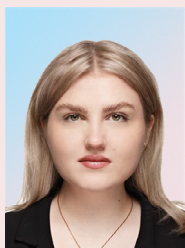# PUBLIC FINANCE

## The Impact of Political News about Russia on the Prices of Russian Companies' Shares: Comparative Analysis of Russian and Foreign Media

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**Abstract.** The dynamics of the financial market depends on the expectations of investors, which are largely determined by economic and political events. To form investment strategies, it is important to understand which events described in the news may affect changes in the value of assets. The purpose of this work is to identify the topics of political news that affect the profitability of shares of Russian companies, and to compare the predictive power of news from Russian and foreign sources. This study investigates the relationship between political news about Russia, obtained from domestic ("Interfax") and foreign ("New York Times") sources, and the stock returns of 193 Russian companies over the period from September 1, 2021 to August 31, 2023. There were 30 political dictionaries from each source identified using the Latent Dirichlet Allocation model, and the differences in the highlighted political themes were noted. Time-series models were used to test hypotheses about the impact of political news on the stock prices of Russian companies. The study demonstrates that the Russian stock market's dynamics are impacted by news from various sources. Specifically, political dictionaries derived from foreign sources enhance the return predictions for the stocks of 142 Russian companies, whereas those from domestic sources improve the forecasts for 146 ones. Nevertheless, models incorporating political news from domestic sources yield higher-quality return forecasts. Additionally, using the Random Forest algorithm, it is demonstrated that the domestic media's interpretation of events, which are covered in both Russian and foreign news, exerts a more substantial influence on the domestic stock market. Furthermore, models that integrate political dictionaries from both sources exhibit superior quality compared to those that rely on news from a single source. Based on the results obtained, it is demonstrated that incorporating political news into investment decisions enables investors to construct stock portfolios with higher returns.

**Key words:** political news, Russian stock market, foreign and domestic media, Latent Dirichlet Allocation, comparative analysis.

### Introduction

Investors adjust their expectations regarding assets, taking into consideration news from both domestic and foreign sources. However, the same events can be interpreted differently by journalists from different countries (in particular, unfriendly ones), thus leading to different strategic decisions (Tsygankov, 2017). In this regard, the following question arises: which news – domestic or foreign – should be considered in order to predict the dynamics of the Russian stock market more effectively. Understanding the connection between various information flows and shares of the Russian stock market is important for regulators, analysts and investors during periods of high geopolitical instability.

Studying the impact of political news on the value of assets is particularly relevant in the context of the special military operation and sanctions pressure from Western countries. The aim of our work is to identify the topics of political news that influenced the profitability of Russian companies' shares in the period from 2021 to 2023. Political news about Russia obtained from the Russian news agency Interfax and the American New York Times Magazine are used as sources of text data. In the course of the study, political dictionaries from each source are identified using the Latent Dirichlet Allocation model, and differences in the highlighted political themes are also noted. Time-series models are used to test hypotheses about the impact of political news on the stock prices of Russian companies.

Scientific novelty of the study lies in the fact that in the course of the work we reveal the reaction time

of investors to the publication of political news and show differences in the news that are reported by Russian and foreign sources and have an impact on the Russian stock market. We find out that the quality of forecasting models using foreign news is lower than that of the models taking into account news from domestic media. The results obtained have practical significance and can be used by investors when constructing portfolios in the context of political uncertainty.

**Theoretical overview and formulation of hypotheses**

*Investment decision-making mechanism*

In order to understand the impact of political news on the financial market, let us consider the mechanism of investor decision-making. One approach is the concept of fair value, where the value of an asset is defined as the discounted value of expected cash flows. Political uncertainty affects stock prices via two channels: a change in cash flow expectations and a change in the discount rate (Brogaard et al., 2020). The first channel means that investors are reconsidering expectations about the prospects of companies, and the second is risk aversion. External shocks can increase risk aversion by forcing the disposal of risky assets (Demirer et al., 2022). If political news does not affect these parameters, then they should not change the decisions of rational investors.

Researchers often rely on the efficient market hypothesis, according to which share prices reflect all available information (Friederich, Payne, 2015). Current prices are fair and rationally set, which deprives investors of the opportunity to systematically receive returns above the market price. In addition, the hypothesis assumes the unpredictability of stock prices, since all available information has already been taken into account in current prices and any new information quickly becomes outdated (Lo, 2004). As a result, past returns cannot predict future ones; thus it becomes

unjustified to rebalance one's portfolio frequently. However, empirical evidence suggests that predicting returns based on past values is possible, especially during economic and political crises (Kim et al., 2011).

The adaptive market hypothesis (Lo, 2004) develops the ideas of previous concepts, suggesting that prices reflect both available information and the behavior of different groups of investors (who have different strategies and may deviate from a rational decision-making model). If many investors compete for a limited amount of shares, the efficiency of the market will be high, and vice versa. Cycles can occur in such a market: a high level of profit attracts new investors, which reduces the opportunities for profit, leading to the withdrawal of some groups, after which there is a decrease in efficiency, an increase in profit-making opportunities and the beginning of a new cycle.

