Social Media and Protest Participation: Evidence from Russia

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Do social media affect protests?

- Widely discussed since Arab Spring
  - is the new media behind the wave of political protests/regime changes?
- Why social media could matter?
  - Information
  - Coordination
  - Social pressure
- Anecdotal evidence is inconclusive
- Systematic evidence is limited (Tufekci and Wilson (2012) on source of information for Tahrir protesters, Reuter and Szakonyi (2013) on social media and political awareness in Russia)

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Methodology

- Methodological problems
  - endogeneity (social media exposure is a choice variable)
  - lack of comparable data on protests (country-level small-N analysis is not satisfactory)
- Our approach: city-level analysis of protest participation in 500+ Russian cities
  - establish cross-sectional relationship
  - use location of early adopters of VKontakte, Russian version of Facebook, corrected for population, as a source of "exogenous" variation
  - use USSR protests for placebo test
  - use overtime variation of protest activities in 2011-2012
  - try to separate mechanisms
    - ⋆ within-city fractionalization between Facebook and VKontakte to account for coordination channel
    - ⋆ on-line social cohesion

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Electoral fraud: trigger

We are for Normal Distribution!

Map of protests (10/12/2011)

Protests Siberian Style

OLS and placebo

Simple relationship: protest participation and social media penetration

VARIABLES	Log(Protesters in December in 2011)				Log(Protesters in 1987-1992)			
log(VK users)	0.185***	0.190***	0.192***	0.179***	0.1	0.118	0.119	0.149
	[0.053]	[0.052]	[0.052]	[0.054]	[0.162]	[0.171]	[0.170]	[0.159]
Log (population)	0.756***	0.790***	0.816***	0.700***	1.557***	1.557***	1.567***	1.536***
	[0.133]	[0.152]	[0.146]	[0.146]	[0.294]	[0.295]	[0.298]	[0.292]
Regional Center	2.925***	2.895***	2.948***	2.792***	3.649***	3.608***	3.628***	3.442***
	[0.456]	[0.474]	[0.476]	[0.461]	[0.672]	[0.662]	[0.682]	[0.703]
Distance to Moscow		0.002	0.001	-0.001		0.023*	0.022*	0.024*
		[0.003]	[0.003]	[0.003]		[0.012]	[0.012]	[0.012]
Rayon Center (county seat)		-0.234	-0.238	-0.202		-0.182	-0.184	-0.215
		[0.165]	[0.161]	[0.152]		[0.216]	[0.214]	[0.206]
% with higher education			-1.307	-2.010*			-0.494	0.724
			[1.042]	[1.108]			[2.323]	[2.346]
Internet penetration 2011, region-level				0.524				-0.43
				[0.399]				[0.767]
Average wage,logged, region-level				-0.008				-0.365
				[0.288]				[0.539]
Log (protest participants), 1987-1992				0.074**				
				[0.033]				
Observations	556	556	556	556	556	556	556	556
R-squared	0.73	0.732	0.733	0.74	0.567	0.575	0.575	0.577

Source of variation

- Timeline:
  - 2006: VKontakte created as a Russian clone of Facebook
  - 2008: Facebook offered Russian interface
  - 2010: Facebook negotiated free access to m.facebook.ru with leading Russian cell phone providers
  - 2011: 30 million unique visitors per month VKontakte, 15 millions unique visitors per month Facebook
    - ★ but 55 million VKontakte users, 6 million Facebook users
- Argument: early comers are more likely to have larger VKontakte audience by 2008, which could deter Facebook users
- Early VKontakte penetration: number of users with id<25k.
  - First comers: students in St Petersburg and Moscow and their friends and relatives, less than 10 users for most cities
  - Durov: offered IPod to the user that attracted the largest number of newcomers
  - largest outside St. Petersbug and Moscow: Apatity Murmansk region, Zhukovsky Moscow region, Noril'sk, Sertolovo Leningrad region...

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Early VK Penetration

Number of users with id<25K	Number of cities
0	447
1	41
2	21
3	13
4	10
5	4
6	5
7	6
10	2
13	2
14	1
16	2
19	1
98	1
1762	1
3246	1
Total	558

Why early penetration matters?

