

The Impact of Bank of Russia Monetary Policy Communication on the Stock Market

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7 June, 2022

Research Background

- Communication by economic regulators influences social well-being and growth, in addition to direct effects of the policy (Algan and Cahuc 2014)
- The textual channel¹ of communication is the primary one:
 - low readability of reports **increases market volatility**, and only people with higher education understand them (Bruno 2017; Bulíř et al. 2012)
 - central banks' statements **affect media discourse** even several weeks after publication (Rybinski 2019)
 - voice tone of FED Chair's statements **affects share prices** (Gorodnichenko et al. 2021)
 - stock market is **sensitive to tone sentiment**, embedded in textual reports (Oshima and Matsubayashi 2018; Tumala 2019; Lee et al. 2019)

¹ It can be decomposed down to various indices: readability, sentiment, transparency etc.

Research Question

- Linguistic and especially sentiment analysis of regulators' speech is mostly limited to dictionary approach² or simple counting methods
- Natural language processing (NLP) models give more accurate results, closer to real perception (Smetanin and Komarov 2019)
- Bank of Russia (BoR) communication is still fairly underinvestigated
- How does BoR monetary policy communication affect economic outcomes (stock market, inflation expectations and bond market)?

² Calculations are based on the number of occurrences of certain words

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- **How does BoR monetary policy communication affect economic outcomes (stock market, inflation expectations and bond market)?**

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Textual Data

- The initial dataset contained all press service publications in the last decade, published on BoR website, but **the importance of the texts was too heterogenous**
- The sample was narrowed down to the **press releases** on the key rate and the corresponding **press conferences** by the BoR Governor
- Applying an automatic framework to the sample, a tone sentiment was computed for 40 press-conferences and 69 press-releases, covering the period between September 2013 and December 2021

Textual Data

Table 1: Summary statistics for press releases and statements (2010-2022)

Communication channel	Num of obs.	Mean num of symbols	Min num of symbols	Max num of symbols	Mean num of sentences	Mean num of words
Press releases	12521	1444.9	131	31075	5.3	216.8
On the key rate	111	4805.3	496	10143	35.0	683.6
Other	12410	1414.8	131	31075	5.0	212.6
Statements	123	22649.0	192	43320	192.5	3690.4
On the key rate	41	30366.3	13700	38361	281.9	5040.3
Other	82	18790.3	192	43320	147.9	3015.5

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Style Indicator

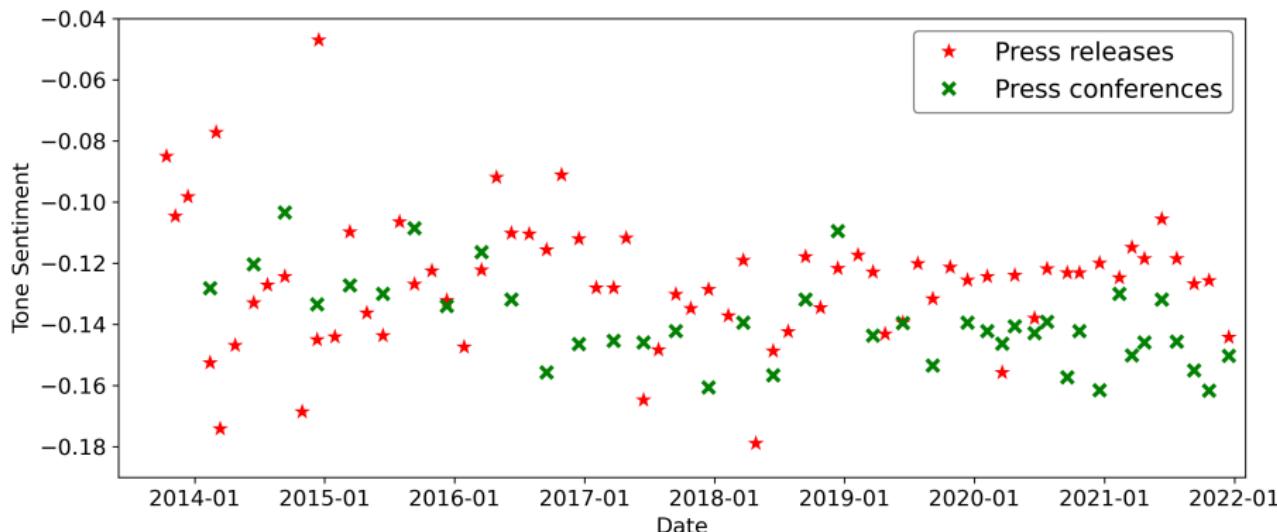
- As summarized in paper by Evstigneeva and Sidorovskiy (2021) and proven in work by Smetanin and Komarov (2021), the state-of-the-art **transformer language models** suggest the highest accuracy score in the sentiment predicting task
- In this study, Dostoevsky model³ is used for computing a vector of the sentiment probabilities for each text
- Tone sentiment** reflects net positive sentiment, which ranges from -1 (negative connotations) to 1 (positive connotations):

$$\text{Tone Sentiment} = \text{Prob}(\text{Positive Sentiment}) - \text{Prob}(\text{Negative Sentiment})$$

³ A neural network classifier, pre-trained on the RuSentiment dataset (Rogers et al. 2018)

Tone Sentiment Distribution

Figure 1: Tone sentiment distribution for the commentary on the key rate



Outcome Variables

- Daily economic outcomes:
 - Returns on **MOEX and RTS indices**
 - Returns on gold exchange trade fund (FXGD ETF), which is used as the proxy for immediate reaction of the **inflation expectations**
 - Returns of the various types of bonds, including the aggregated indices of the **corporate debt** (RUCBITR), the **government debt** (RGIBTR, indices of different duration) and MOEX Aggregate bond index (RUABITR)
- Yearly control variables:
 - General **transparency** of a regulator's communication under inflation-targeting regimes, suggested by Al-Mashat et al. (2018)
 - **Public trust** in the Bank of Russia based on a representative all-Russian sample ("INFOM" 2021)

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Baseline Model

$$\begin{aligned} \text{Outcome}_t = & \alpha + \beta_1 \text{Tone Sentiment}_{1t} + \beta_2 \text{Tone Sentiment}_{2t} \\ & + \gamma \text{Rate Change}_t + \gamma_{1y} \text{Transparency}_y + \gamma_{2y} \text{Trust}_y + \varepsilon_t \end{aligned} \quad (1)$$

- $\text{Tone Sentiment}_{1t}$ – the sentiment of the press conference by the Governor of the Bank of Russia on the day t
- $\text{Tone Sentiment}_{2t}$ – the sentiment of the press release on the day t
- Rate Change_t – the change of the key rate on the day t

Extensions (1/2)

$$\begin{aligned} \text{Outcome}_t = & \alpha + \beta_1 \text{Tone Sentiment}_{1t} + \beta_2 \text{Tone Sentiment}_{2t} \\ & + \beta_3 \text{Tone Sentiment}_{1t} \times \text{Rate Change}_t + \beta_4 \text{Tone Sentiment}_{2t} \times \text{Rate Change}_t \quad (2) \\ & + \gamma \text{Rate Change}_t + \gamma_{1y} \text{Transparency}_y + \gamma_{2y} \text{Trust}_y + \varepsilon_t \end{aligned}$$

Motivation:

The effect of the tone sentiment might be lower when the size of the absolute rate change is higher

