

Social Media and Protest Participation: Evidence from Russia

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- Collective action problems = obstacles to achieving socially beneficial outcomes (Olson 1968, Hardin 1982, Ostrom 1990), e.g.
 - ▶ consumers interested in low tariffs
 - ▶ people favoring environment protection
 - ▶ citizens fighting corruption in countries with weak institutions
- Do online social networks (=horizontal communication technologies) reduce the costs of overcoming collective action problems?
- Look at this question using the example of online social networks and protest participation in Russia in 2011-2012

Main Idea

- Estimating causal impact of social media is challenging:
 - ▶ endogeneity problem - social media usage is a choice variable
 - ▶ lack of geographical variation - protests in a small number of locations does not allow to study effects of availability of social media
- Russia in 2011-2012 is perfect example for the empirical investigation
 - ▶ unexpected wave of protests triggered by elections, first large-scale protests since the end of USSR
 - ▶ significant geographical variation
 - ★ 625 cities, 133 cities with protests
- Social media dominated by VKontakte (VK)
 - ▶ Russian version of Facebook with 55 million users in 2011
 - ▶ use information about the history of the creation of VK for identification
 - ★ origins of students studying at SPbSU at the time of creation

Preview of results

- ① Penetration of social media in Russian cities increased protest participation, with 10% increase in VK penetration leading to
 - ▶ 19% increase in protest participation
 - ▶ 4.6% increase in the probability of protests
- ② Information channel is unlikely to explain the results
 - ▶ *more*, not *less* pro-government attitudes and behavior in places with higher VK penetration
 - ▶ *no* evidence of increased polarization
- ③ Reduction in the costs of collective action is a likely channel

Contribution

- Existing literature :
 - ▶ Mostly focused on broadband effect, not on social media (Falck et al. 2014, Campante et al. 2014, Bhuller et al. 2013)
 - ▶ Protests are important for policies and rent distribution (Madestam et al. 2012, Acemoglu et al. 2015, Passarelli and Tabellini 2013)
 - ▶ Why communication technology should matter? Theories (Edmond 2013, Little 2015, Barbera Jackson 2016), but no empirical tests
- Novelty: our paper looks at the causal impact of social media penetration on protest incidence and participation
 - ▶ Additional evidence consistent with reduction of the costs of collective action, but not the information channel
- Methodology: approach to study the impact of penetration of any type of technology
 - ▶ use social distance from inventors of new technologies

We are for Normal Distribution!



Electoral fraud: trigger

We don't trust Churov (Head of Electoral Commission), we trust Gauss!



Map of protests (10/12/2011)



Roadmap

- ① Background on VK
- ② Source of variation: SPbSU student cohorts fluctuations
 - ▶ basic evidence, reduced form estimation
- ③ Baseline results. IV estimation
- ④ Mechanisms

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Background on VK

Timeline

- October 2006 – VKontakte (VK) created as a Russian clone of Facebook
 - ▶ founder - Pavel Durov, who was at that time a student of philology department
 - ▶ initially, by invitation only (through student forum, created also by Durov)
- First VK users
 - ▶ mostly students from SPbSU; different home cities
 - ▶ most of them never returned to their home cities, but still had networks of friends and relatives there
- End of November 2006 – open registration
- Later:
 - ▶ Summer 2008 – Facebook offered Russian interface
 - ▶ 2011 – 55 million VKontakte users, 6 million Facebook users

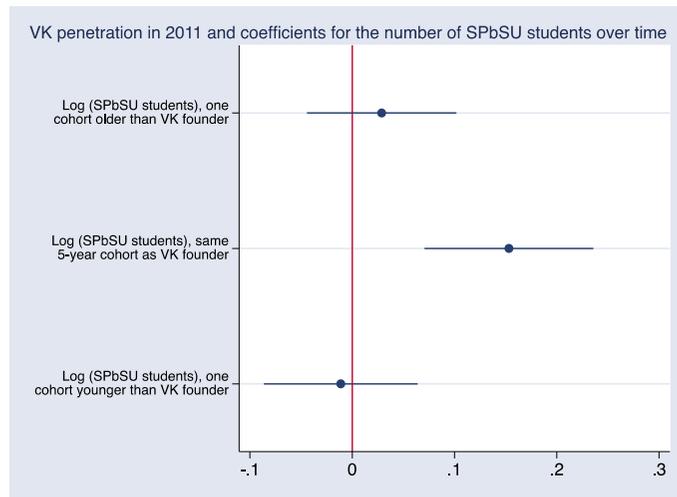
Source of variation

- Argument: idiosyncratic variation in the distribution of early users has a long lasting effect
 - ▶ attract new users through network externalities
 - ▶ deter opening Facebook accounts
- Instrument: fluctuations in inter-city student flows
 - ▶ Originally, accounts by invitation only
 - ▶ Early penetration can be correlated with unobserved taste parameter
 - ▶ We use information on city origins of the students studying in St Petersburg State University by cohort
 - ★ separate cohort studying with the VK founder (+- 2 years) from older or younger cohorts

