related in the long run. In the short run, we find no evidence of such a relationship. However, we do observe evidence of a vicious cycle of influence among stocks. Corporate news has a strong and positive effect on stocks in the high-tech and energy sectors, while the financial sector reacts to corporate news in a mixed manner, and the effect is weak.

Based on our results, we provide practical recommendations for individual and institutional investors. First, the presence of a positive correlation between energy and high-tech stocks in the long term enables automatic trading strategies to be customized to these stocks, considering the degree of asset volatility. Second, we shed light on the interaction of the stocks in these sectors in the short term. Based on the Granger test and the impulse response function, we argue that the energy sector is the first to receive external macroeconomic shocks, and then transmits them to the high-tech sector, which forwards this effect to the financial sector.

We believe that in the new Russian stock market environment affected by complex sanctions, the results related to the impact of news about external shocks on the stock prices in various sectors of the economy are significant. In addition, the limited opportunities to attract investors to Russian companies create a demand for assessing the role of corporate news. We consider implementation of advanced methods of analysis, e.g., text mining, and expansion of the number of sectors a promising research area for future research.

References

1. Huang A.G., Tan H., Wermers R. Institutional trading around corporate news: Evidence from textual analysis. *The Review of Financial Studies*. 2020;33(10):4627-4675. https://doi.org/10.1093/rfs/hhz136
2. Antweiler W., Frank M.Z. Do US stock markets typically overreact to corporate news stories? *SSRN Electronic Journal*. 2006. https://doi.org/10.2139/ssrn.878091
3. John K., Lang L.H.P. Insider trading around dividend announcements: Theory and evidence. *The Journal of Finance*. 1991;46(4):1361-1389. https://doi.org/10.1111/j.1540-6261.1991.tb04621.x