Extensions (2/2)

$$\begin{aligned} Outcome_t^{(t+h)} = & \alpha^{(h)} + \beta_1^{(h)} Tone\ Sentiment_{1t} + \beta_2^{(h)} Tone\ Sentiment_{2t} \quad (3) \\ & + \gamma^{(h)} Rate\ Change_t + \gamma_{1y}^{(h)} Transparency_y + \gamma_{2y}^{(h)} Trust_y + \varepsilon_t^{(h)} \end{aligned}$$

Motivation:

The signal from the regulator needs time to build up and to be comprehended by the market

Results

Table 2: Instant effect of the tone sentiment, MOEX returns

Variable	MOEX returns				
	(1)	(2)	(3)	(4)	(5)
Tone Sentiment ₁	0.116 (0.0996)		0.124 (0.101)	0.298** (0.111)	0.296** (0.112)
Tone Sentiment ₂		-0.379 (0.390)	-0.216 (0.225)	-0.372* (0.196)	-0.351** (0.172)
Rate Change			-0.0745 (0.374)	-0.277 (0.356)	-0.324 (0.335)
Transparency				0.296** (0.134)	0.243 (0.175)
Trust					-1.920 (3.166)
<i>Number of obs.</i>	40	69	40	40	40

Notes. The table shows results for the instant effect model from Specification (1) and investigates the influence of tone sentiment of press releases and press conferences. For better interpretability, the returns, as the differences between the logs of the open and close prices, are scaled to the percentage points. Both tone sentiment variables are normalized to unit variance. Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Results

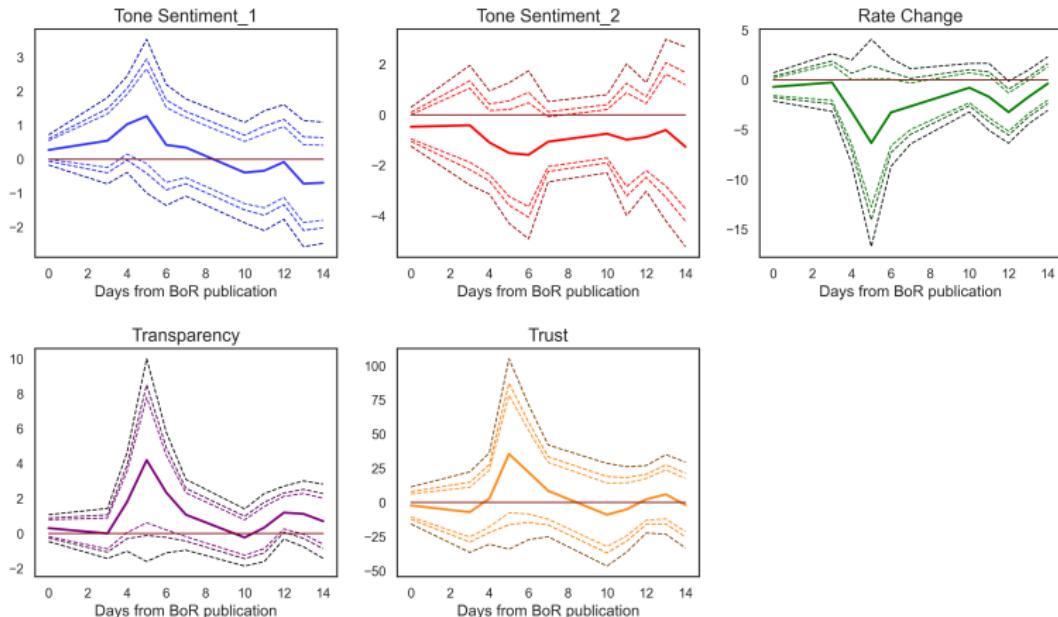
Table 3: Summary of instant effects of the tone sentiments
(all controls included)

<i>Panel A</i>	MOEX	RTSI	FXGD ETF	RUCBITR	RUABITR
Tone Sentiment ₁	0.296** (0.112)	0.272 (0.163)	-0.327** (0.154)	0.0444 (0.0275)	0.0767 (0.0544)
Tone Sentiment ₂	-0.351** (0.172)	-0.473 (0.282)	-0.257 (0.230)	-0.161* (0.0864)	0.0380 (0.0856)
Rate Change	-0.324 (0.335)	-0.704 (0.519)	-0.0466 (0.339)	-0.204*** (0.0462)	-0.137 (0.200)
Transparency	0.243 (0.175)	0.302 (0.282)	-0.444*** (0.155)	0.0909** (0.0396)	0.0810 (0.0973)
Trust	-1.920 (3.166)	-2.217 (4.968)	-8.337 (5.052)	0.920 (0.739)	-1.171 (1.363)
<i>Number of obs.</i>	40	40	40	40	40

Notes. The table shows the summary of the results for the instant effect model from Specification (1). *Panel B* with the estimates for the government bonds is presented in Table A13. Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure 2: Dynamics of the tone sentiment effect, RTS returns



Notes. This figure presents the estimates of β^h and γ^h coefficients from Specification (3). The solid line shows the point estimates, the dashed lines show 90%, 95% and 99% confidence intervals. The lines are linearly interpolated for the horizons with the number of observations lower than the number of degrees of freedom.

Conclusion

- The stock market:
 - 1 std. dev. in the tone sentiment of a press conference **increases** returns by 29.6 basis points
 - 1 std. dev. in the tone sentiment of a press release **decreases** returns by 35.1 basis points
- FXGD returns:
 - 1 std. dev. in the tone sentiment of a press conference **decreases** returns by 32.7 basis points
- The bond market:
 - The effect seems to be irrelevant for the government bonds, but significantly negative for corporate bonds

Response to the Review

- Narrow the analysis to the intra-day data:
 - The effects from tone sentiment of press releases would be separated
- Determine and include extra control variables, associated with the unexpected changes
- Use another model to construct tone sentiment index:
 - RuBERT, fine-tuned on Kaggle Russian News Dataset (Smetanin and Komarov 2021)
- Experiment with the bootstrapped and winsorized samples