The efficient market hypothesis implies that even if there are investors whose behavior deviates from the rational, they will incur losses (and rational investors will benefit from their presence) and disappear from the market (Lo, 2004). At the same time, the adaptive market hypothesis assumes that there can be periods of significant deviations from the rational behavior of investors in the market. Let us look at these deviations in more detail.

Investors often show overconfidence in their ability to predict market dynamics and are slow to revise company valuations even when there are clear signs of errors (Evans, 2006). This leads to the fact that they rely more on their own ideas than on public signals, which contributes to overtrading and increased volatility (Odean, 1998; Grinblatt, Han, 2002). Instead of analyzing the entire available market, they focus on the stocks that have caught their attention, and this leads to buying stocks that have recently shown strong growth or decline and are more often mentioned in the news (Odean, 1999; Barber, Odean, 2001). Researchers also note

that investors can show herding behavior when following the majority without conducting an analysis. This may contribute to price deviations from their fair values, since such price changes are not related to the performance of companies (Sari et al., 2022; Wahyono et al., 2021). Other examples of irrational behavior are increased risk avoidance after losses and regret aversion. For example, investors sell rising stocks to lock in profits, and less often sell falling stocks so as not to recognize a loss and avoid regretting bad decisions (Odean, 1999; Ngoc, 2013). This behavior contradicts diversification principles and leads to suboptimal results.

Investors also differ in their decision-making approaches: some rely on past stock price dynamics, others on non-price information (Ngoc, 2013). Surveys show that the majority of investors (about 70%) rely on fundamental financial indicators presented in company reports (Sari et al., 2022). However, 45% of investors also take into account news and opinions, especially during periods of high volatility. Negative market dynamics cause investors to worry and arouse pessimistic sentiment in them, which can lead to emotional decision-making.

There are various approaches to the formation of an investment portfolio based on objective indicators. The classical Markowitz theory assumes a compromise between profitability and risk in solving the optimization problem: maximizing expected profitability at a given level of risk or minimizing risk at a given yield (Fabozzi et al., 2002). Optimal weights are calculated using the values of expected returns, variance, and covariance of returns (they are usually calculated based on historical returns). The optimization task can be changed by introducing restrictions, for example, bans on short selling. The objective can be replaced by maximizing the Sharpe ratio or a utility function that takes into account risk avoidance (Merkle, Weber, 2014).

The uncertainty resulting from economic and political changes affects the formation of the portfolio as follows: 1) creates uncertainty about future flows and discount rates (Pástor, Veronesi, 2012); 2) affects the correlation between assets (Badshah et al., 2019); 3) increases uncertainty avoidance by investors, pushing them to replace riskier assets with less risky ones (for example, selling shares and purchasing bonds) (Brogaard et al., 2020).

Using the Black − Litterman model when compiling a portfolio, an investor can take into account not only the historical characteristics of returns, but also his/her own ideas about expected returns (and set the degree of confidence in them) (Colasanto et al., 2022). This approach is also used when there is uncertainty related to the government's economic policy (Han, Li, 2023).

***Impact of news on market dynamics***

Thus, financial market dynamics turn out to be sensitive to expectations (Shiller, 2000) formed by news: investors base their decisions on a feeling of fear or desire caused by a certain phenomenon (Kurov, 2008). Emergencies (which include political events) are associated with insufficient information available, and investors are forced to make decisions in a state of uncertainty (Lipsitch et al., 2011). News shapes investors' view of the stock market situation. Investors make decisions based on a wide range of information related to companies' prospects, including information on the quality of management, lawsuits or announcements of new products (Barber, Odean, 2008). If an event attracts the investor's attention, then it can influence their decision, even if the investor does not have a clear understanding of the impact of this event on companies (Barber, Odean, 2001).

Empirical studies confirm the assumptions that news has an impact on the dynamics of stock prices. S.A. Fedorova and co-authors emphasize that models based on news data make it possible to

predict the profitability of shares of the Russian stock market (Fedorova et al., 2022). However, the value of shares is influenced not so much by the amount of news as by their subject matter (Chan et al., 2001). For example, information about corruption in state-owned companies posted on a personal blog had a negative impact on the value of their shares (Enikolopov et al., 2018). News about the coronavirus pandemic has led to the highest volatility in the markets compared to other epidemics (Baek et al., 2020; Goodell, Huynh, 2020).

Researchers pay special attention to the impact of political events on the stock market (Pástor, Veronesi, 2013; Baker et al., 2016; Fedorova et al., 2022). Thus, stock yield is directly related to the political cycle in the country and the results of elections (Snowberg et al., 2007). For example, the index of the American stock market shows a 9.4% higher annual return under Democrats than under Republicans (Santa Clara, Valkanov, 2003). Financial markets are also very sensitive to the country's involvement in conflicts. For example, the value of Russian shares fell due to the outbreak of the conflict between Russia and Georgia (Korhonen, Peresetsky, 2013); and the price of Canadian shares dropped during the growth of separatist sentiments in the French-speaking regions of the country (Beaulieu et al., 2005).

