Censorship in Democracy

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IPES 2024

Motivation

A rising threat:

- Misinformation, propaganda and biased narratives as major source of risk (Global Risks Report, 2024)
- 2016 US Presidential Elections $\rightarrow$ Autocracies shifted from outright repression to controlling narratives (Guriev and Treisman, 2015)

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How can democracies counteract?

- Micro: individual level
  $\rightarrow$ Effective, see evidence in Guriev et al., 2023

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  $\rightarrow$ Effective, see evidence in Guriev et al., 2023
- Macro: regulatory and top-down
  $\rightarrow$ **Trade-off**: Regulating media activity vs. Ensuring freedom of speech

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- Macro: regulatory and top-down
  $\rightarrow$ **Trade-off**: Regulating media activity vs. Ensuring freedom of speech

This paper: Understand the effectiveness and consequences of media censorship in the context of liberal democracies.

Setting

Source: Politico

Kyiv Independent | @RT after ban

Context: Russia invades Ukraine in Feb. 2022

Decision: "Russia Today and Sputnik, as well as their subsidiaries, will no longer be able to spread their lies to justify Putin's war and to sow division in our union." Ursula von der Leyen, Feb. 27, 2022 in The Guardian

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→ **Ban**: *supply shock* in a particular media market and a *natural experiment*

a. signaling effect, decreased tolerance

b. increasing cost of content creation

Outcome of interest

> Systematic information manipulation and disinformation by the Kremlin is applied as an operational tool in its assault on Ukraine. It is also a significant and direct threat to the Union's public order and security. Today, we are taking an important step against Putin's manipulation operation and turning off the tap for Russian state-controlled media in the EU. We have already earlier put sanctions on leadership of RT, including the editor-in-chief Simonyan, and it is only logical to also target the activities the organisations have been conducting within our Union.
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> — **Josep Borrell, High Representative for Foreign Affairs and Security Policy**

Media slant: Discourse on the war conceptualized by a one-dimensional continuum between two narrative poles: pro-Russia and pro-Ukraine (governments).

Source: Council of the EU - Press release

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Media slant: Discourse on the war conceptualized by a one-dimensional continuum between two narrative poles: pro-Russia and pro-Ukraine (governments).

Source: Council of the EU - Press release

Data

Government tweets:

- 5,993 tweets from Russian government from month around the ban

- 9,451 tweets from Ukrainian government from month around the ban

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- 9,451 tweets from Ukrainian government from month around the ban

Users tweets:

- English tweets about the war from the month around the ban

- UK, Switzerland (control), Austria, Ireland, Italy, Germany, France (treat)

- Total of 775,616 tweets

- Total of 133,276 users

Map of users

Computing media slant

1. Download tweets from government accounts Accounts
2. Text embedding of government tweets Text embedding
3. Aggregate government tweets by side and day Aggregation
4. Download and embed users' tweets Users' tweets
5. Compute cosine similarities, take ratio, and standardize Language similarity

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Output: Continuous, standardized measure of slant

- Neutral if $= 0$
- Russian slant tweet if > 1

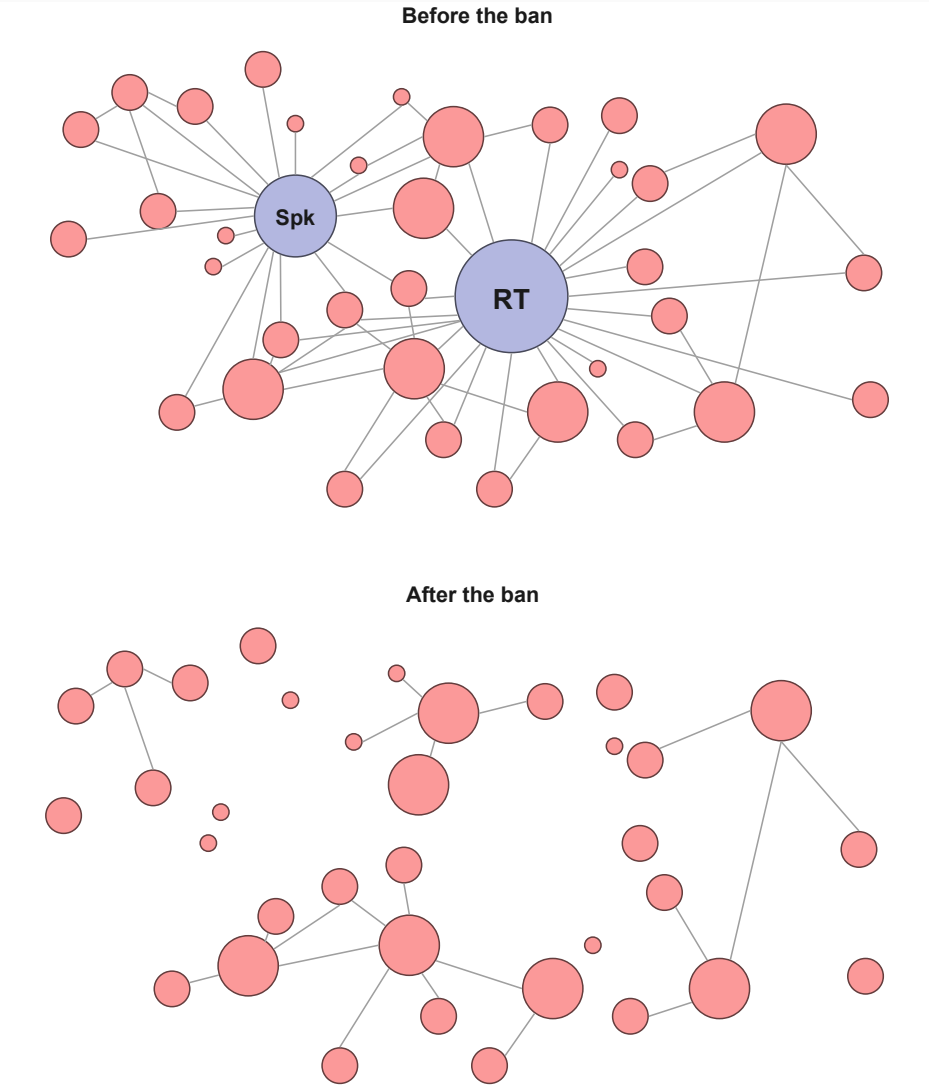
Summary statistics - tweets Summary statistics - users

Estimation

$$Y_{i,t} = \alpha_i + \gamma_t + \beta \cdot EU_i \times Ban_t + \Theta \boldsymbol{X}_{i,t} + \epsilon_{i,t}, \tag{1}$$

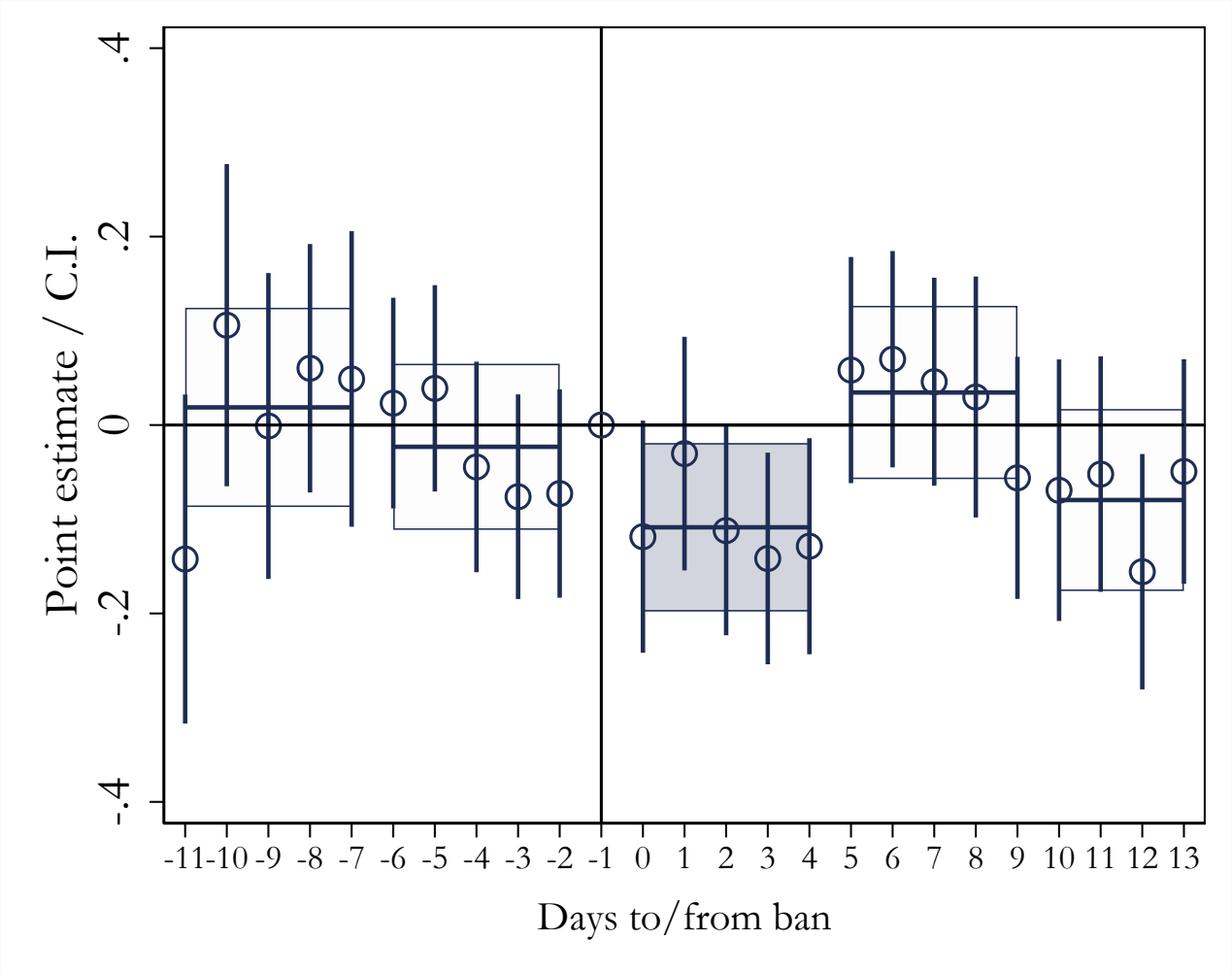
– $Y_{i,t}$ measure of user's content slant
– EU_i dummy variable is 1 for users whose account is located in the EU, 0 otherwise
– Ban_t indicator equal to 1 after (inclusively) March 2, 2022
– α_i user fixed effects
– γ_t time fixed effects
– standard errors are clustered at the user level