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APPENDIX

Figure A1: Dynamics of the key rate

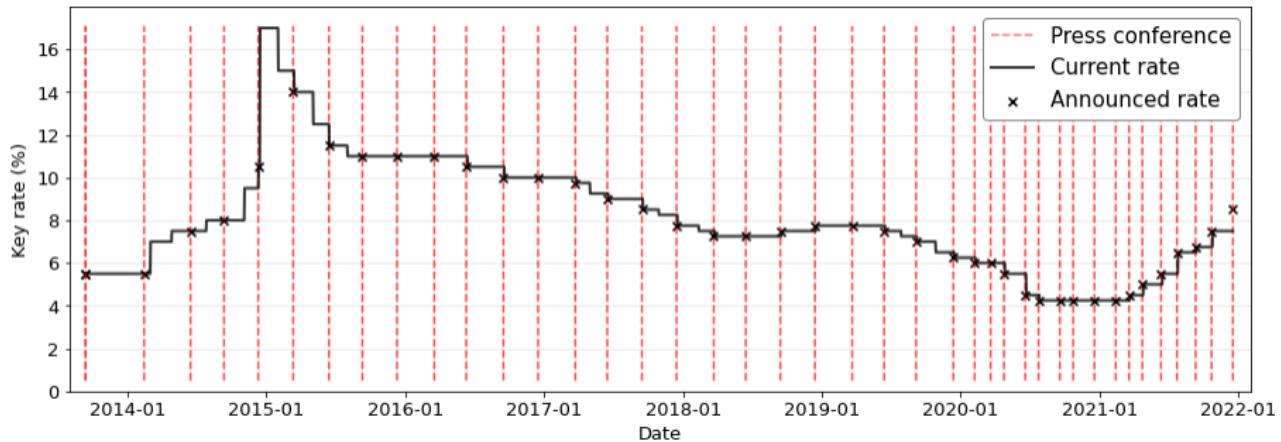


Figure A2: Tone sentiment distribution for 2010-2022

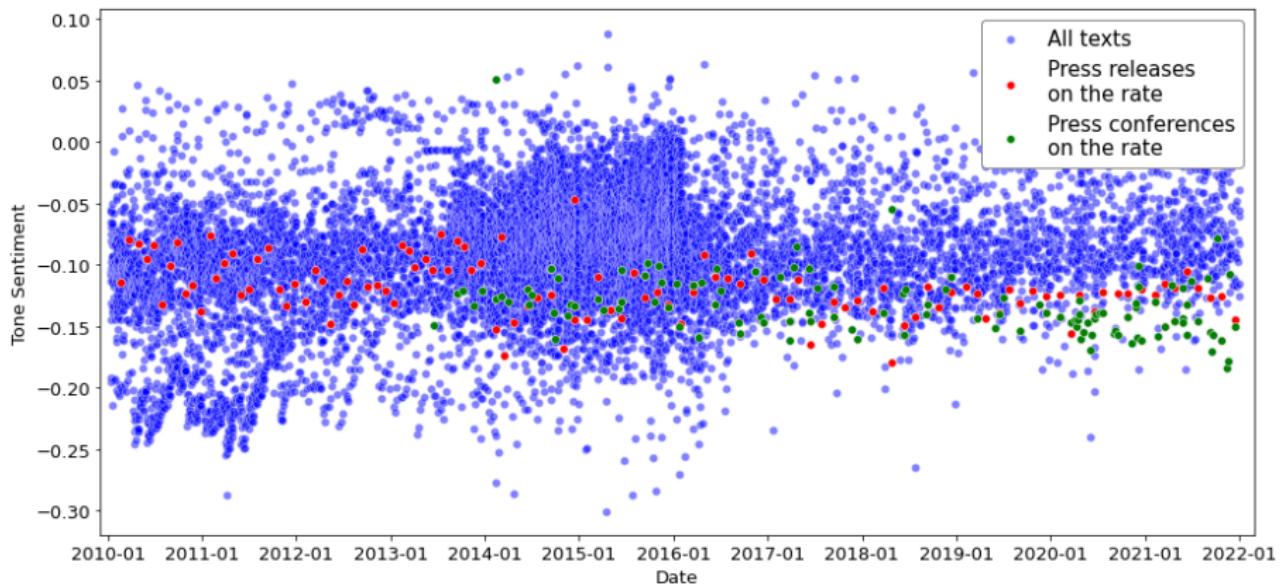


Figure A3: FXGD close price (RUB per share)



Figure A4: Public trust in Bank of Russia
by InFOM (Public Opinion Foundation, Russia, 2021)

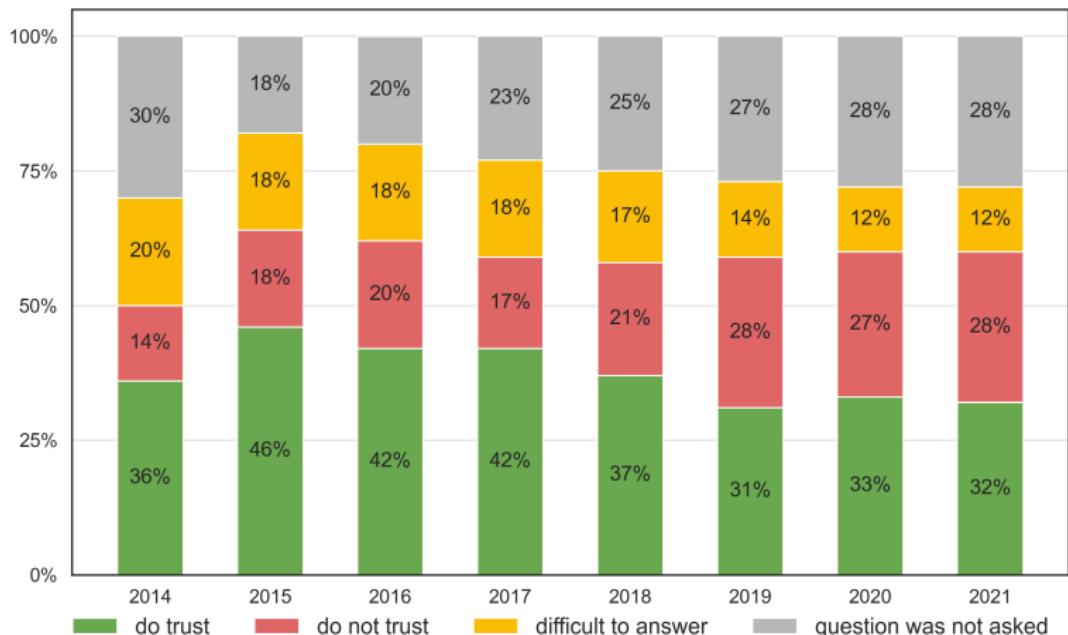


Table A1: Cross-correlations between regressors

	Tone Sentiment ₁	Tone Sentiment ₂	Rate Change	Transparency	Trust
Tone Sentiment ₁	1.0	(.)	(.)	(.)	(.)
Tone Sentiment ₂	0.0802	1.0	(.)	(.)	(.)
Rate Change	-0.0702	-0.0468	1.0	(.)	(.)
Transparency	-0.4847	-0.1765	0.0772	1.0	(.)
Trust	0.3240	0.0255	-0.4333	-0.5864	1.0

Table A2: Cross-correlations between regressors and outcome variables

	MOEX	RTSI	FXGD ETF	RUCBITR	RUABITR
Tone Sentiment ₁	0.1566	0.0530	-0.2096	0.0268	0.0532
Tone Sentiment ₂	-0.2429	-0.5077	0.3818	-0.4561	0.3315
Rate Change	-0.0591	-0.0686	0.0121	-0.1520	-0.1585
Transparency	0.1363	0.2422	-0.2493	0.1934	-0.0657
Trust	0.0412	0.0139	-0.0472	0.1018	-0.0263

	RGBTIR	RUGBITR1Y	RUGBITR3Y	RUGBITR5Y	RUGBITR10Y
Tone Sentiment ₁	0.0668	0.1532	0.0494	-0.0142	0.0411
Tone Sentiment ₂	-0.4526	-0.2036	0.2610	0.3693	0.3192
Rate Change	-0.1690	-0.1214	-0.2964	-0.1677	-0.1212
Transparency	0.1971	-0.0408	-0.0749	-0.0408	-0.0637
Trust	0.0849	-0.0703	0.0448	-0.0183	-0.0438

Table A3: Test of the functional dependence
between the explanatory variables

	Tone Sentiment ₁		
Tone Sentiment ₂	0.0881 (0.119)	-0.0976 (1.890)	16.04 (22.11)
Tone Sentiment ₂ ²		-0.695 (7.017)	121.0 (163.9)
Tone Sentiment ₂ ³			303.1 (400.4)
<i>Number of obs.</i>	40	40	40

Notes. Robust standard errors are given in parentheses:
 $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table A4: Instant effect of the tone sentiment, RTS returns