In the context of technological progress and a growing asymmetry of information, news publications in one country may contain information about events in other regions and influence their stock markets. For example, the returns on Asian market stocks are connected with the publication of news in English-language sources (Wuthrich et al., 1998). However, the same events may be covered differently by domestic and foreign media (Tsygankov, 2017). Despite this, foreign news can have an even stronger impact on stock

prices of Russian companies than their domestic counterparts.

Based on the theories described above, we can draw several conclusions. Political news can has an impact on the dynamics of stock prices when rational investors make decisions (changes in expected cash flows and discount rates) and when investors demonstrate various behavioral deviations. At the same time, the presence of behavioral deviations can make the market less effective: then current political news will allow predicting future stock returns; in addition, the more the earlier news turns out to be useful in predicting current returns, the less effective is the market (low speed of taking the available information into consideration).

We put forward the following hypotheses.

**H1a:** Using political news from a domestic source makes it possible to improve the quality of forecasting daily returns on Russian companies' shares.

**H1b:** Using political news from a foreign source makes it possible to improve the quality of forecasting daily returns on Russian companies' shares.

Key political events related to Russia are covered by both domestic and foreign media, and they can present the same event in different ways. The predictive power of news depends on which of the news sources investors rely on when forming expectations.

To test the first hypothesis, we build models with a dependent variable of stock returns for various Russian companies. We assume that the average coefficient of determination is higher for models that take into account past stock returns and political news from a foreign source than for models built using only past returns. If this is true for more than half of the companies, we accept this hypothesis.

**H2:** Models using political news from foreign and domestic sources simultaneously make it possible to better predict the daily returns of Russian companies' shares than models built using news from only one source.

We also assume that a number of events that affect the stock returns of Russian companies may be described in foreign media and not covered in Russian sources, and vice versa. In this regard, we believe that models that take into account news data from two types of sources (both domestic and foreign) allow for a greater increase in the average coefficient of determination than models that take into account news from only one type of source. If the average increase in the adjusted coefficient of determination of models with two types of news sources turns out to be higher than that of models with news from only one source, we accept this hypothesis.

### *Data*

In the course of the work we used financial and textual data.

Quarterly reports for 2021–2023 on the market capitalization of companies were obtained from the website of the Moscow Exchange[1]. They contain lists of companies whose shares were traded on the market during the corresponding quarter. To be included in our sample, a company must have outstanding ordinary shares for at least 100 trading days (September 1, 2021 – August 31, 2023). Thus, the final sample included 193 companies of the Russian stock market. Daily data on the closing prices of the trading day were collected from the website of the financial platform Investing.com[2] for each company for the period from September 1, 2021 to August 31, 2023.

To take into account differences in the news published by Russian and foreign media, we collected news texts from the websites of Interfax and The New

York Times. The search and subsequent downloading were carried out using the keyword "Russia": this word or its cognate was contained either in the headline or in the text of the news. News texts were downloaded from Interfax[3] on a daily basis during the period under consideration directly from the website of the online magazine. Data from The New York Times[4] were downloaded via an API created by the publication itself. The final sample of news from The New York Times included 5,983 items, from Interfax — 49,851 items.

### Methodology

To select political news from Interfax and The New York Times (for each source separately) we first apply the Latent Dirichlet Allocation (LDA) model. According to (Arun et al., 2010; Cao et al., 2009; Deveaud et al., 2014; Griffiths, Steyvers, 2004), the optimal number of dictionaries within the data corpus for news from Interfax is 60, 30 of which we have identified as political. According to the results of assessing each of the four criteria in relation to news from The New York Times, the optimal number of dictionaries was 30; all of them were selected as related to political topics. We assume this is due to the fact that English-language media generally publish only political news about Russia. We consider that political dictionaries include those dictionaries that describe foreign or domestic policy, internal conflicts, sanctions, military actions, elections and voting (Azam et al., 2012; Baker et al., 2016; Robinson, Bangwayo-Skeete, 2017; Fedorova et al., 2022). In addition, we also do not exclude dictionaries that contain news comments from the official media of Russia and Western countries (Khrustova et al., 2020). The selected political dictionaries from Interfax and The New York Times and the words included in them with the greatest weight are presented in the Appendix (Tab. 1P and 2P, respectively).

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[1] Available at: https://www.moex.com/s26
[2] Available at: https://ru.investing.com/about-us/
[3] Available at: https://www.interfax.ru
[4] Available at: https://www.nytimes.com

The daily stock return is used as a dependent variable. Seven stock yield lags are used as regressors describing financial data. Due to the suspension of trading on the Moscow Exchange in the period from February 24 to March 24–28 (depending on the type of shares), seven trading days after its opening were excluded from the analysis in order to correctly account for lagged values of the regressors. The current value and the seven lags of the value of the average share, by which the news items published during the day consist of the selected LDA dictionaries, are used as regressors describing political news. Regressors describing political news were formed as follows. First, for each news item, the proportion by which it consists of selected dictionaries of political topics was identified using the Latent Dirichlet Allocation model (LDA dictionaries). Further, these values were averaged over the days of news publication. Thus, the value of the average proportion by which the news items published during the day consist of the selected LDA dictionaries is used as regressors. We calculate the average proportion for the publications over the weekend before the opening of trading, so that the subsequent analysis would take into account the news that was published over the weekend and that could also affect investors' strategies. The value of this average proportion is used as a lag in the models. Adding more lags (up to 14) did not improve the quality of the models.