Interaction users



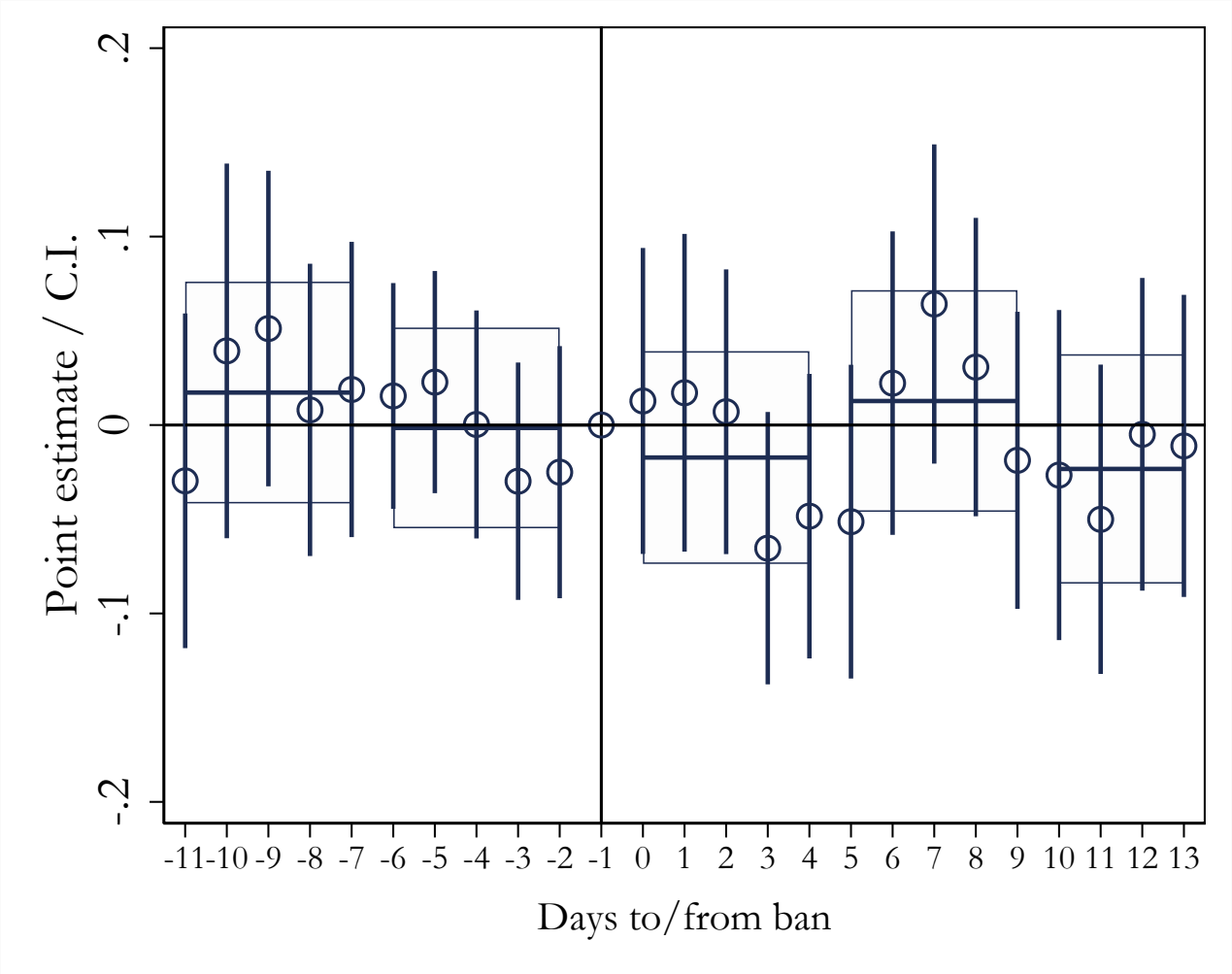
Interaction users: Intensity of slant

Figure 1: *Daily event-study on our slant measure: Interaction users*



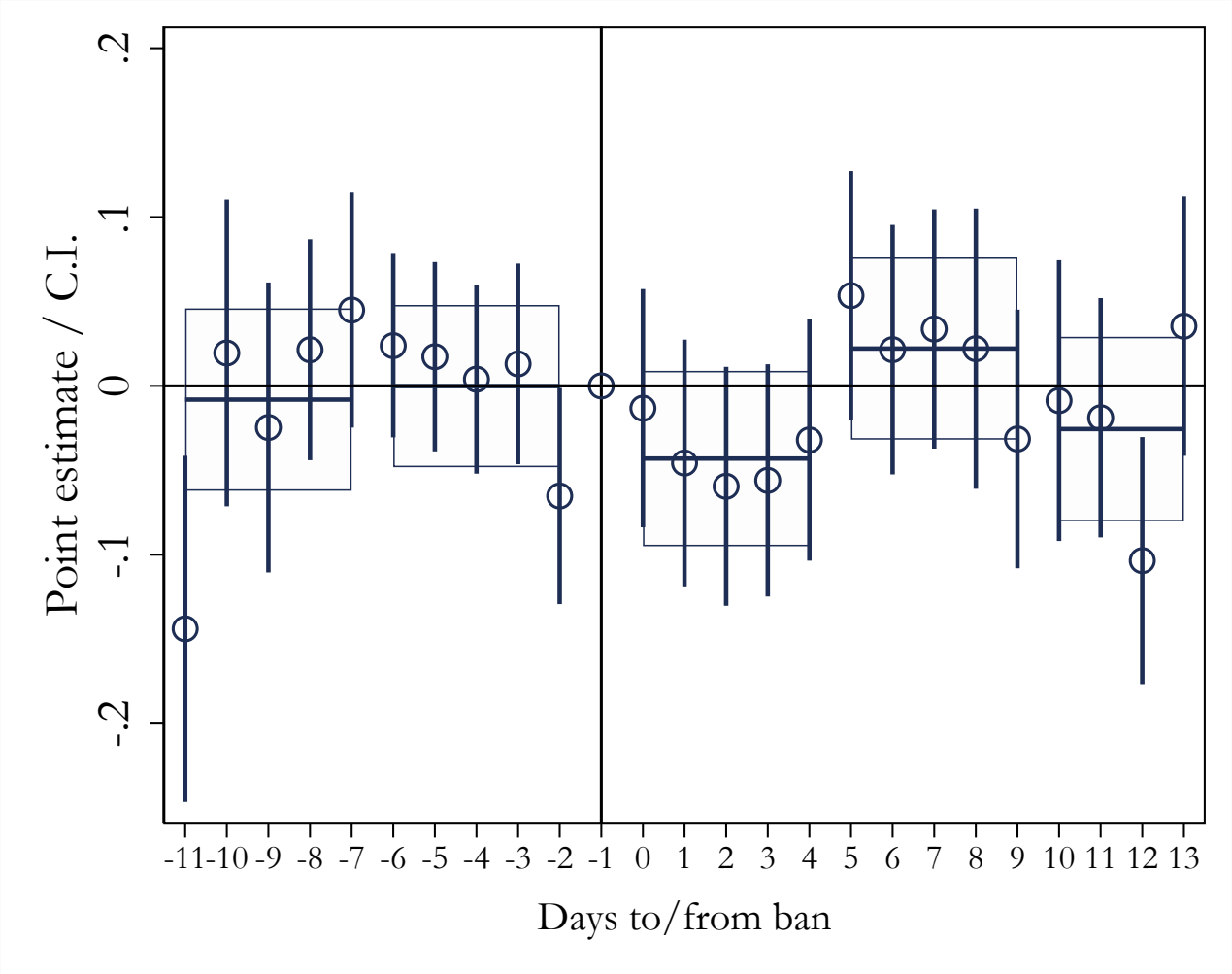
Interaction users: Tweets share

Figure 2: *Daily event-study on share of slanted tweets: Interaction users*



Interaction users: Retweets share

Figure 3: *Daily event-study on share of slanted retweets: Interaction users*

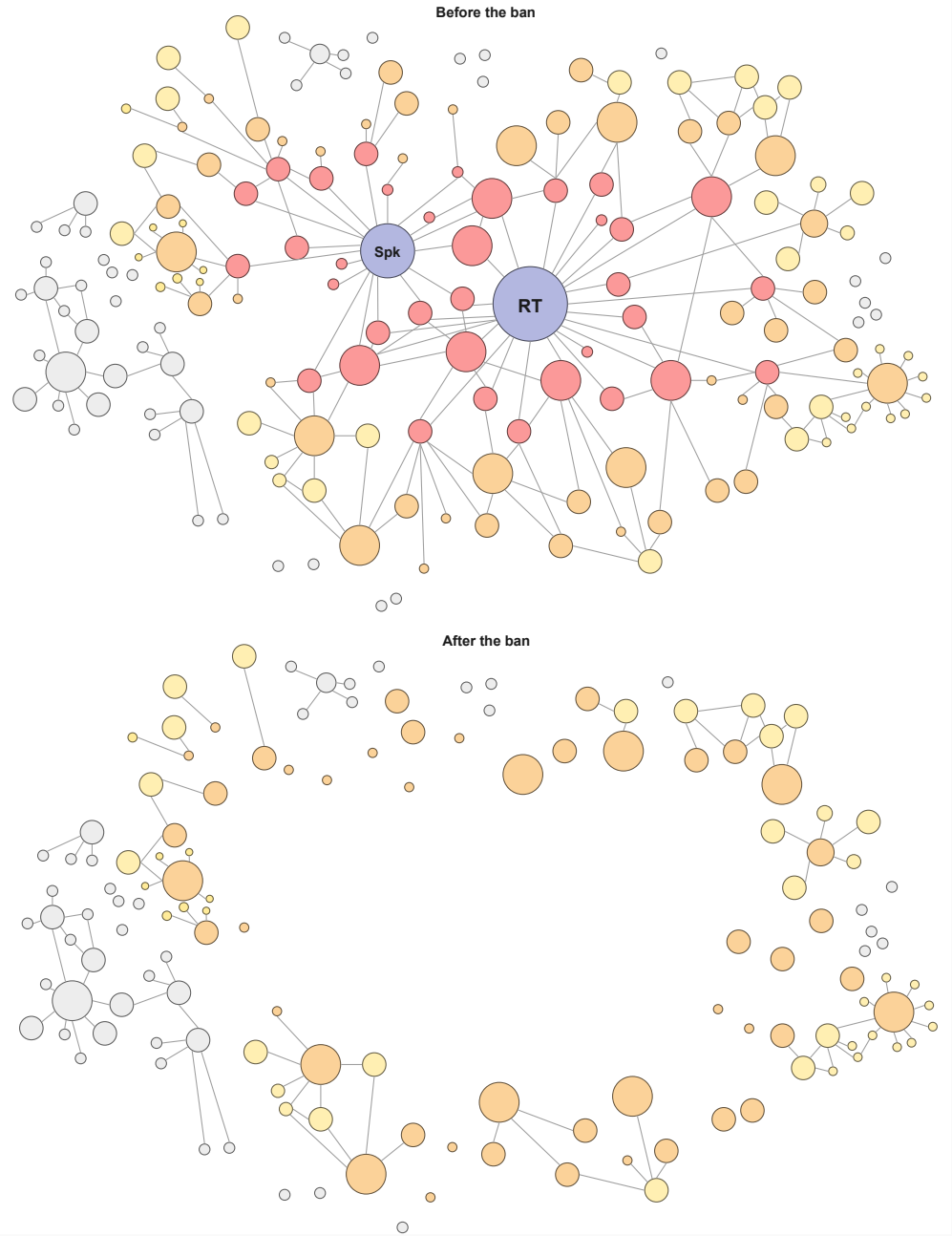


Interaction users: Persistence

Table 1: *User-day level two-periods TWFE with post-ban weeks interactions: Interaction users*

	(1)	(2)	(3)	(4)	(5)
	Avg. media slant	% pro-Russia tweets	% pro-Russia retweets	Tot. Pro-Russia tweets	Tot. pro-Russia retweets
EU × 1st week after-ban	-0.050	-0.020	-0.017	-0.041	-0.034
	[0.023]	[0.014]	[0.013]	[0.020]	[0.026]
EU × 2nd week after-ban	-0.034	-0.002	-0.010	0.004	-0.018
	[0.025]	[0.016]	[0.014]	[0.017]	[0.024]
User FEs	yes	yes	yes	yes	yes
Day FEs	yes	yes	yes	yes	yes
Observations	29704	16508	19614	29704	29704
R^2	0.343	0.236	0.247	0.215	0.375
Pre-period mean of DV	-0.068	0.113	0.162	1.324	1.861
1st week % of mean	-73.83	-17.39	-10.23	-3.07	-1.83

Non-interaction users



Non-interaction users: Indirect effect

Table 2: *User-day level two-periods TWFE: Interaction and non-interaction users*

Panel A: Interaction users

	(1) Avg. media slant	(2) % pro-Russia tweets	(3) % pro-Russia retweets	(4) Tot. Pro-Russia tweets	(5) Tot. pro-Russia retweets
EU × after-ban	-0.043	-0.012	-0.014	-0.021	-0.027
	[0.020]	[0.012]	[0.011]	[0.015]	[0.021]
User FEs	yes	yes	yes	yes	yes
Day FEs	yes	yes	yes	yes	yes
Observations	29704	16508	19614	29704	29704
R^2	0.343	0.236	0.247	0.215	0.375
Pre-period mean of DV	-0.068	0.113	0.162	1.324	1.861
% of mean	-63.13	-10.88	-8.45	-1.60	-1.45

Panel B: Non-interaction users

	(1) Avg. media slant	(2) % pro-Russia tweets	(3) % pro-Russia retweets	(4) Tot. Pro-Russia tweets	(5) Tot. pro-Russia retweets
EU × after-ban	-0.034	0.002	-0.038	-0.004	-0.011
	[0.007]	[0.004]	[0.004]	[0.006]	[0.005]
User FEs	yes	yes	yes	yes	yes
Day FEs	yes	yes	yes	yes	yes
Observations	312779	147536	181353	312779	312779
R^2	0.424	0.328	0.313	0.299	0.297
Pre-period mean of DV	-0.199	0.101	0.140	0.934	1.110
% of mean	-17.27	1.75	-26.85	-0.44	-1.00

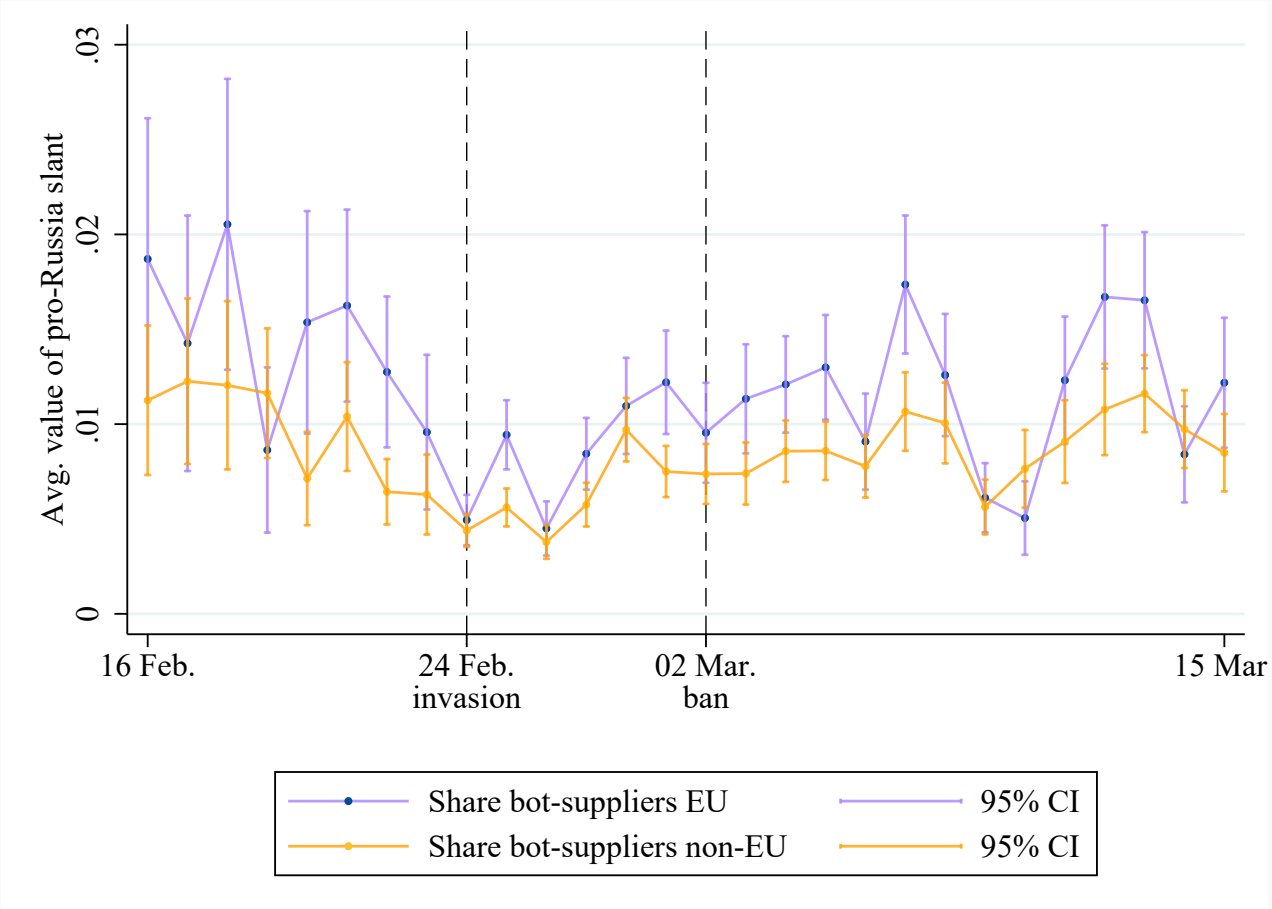
Efficacy of the ban

Suppliers activity: Did new suppliers activate right after the ban in EU to counteract the ban?