Argument: Facebook entered later, path dependency

VARIABLES	Log(Number of Facebook users in 2013)				
log(Early VK users), <5k	-0.172**				
	[0.085]				
log(Early VK users), <15k		-0.06			
		[0.060]			
log(Early VK users), <25k			-0.027		
			[0.077]		
log(Early VK users), <50k				0.078	
				[0.079]	
log(Early VK users), <100k					0.13
\					[0.119]
Log (population)	1.467***	1.452***	1.445***	1.399***	1.358***
	[0.068]	[0.072]	[0.072]	[0.075]	[0.084]
Regional Center	0.38	0.395	0.386	0.315	0.263
	[0.265]	[0.265]	[0.280]	[0.280]	[0.324]
Distance to Moscow	0.007**	0.006**	0.006**	0.006**	0.007**
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]
Rayon Center (county seat)	0.033	0.029	0.029	0.065	0.063
	[0.359]	[0.365]	[0.373]	[0.374]	[0.380]
% with higher education	4.642**	4.662**	4.617**	4.410**	4.125**
	[1.886]	[1.902]	[1.866]	[1.813]	[1.594]
Internet penetration 2011,	-0.099	-0.149	-0.163	-0.216	-0.251
region-level	[0.566]	[0.559]	[0.577]	[0.565]	[0.563]
Average wage,logged, region-	0.540**	0.546**	0.549**	0.521*	0.466
level	[0.258]	[0.258]	[0.260]	[0.268]	[0.287]
Observations	309	309	309	309	309
R-squared	0.77	0.77	0.77	0.77	0.771

Identification strategy

1. Look at determinants of early VKontakte penetration, conditional on population
   - check that it is not linked to USSR protests
2. Use IV specifications and do related placebo tests
3. Do AET-style test to ensure that controls do not predict the relationship in the reduced form model
4. Examine how the relationship changes over time
5. Use IV specification for different social media variables to separate mechanisms

First stage

VARIABLES	log(VK users in 2011)			
log(Early VK users), <25k	0.145***	0.153***	0.150***	0.135***
	[0.043]	[0.047]	[0.040]	[0.039]
Log (population)	1.179***	1.163***	1.162***	1.151***
	[0.033]	[0.039]	[0.043]	[0.049]
Regional Center	0.278***	0.283***	0.280***	0.335***
	[0.083]	[0.084]	[0.089]	[0.124]
Distance to Moscow		-0.001	-0.001	-0.003*
		[0.002]	[0.002]	[0.002]
Rayon Center (county seat)		0.079	0.079	0.086
		[0.108]	[0.108]	[0.100]
% with higher education			0.112	-0.463
			[0.744]	[0.965]
Internet penetration 2011, region-level				-0.145
				[0.268]
Average wage,logged, region-level				0.487***
				[0.146]
Log (protest participants), 1987-1992				0.009
				[0.011]
Observations	556	556	556	556
R-squared	0.806	0.806	0.806	0.813
F-statistics	11.26	10.61	14.36	11.8

Baseline IV results

VARIABLES	Log(Protesters in December in 2011)				Log(Protesters in 1987-1992)			
log(VK users)	5.708***	5.316***	5.909***	6.230***	3.038	3.119	3.419	4.051
	[2.120]	[1.863]	[1.933]	[2.162]	[2.832]	[2.541]	[2.535]	[2.750]
Log (population)	-5.992**	-5.424**	-6.065***	-6.470**	-2.033	-2.082	-2.405	-3.161
	[2.584]	[2.250]	[2.321]	[2.591]	[3.479]	[3.060]	[3.054]	[3.307]
Regional Center	0.879	0.958	0.884	0.292	2.561*	2.474*	2.437**	1.681
	[0.963]	[0.915]	[0.903]	[1.121]	[1.309]	[1.264]	[1.243]	[1.501]
Distance to Moscow		0.01	0.007	0.019		0.028*	0.026*	0.036**
		[0.011]	[0.012]	[0.015]		[0.014]	[0.015]	[0.018]
Rayon Center (county seat)		-0.527	-0.573	-0.626		-0.354	-0.377	-0.48
		[0.661]	[0.735]	[0.688]		[0.495]	[0.523]	[0.521]
% with higher education			-3.583	-0.286			-1.808	1.806
			[4.337]	[6.067]			[2.790]	[3.982]
Internet penetration 2011, region-level				1.08				-0.053
				[1.558]				[1.369]
Average wage,logged, region-level				-2.971**				-2.264
				[1.284]				[1.521]
Log (protest participants), 1987-1992				0.009				
				[0.073]				
Observations	556	556	556	556	556	556	556	556