VK penetration and inter-city student flows

Coefficients for the number of students of different origin as determinants of 2011 VK penetration

- in a regression with all baseline controls included



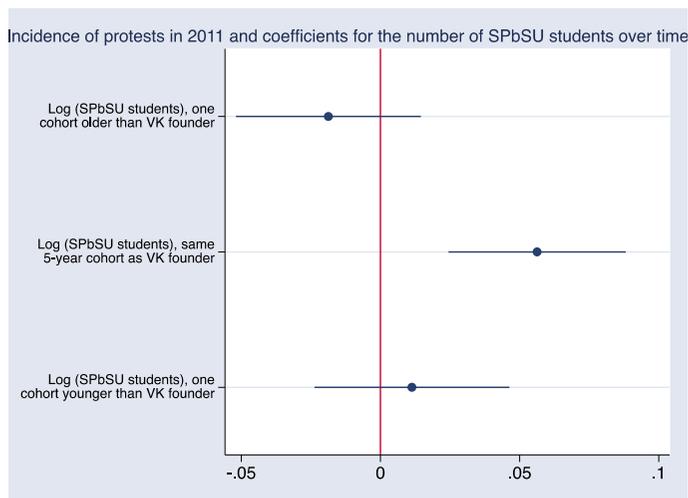
VK penetration and inter-city student flows

	Log (number of VK users), Aug 2011				
Log (SPbSU students), same 5-year cohort as VK founder	0.1581***	0.1322***	0.1393***	0.1371***	0.1360***
	[0.0425]	[0.0489]	[0.0482]	[0.0463]	[0.0488]
Log (SPbSU students), one cohort younger than VK founder	-0.0292	-0.0452	-0.0433	-0.0464	-0.0457
	[0.0552]	[0.0461]	[0.0468]	[0.0472]	[0.0474]
Log (SPbSU students), one cohort older than VK founder	0.025	0.0161	0.0175	0.0137	0.0142
	[0.0523]	[0.0468]	[0.0467]	[0.0445]	[0.0454]
Regional center	0.2952***	0.3015*	0.2563*	0.3008*	0.3026*
	[0.0899]	[0.1583]	[0.1526]	[0.1539]	[0.1523]
Distance to Saint Petersburg, km		0.0001	0.0001	0.0002	0.0000
		[0.0001]	[0.0001]	[0.0001]	[0.0001]
Distance to Moscow, km		-0.0002	-0.0002	-0.0003	-0.0001
		[0.0001]	[0.0001]	[0.0002]	[0.0001]
Rayon center (county seat)		-0.0142	-0.0134	-0.0056	-0.0155
		[0.0873]	[0.0869]	[0.0906]	[0.0843]
Log (average wage), city-level, 2011	0.2108	0.1977	0.1756	0.1756	0.1386
	[0.1637]	[0.1686]	[0.1691]	[0.1571]	
Presence of a university in a city, 2011	-0.0224	-0.0087	-0.0348	-0.0056	
	[0.1496]	[0.1468]	[0.1478]	[0.1441]	
Internet penetration, region-level, 2011	-0.1190	-0.1572	-0.0677	-0.0875	
	[0.2304]	[0.2144]	[0.2272]	[0.2254]	
Log (number of Odnoklassniki users), 2014	0.1475*	0.1391*	0.1322	0.1706**	
	[0.0798]	[0.0806]	[0.0801]	[0.0793]	
Ethnic fractionalization, 2010	0.4041*	0.4872**	0.5660***	0.4599**	
	[0.2149]	[0.2073]	[0.2016]	[0.2197]	
Observations	625	625	625	625	
R-squared	0.8263	0.8517	0.8546	0.8550	0.8540
Population controls	Yes***	Yes***	Yes**	Yes***	Yes***
Age cohort controls		Yes**	Yes***	Yes**	Yes**
Education controls		Yes***	Yes***	Yes***	Yes***
Electoral controls, 1995			Yes		
Electoral controls, 1999				Yes*	
Electoral controls, 2003					Yes

Probability of a protest and inter-city student flows

Coefficients for the number of students of different origin as determinants of dummy for protest