Circumvention of ban: Did the outlets circumvent the ban and maintain their high levels of activity?

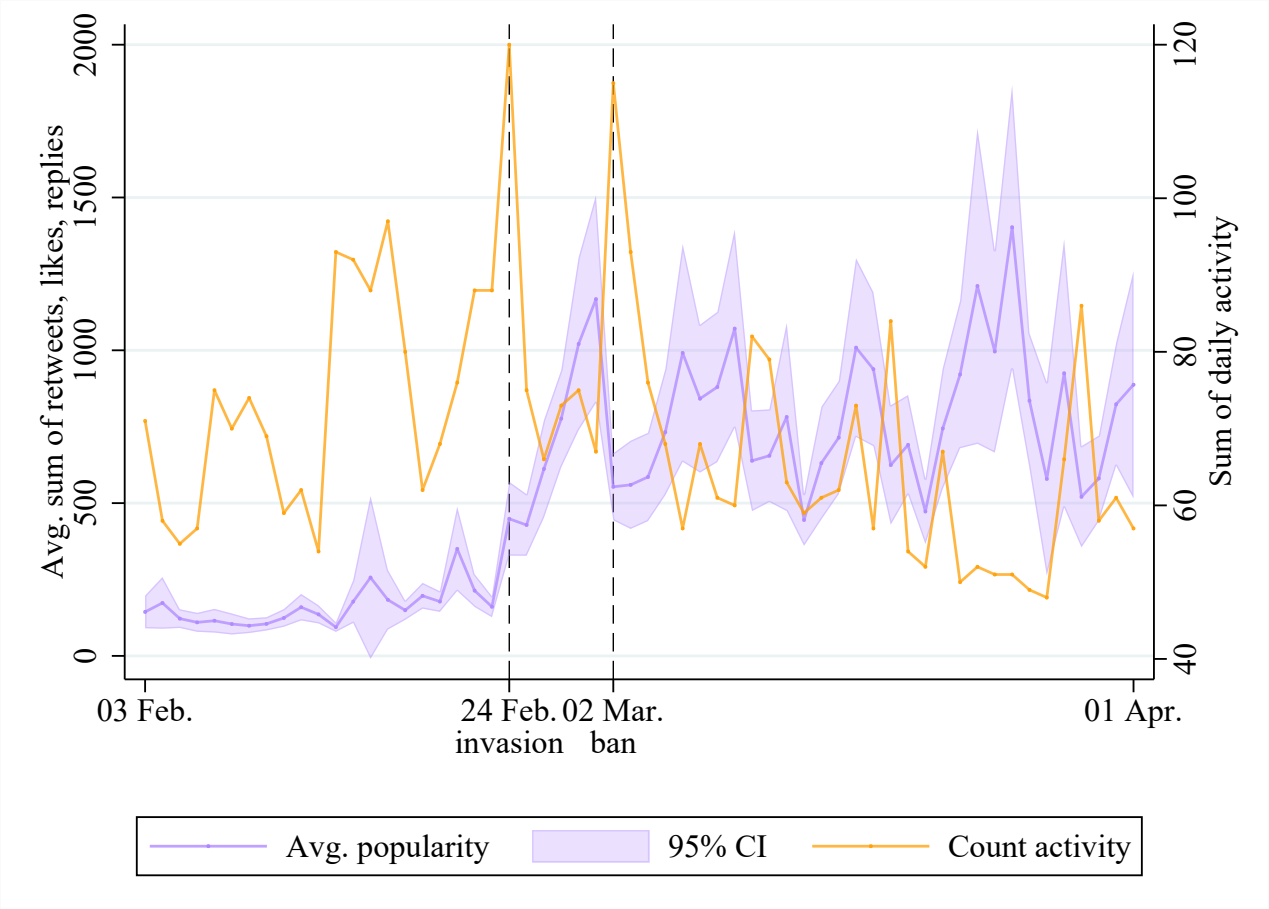
Share of bot-suppliers

Figure 4: *Share of bots-users supplying slanted content*



Circumventing the ban

Figure 5: *Activity and reach of Russia Today*



Conclusion

Summary:

- First natural experiment to assess effect of censorship in democracy
- Data-driven media slant measure based on language similarity
- Direct effect of ban on users that had interacted with outlets
- Smaller effect of ban on overall discourse
- Suggestive evidence of media market reaction

Censorship as a policy tool?

- Decentralized nature of social media poses new challenge
- Simple ban like this only partly effective
- Effects' size and persistence enough to justify the ban?

Thank you!

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Appendix - Related literature

Effects of censorship

(Chen and Yang, 2019; Becker, Pino, and Vidal-Robert, 2021; Bjørnskov and Voigt, 2021)

→ Investigation into the effects of censorship in a democratic context

Media and content moderation

(Jiménez Durán, Müller, and Schwarz, 2022; Müller and Schwarz, 2022)

→ Analysis of the reaction of suppliers of slanted content after a politically-decided ban

→ Use of a natural experiment with variation in implementation of ban

Measure of propagandist media slant

(Enikolopov, Petrova, and Zhuravskaya, 2011; Yanagizawa-Drott, 2014; Adena et al., 2015)

→ Propose a new (and simple) data-driven way to measure propagandist media slant (Gentzkow and Shapiro, 2010; Gennaro and Ash, 2023)

Appendix - Kyiv Independent on RT and Spk

The Kyiv Independent
@KyivIndependent

⚡ EU bans Russia Today, Sputnik. Russia's two main propaganda networks are now to shut down all across the union.

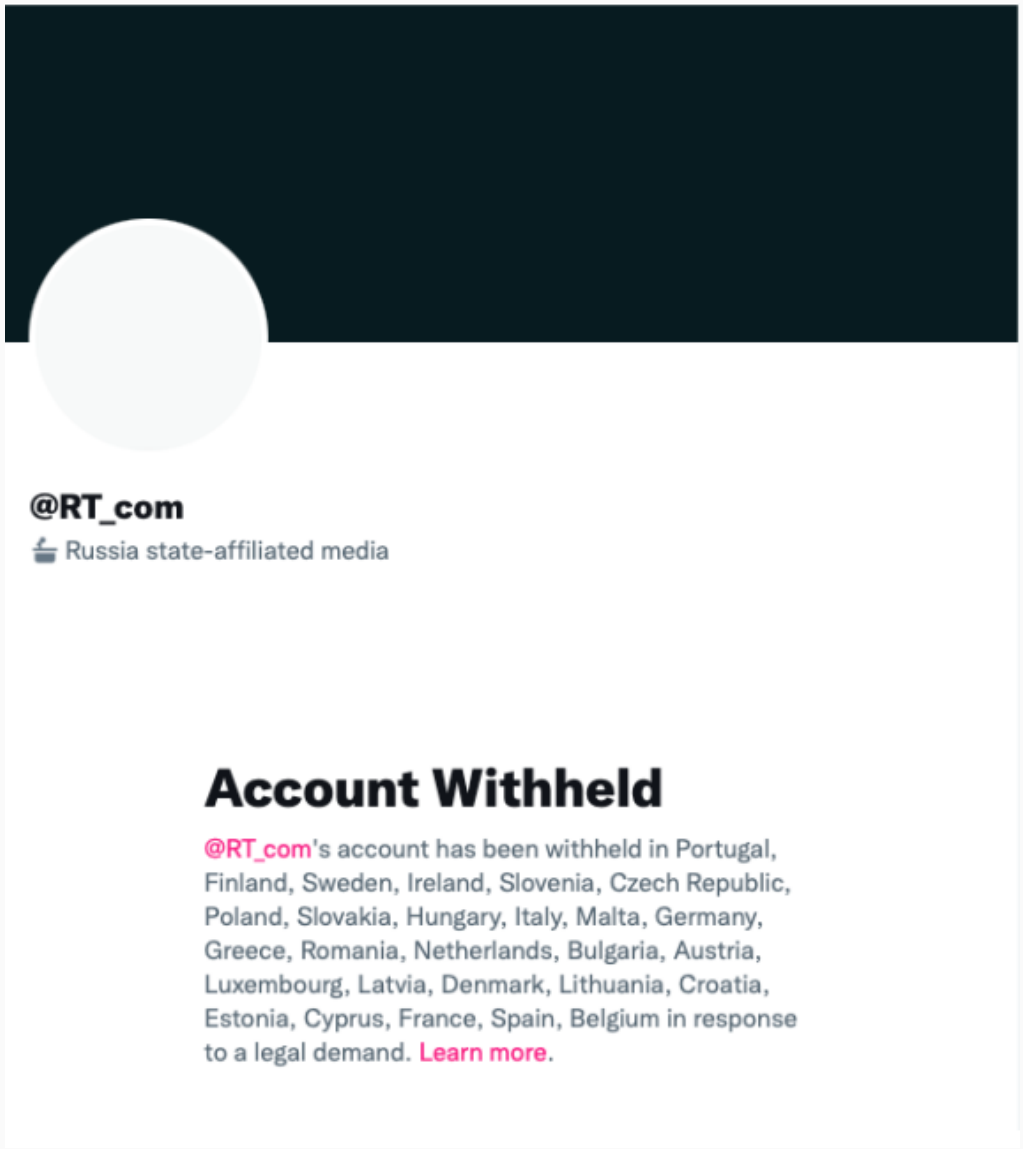
6:48 PM · Feb 27, 2022

5,903 Reposts **437** Quotes **54.7K** Likes **135** Bookmarks

Residents of the two regions proclaimed the Donetsk People's Republic (DPR) and Lugansk People's Republic (LPR) in 2014, after US-backed nationalists carried out a coup against the democratically elected government in Kiev. Subsequent Ukrainian governments have accused Russia of invasion and occupation, and repeatedly tried to take the rebel regions by force.

Natural Experiment

Appendix - Twitter's message



Source: TechCrunch

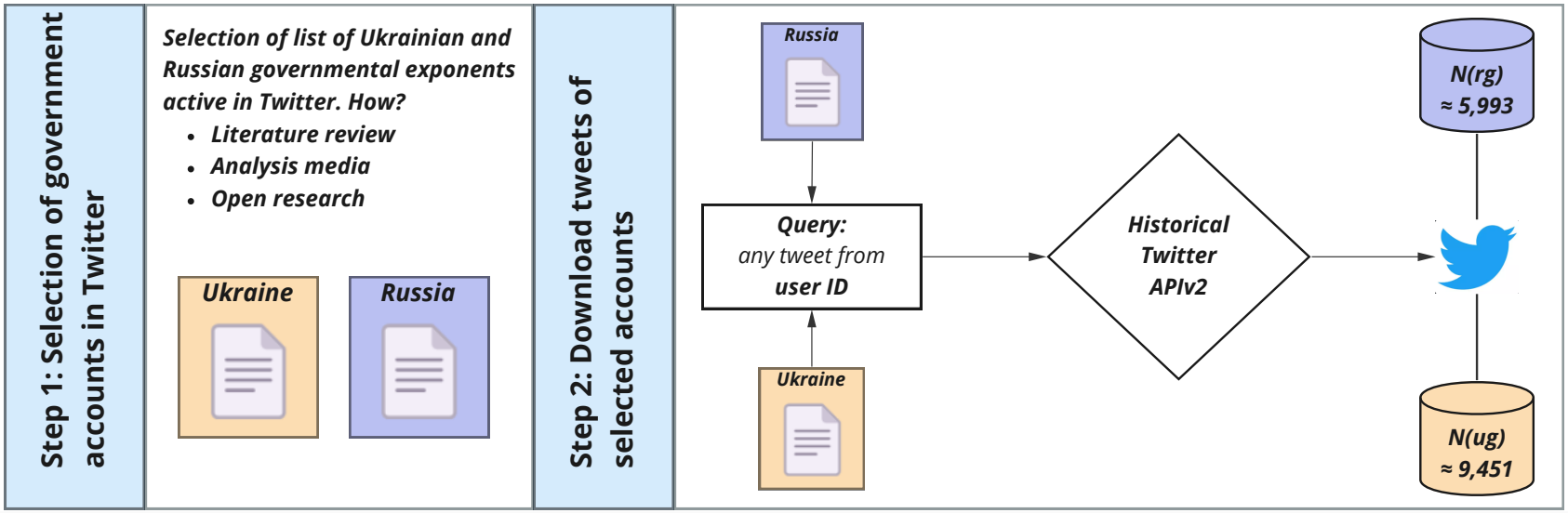
Appendix - Government accounts

Table: *Accounts of the Russian and Ukrainian governments' representatives*

Ukrainian Accounts	Account Holder	Russian Accounts	Account Holder
https://twitter.com/DI_Ukraine	Defence Intelligence	https://twitter.com/RussianEmbassy	Embassy in the UK
https://twitter.com/Ukraine	Ukraine	https://twitter.com/mfa_russia	Ministry of Foreign Affairs
https://twitter.com/DefenceU	Ministry of Defense	https://twitter.com/mission_rf	Mission to the International Organizations in Vienna
https://twitter.com/CinC_AFU	Colonel General Oleksandr Syrskyi	https://twitter.com/RF_OSCE	Mission to the OSCE
https://twitter.com/oleksiireznikov	Minister of Defence	https://twitter.com/RusEmbUSA	Embassy in the US
https://twitter.com/kabmin_ua_e	Cabinet of Ministers	https://twitter.com/RussianEmbassyC	Embassy in Canada
https://twitter.com/MFA_Ukraine	Ministry of Foreign Affairs	https://twitter.com/KremlinRussia_E	Official Kremlin News
https://twitter.com/DmytroKuleba	Minister of Foreign Affairs	https://twitter.com/EmbassyofRussia	Embassy in South Africa
https://twitter.com/AndriyYermak	Head of the Office of the President	https://twitter.com/PMSimferopol	Ministry of Foreign Affairs' Office in Crimea
https://twitter.com/NSDC_ua	Press Service of the National Security and Defense Council	https://twitter.com/RusMission_EU	Mission to the EU
https://twitter.com/UKRinDEU	Embassy of Ukraine in Germany	https://twitter.com/RusBotschaft	Embassy in Germany
https://twitter.com/ukrinche	Embassy of Ukraine in Switzerland	https://twitter.com/RusEmbSwiss	Embassy in Switzerland
https://twitter.com/ukrinfra	Embassy of Ukraine in France	https://twitter.com/ambrusfrance	Embassy in France
https://twitter.com/ukrinit	Embassy of Ukraine in Italy	https://twitter.com/rusembitaly	Embassy in Italy
https://twitter.com/UkrEmbLondon	Embassy of Ukraine in the UK		
https://twitter.com/MelnykAndrij	Ukrainian Ambassador to Germany		