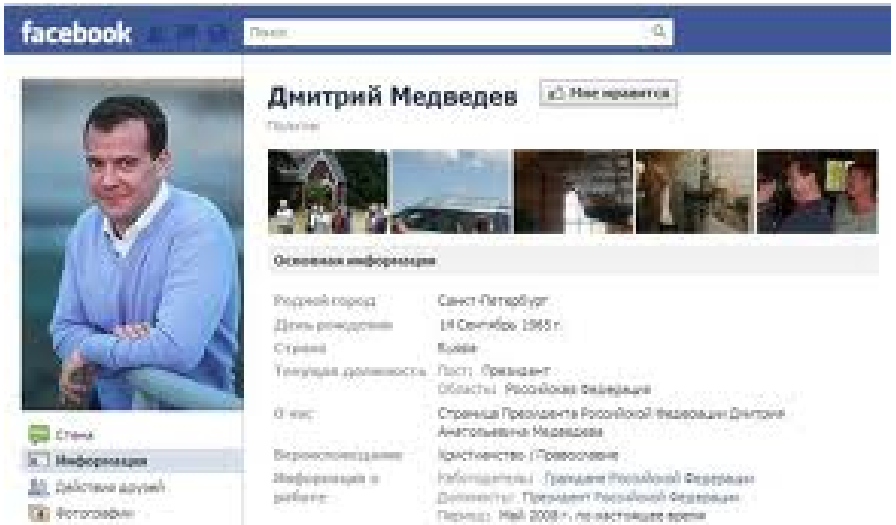
Altonji-Elder-Taber (2005) style test

- Does index of observables, correlated with early VK penetration affects outcomes?

VARIABLES	Log(Protesters in December in 2011)			Log(Protesters in 1987-1992)		
Fitted values	-1.034	-0.23	0.36	-1.175	-0.159	-0.092
	[0.681]	[0.166]	[0.296]	[1.195]	[0.481]	[0.480]
Log (population)	1.020***	1.015***	0.903***	1.722***	1.702***	1.692***
	[0.160]	[0.134]	[0.120]	[0.249]	[0.231]	[0.228]
Regional Center	2.966***	3.049***	2.834***	3.656***	3.725***	3.713***
	[0.469]	[0.452]	[0.514]	[0.676]	[0.683]	[0.697]
Observations	556	556	556	556	556	556
R-squared	0.729	0.728	0.729	0.567	0.567	0.566

Fractionalization

- People in the same city can join several online social networks and usually use only one intensively
- Other things being equal, cities with more fracitonalized networks are less likely to experience mass protests
  - social pressure is smaller
  - coordination is more difficult
- Two online social networks very similar in terms of functions and even colors of interface: Facebook and VKontakte



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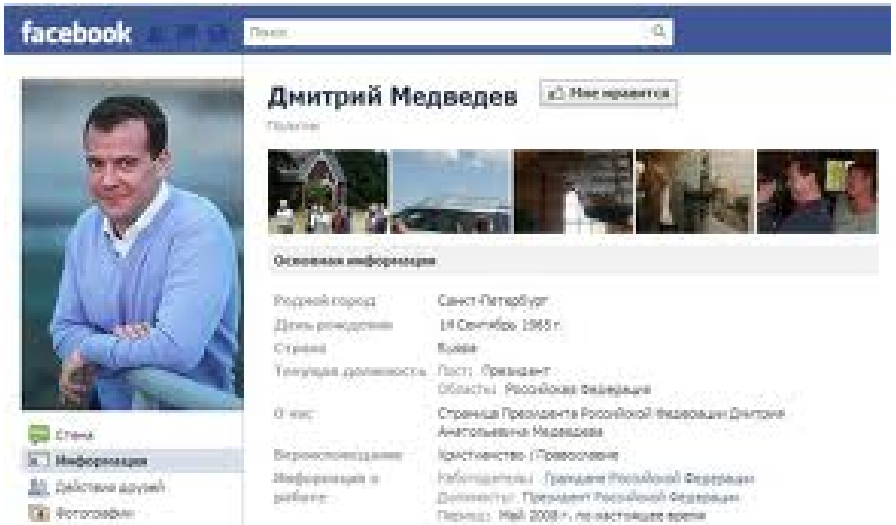