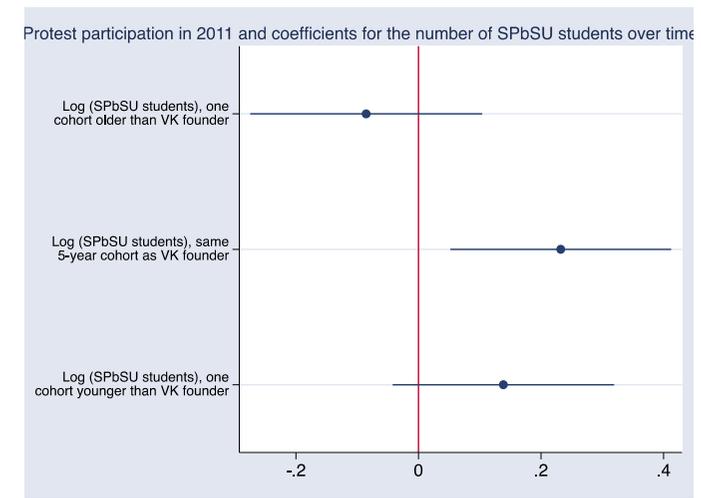
- in a regression with all baseline controls included



Protest participation and inter-city student flows

Coefficients for the number of students of different origin as determinants of protest participation

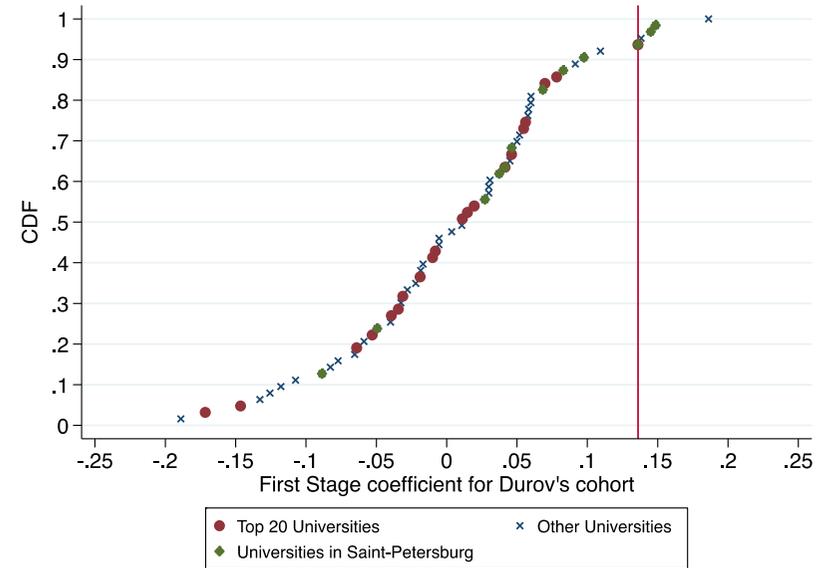
- in a regression with all baseline controls included