Variable	RTS returns				
	(1)	(2)	(3)	(4)	(5)
Tone Sentiment ₁	0.0598 (0.143)		0.0613 (0.149)	0.275* (0.158)	0.272 (0.163)
Tone Sentiment ₂		-1.094** (0.514)	-0.306 (0.340)	-0.497 (0.301)	-0.473 (0.282)
Rate Change			-0.400 (0.550)	-0.649 (0.546)	-0.704 (0.519)
Transparency				0.364* (0.206)	0.302 (0.282)
Trust					-2.217 (4.968)
<i>Number of obs.</i>	40	69	40	40	40

Notes. The table shows results for the instant effect model from Specification (1) and investigates the influence of tone sentiment of press releases and press conferences. RTS returns is the dependent variable. For better interpretability, the returns, as the differences between the logs of the open and close prices, are scaled to the percentage points. Both tone sentiment variables are normalized to unit variance. Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Instant effect of the tone sentiment, FXGD ETF returns

	FXGD ETF returns				
	(1)	(2)	(3)	(4)	(5)
Tone Sentiment ₁	-0.215 (0.161)		-0.192 (0.162)	-0.317* (0.170)	-0.327** (0.154)
Tone Sentiment ₂		1.002 (0.951)	-0.461* (0.237)	-0.349 (0.246)	-0.257 (0.230)
Rate Change			0.0147 (0.307)	0.160 (0.342)	-0.0466 (0.339)
Transparency				-0.213 (0.155)	-0.444*** (0.155)
Trust					-8.337 (5.052)
<i>Number of obs.</i>	40	65	40	40	40

Notes. The table shows results for the instant effect model from Specification (1) and investigates the influence of tone sentiment of press releases and press conferences. FXGD ETF is the dependent variable. For better interpretability, the returns, as the differences between the logs of the open and close prices, are scaled to the percentage points. Both tone sentiment variables are normalized to unit variance. Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Instant effect of the tone sentiment,
Government Bond Index (RGBITR)

	RGBITR				
	(1)	(2)	(3)	(4)	(5)
Tone Sentiment ₁	0.0282 (0.0549)		0.0298 (0.0501)	0.0969 (0.0689)	0.0975 (0.0700)
Tone Sentiment ₂		-0.528 (0.388)	-0.102 (0.205)	-0.162 (0.229)	-0.168 (0.238)
Rate Change			-0.100 (0.100)	-0.178 (0.110)	-0.165 (0.108)
Transparency				0.114 (0.0922)	0.129 (0.108)
Trust					0.539 (1.241)
Number of obs.	40	69	40	40	40

Notes. The table shows results for the instant effect model from Specification (1) and investigates the influence of tone sentiment of press releases and press conferences. The change of RGBITR prices is the dependent variable. For better interpretability, the differences between the logs of the open and close prices, are scaled to the percentage points. Both tone sentiment variables are normalized to unit variance. Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Instant effect of the tone sentiment,
Government Bond Index for < 1 year duration (RUGBITR1Y)

	RUGBITR1Y				
	(1)	(2)	(3)	(4)	(5)
Tone Sentiment ₁	0.00969 (0.00722)		0.00837 (0.00697)	0.00680 (0.00720)	0.00672 (0.00738)
Tone Sentiment ₂		-0.0253 (0.0170)	0.0286 (0.0218)	0.0300 (0.0221)	0.0308 (0.0228)
Rate Change			0.00219 (0.0309)	0.00402 (0.0377)	0.00243 (0.0384)
Transparency				-0.00267 (0.0142)	-0.00444 (0.0190)
Trust					-0.0640 (0.322)
Number of obs.	40	69	40	40	40

Notes. The table shows results for the instant effect model from Specification (1) and investigates the influence of tone sentiment of press releases and press conferences. The change of the bond (RUGBITR1Y) prices is the dependent variable. For better interpretability, the differences between the logs of the open and close prices, are scaled to the percentage points. The open price equals the close price at the previous day. Both tone sentiment variables are normalized to unit variance. Robust standard errors are given in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Instant effect of the tone sentiment,
Government Bond Index for 1-3 years duration (RUGBITR3Y)

	RUGBITR3Y				
	(1)	(2)	(3)	(4)	(5)
Tone Sentiment ₁	0.0117 (0.0266)		0.00650 (0.0297)	0.0587* (0.0347)	0.0582 (0.0356)
Tone Sentiment ₂		0.102 (0.125)	-0.00132 (0.0786)	-0.0483 (0.0587)	-0.0437 (0.0561)
Rate Change			-0.155 (0.146)	-0.216 (0.155)	-0.226 (0.151)
Transparency				0.0891 (0.0599)	0.0778 (0.0759)
Trust					-0.409 (0.866)
Number of obs.	40	69	40	40	40

Notes. The table shows results for the instant effect model from Specification (1) and investigates the influence of tone sentiment of press releases and press conferences. The change of the bond (RUGBITR3Y) prices is the dependent variable. For better interpretability, the differences between the logs of the open and close prices, are scaled to the percentage points. The open price equals the close price at the previous day. Both tone sentiment variables are normalized to unit variance. Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: Instant effect of the tone sentiment,
Government Bond Index for 3-5 years duration (RUGBITR5Y)

	RUGBITR5Y				
	(1)	(2)	(3)	(4)	(5)
Tone Sentiment ₁	-0.00502 (0.0430)		-0.0158 (0.0464)	0.0587 (0.0519)	0.0581 (0.0538)
Tone Sentiment ₂		0.211 (0.169)	0.152 (0.120)	0.0853 (0.0936)	0.0914 (0.0925)
Rate Change			-0.0997 (0.222)	-0.187 (0.240)	-0.200 (0.231)
Transparency				0.127 (0.0874)	0.112 (0.115)
Trust					-0.548 (1.515)
Number of obs.	40	69	40	40	40

Notes. The table shows results for the instant effect model from Specification (1) and investigates the influence of tone sentiment of press releases and press conferences. The change of the bond (RUGBITR5Y) prices is the dependent variable. For better interpretability, the differences between the logs of the open and close prices, are scaled to the percentage points. The open price equals the close price at the previous day. Both tone sentiment variables are normalized to unit variance. Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A10: Instant effect of the tone sentiment,
Government Bond Index for 5-10 years duration (RUGBITR10Y)

	RUGBITR10Y				
	(1)	(2)	(3)	(4)	(5)
Tone Sentiment ₁	0.0220 (0.0760)		0.0208 (0.0777)	0.125 (0.0932)	0.122 (0.101)
Tone Sentiment ₂		0.381 (0.406)	0.0889 (0.179)	-0.00522 (0.155)	0.0274 (0.148)
Rate Change			0.0946 (0.305)	-0.0275 (0.311)	-0.101 (0.308)
Transparency				0.179 (0.114)	0.0969 (0.153)
Trust					-2.946 (2.400)
<i>Number of obs.</i>	40	69	40	40	40

Notes. The table shows results for the instant effect model from Specification (1) and investigates the influence of tone sentiment of press releases and press conferences. The change of the bond(RUGBITR10Y) prices is the dependent variable. For better interpretability, the differences between the logs of the open and close prices, are scaled to the percentage points. The open price equals the close price at the previous day. Both tone sentiment variables are normalized to unit variance. Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A11: Instant effect of the tone sentiment,
Russian corporate debt (RUCBITR)