To test hypotheses, the Autoregressive Distributed Lag, ARDL is used, the quality of which is assessed at cross-validation. The following algorithm was implemented for each company. At the first stage, regression was evaluated with the help of the LASSO (Least Absolute Shrinkage and Selection Operator) method, which was used to select three sets of the most informative regressors describing political news (LDA dictionaries). The regularization parameter ranged from 0 to 0.1 in increments of 0.0001. At the second stage, the ARDL model was evaluated taking into account seven lags of past stock returns, seven lags and the current value of the average share by which the news items published during the day consist of the most informative LDA dictionaries on cross-validation. At the third stage, the quality of models that take into account only past returns was compared with those that take into account both past returns and news data. To do this, Welch's t-test was used to test the hypothesis of equality of the coefficients of determination of models on cross-validation, taking into account textual data and without them. To test H2, we use Welch's t-test to compare the increments (compared with models without textual data) of the average adjusted coefficients of determination on the cross-validation of the models taking into account news from two types of sources and the models taking into account news from only one type of source.

**Results and discussion**

*Russian source*

To determine the number of companies whose stock returns are associated with the publication of news from the selected 30 political dictionaries from Interfax during the entire period under consideration, ARDL models were built. The modeling includes the current value and the seven lagged values of the proportion by which the news items published during the day consist of selected dictionaries. The daily stock return is used as a dependent variable. The results of ARDL models construction are presented in *Table 1*.

Taking into account political dictionaries from Interfax improves the quality of stock yield forecasts for 146 of the 193 companies reviewed. Thus, **we accept the H1a hypothesis.**

The company's stock returns are linked to all the selected dictionaries (Appendix, Tab. 1P). The market reaction begins in the first three days after the publication of political news. Those dictionaries that influence the largest amount of stock returns (from 30 companies) describe changes in inter-

Table 1. Results of ARDL models construction, taking into account political dictionaries from Interfax

| | $R^2$ increase from 0 to 0.03 | $R^2$ increase from 0.03 to 0.045 | $R^2$ increase from 0.045 to 0.06 | $R^2$ increase from 0.06 to 0.075 | $R^2$ increase from 0.075 to 0.12 |
|---|---|---|---|---|---|
| Number of companies | 1 | 19 | 42 | 50 | 34 |

Note. The average increase in adjusted $R^2$ on cross-validation is indicated. The columns indicate the number of companies for which the quality of models that take into account past returns and news data exceeds the quality of models built only taking into account past returns, according to the results of Welch's t-test (at a 10% significance level). The maximum value of the adjusted $R^2$ increase on cross-validation is 11.2 p.p.
Source: own compilation.

national relations (relations between Russia and China; sanctions imposed by Western countries) and the consequences of military actions (attacks on Crimea; refugees from Ukraine). The dictionary related to the returns of 69 companies describes cases related to refugees from Ukraine (their movement to border areas, financial aid to refugees, rescue of children, citizens' appeals, etc.). The news items of the covered themes have a negative effect on the returns of 67 companies; and the market reacts to the news items mainly on the day of their publication or the day after publication (30 and 15 companies, respectively). The dictionary describing the rapprochement between Russia and China is completely related to the revenues of 46 companies. The market reacts both on the day of publication of relevant news (10 companies) and within a week after publication. The negative reaction of the market to the news about the imposition of sanctions by the West against Russia begins mainly on the day of publication (29 out of 34 companies). At the same time, the market's reaction to the news describing the talks between the countries occurs only 5−6 days after publication. Such a reaction rate indicates the inefficiency of the market.

*Foreign source*

ARDL models were built to determine the number of companies whose stock returns are associated with the publication of news from the selected 30 political dictionaries from the New York Times during the entire period under consideration. The model also includes the current value and seven lagged values of the proportion by which the news items published during the day consist of selected dictionaries. Daily stock return is the dependent variable. The results of ARDL models construction are presented in *Table 2*.

In the course of modeling, we found that taking into account political dictionaries from NYT improves the quality of forecasts of stock returns for 142 of the 193 companies in question. Thus, **we accept the H1b hypothesis**.

Stock returns of 142 companies are associated with all the highlighted dictionaries (Appendix, Table 2P). The market reaction occurs within a week after the publication of news on relevant political topics. The dictionaries that affect the largest number of stock returns (from 30 companies) are related to the implementation of the special military operation and the imposition of sanctions.