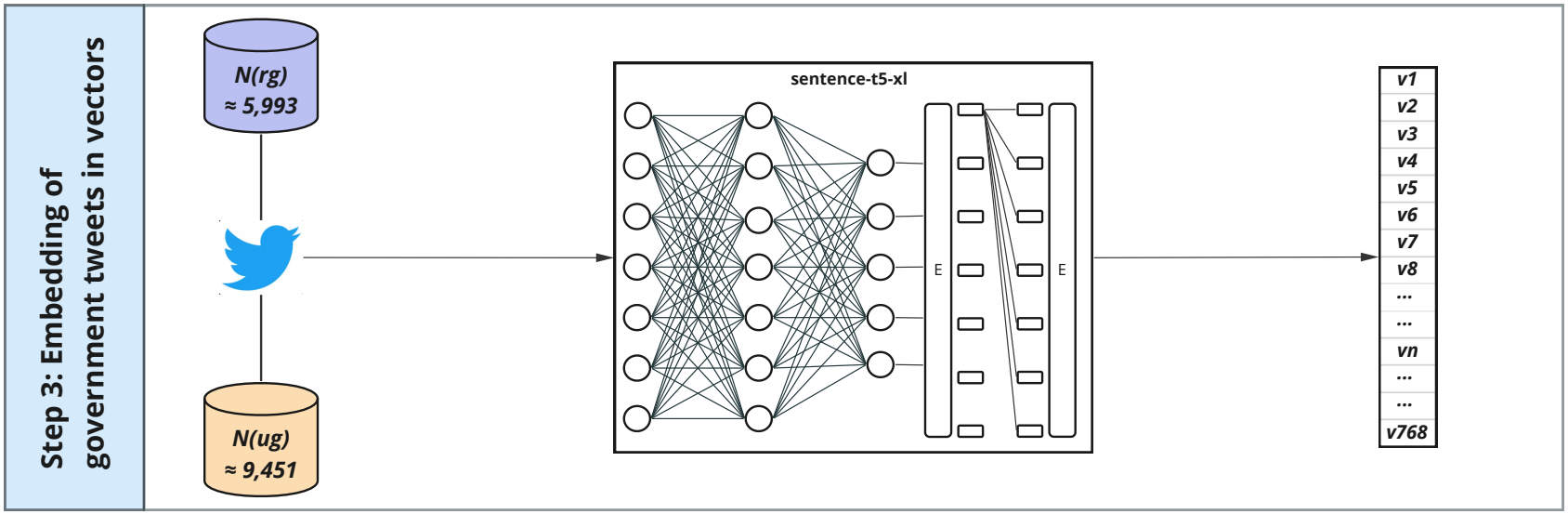
Method

Appendix - Pipeline method (i.)



Method

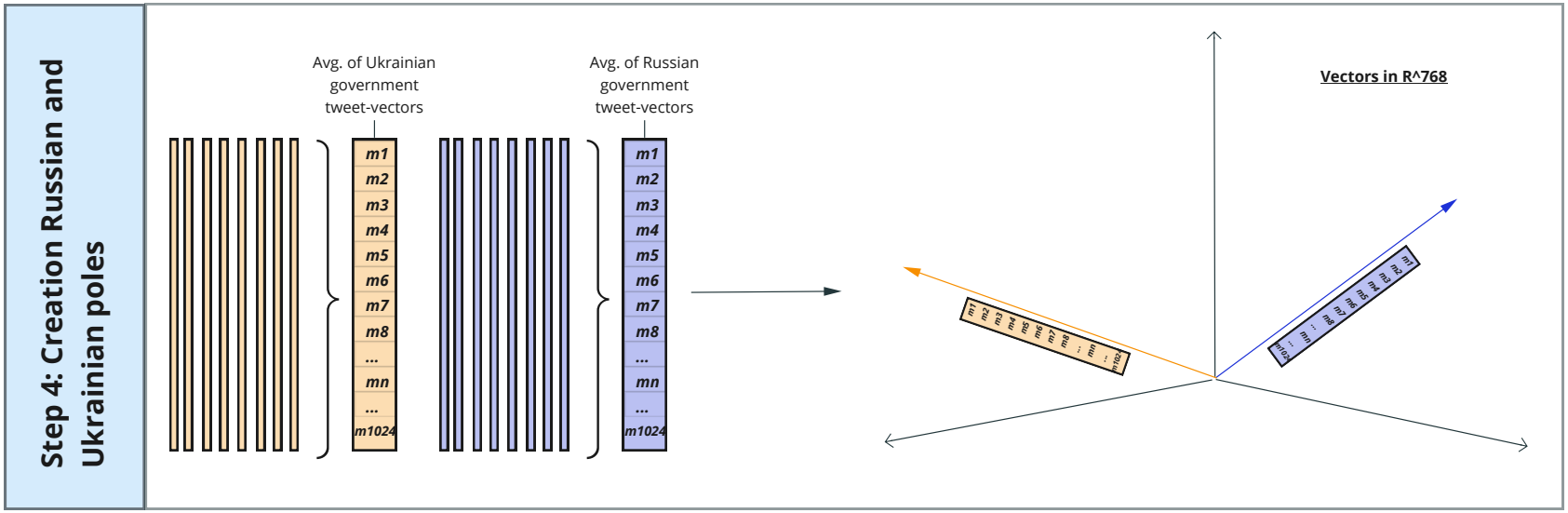
Appendix - Pipeline method (ii.)



More on word embeddings

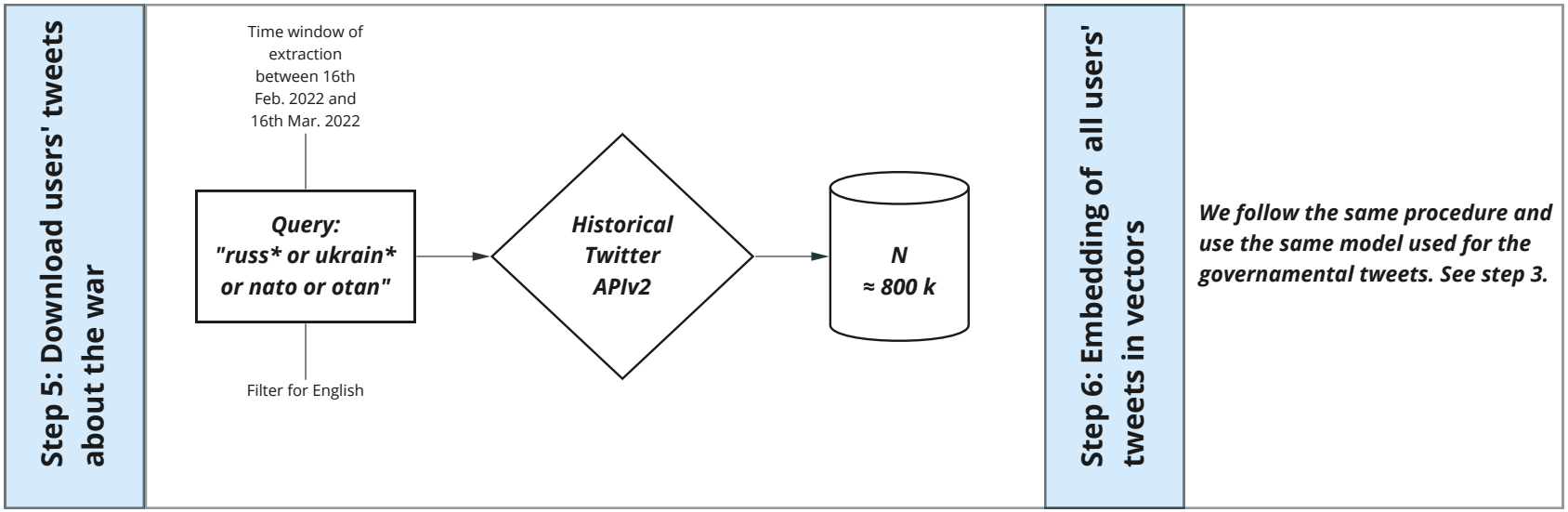
Method

Appendix - Pipeline method (iii.)



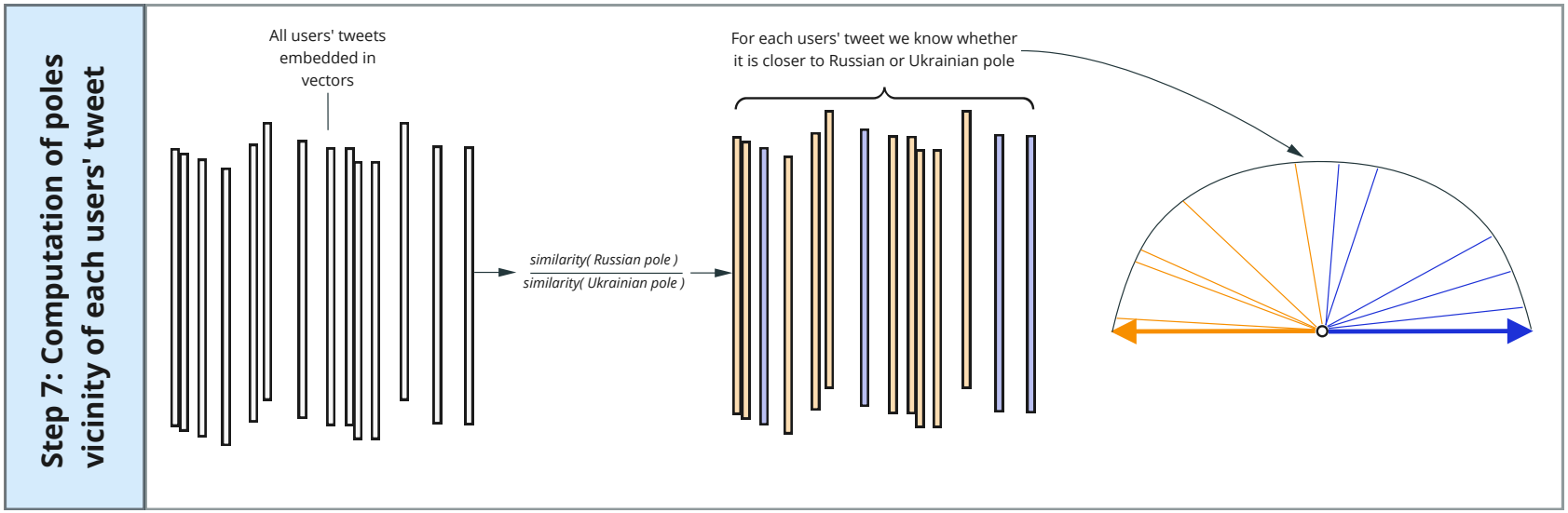
Method

Appendix - Pipeline method (iv.)



Method

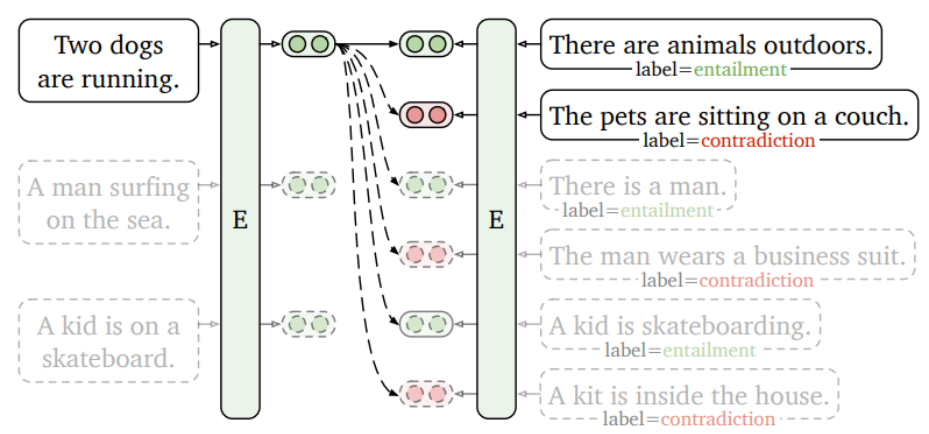
Appendix - Pipeline method (v.)