	(1)	(2)	RUCBITR (3)	(4)	(5)
Tone Sentiment ₁	0.00541 (0.0244)		0.00493 (0.0197)	0.0433* (0.0256)	0.0444 (0.0275)
Tone Sentiment ₂		-0.197 (0.142)	-0.116 (0.0803)	-0.150* (0.0822)	-0.161* (0.0864)
Rate Change			-0.182*** (0.0639)	-0.227*** (0.0592)	-0.204*** (0.0462)
Transparency				0.0654** (0.0311)	0.0909** (0.0396)
Trust					0.920 (0.739)
Number of obs.	40	69	40	40	40

Notes. The table shows results for the instant effect model from Specification (1) and investigates the influence of tone sentiment of press releases and press conferences. The change of the bond(RUCBITR) prices is the dependent variable. For better interpretability, the differences between the logs of the open and close prices, are scaled to the percentage points. Both tone sentiment variables are normalized to unit variance. Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: Instant effect of the tone sentiment,
MOEX Aggregate Bond Index (RUABITR)

	RUABITR				
	(1)	(2)	(3)	(4)	(5)
Tone Sentiment ₁	0.0169 (0.0421)		0.0117 (0.0438)	0.0782 (0.0515)	0.0767 (0.0544)
Tone Sentiment ₂		0.192 (0.190)	0.0849 (0.106)	0.0251 (0.0866)	0.0380 (0.0856)
Rate Change			-0.0302 (0.192)	-0.108 (0.200)	-0.137 (0.200)
Transparency				0.114 (0.0736)	0.0810 (0.0973)
Trust					-1.171 (1.363)
<i>Number of obs.</i>	40	69	40	40	40

Notes. The table shows results for the instant effect model from Specification (1) and investigates the influence of tone sentiment of press releases and press conferences. The change of the bond(RUABITR) prices is the dependent variable. It includes both government and corporate bonds with duration more than 1 year. For better interpretability, the differences between the logs of the open and close prices, are scaled to the percentage points. The open price equals the close price at the previous day. Both tone sentiment variables are normalized to unit variance. Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A13: Summary of instant effects of the tone sentiments
 (all controls included)

<i>Panel B</i>	RGBTIR	RUGBITR1Y	RUGBITR3Y	RUGBITR5Y	RUGBITR10Y
Tone Sentiment ₁	0.0975 (0.0700)	0.00672 (0.00738)	0.0582 (0.0356)	0.0581 (0.0538)	0.122 (0.101)
Tone Sentiment ₂	-0.168 (0.238)	0.0308 (0.0228)	-0.0437 (0.0561)	0.0914 (0.0925)	0.0274 (0.148)
Rate Change	-0.165 (0.108)	0.00243 (0.0384)	-0.226 (0.151)	-0.200 (0.231)	-0.101 (0.308)
Transparency	0.129 (0.108)	-0.00444 (0.0190)	0.0778 (0.0759)	0.112 (0.115)	0.0969 (0.153)
Trust	0.539 (1.241)	-0.0640 (0.322)	-0.409 (0.866)	-0.548 (1.515)	-2.946 (2.400)
<i>Number of obs.</i>	40	40	40	40	40

Notes. The table shows the summary of the results for the instant effect model from Specification (1). Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A14: Instant effects with the dependence
between rate change and tone sentiments

<i>Panel A</i>	MOEX	RTSI	FXGD ETF	RUCBITR	RUABITR
Tone Sentiment ₁	0.241** (0.113)	0.138 (0.148)	-0.277* (0.161)	0.0405 (0.0265)	0.0732 (0.0515)
Tone Sentiment ₂	-0.248 (0.160)	-0.222 (0.228)	-0.352 (0.217)	-0.153 (0.0915)	0.0448 (0.114)
Rate Change	6.904 (4.112)	7.934 (4.768)	-2.356 (3.059)	-1.534** (0.663)	1.673 (2.195)
Rate Change##Tone Sentiment ₁	0.109 (0.302)	-0.446 (0.412)	0.244 (0.272)	-0.139* (0.0759)	0.114 (0.196)
Rate Change##Tone Sentiment ₂	1.007** (0.460)	2.132*** (0.543)	-0.771** (0.309)	0.00614 (0.0964)	0.113 (0.301)
Transparency	0.137 (0.170)	-0.0255 (0.222)	-0.313* (0.154)	0.0689 (0.0486)	0.0847 (0.0870)
Trust	-2.008 (2.992)	-4.149 (4.537)	-7.424 (5.338)	0.560 (0.668)	-0.920 (1.287)
<i>Number of obs.</i>	40	40	40	40	40

Notes. The table shows the summary of the results for the instant effect model from Specification (2). Robust standard errors are given in parentheses:

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

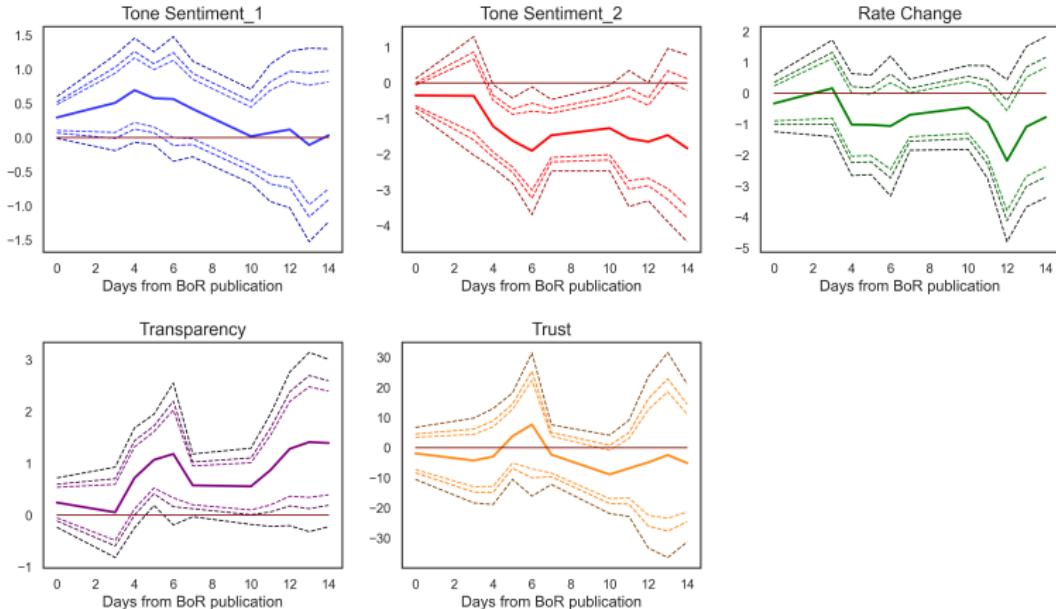
Table A14: Instant effects with the dependence
between rate change and tone sentiments