Table 2. The results of building ARDL models based on political dictionaries from The New York Times (NYT)

| | $R^2$ increase from 0 to 0.03 | $R^2$ increase from 0.03 to 0.045 | $R^2$ increase from 0.045 to 0.06 | $R^2$ increase from 0.06 to 0.075 | $R^2$ increase from 0.075 to 0.13 |
|---|---|---|---|---|---|
| Number of companies | 3 | 23 | 65 | 37 | 14 |

Note. The average increase in adjusted $R^2$ on cross-validation is indicated. The columns indicate the number of companies for which the quality of models that take into account past returns and news data exceeds the quality of models built only taking into account past returns, according to the results of Welch's t-test (at a 10% significance level). The maximum value of the adjusted $R^2$ increase on cross-validation is 12.9 p.p.
Source: own compilation.

Thus, the dictionary, which describes the actions of the Russian army, affects stock returns of 45 companies, for 34 of which the effect is negative. The Russian market reacts mainly on the day of the appearance of news on the relevant topic (25 companies) and three days after publication (7 companies). The dictionary that describes events on the borders of Ukraine affects 28 companies, with 20 companies stock returns declining on the third day after the news is published. The dictionary describing grain transactions has only a positive effect and is associated with the profitability of 37 companies. The information is not absorbed by the market immediately: it reacts 1—2 days and 4—7 days after the publication of news on the relevant topic. The dictionary that describes Ukraine's army is positively associated with stock returns of 35 Russian companies. The reaction mainly occurs six days after the publication of the news.

We should point out that the value of companies' shares is also influenced by those dictionaries whose topics were not presented in the Russian source. For example, news about Western celebrities supporting Ukraine affects stock returns of 14 companies, and the reaction to the news occurs on average 6—7 days after publication (9 out of 14 companies).

***Comparing the quality of models based on news from different sources***

Taking into account political dictionaries from a foreign source makes it possible to improve the quality of forecasts for 142 of the 193 companies under consideration, and for 146 — from a domestic source. According to the results of Welch's t-test,

we found that the average increase in the coefficient of determination on cross-validation is higher for models that are based on past returns and political dictionaries from Interfax than for models that are based on past returns and political dictionaries from The New York Times (p-value < 0.01). The average increase in the coefficient of determination for models that take into account dictionaries from Interfax and past returns was 6.3 p.p., and 5.5 p.p. for models that take into account dictionaries from The New York Times and past returns. Thus, the quality of models that take into account news from a Russian source is higher than the quality of models which take into account foreign news.

There is reason to believe that in order to obtain more accurate forecasts of stock returns of Russian companies, one should take into account news not only from a Russian source. Thus, to determine the number of companies whose stock returns are associated with the publication of news from selected political dictionaries from two types of sources at once, ARDL models were built (*Tab. 3*).

The model, which takes into account political dictionaries from two types of sources, makes it possible to improve the quality of forecasts for 158 companies, in comparison to the model based only on past returns. The maximum increase in the adjusted coefficient of determination is 14.53 p.p., and the minimum is 4 p.p. Dictionaries that affect the largest number of stock returns of Russian companies (more than 20 companies) are presented in the Appendix (Tab. 3P).

Table 3. The results of constructing ARDL models taking into account political
dictionaries from two types of sources: NYT and Interfax

| | $R^2$ increase from 0.04 to 0.06 | $R^2$ increase from 0.06 to 0.075 | $R^2$ increase from 0.075 to 0.15 |
|---|---|---|---|
| Number of companies | 46 | 50 | 62 |

Note. The average increase in adjusted $R^2$ on cross-validation is indicated. The columns indicate the number of companies for which the quality of models that take into account past returns and news data exceeds the quality of models built only taking into account past returns, according to the results of Welch's t-test (at a 10% significance level). The maximum value of the adjusted $R^2$ increase on cross-validation is 14.53 p.p., minimum – 4 p.p.
Source: own compilation.

Welch's t-tests were conducted to compare the increase in the adjusted coefficient of determination for models that take into account dictionaries from only one type of source (domestic or foreign) with the increase in the adjusted coefficient of determination for models that take into account dictionaries from two types of sources at once. It was found that the increase in the adjusted coefficient of determination is statistically higher for models that take into account political dictionaries from both Interfax and The New York Times than for models that take into account news from only one source (p-value < 0.01 in both cases). Thus, **we confirm the H2 hypothesis**: in order to improve the quality of forecasts of stock returns of Russian companies, it is necessary to take into account not only the domestic, but also the foreign news background.

### *Discussion and portfolio building*

The paper analyzed political news from Russian and foreign media using the news from Interfax and The New York Times. Despite the fact that 12 dictionaries from each source describe similar topics, there are significant differences in the selected political dictionaries based on news from Russian and foreign media, respectively. Russian sources mainly describe changes in Russia's domestic policy, while foreign media mainly reflect the events of foreign policy. In addition, unlike Russian media, foreign sources cover in more detail the course of the special military operation and describe in detail the changes occurring in Ukraine due to the outbreak of the conflict. Some topics (for example, dictionaries on celebrities supporting Ukraine and forecasts of the end of the conflict, respectively) are not covered in Russian media, but are presented in foreign publications and are related to the stock returns of Russian companies.