Method

Appendix - Model sentence-t5-xl

- 768-dimensional vector representation
- Sentence instead of word level
- Contrastive learning on top of text-to-text transfer transformer (T5) - similar to BERT **ni2021xlsentence**



gao2021simcse

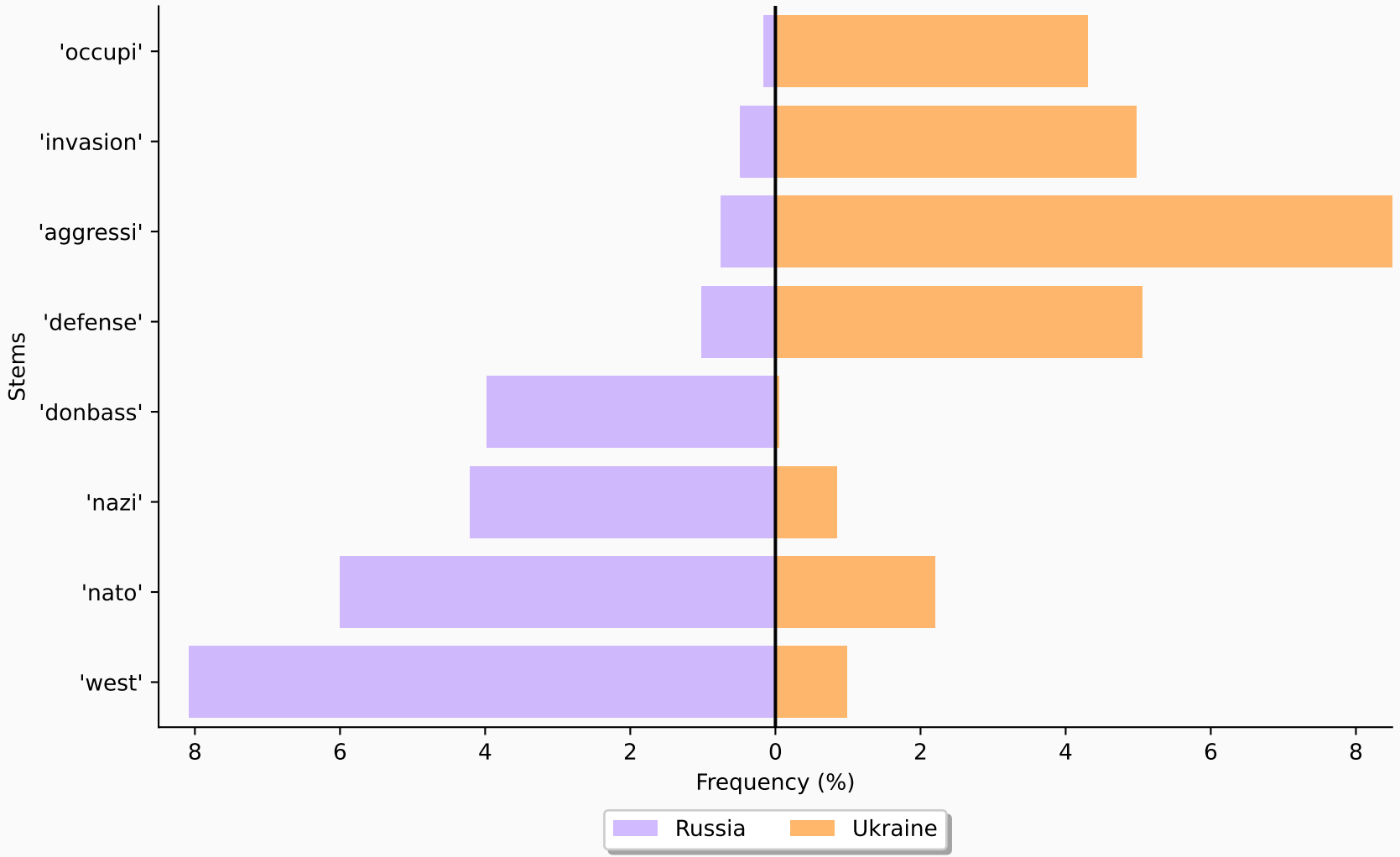
→ more light-weight solution than full-scale large language model

→ better contextualization than word embeddings

Pipeline Step 3

Appendix - Governments' tweets word-frequency

Figure: Frequency of different word stems by government exponents



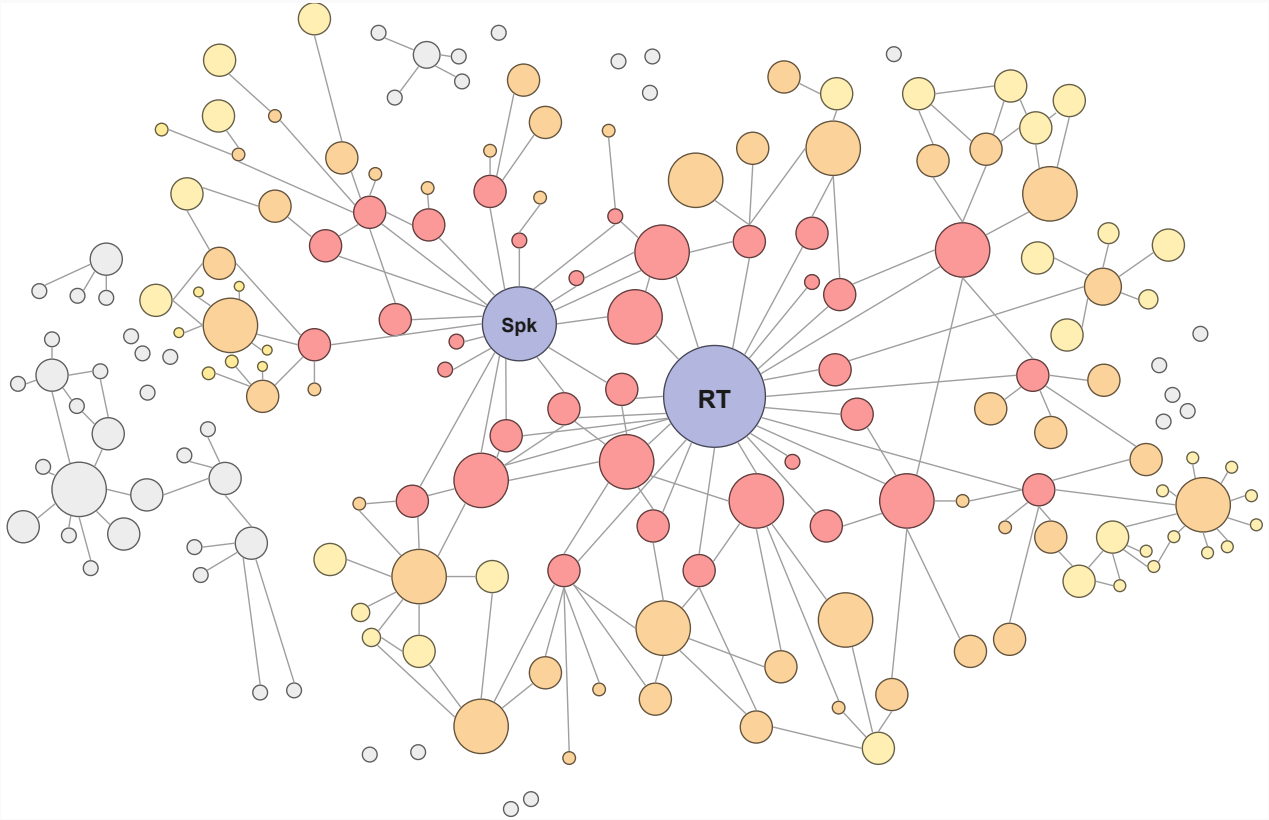
Appendix - Example tweets

Index value: -1.95

Index value: 2.34

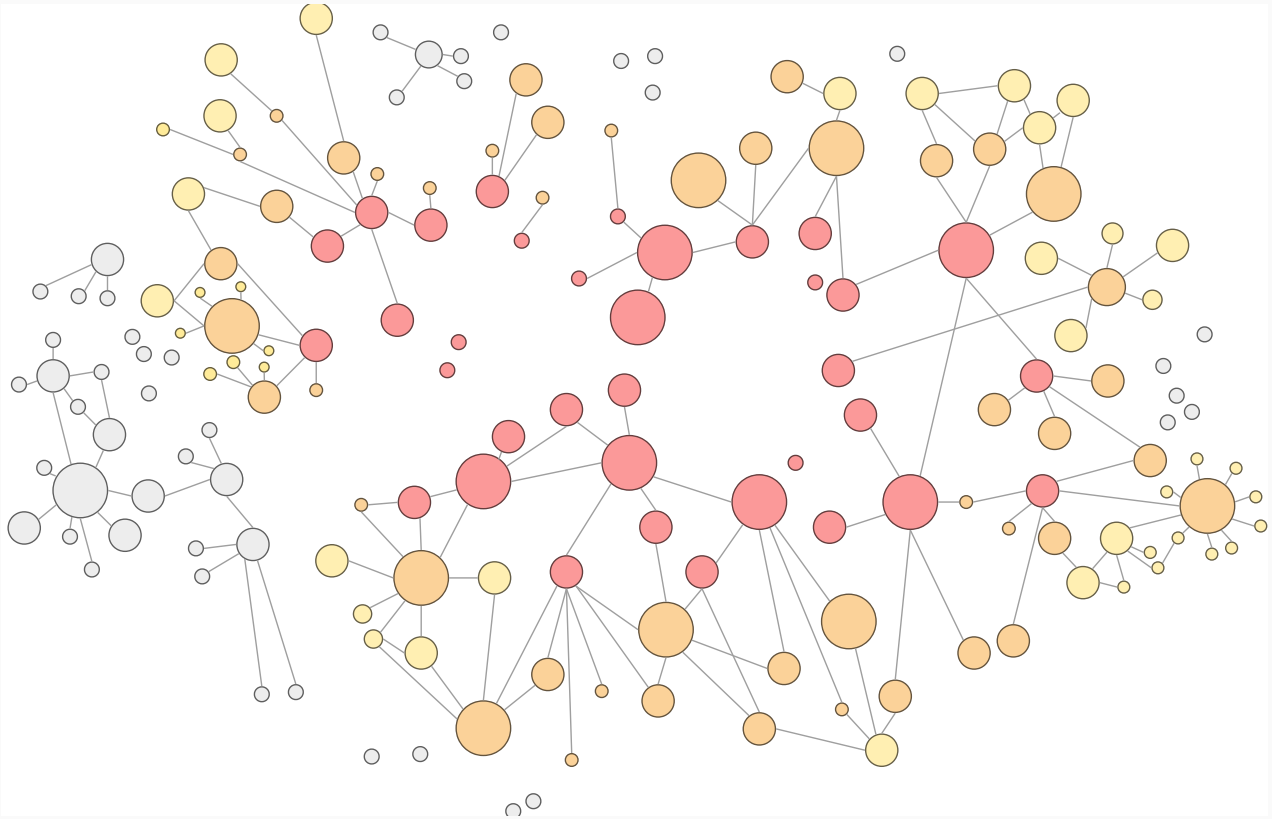
Appendix - Conceptual Framework (i.)

- Media market (Mullainathan and Shleifer, 2005; Gentzkow and Shapiro, 2011) where all participants discuss about the war
- Outlets try to reach readers, readers can become suppliers of slant



Appendix - Conceptual Framework (ii.)

- The ban represents a supply shock eliminating two important suppliers:
  - signal effect, there is a risk of being banned,
  - more costly to find content for consumers and smaller suppliers.
- We are interested in **intensive** and **extensive** margin



Appendix - Conceptual Framework (iii.)

How to assess the impact of the ban?

1. Users most connected to outlets (*interaction users*), receive highest signal and lose close supplier of content:
   - *Hp:* **shift away** from Russian state narratives to avoid ban/block,
   - *Hp:* **change in activity**, no prior in which direction.

2. Users not connected to outlets (*non-interaction users*), may not perceive ban, but may be affected by decrease slant level:
   - *Hp:* **no change** in extremism of their slant,
   - *Hp:* **no change** in activity.

3. Social media is a particular media market, providing the chance to users to react to the ban:
   - *Hp:* **new suppliers** activate to counteract the ban (bots, etc.),
   - *Hp:* inelastic demand, users **seek alternative** among existing suppliers,
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Appendix - Summary Statistics on tweets

Table: *Summary statistics - tweet level*

	Mean	Median	St. Dev.	Min.	Max.
Dependent Variables					
Propaganda ratio	-.00011	.042	1	-4	4.8926959038
Russian propaganda tweet	.057	0	.23	0	1
Russian propaganda retweet	.1	0	.3	0	1
Tweet type					
Retweet	.53	1	.5	0	1
No. of words	25	23	11	1	108
No. of mentions	1.6	1	2.4	0	50
No. of hashtags	.44	0	1.6	0	42
No. of Observations	775,616				