<i>Panel B</i>	RGBITR	RUGBITR1Y	RUGBITR3Y	RUGBITR5Y	RUGBITR10Y
Tone Sentiment ₁	0.124 (0.0843)	0.00558 (0.00744)	0.0493 (0.0307)	0.0489 (0.0469)	0.119 (0.0948)
Tone Sentiment ₂	-0.218 (0.248)	0.0329 (0.0252)	-0.0269 (0.0785)	0.109 (0.118)	0.0337 (0.189)
Rate Change	0.797 (1.625)	-0.112 (0.414)	1.207 (1.444)	2.013 (2.278)	4.318 (3.637)
Rate Change##Tone Sentiment ₁	0.303 (0.185)	-0.0187 (0.0331)	0.0382 (0.123)	0.0980 (0.214)	0.324 (0.319)
Rate Change##Tone Sentiment ₂	-0.330 (0.215)	0.0115 (0.0575)	0.173 (0.215)	0.204 (0.339)	0.201 (0.478)
Transparency	0.216 (0.140)	-0.00872 (0.0172)	0.0626 (0.0606)	0.102 (0.0912)	0.122 (0.144)
Trust	1.441 (1.276)	-0.117 (0.320)	-0.374 (0.763)	-0.370 (1.335)	-2.185 (2.292)
<i>Number of obs.</i>	40	40	40	40	40

Notes. The table shows the summary of the results for the instant effect model from Specification (2). Robust standard errors are given in parentheses:

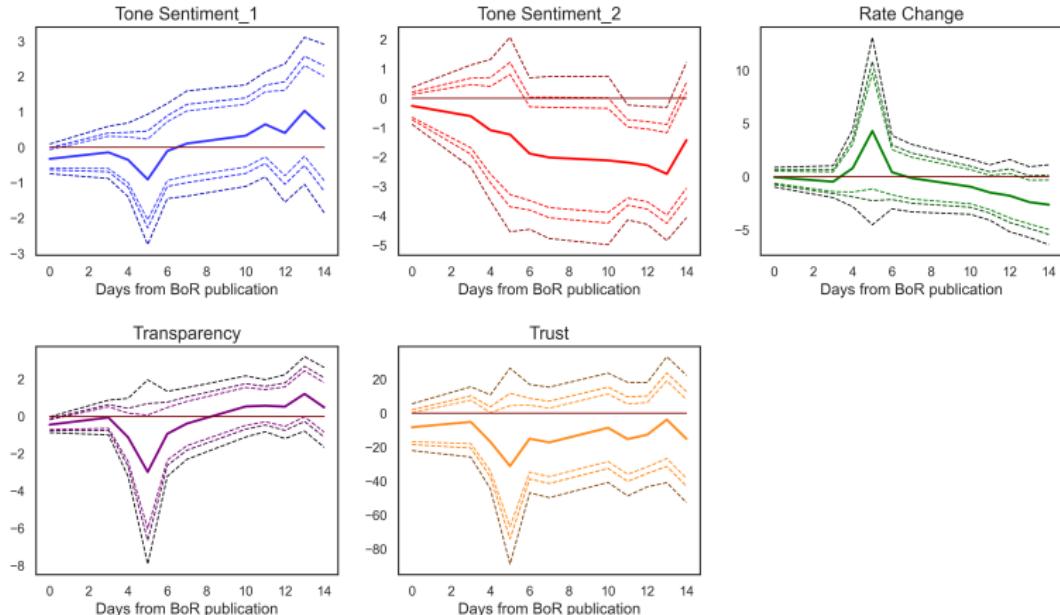
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure A5: Dynamics of the tone sentiment effect, MOEX returns



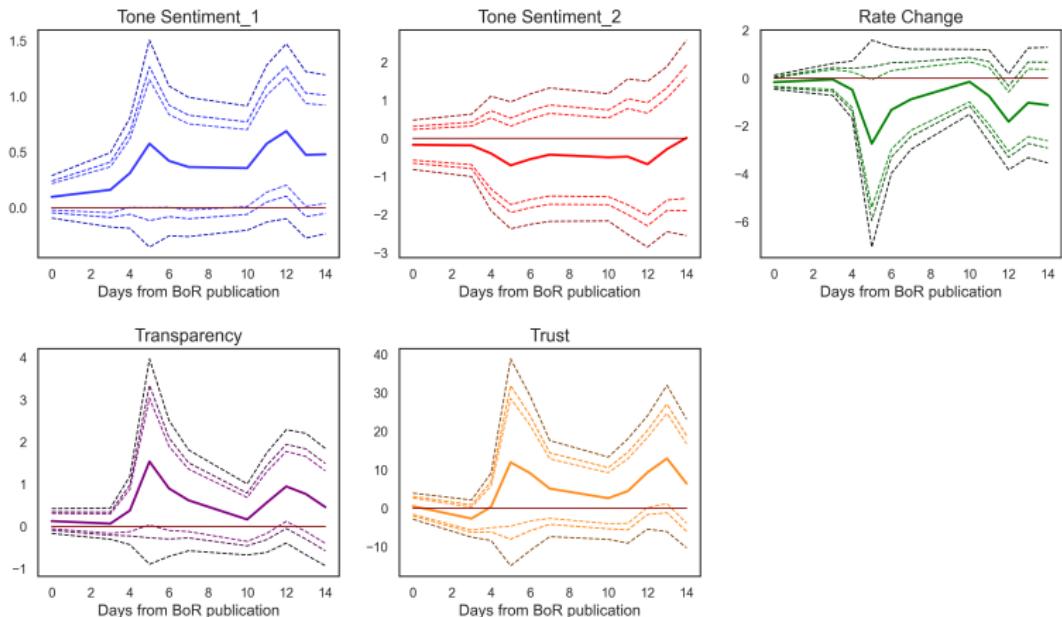
Notes. This figure presents the estimates of β^h and γ^h coefficients from Specification (3). The solid line shows the point estimates, the dashed lines show 90%, 95% and 99% confidence intervals. The lines are linearly interpolated for the horizons with the number of observations lower than the number of degrees of freedom.

Figure A6: Dynamics of the tone sentiment effect, FXGD ETF returns



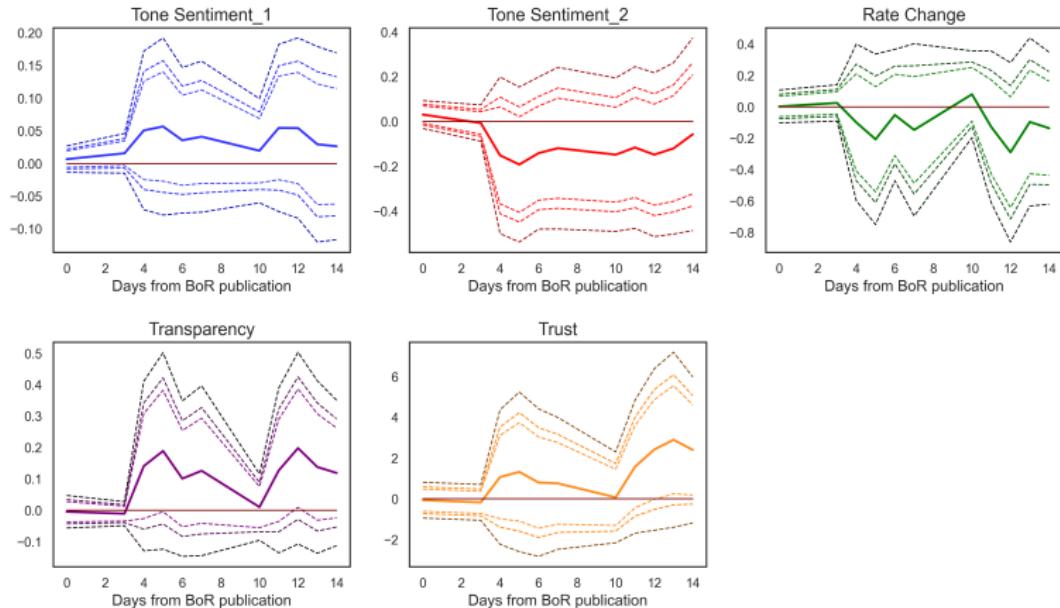
Notes. This figure presents the estimates of β^h and γ^h coefficients from Specification (3). The solid line shows the point estimates, the dashed lines show 90%, 95% and 99% confidence intervals. The lines are linearly interpolated for the horizons with the number of observations lower than the number of degrees of freedom.