In the course of the work we found that political news from a domestic source in general and correlated dictionaries in particular help to better predict daily stock returns of Russian companies.

At the same time, we find evidence that in order to improve the quality of forecasts of daily returns of Russian stocks, both the Russian and foreign news background should be taken into account. This conclusion is particularly important in the context of growing geopolitical instability: political news about Russia in foreign media affects the domestic stock market and the expectations of Russian investors.

The ability to predict stock returns based on political dictionaries allows building a portfolio of stocks that demonstrates higher returns (than in a situation where there is no information about the news). To build the portfolio, we selected 10 stocks of companies for which political news had the greatest predictive power (the models built for them showed the greatest increase in the coefficient of determination when variables reflecting political topics were added). Then, based on the models described in the previous part, we built forecasts of the returns of these stocks (only lagged values of variables were used for the forecast). At the next stage, a portfolio was built, where maximizing the Sharpe ratio was set as an optimization task (short selling is banned, average rate on federal bonds was used as an interest rate). It was assumed that the portfolio is rebalanced every day based on new yield forecasts (the rebalancing cost of 0.04% of the rebalancing amount was taken into account). The resulting portfolio demonstrated an average return of 14.89% per annum, while the average annual return of the portfolio (built using the same ten shares) built without taking into account political news was 3.27%. This confirms the assumption that the presence of market inefficiency allows gaining additional profitability.

### Conclusion

The paper examines the relationship between political news from domestic and foreign sources and stock returns of Russian stock market companies in the period from September 1, 2021 to

August 31, 2023. The daily prices at the close of trading of 193 Russian companies were used as financial data. News items from Russian (Interfax) and foreign (The New York Times) publications were collected as sources of text data. Using the Latent Dirichlet Allocation model based on news from Interfax and The New York Times, 30 political dictionaries were identified, respectively. The current value and the lags of the average proportion by which the news items published during the day consist of the selected dictionaries were used as regressors describing political news. Daily stock return is the dependent variable.

The H1a hypothesis has been confirmed: political dictionaries obtained on the basis of news from a domestic source (Interfax) help to improve forecasts of the stock returns of 146 Russian companies. The H1b hypothesis has also been confirmed: political dictionaries obtained on the basis of news from a foreign source (The New York Times) improve the quality of forecasts of the stock returns of 142 companies. However, we note that the quality of models using political dictionaries from Interfax is higher than the quality of models using political dictionaries from The New York Times.

There is reason to believe that in order to obtain a more accurate forecast of stock returns, it is necessary to take into account not only the domestic news background, but also the foreign one. Models that take into account financial data and political dictionaries from both Interfax and The New York Times help to improve the quality of the forecast for 158 companies. We note that the quality of these models is statistically higher than the quality of models based on past returns and political dictionaries from only one type of source. Therefore, the H2 hypothesis has also been confirmed.

The results obtained in this work contribute to a deeper understanding of the relationship between political changes and stock price dynamics in the context of growing geopolitical instability and can serve as a basis for further research.

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*Appendix*

Table 1P. Results of ARDL models construction using selected political dictionaries based on news from Interfax with the help of the Latent Dirichlet Allocation model

| Name of the dictionary | Five words with the highest weight in the dictionary | Current value | | 1st lag | | 2nd lag | | 3rd lag | | 4th lag | | 5th lag | | 6th lag | | 7th lag | | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | - | + | - | + | - | + | - | + | - | + | - | + | - | + | - | + | |
| Refugees from Ukraine | Aid, children, refugees, Rostov (Region), appeal | 30 | 0 | 15 | 0 | 7 | 0 | 0 | 1 | 6 | 0 | 8 | 0 | 1 | 0 | 0 | 1 | 69 |
| Russia–China relations | China, cooperation, meetings, discuss, jointly | 0 | 10 | 0 | 11 | 0 | 7 | 0 | 6 | 0 | 5 | 0 | 2 | 0 | 4 | 0 | 1 | 46 |
| Western sanctions | EU, ban, package, sanctions, sanctions, impose | 29 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 |
| Strikes on Crimea | Crimea, traffic, bridge, transportation, republic | 0 | 2 | 1 | 8 | 0 | 5 | 1 | 3 | 0 | 3 | 0 | 2 | 1 | 0 | 0 | 5 | 31 |
| Nuclear weapons | Treaty, agreement, nuclear, risk, negotiations | 0 | 15 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 6 | 0 | 1 | 27 |
| Negotiations between countries | Negotiations, NATO, meeting, guarantee, Zelensky | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 17 | 0 | 7 | 0 | 0 | 0 | 26 |
| War in the new territories of the Russian Federation | Republic, DPR, Ukrainian, destroy, strike | 11 | 0 | 0 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 25 |
| Russian Defense Ministry reports | Defense, report, Ministry of Defense, troops, military | 0 | 0 | 0 | 15 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 23 |
| Mobilization | Citizens, mobilization, employee, SMO, partial | 8 | 1 | 4 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 20 |
| Navy | Naval, ship, fleet, Black (Sea), exercises | 1 | 0 | 0 | 2 | 0 | 1 | 2 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 6 | 20 |
| Requirements of Roskomnadzor | Penalty, website, recognize, administrative (violation), RKN | 0 | 0 | 5 | 0 | 1 | 0 | 3 | 0 | 4 | 0 | 2 | 1 | 0 | 0 | 3 | 0 | 19 |
| European statements | Germany, Europe, cease, agree, condemn | 5 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 1 | 0 | 15 |
| Statement of the Ministry of Foreign Affairs | Foreign Ministry, diplomat, embassy, response, Lavrov | 4 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 14 |
| Change of leaders | Deputy, post, head, become head, dismissed | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 13 |
| Relations between Russia and Belarus | Belarus, arms, Lukashenko, West, threats | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 11 |