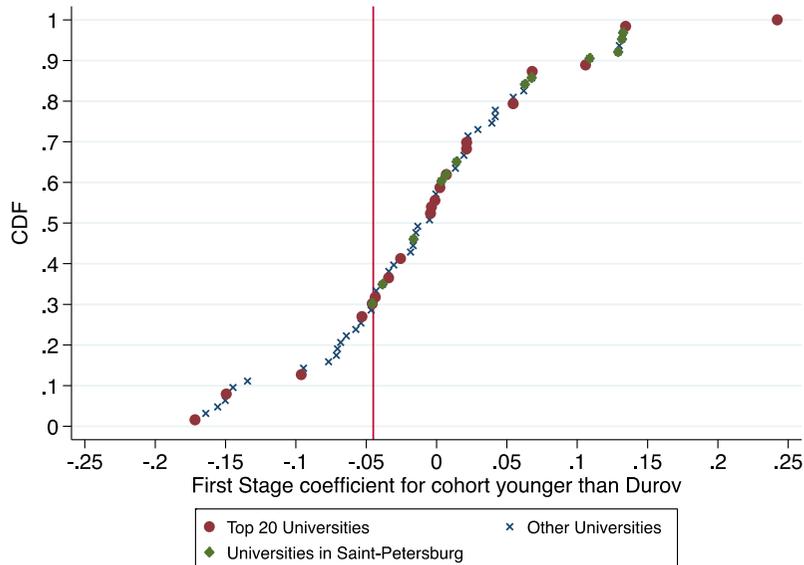
Placebo: pre-VK voting

	Dependent variable					
	Pro-government party vote share	Yabloko vote share	Communists vote share	LDPR vote share	Turnout	Against all share
Panel A. Parliamentary elections						
Voting results in 1995, IV with SPbSU cohorts	-0.016 [0.027]	-0.019 [0.019]	0.101 [0.074]	0.022 [0.050]	0.023 [0.038]	-0.009 [0.008]
Voting results in 1999, IV with SPbSU cohorts	0.059 [0.048]	0.000 [0.015]	0.047 [0.049]	-0.009 [0.011]	-0.086 [0.061]	-0.002 [0.007]
Voting results in 2003 IV with SPbSU cohorts	-0.003 [0.003]	-0.018 [0.011]	-0.016 [0.024]	-0.007 [0.025]	-0.013 [0.041]	-0.017 [0.012]
Panel B. Presidential elections						
Year 1996, 1st round						
Voting results, IV with SPbSU cohorts	Yeltsin vote share -0.114 [0.082]	Yavlinsky vote share 0.007 [0.017]	Zyuganov vote share 0.120 [0.092]	Lebedev vote share -0.009 [0.041]	Turnout 0.013 [0.025]	Against all share -0.002 [0.003]
Year 1996, 2nd round						
Voting results, IV with SPbSU cohorts	Yeltsin vote share -0.108 [0.089]	-	Zyuganov vote share 0.124 [0.094]	-	Turnout 0.008 [0.029]	Against all share -0.008 [0.010]
Year 2000						
Voting results, IV with SPbSU cohorts	Putin vote share 0.129* [0.074]	Yavlinsky vote -0.027** [0.013]	Zyuganov vote -0.056 [0.054]	Tuleev vote share 0.004 [0.028]	Turnout 0.001 [0.029]	Against all share -0.012** [0.005]

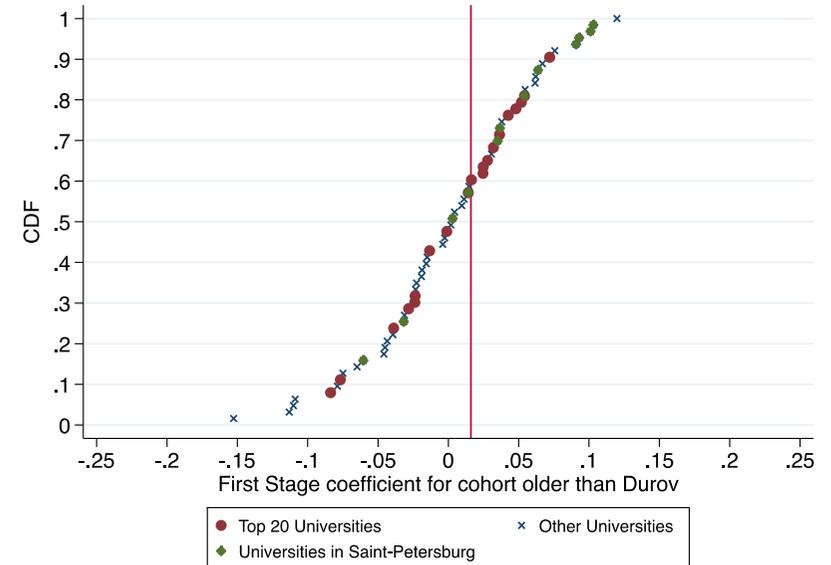
Other universities: Durov's cohort



Other universities: older cohort



Other universities: younger cohort



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Individual utility

- Protest only if the regime is perceived as “bad”: $\theta(s) < 0$
- Utility of an individual protester, if the regime is “bad”:

$$\gamma_i + \pi(s, P)\alpha_i - c(s, P) - \varepsilon_i$$

- ▶ γ_i – intrinsic motivation
- ▶ s – social media penetration
- ▶ $\pi(s, P)$ – probability of being seen (offline or online)
- ▶ α_i – utility from being seen in a protest (can be < 0)
- ▶ $c(s, P)$ – is the cost of participation consists of the cost of
 - ★ learning the logistics of a protest (which is a decreasing function of the social media penetration s)
 - ★ the expected cost of protesting (which is a decreasing function of the size of a protest P),
 - ★ with some potential complementarities between the two.
- ▶ ε_i – idiosyncratic cost of protest participation

Conceptual framework

- Protest participation: similar to other forms of political participation
 - ▶ $p = \frac{P}{N}$ propensity to protest
- Individual participate in protests iff

$$\text{instrumental benefits} + \text{non-instrumental benefits} - \text{costs} > 0$$