4. Article 30 of Federal Law N 39-FZ dated 22.04.1996 "On securities market" (as revised on 02.07.2021). URL: http://www.consultant.ru/document/cons_doc_LAW_10148/1fd8c5ab4657f13029545cd542dd3d01adc9ad51/ (accessed on 11.04.2022). (In Russ.).
5. Krueger P., Sautner Z., Tang D.Y., Zhong R The effects of mandatory ESG disclosure around the world. ECGI Finance Working Paper. 2021;(754). URL: https://ecgi.global/sites/default/files/working_papers/documents/kreugersautnertangzhongfinal.pdf
6. Business extent of disclosure index. The World Bank. URL: https://data.worldbank.org/indicator/IC.BUS.DISC.XQ?end=2019&start=2019 (accessed on 11.04.2022).
7. Fama E.F. Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*. 1970;25(2):383-417. https://doi.org/10.2307/2325486
8. Patell J.M., Wolfson M.A. Good news, bad news, and the intraday timing of corporate disclosures. *The Accounting Review*. 1982;57(3):509-527.
9. Strycharz J., Strauss N., Trilling D. The role of media coverage in explaining stock market fluctuations: Insights for strategic financial communication. *International Journal of Strategic Communication*. 2018;12(1):67-85. https://doi.org/10.1080/1553118X.2017.1378220
10. Carberry E.J., Engelen P.-J.,Van Essen M. Which firms get punished for unethical behavior? Explaining variation in stock market reactions to corporate misconduct. *Business Ethics Quarterly*. 2018;28(2):119-151. https://doi.org/10.1017/beq.2017.46
11. Blaufus K., Möhlmann A., Schwäbe A.N. Stock price reactions to news about corporate tax avoidance and evasion. *Journal of Economic Psychology*. 2019;72:278-292. https://doi.org/10.1016/j.joep.2019.04.007
12. Kim Y., Li H., Li S. Corporate social responsibility and stock price crash risk. *Journal of Banking & Finance*. 2014;43:1-13. https://doi.org/10.1016/j.jbankfin.2014.02.013.
13. Feng J., Goodell J.W., Shen D. ESG rating and stock price crash risk: Evidence from China. *Finance Research Letters*. 2022;46(Pt.B):102476. https://doi.org/10.1016/j.frl.2021.102476.
14. Valvi A.C., Fragkos K.C. Crisis communication strategies: A case of British Petroleum. *Industrial and Commercial Training*. 2013;45(7):383-391. https://doi.org/10.1108/ICT-04-2013-0026
15. Gillan S.L., Martin J.D. Financial engineering, corporate governance, and the collapse of Enron. *SSRN Electronic Journal*. 2002. https://doi.org/10.2139/ssrn.354040.
16. Carretta A., Farina V., Martelli D., Fiordelisi F., Schwizer P. The impact of corporate governance press news on stock market returns. *European Financial Management*. 2011;17(1):100-119. https://doi.org/10.1111/j.1468-036X.2010.00548.x
17. Taleb W., le Guenedal T., Lepetit F. et al. Corporate ESG news and the stock market. *SSRN Electronic Journal*. 2020. https://doi.org/10.2139/ssrn.3723799.
18. Flammer C. Corporate social resposibility and shareholder reaction: The enviromental awareness of investors. *The Academy of Management Journal*. 2013;56(3):758-781. https://doi.org/10.5465/amj.2011.0744x
19. Nam K.H., Seong N.Y. Financial news-based stock movement prediction using causality analysis of influence in the Korean stock market. *Decision Support Systems*. 2019;117:100-112. https://doi.org/10.1016/j.dss.2018.11.004.
20. Capelle-Blancard G., Petit A. Every little helps? ESG news and stock market reaction. *Journal of Business Ethics*. 2019;157(2):543-565. https://doi.org/10.1007/s10551-017-3667-3
21. Carlini F., Cucinelli D., Previtali D., Soana M.G. Don't talk too bad! Stock market reactions to bank corporate governance news. *Journal of Banking & Finance*. 2020;121:105962. https://doi.org/10.1016/j.jbankfin.2020.105962
22. Radar. Yandex. URL: https://radar.yandex.ru/search?period=2020-12-01%3A2021-03-31 (accessed on 11.04.2022). (In Russ.).
23. Official website of Gazprom. URL: https://www.gazprom.ru/about/ (accessed on 11.04.2022). (In Russ.).
24. Official website of Tinkoff. URL: https://www.tinkoff.ru/about/ (accessed on 11.04.2022). (In Russ.).
25. "Sber" announced ecosystem reform. RBC. Feb. 15, 2022. URL: https://www.rbc.ru/finances/15/02/2022/620ba0019a79477dc26cdd0a (accessed on 11.04.2022). (In Russ.).
26. Press Center of Sberbank. URL: https://www.sberbank.ru/ru/press_center (accessed on 11.04.2022). (In Russ.).
27. Index stock quotes MOEX Blue Chip. Investing.com. URL: https://ru.investing.com/indices/rts-standard-components (accessed on 11.04.2022). (In Russ.).
28. Stock prices of the IRTS. Investing.com. URL: https://ru.investing.com/indices/rtsi-components (accessed on 11.04.2022). (In Russ.).
29. Unprecedented oil crisis: What the price war between Saudi Arabia and Russia resulted in. Forbes. Apr. 18, 2020. URL: https://www.forbes.ru/biznes/398433-

nebyvalyy-neftyanoy-krizis-k-chemu-privela-cenovaya-voyna-saudovskoy-aravii-i-rossii (accessed on 11.04.2022). (In Russ.).

30. Finrange official website. URL: https://finrange.com (accessed on 11.04.2022).
31. FINAM official website. URL: https://www.finam.ru (accessed on 11.04.2022). (In Russ.).
32. The 10 biggest crashes in the history of stock exchanges. FINAM. Aug. 20, 2021. URL: https://www.finam.ru/analysis/newsitem/10-krupneiyshix-kraxov-v-istorii-fondovyx-birzh-20210820-13064/ (accessed on 11.04.2022). (In Russ.).
33. Yahoo! Finance. URL: https://finance.yahoo.com (accessed on 11.04.2022).
34. Press Center of Gazprom. URL: https://mrg.gazprom.ru/press/ (accessed on 11.04.2022). (In Russ.).
35. Press Center of Tinkoff. URL: https://www.tinkoff.ru/about/news/ (accessed on 11.04.2022). (In Russ.).
36. Press Center of Yandex. URL: https://yandex.ru/company/press_releases/2022 (accessed on 11.04.2022). (In Russ.).
37. Yin K., Liu Z., Jin X. Interindustry volatility spillover effects in China's stock market. *Physica A: Statistical Mechanics and its Applications*. 2020;539:122936. https://doi.org/10.1016/j.physa.2019.122936

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