End of Table 1P

| Name of the dictionary | Five words with the highest weight in the dictionary | Current value | 1st lag | 2nd lag | 3rd lag | 4th lag | 5th lag | 6th lag | 7th lag | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| Western companies leaving | Asset, deal, transfer, sale, withdrawal | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **11** |
| Closure of borders | Georgia, border, Lithuania, transportation, transport | 2 | 1 | 1 | 0 | 2 | 0 | 1 | 1 | **10** |
| Business support | Technological, tasks, created, support, important | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | **10** |
| Grain deal | UN, Turkey, Ukrainian (grain), deal, grain | 0 | 4 | 2 | 2 | 0 | 1 | 0 | 1 | **10** |
| Karabakh | Armenia, Turkey, Azerbaijan, volunteers, strike | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | **9** |
| Strikes by Ukraine | Shelling, residents, nuclear power plant, Kherson, evacuation | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 1 | **9** |
| Foreign journalists | American, source, publication, Biden, media | 0 | 3 | 0 | 0 | 0 | 0 | 6 | 0 | **9** |
| Voting | Elections, party, deputy, voting, commission | 4 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | **9** |
| Regional politics | Decree, requirements, state, regulation, holding | 0 | 1 | 4 | 0 | 0 | 1 | 0 | 0 | **8** |
| Criminal cases | Detain, criminal, Interior Ministry, employee, FSB | 2 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | **7** |
| State budget | Budget, revenue, taxes, amount, Finance Minisrty | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 0 | **7** |
| Vaccination | Coronavirus, vaccination, drug, sputnik, Rospotrebnadzor | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | **6** |
| Adoption of new laws | Law, bill, amendments, proposes, State Duma | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | **3** |
| Kremlin statements | Peskov, Kremlin, spokesperson, answer, name | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | **3** |
| Court decisions | Case, verdict, recognize, criminal, accuse | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | **2** |

Note: Column 1 shows the short names of dictionaries, the coefficients before which are significant in ARDL models, for which $R^2$ on cross-validation is higher than in models that take into account only past returns, according to the results of Welch's t- test. Column 2 shows the five words included in them with the highest weight. The remaining columns show the number of companies for which the coefficient in front of this dictionary is significant at least at 10% significance level: "+" means that news on relevant topics is positively related to stock returns, "–" means that news on relevant topics is negatively related to stock returns.

Table 2P. Results of ARDL models construction using selected political dictionaries based on news from The New York Times with the help of the Latent Dirichlet Allocation model

| Name of the dictionary | Five words with the highest weight in the dictionary | Current value | | 1st lag | | 2nd lag | | 3rd lag | | 4th lag | | 5th lag | | 6th lag | | 7th lag | | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | − | + | − | + | − | + | − | + | − | + | − | + | − | + | − | + | |
| Description of the actions of the Russian Army | annexation, terrorism, south, regions, control | 25 | 0 | 0 | 1 | 1 | 0 | 7 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 0 | 44 |
| Grain deal | grain, sea, black, deal, food | 0 | 0 | 0 | 3 | 0 | 11 | 0 | 0 | 0 | 3 | 0 | 7 | 0 | 11 | 0 | 2 | 37 |
| Ukrainian army | weapon, military, defense, army (Ukrainian), system | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 21 | 0 | 2 | 35 |
| European community | EU, leader, support, concern, invasion | 3 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 21 | 0 | 1 | 1 | 32 |
| US sanctions against Russia | sanctions, Biden, economy, administration, punish | 0 | 5 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 6 | 0 | 11 | 0 | 1 | 1 | 30 |
| Ukraine's borders | border, troop, neighbor, Poland, force | 0 | 0 | 4 | 0 | 2 | 0 | 20 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 28 |
| Strikes on Crimea | attack, force, operation, bridge, explosion | 0 | 2 | 0 | 6 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 2 | 0 | 4 | 0 | 6 | 24 |
| Strikes by Russia | drone, strike, target, Moscow, launch | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 10 | 19 |
| Kremlin statements | Putin, speech, blame, speak, leader | 1 | 1 | 0 | 0 | 5 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 6 | 1 | 0 | 2 | 18 |
| Eastern front | eastern, force, battle, Bakhmut, Donbass | 0 | 3 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 4 | 16 |
| Nuclear weapons | power, nuclear, plant, threat, warn | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 4 | 0 | 1 | 0 | 6 | 0 | 3 | 0 | 0 | 17 |
| Destruction in Ukraine | kill, city, dozen, rocket, destroy | 0 | 5 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 16 |
| Russian state media | media, propaganda, kremlin, policy, government | 0 | 0 | 0 | 1 | 0 | 1 | 6 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 1 | 1 | 15 |
| US statements | official, Biden, administration, Washington, senior | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 0 | 4 | 0 | 0 | 1 | 15 |
| Refugees from Ukraine | country, people, leave, family, live | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 1 | 1 | 0 | 5 | 0 | 0 | 1 | 1 | 1 | 15 |
| Celebrity support for Ukraine | invasion, celebrity, call, message, visit | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 3 | 14 |
| Private Military Companies (PMCs) | Wagner, Prigozhin, private, force, rebellion | 0 | 1 | 0 | 4 | 0 | 2 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 1 | 0 | 14 |
| NATO | NATO, talk, alliance, peace, invasion | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 1 | 0 | 0 | 0 | 13 |
| Brief of the conflict | conflict, news, Russian-Ukranian, brief, guide | 1 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 13 |