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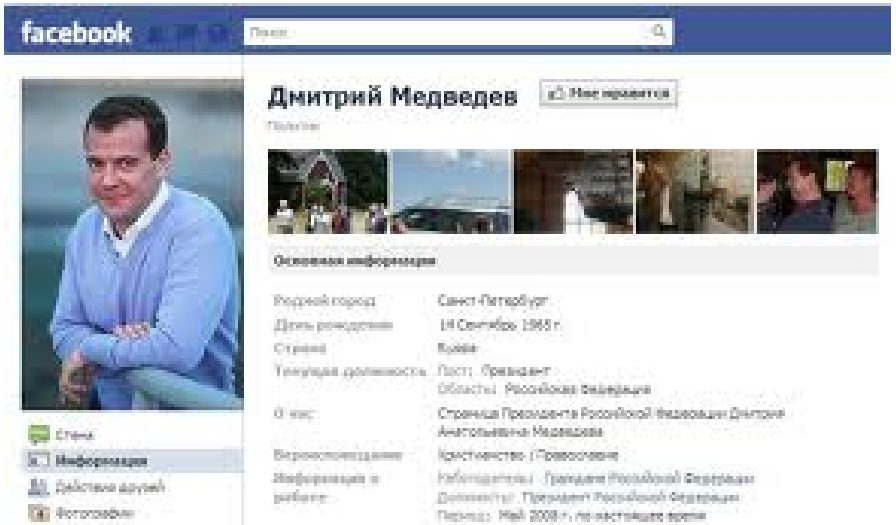

Coordination channel: fractionalization

VARIABLES	Log (Protesters in 2011)							
	Whole Sample				Large cities (>100k population)			
Fractionalization in 2011	0.369	0.424	0.566	0.538	-7.062**	-6.361**	-5.631*	-4.717*
	[2.851]	[2.839]	[2.794]	[2.769]	[2.958]	[2.985]	[2.847]	[2.696]
Log (total network users)	0.153***	0.153***	0.166***	0.145**	0.654*	0.672*	0.745**	0.700*
	[0.055]	[0.054]	[0.054]	[0.057]	[0.392]	[0.384]	[0.367]	[0.365]
Log (population)	0.592***	0.611***	0.645***	0.553***	2.208***	2.093***	2.089***	1.973***
	[0.122]	[0.125]	[0.129]	[0.125]	[0.659]	[0.667]	[0.663]	[0.674]
Internet penetration 2011, region-level				-0.219				-3.164*
				[0.337]				[1.639]
Regional Center	3.109***	3.093***	3.166***	2.937***	1.498***	1.437**	1.801***	1.315*
	[0.481]	[0.480]	[0.472]	[0.501]	[0.548]	[0.555]	[0.586]	[0.669]
% with higher education			-0.002**	-0.002**			-0.008*	-0.007*
			[0.001]	[0.001]			[0.004]	[0.004]
Rayon Center (county seat)		-0.098	-0.110	-0.101		0.668*	-0.151	-0.521
		[0.068]	[0.067]	[0.068]		[0.353]	[0.704]	[0.721]
Distance to Moscow		-0.004	-0.006	-0.008**		-0.013	-0.017	-0.024*
		[0.004]	[0.004]	[0.004]		[0.013]	[0.013]	[0.015]
Average wage,logged, region-level				0.238				1.239
				[0.258]				[1.054]
Log (protest participants), 1987-1992				0.071***				0.078
				[0.027]				[0.049]
Observations	546	546	546	546	135	135	135	135
R-squared	0.681	0.683	0.686	0.693	0.630	0.634	0.646	0.665

Social channel: online social cohesion

VARIABLES	Log(Protesters in December in 2011)		Log(Protesters in 1987-1992)	
Online social cohesion, within-city	0.664**	0.667**	0.381	0.425
	[0.264]	[0.301]	[0.340]	[0.391]
Log (population)	1.718***	1.607***	2.098***	2.128***
	[0.317]	[0.400]	[0.286]	[0.322]
Regional Center	-0.978	-1.338	1.402	0.934
	[1.687]	[2.133]	[1.999]	[2.531]
Distance to Moscow	-0.003	-0.001	0.013	0.016
	[0.013]	[0.013]	[0.013]	[0.014]
Rayon Center (county seat)	-2.348**	-2.462*	-1.048	-1.341
	[1.182]	[1.481]	[1.330]	[1.665]
% with higher education	17.349*	18.385	10.336	13.153
	[9.367]	[12.883]	[12.758]	[16.153]
Internet penetration 2011, region-level		0.235		-0.071
		[2.067]		[1.764]
Average wage,logged, region-level		-0.920		-1.068
		[1.315]		[1.129]
Log (protest participants), 1987-1992		0.061		
		[0.064]		
Observations	359	359	359	359
R-squared	-0.976	-0.982	0.338	0.278
F	6.404	5.495	6.404	5.708