Method

Appendix - Summary statistics on users

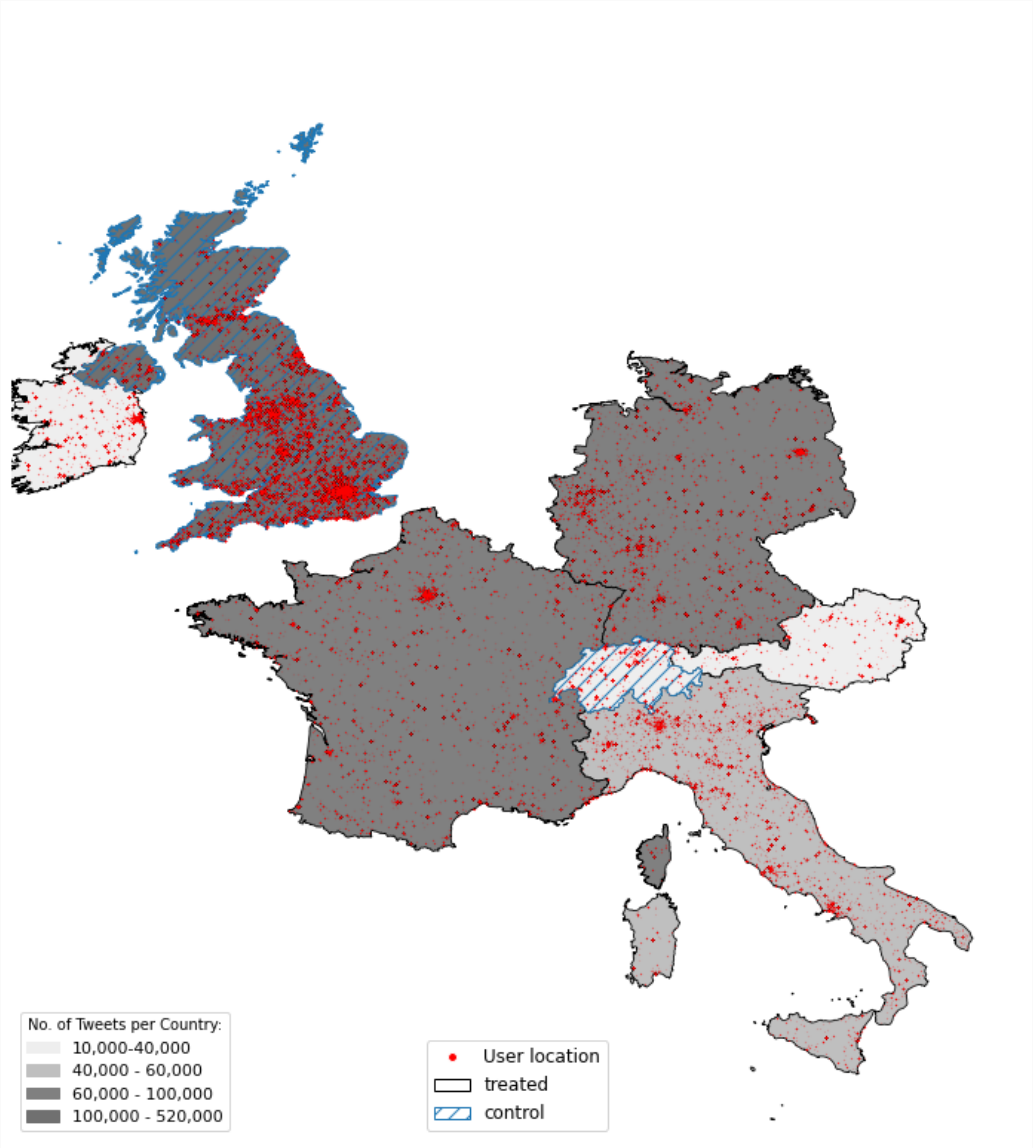
Table: *Summary statistics - user level*

	Mean	Median	St. Dev.	Min.	Max.
User behavior					
No. tweets from user	2.7	1	12	0	1,528
No. retweets from user	3.1	1	11	0	616
No. replies from user	.52	0	2.1	0	202
No. russian propaganda tweets	.33	0	1.6	0	300
No. russian propaganda retweets	.6	0	2.3	0	138
Interacted with RT/Spk	.037	0	.19	0	1
No. retweets of RT/Spk	.001	0	.044	0	6
Region					
European Union	.39	0	.49	0	1
No. of Observations	133,276				

Method

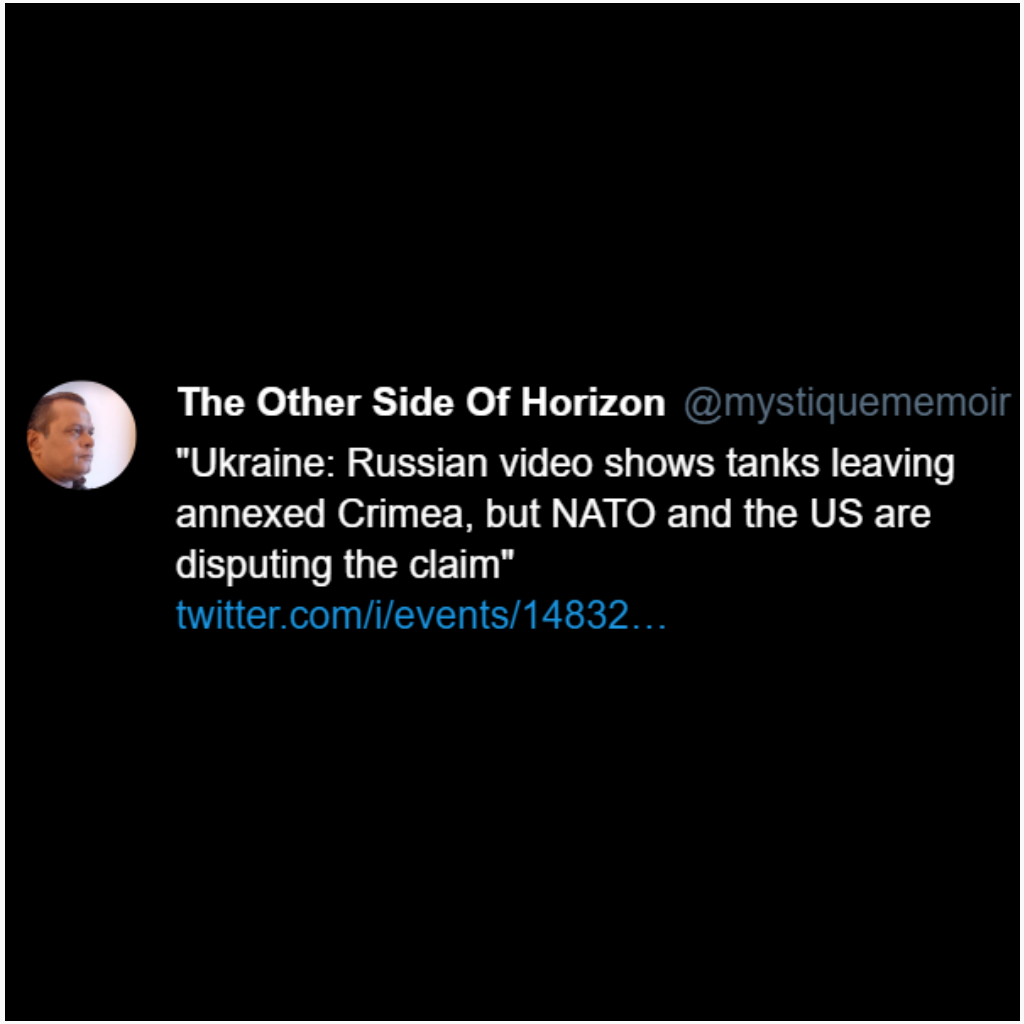
Appendix - Map of users

Figure: *Map of users*



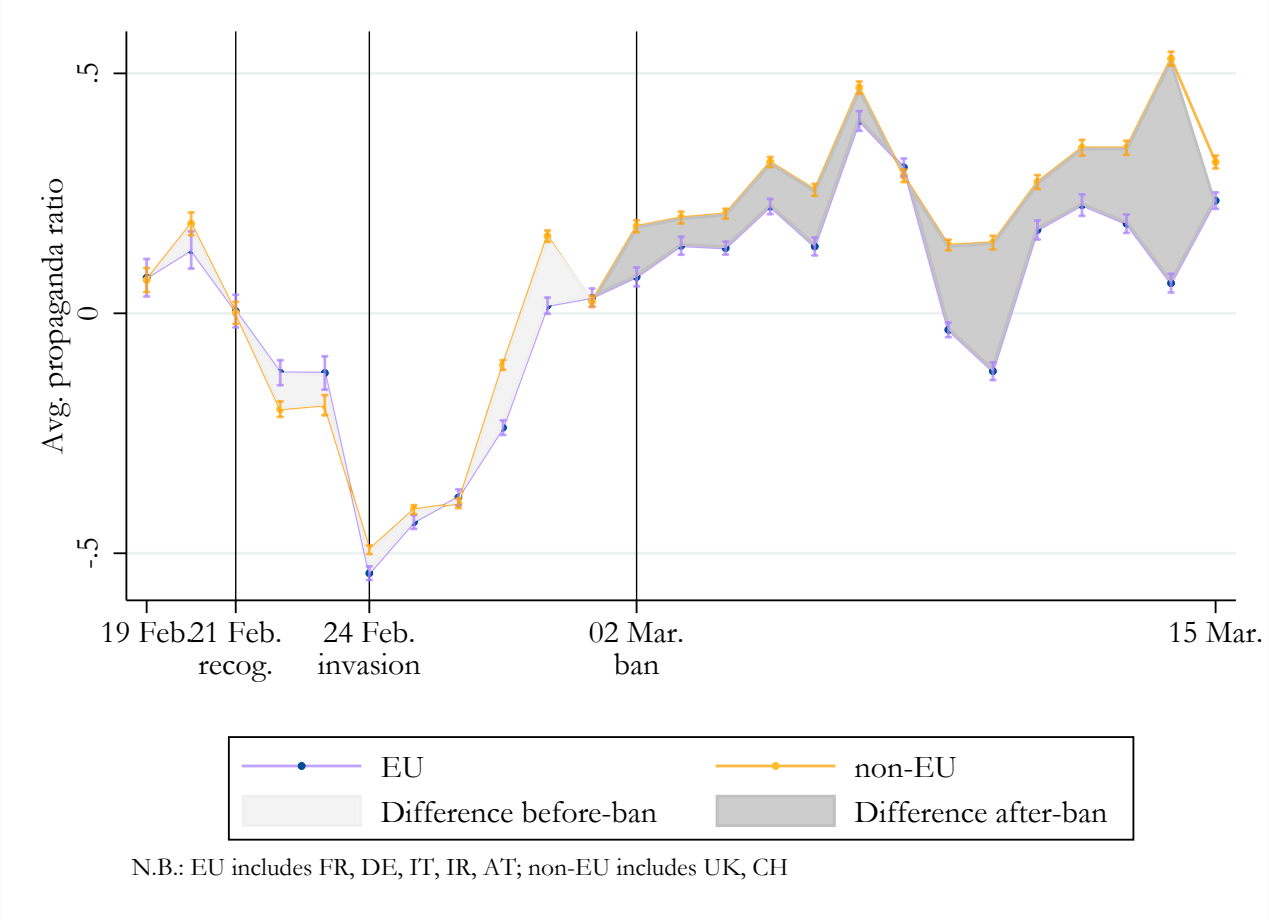
Data

Appendix - Example tweets neutral



Appendix - Media slant in time

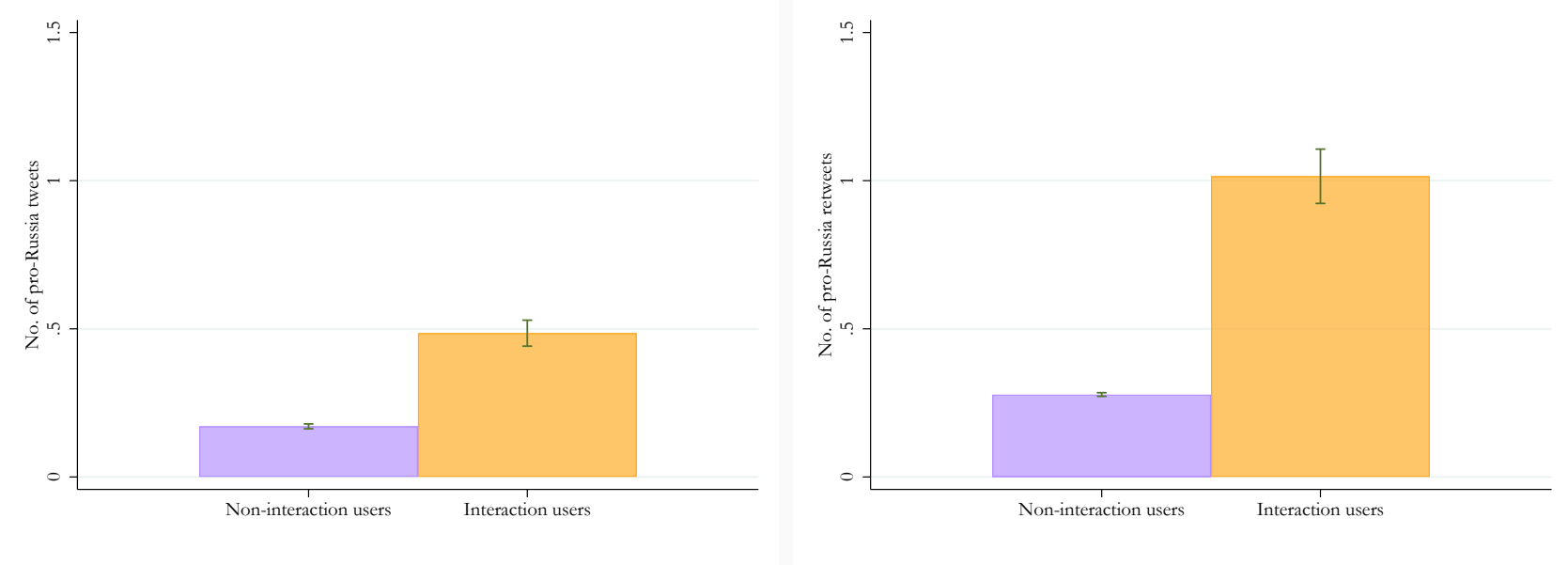
Figure: *Time-series of our slant measure: Daily averages*