End of Table 2P

| Name of the dictionary | Five words with the highest weight in the dictionary | Current value | 1st lag | 2nd lag | 3rd lag | 4th lag | 5th lag | 6th lag | 7th lag | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| Criminal cases | prison, court, arrest, crime, investigation | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | *9* |
| Life in Ukraine's back towns | western, soldier, artillery, Kyiv, Lviv | 1 | 0 | 1 | 0 | 1 | 2 | 5 | 0 | *9* |
| Ukrainian offensive | move, battlefield, success, territory, counteroffensive | 0 | 2 | 0 | 1 | 3 | 0 | 2 | 0 | *9* |
| Sanctions against the oil and gas sector | gas, oil, price, limit, cut | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | *6* |
| Predictions for the end of the conflict | time, win, end, forecast, analyze | 0 | 0 | 0 | 3 | 1 | 1 | 1 | 0 | *7* |
| Negotiations between the countries | Zelenskiy, leader, China, visit, support | 1 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | *7* |
| Russian Foreign Ministry statements | Russia, foreign, Sergey, Lavrov, Moscow | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 0 | *7* |
| Reaction of the world community to the conflict | Hope, happen, question, world, alliance | 2 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | *6* |
| Russian opposition | Critic, politician, opposition, kill, figure | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | *5* |
| Military aid to Ukraine | Kyiv, tank, Germany, effort, increase | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | *4* |
| Events in Mariupol | Ukrainian, southern, russia-occupier, withdraw, Mariupol | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | *4* |

Note. Column 1 shows the short names of dictionaries, the coefficients before which are significant in ARDL models, for which $R^2$ on cross-validation is higher than in models that take into account only past returns, according to the results of Welch's t-test. Column 2 shows five words included in them with the highest weight. The remaining columns show the number of companies for which the coefficient in front of this dictionary is significant at least at 10% significance level: "+" means that news on relevant topics is positively related to stock returns, "−" means that news on relevant topics is negatively related to stock returns.

Table 3P. Results of ARDL models construction using selected political dictionaries based on news from The New York Times and Interfax

| Source | Name of the dictionary | Five words with the highest weight in the dictionary | Current value | | 1st lag | | 2nd lag | | 3rd lag | | 4th lag | | 5th lag | | 6th lag | | 7th lag | | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | – | + | – | + | – | + | – | + | – | + | – | + | – | + | – | + | |
| Interfax | Refugees from Ukraine | Aid, children, refugees, Rostov (Region), appeal | 21 | 0 | 12 | 0 | 6 | 0 | 1 | 0 | 7 | 0 | 8 | 0 | 0 | 0 | 0 | 1 | *56* |
| Interfax | Russia–China relations | China, cooperation, meetings, discuss, jointly | 0 | 7 | 0 | 8 | 0 | 6 | 0 | 5 | 0 | 3 | 0 | 1 | 0 | 3 | 0 | 1 | *34* |
| Interfax | Western sanctions | EU, ban, package, sanctions, impose | 25 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | *30* |
| Interfax | Strikes on Crimea | Crimea, traffic, bridge, transportation, republic | 0 | 2 | 1 | 8 | 0 | 2 | 1 | 3 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | 5 | *26* |
| NYT | Grain deal | grain, sea, black, deal, food | 0 | 0 | 0 | 3 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 7 | 0 | 1 | *22* |

Note. Column 1 shows the source of news on the basis of which the political dictionary was obtained. Column 2 shows the short names of dictionaries, the coefficients before which are significant in ARDL models, for which R² on cross-validation is higher than in models that take into account only past returns, according to the results of Welch's t-test. Column 3 shows the five words included in them with the highest weight. The remaining columns show the number of companies for which the coefficient in front of this dictionary is significant at least at 10% significance level: "+" means that news on relevant topics is positively related to stock returns, "–" means that news on relevant topics is negatively related to stock returns.

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