Figure A7: Dynamics of the tone sentiment effect,
Government Bond Index RGBITR



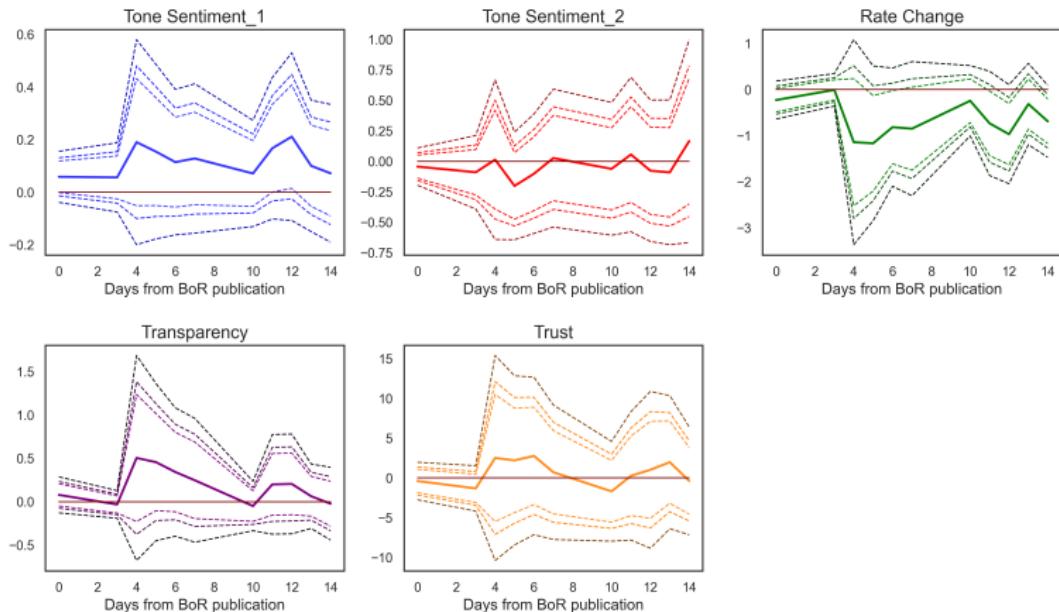
Notes. This figure presents the estimates of β^h and γ^h coefficients from Specification (3). The solid line shows the point estimates, the dashed lines show 90%, 95% and 99% confidence intervals. The lines are linearly interpolated for the horizons with the number of observations lower than the number of degrees of freedom.

Figure A8: Dynamics of the tone sentiment effect,
Government Bond Index for < 1 year duration (RUGBITR1Y)



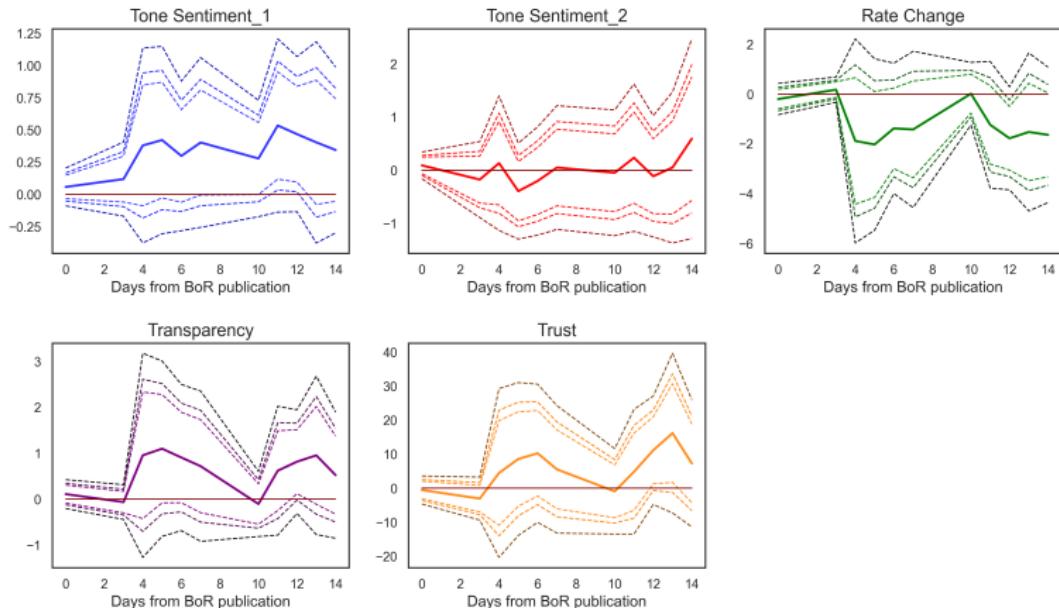
Notes. This figure presents the estimates of β^h and γ^h coefficients from Specification (3). The solid line shows the point estimates, the dashed lines show 90%, 95% and 99% confidence intervals. The lines are linearly interpolated for the horizons with the number of observations lower than the number of degrees of freedom.

Figure A9: Dynamics of the tone sentiment effect,
Government Bond Index for 1-3 years duration (RUGBITR3Y)



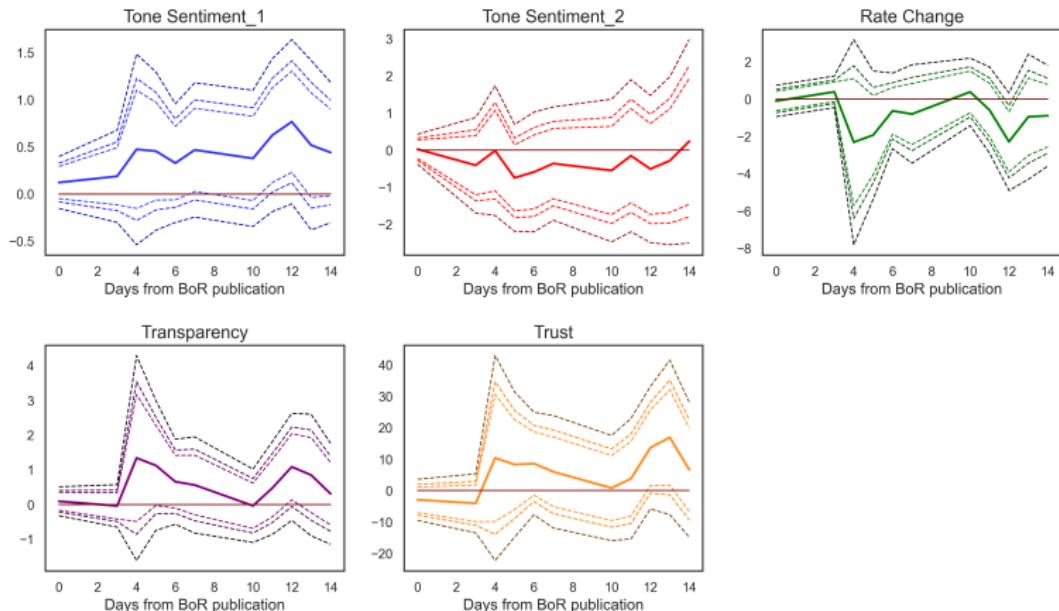
Notes. This figure presents the estimates of β^h and γ^h coefficients from Specification (3). The solid line shows the point estimates, the dashed lines show 90%, 95% and 99% confidence intervals. The lines are linearly interpolated for the horizons with the number of observations lower than the number of degrees of freedom.