N.B.: EU includes FR, DE, IT, IR, AT; non-EU includes UK, CH

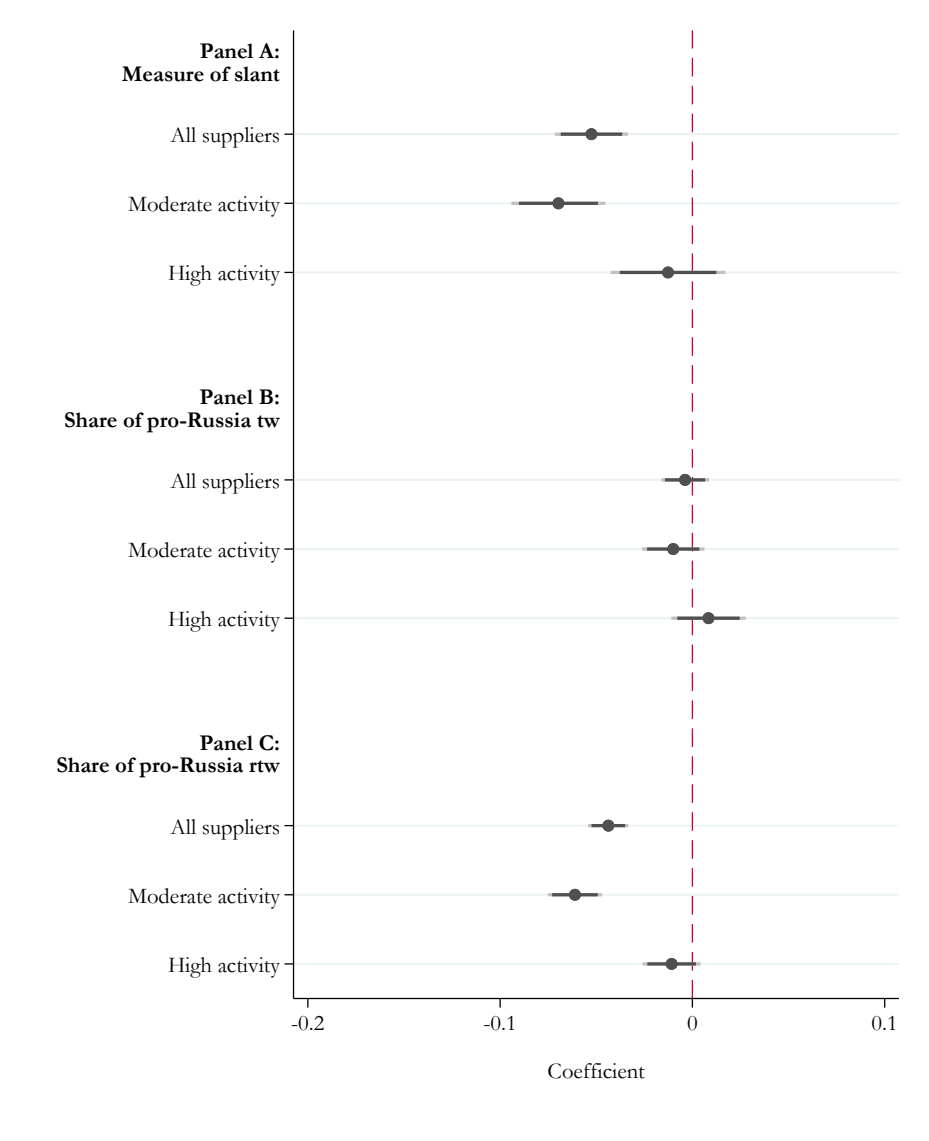
Appendix - Peculiar users: Interaction users

Figure: *Activity of interaction users before the ban*



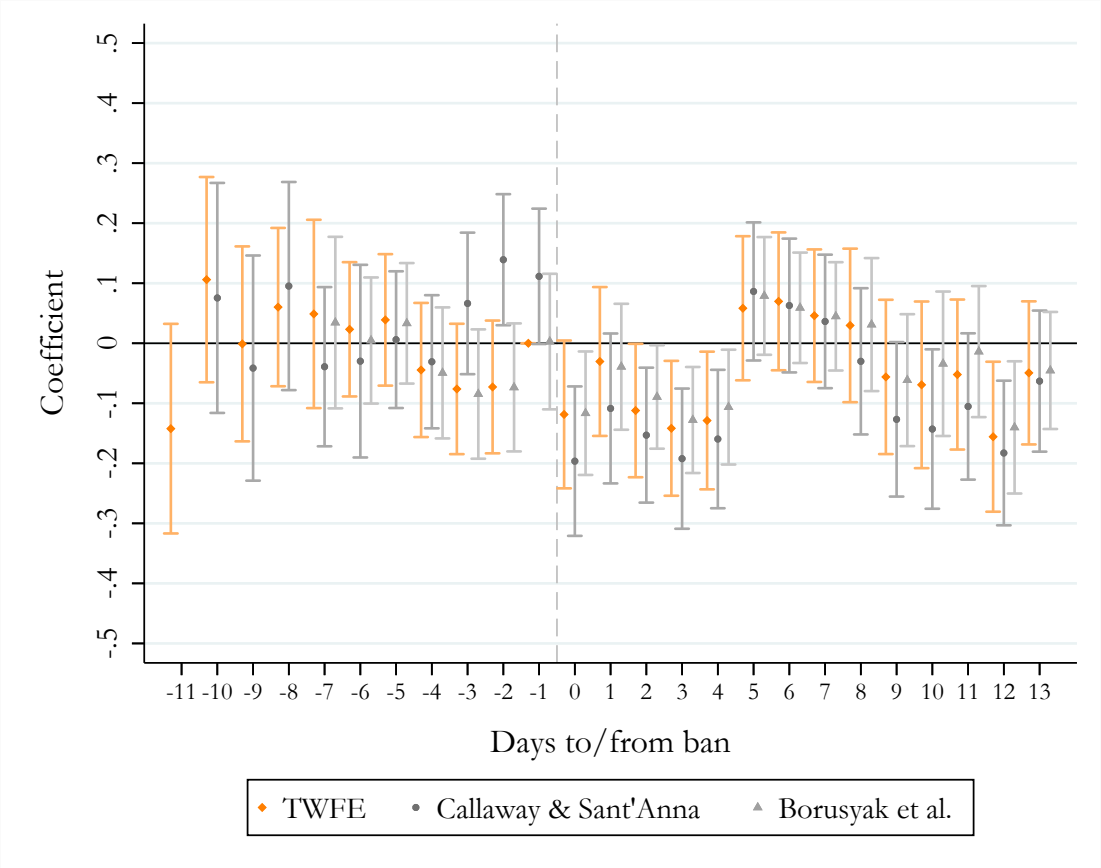
Appendix - Suppliers reaction: Slant

Figure: *Heterogeneous effects by pre-ban activity: Supplier of pro-Russia slant*



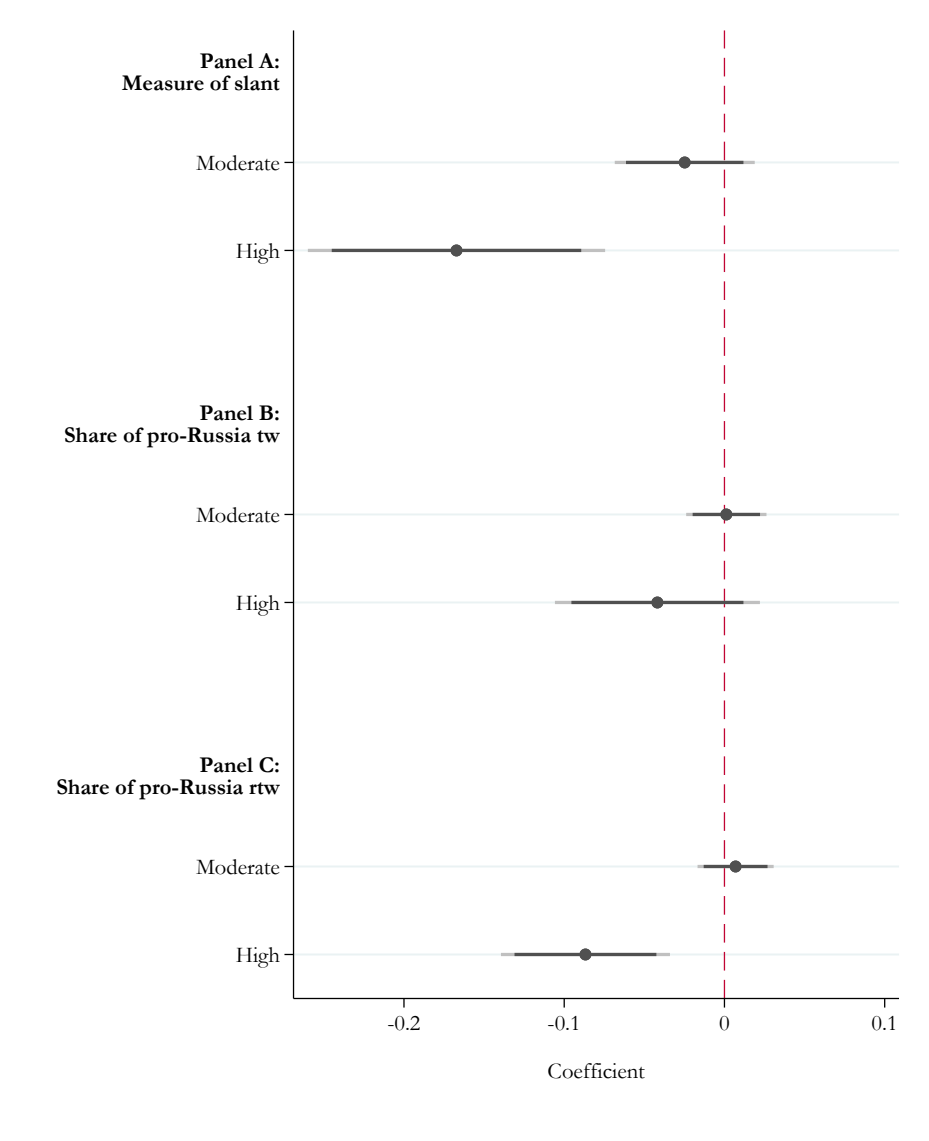
Appendix - Alternative estimators

Figure: *Daily event-study on our slant measure: Interaction users*



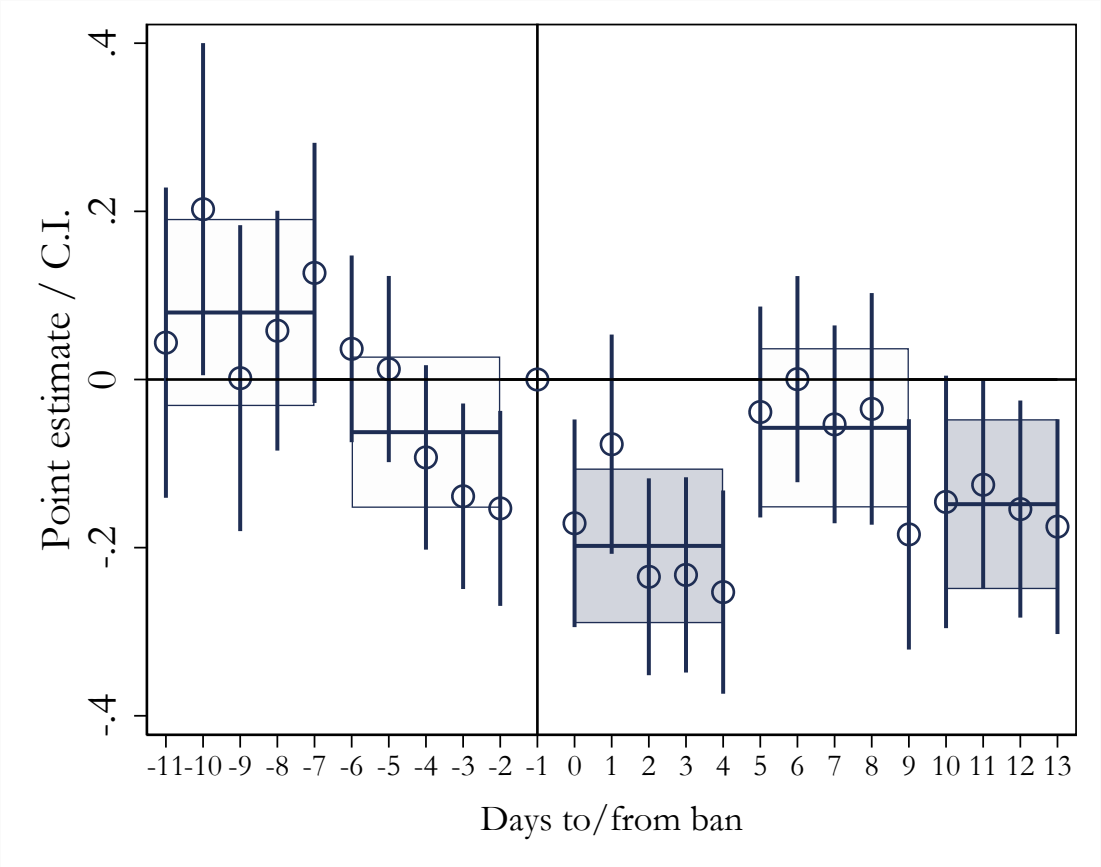
Appendix - Interaction users: Heterogeneous effects

Figure 7: *Heterogeneous effects by pre-ban level of pro-Russian slant: Interaction users*