Online Protest groups

VARIABLES	Log(Protesters in December in 2011)			
Registered for protest events in 2011	0.001***	0.001***	0.001***	0.001***
	[0.000]	[0.000]	[0.000]	[0.000]
Log (population)	0.387**	0.379*	0.379*	0.3
	[0.179]	[0.197]	[0.196]	[0.189]
Regional Center	1.547***	1.551***	1.552***	1.325**
	[0.546]	[0.546]	[0.544]	[0.566]
Distance to Moscow		-0.002	-0.002	-0.003
		[0.003]	[0.003]	[0.004]
Rayon Center (county seat)		0.044	0.043	0.039
		[0.085]	[0.084]	[0.075]
% with higher education			0.343	0.729
			[1.405]	[1.383]
Internet penetration 2011, region-level				-0.126
				[0.339]
Average wage,logged, region-level				-0.123
				[0.236]
Log (protest participants), 1987-1992				0.053*
				[0.028]
Observations	556	556	556	556
R-squared	0.641	0.64	0.645	0.655
F	6.276	6.274	7.329	7.298

Panel estimates: channels over time

	Log (protesters in a given week)					
Log (VK penetration)*t	-0.019**	-0.019**				
	[0.008]	[0.009]				
Log(registered for protest events)*t			-0.015**	-0.013*		
			[0.007]	[0.007]		
Online social cohesion*t					0.007*	0.144
					[0.004]	[0.801]
Log (population)*t	0.101**	0.103**	-0.001***	-0.001	-0.027**	-0.940
	[0.041]	[0.048]	[0.000]	[0.001]	[0.013]	[5.235]
Internet penetration*t		0.005		0.004		-0.138
		[0.003]		[0.003]		[0.784]
Higher education*t		0.010		-0.004		4.713
		[0.011]		[0.012]		[26.301]
Administrative Center*t	-0.001	0.001	-0.004	-0.001	-0.030***	-0.607
	[0.008]	[0.008]	[0.008]	[0.008]	[0.007]	[3.321]
Distance to Moscow*t	0.000	0.000	0.000	0.000*	-0.000	-0.004
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.024]
Log (old protesters)*t		-0.000		-0.001**		0.017
		[0.000]		[0.000]		[0.102]
Observations	7,228	7,228	7,228	7,228	4,667	4,667
Number of cities	556	556	556	556	359	359

Robustness

Restricting a sample to cities with less than 10 people early VK penetration - tiny fraction of city population and of 2011 penetration (less than 0.05% of 2011 penetration for all cities)

VARIABLES	Log (protest participants in 2011)			
VK penetration (logged)	5.993***			
	[2.174]			
Registered for protest events (logged)		1.612***		
		[0.528]		
Online social cohesion, within-city			0.394***	
			[0.135]	
Average number of friends, in any city				0.110***
				[0.039]
Log (population)	-6.236**	-0.957	1.282***	1.132***
	[2.733]	[0.698]	[0.181]	[0.178]
Internet penetration 2011, region-level	0.474	0.304	-0.690	-0.735
	[1.196]	[0.591]	[1.067]	[1.026]
% with higher education	-0.379	-1.742	9.191**	2.098
	[3.684]	[2.258]	[3.762]	[2.760]
Rayon Center (county seat)	-0.585	-0.005	-1.434**	-1.192*
	[0.481]	[0.126]	[0.605]	[0.612]
Distance to Moscow	0.015	0.006	-0.010	-0.009
	[0.012]	[0.007]	[0.009]	[0.009]
Average wage,logged, region-level	-2.751**	-0.193	-0.246	-0.215
	[1.165]	[0.344]	[0.657]	[0.612]
Log (protest participants), 1987-1992	0.000	-0.081	0.046	0.059
	[0.070]	[0.077]	[0.053]	[0.052]
Observations	549	549	352	352

Conclusions

- Evidence consistent with social media boosting protest participation
  - Cross-city results for the leading Russian social network, VKontakte
- The role of social media declines over time
- Some evidence on the mechanisms
  - Coordination mechanism: stronger evidence for larger cities
  - Social motivation: evidence from within-city cohesion
  - Social pressure: evidence in Enikolopov et al (2013)