Figure A10: Dynamics of the tone sentiment effect,
Government Bond Index for 3-5 years duration (RUGBITR5Y)



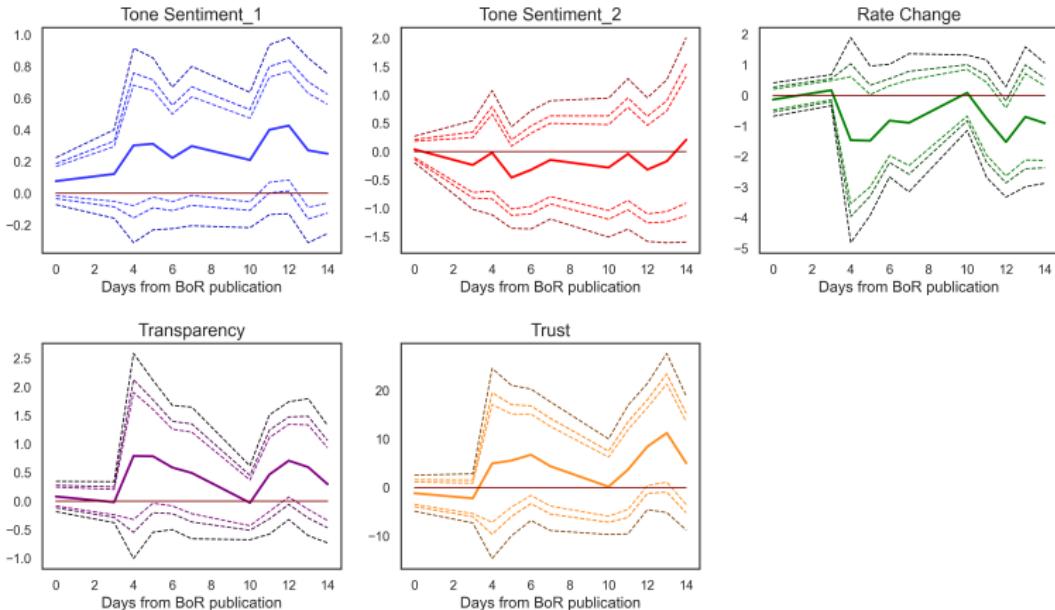
Notes. This figure presents the estimates of β^h and γ^h coefficients from Specification (3). The solid line shows the point estimates, the dashed lines show 90%, 95% and 99% confidence intervals. The lines are linearly interpolated for the horizons with the number of observations lower than the number of degrees of freedom.

Figure A11: Dynamics of the tone sentiment effect,
Government Bond Index for 5-10 years duration (RUGBITR10Y)



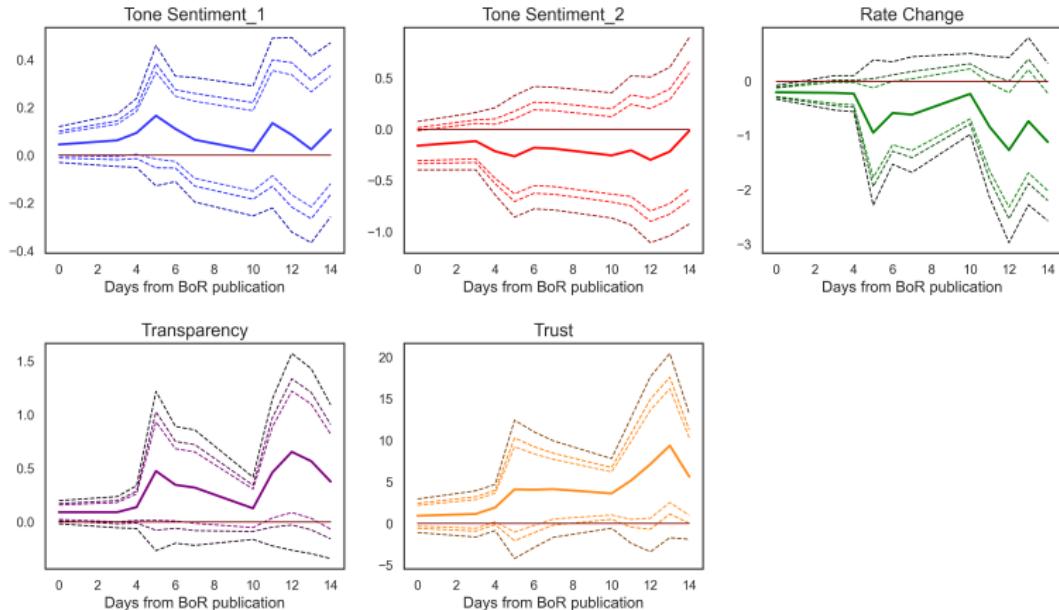
Notes. This figure presents the estimates of β^h and γ^h coefficients from Specification (3). The solid line shows the point estimates, the dashed lines show 90%, 95% and 99% confidence intervals. The lines are linearly interpolated for the horizons with the number of observations lower than the number of degrees of freedom.

Figure A12: Dynamics of the tone sentiment effect,
MOEX Aggregate Bond Index (RUABITR)



Notes. This figure presents the estimates of β^h and γ^h coefficients from Specification (3). The solid line shows the point estimates, the dashed lines show 90%, 95% and 99% confidence intervals. The lines are linearly interpolated for the horizons with the number of observations lower than the number of degrees of freedom.

Figure A13: Dynamics of the tone sentiment effect,
Russian corporate deb (RUCBITR)



Notes. This figure presents the estimates of β^h and γ^h coefficients from Specification (3). The solid line shows the point estimates, the dashed lines show 90%, 95% and 99% confidence intervals. The lines are linearly interpolated for the horizons with the number of observations lower than the number of degrees of freedom.

Table A15: Summary statistics of the outcome variables

	Obs	Mean	Std	Min	25%	Median	75%	Max
<i>Stock market</i>								
MOEX	40	-0.1930	0.7432	-2.2300	-0.6242	-0.1435	0.2235	1.1705
RTS	40	-0.3869	1.1293	-3.7538	-1.1094	-0.2182	0.4393	1.6204
<i>Inflation expectations</i>								
FXGD	40	0.0028	1.0272	-3.3081	-0.6860	0.1064	0.5629	2.0748
<i>Bond market</i>								
RGBTIR	40	0.0439	0.4219	-0.8166	-0.1320	0.0517	0.1463	2.0852
RUGBITR1Y	40	0.0292	0.0633	-0.1539	0.0000	0.0383	0.0625	0.1471
RUGBITR3Y	40	-0.0521	0.2359	-1.1802	-0.0843	0.0162	0.0755	0.2117
RUGBITR5Y	40	-0.1149	0.3524	-1.8063	-0.1694	0.0040	0.0774	0.3078
RUGBITR10Y	40	-0.2310	0.5344	-1.9699	-0.3489	-0.0848	0.0776	0.6713
RUCBITR	40	0.0735	0.2016	-0.1731	-0.0313	0.0177	0.1206	0.8483
RUABITR	40	-0.1067	0.3169	-1.3824	-0.2075	-0.0016	0.0846	0.4513