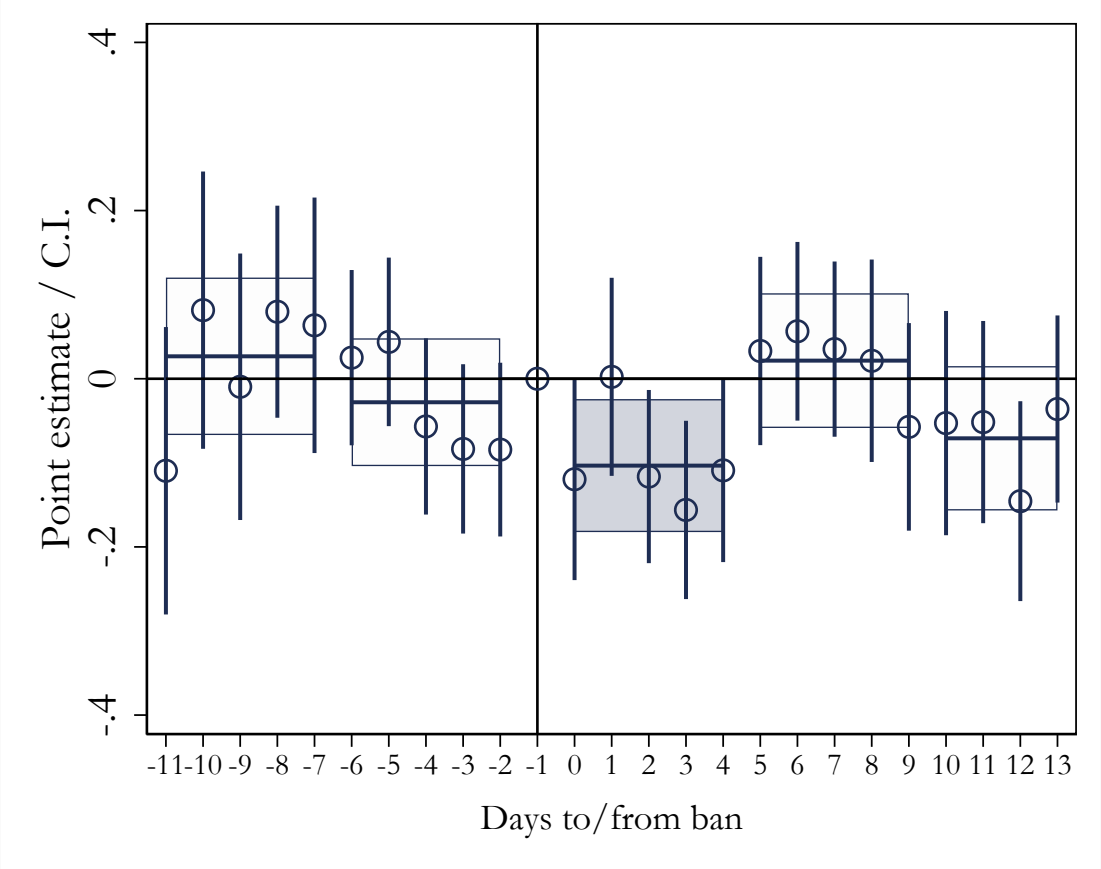
Appendix - Alternative model

Figure: *Model: simCSE*



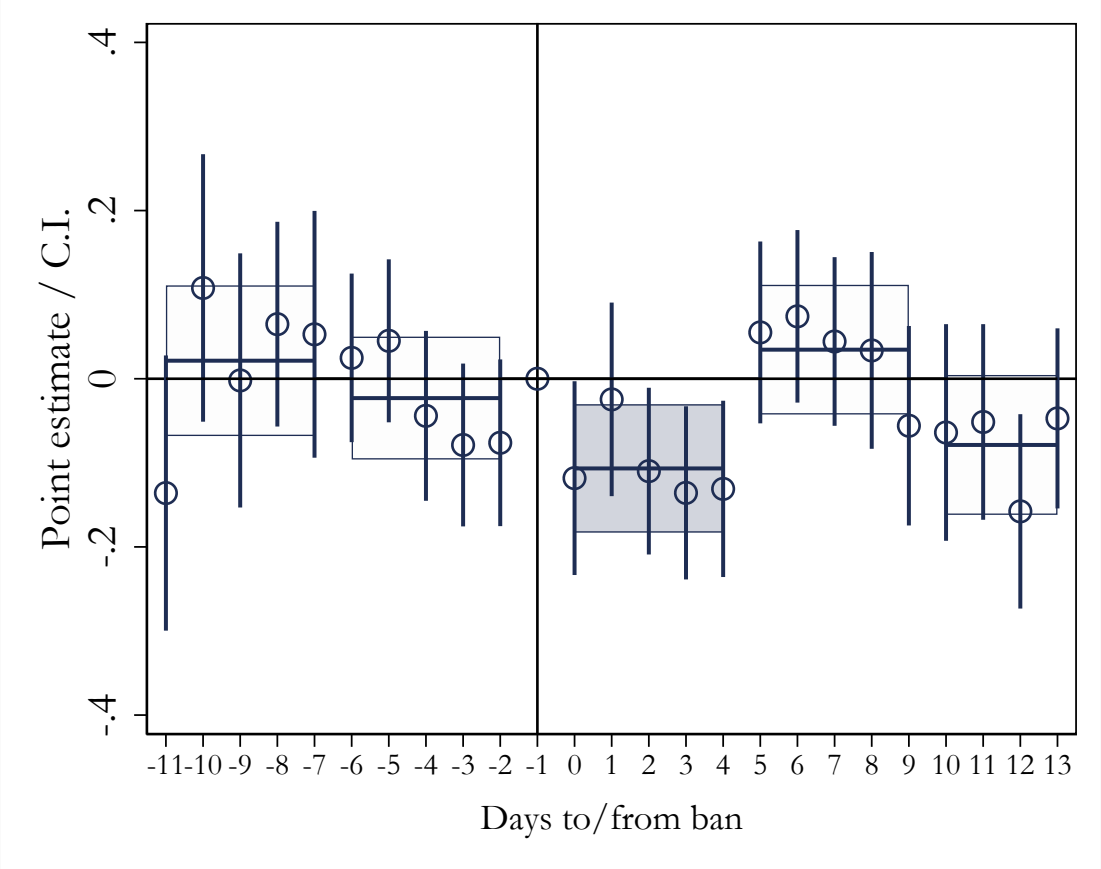
Appendix - Exclusion of bots

Figure: *Daily event-study on share of slanted tweets and retweets: Interaction users excluding plausible bots*



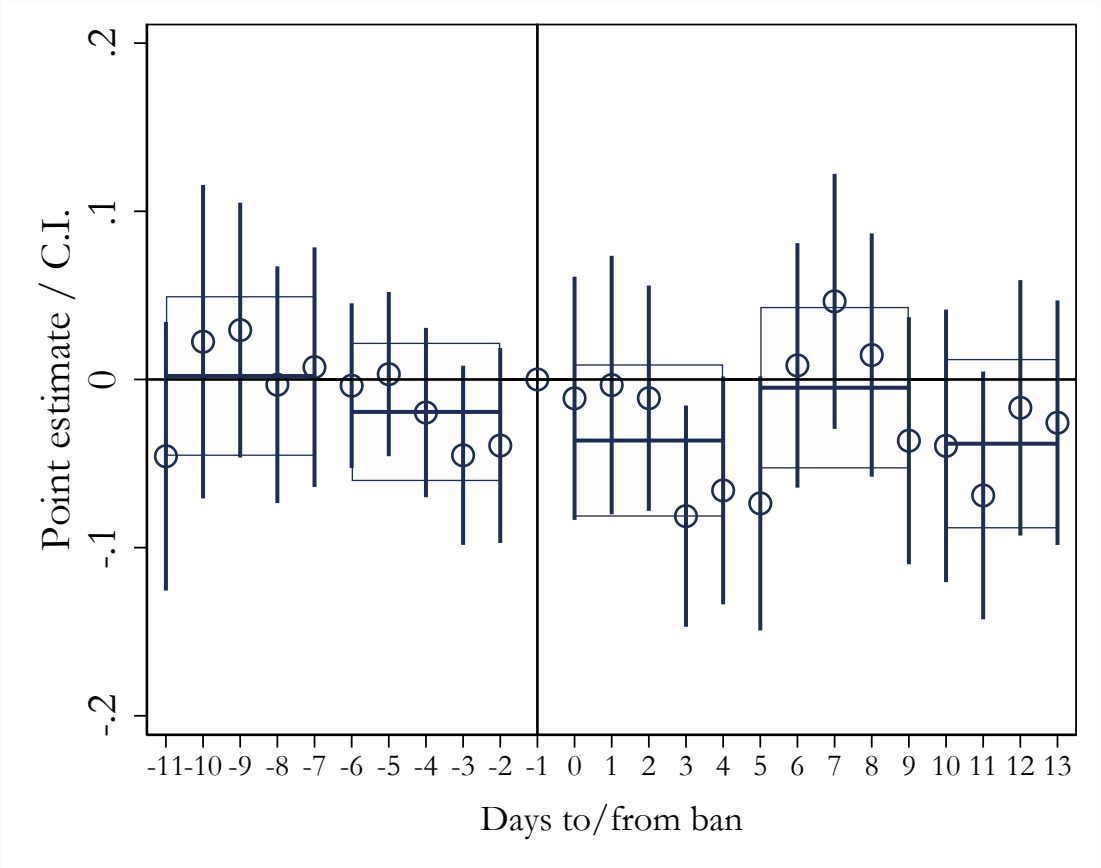
Appendix - Exclusion of late accounts

Figure: *Daily event-study on share of slanted tweets and retweets: Interaction users excluding accounts created post-ban*



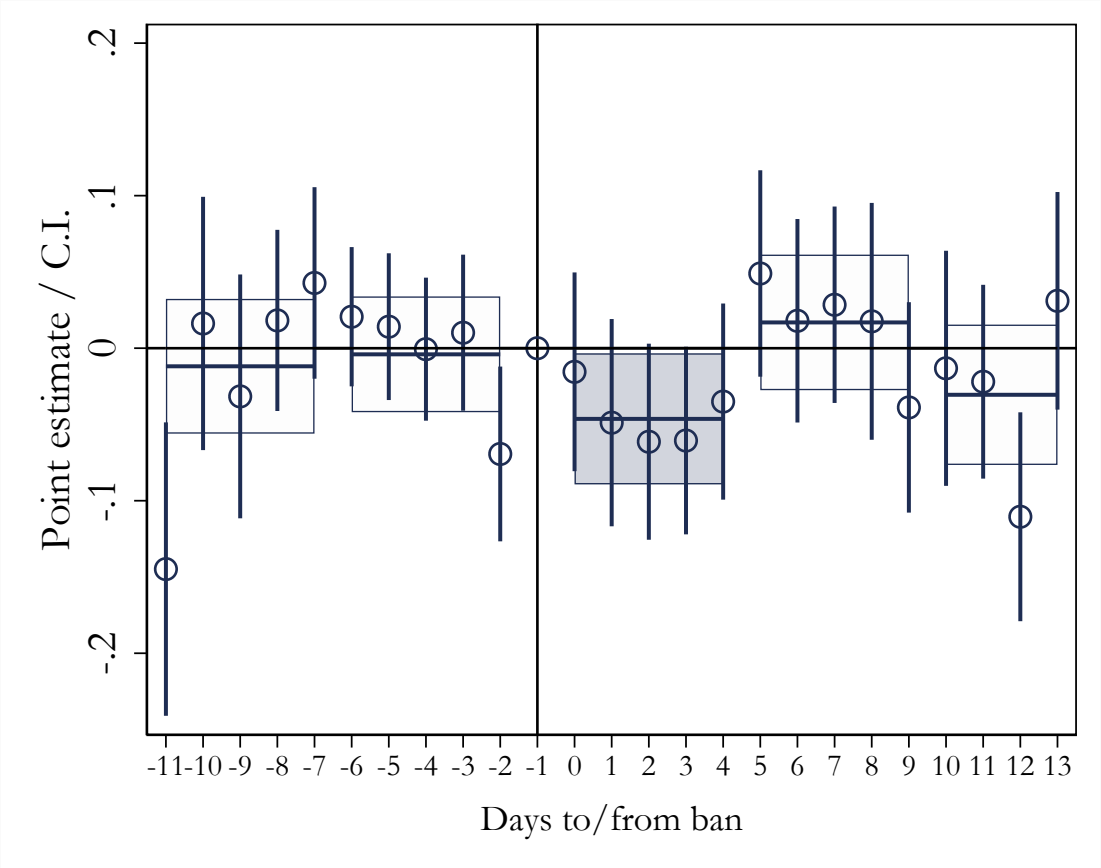
Appendix - Different threshold: Tweets share

Figure: *Daily event-study on share of slanted tweets: Interaction users using alternative threshold*



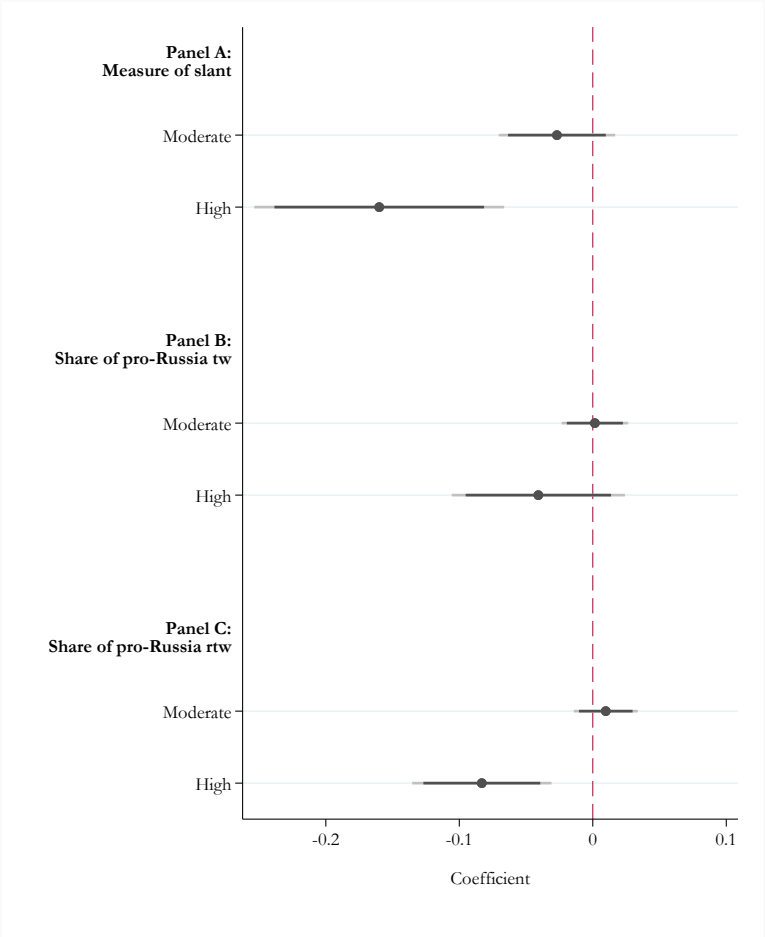
Appendix - Different threshold: Retweets share

Figure: *Daily event-study on share of slanted retweets: Interaction users using alternative threshold*



Appendix - Different threshold: Heterogeneous effects

Figure: *Heterogeneous effects of the ban by pre-ban level of pro-Russian slant: Interaction users using alternative threshold*



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