- ▶ here $\text{instrumental benefits}_i = B_i \Delta \text{Prob}_i(\text{successful} | P)$
 - ★ where B_i is the benefit for individual i if the protest is successful
- ▶ $\Delta \text{Prob}_i(\text{successful} | P)$ is the marginal increase in the probability that the protest is successful if person i decides to participate
 - ★ Large aggregate number of participants $\Rightarrow \Delta \text{Prob}_i(\text{successful} | P) = 0$

Theoretical channels

- Propensity to protest:

$$p = \frac{P}{N} = I(\theta < 0 | s) * F(\gamma_i + \pi(s, P)\alpha_i - c(s, P))$$

- Effect of social media penetration:

•

$$\frac{\partial p}{\partial s} = \underbrace{\frac{\partial I(\theta < 0 | s)}{\partial s} F(\cdot)}_{\text{information}} + \underbrace{I(\theta < 0 | s) f(\cdot) \left(\underbrace{\frac{\partial \alpha_i \pi(s, P)}{\partial s}}_{\text{social pressure}} - \underbrace{\frac{\partial c(s, P)}{\partial s}}_{\text{coordination}} \right)}_{\text{collective action}}$$

Information channel: vote for the government

	Voting share for United Russia, 2007				Voting share for United Russia, 2011			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log (number of VK users), Aug 2011	0.035 [0.050]	0.019 [0.041]	0.045 [0.046]	0.003 [0.037]	0.230* [0.128]	0.179* [0.099]	0.230* [0.118]	0.182* [0.104]
Log (SPbSU students), one cohort younger than VK founder	-0.007 [0.009]	-0.004 [0.008]	-0.006 [0.008]	-0.007 [0.007]	-0.002 [0.017]	0.002 [0.014]	-0.001 [0.016]	0.000 [0.013]
Log (SPbSU students), one cohort older than VK founder	0.002 [0.008]	0.001 [0.007]	-0.000 [0.008]	-0.003 [0.006]	0.004 [0.017]	0.006 [0.013]	0.001 [0.015]	-0.002 [0.013]
Population controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age cohort controls	Yes***	Yes***	Yes***	Yes***	Yes	Yes	Yes	Yes
Education controls	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***
Other controls	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***
Electoral controls, 1995		Yes***						
Electoral controls, 1999			Yes***				Yes***	
Electoral controls, 2003				Yes***				Yes***
Observations	625	625	625	625	625	625	625	625
Effective F-statistics (Olea Montiel and Pflueger 2013)	276.8	274	274	274	276.8	274	274	274

	Voting share for Medvedev, 2008				Voting Share for Putin, 2012			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log (number of VK users), Aug 2011	0.125* [0.071]	0.115* [0.062]	0.137** [0.067]	0.098* [0.054]	0.127* [0.073]	0.111* [0.065]	0.127* [0.067]	0.096 [0.058]
Log (SPbSU students), one cohort younger than VK founder	-0.005 [0.011]	-0.003 [0.009]	-0.005 [0.010]	-0.004 [0.008]	0.002 [0.011]	0.003 [0.010]	0.003 [0.010]	0.002 [0.008]
Log (SPbSU students), one cohort older than VK founder	0.001 [0.009]	-0.000 [0.008]	-0.003 [0.009]	-0.003 [0.007]	0.008 [0.011]	0.007 [0.010]	0.005 [0.010]	0.003 [0.009]
Population controls	Yes	Yes	Yes*	Yes**	Yes	Yes	Yes*	Yes*
Age cohort controls	Yes**	Yes*	Yes**	Yes	Yes	Yes	Yes	Yes
Education controls	Yes	Yes	Yes	Yes	Yes***	Yes***	Yes***	Yes***
Other controls	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***	Yes***
Electoral controls, 1995		Yes***						
Electoral controls, 1999			Yes***				Yes***	
Electoral controls, 2003				Yes***				Yes***
Observations	625	625	625	625	625	625	625	625
Effective F-statistics (Olea Montiel and Pflueger 2013)	276.8	274	274	274	276.8	274	274	274

Information channel: survey evidence

	How do you assess the work of president Dmitry Medvedev					
	Good and getting better	Good and remains the same	Good and getting worse	Bad, but getting better	Bad and remains the same	Bad and getting worse
Log (number of VK users), Aug 2011	0.207** [0.097]	-0.070 [0.113]	-0.046 [0.048]	-0.081* [0.047]	-0.014 [0.066]	0.027 [0.052]
Log (SPbSU students), one cohort younger than VK founder	-0.009 [0.015]	0.009 [0.008]	0.001 [0.006]	0.011** [0.005]	0.002 [0.009]	0.005 [0.007]
Log (SPbSU students), one cohort older than VK founder	-0.012 [0.016]	-0.016 [0.013]	-0.004 [0.010]	0.004 [0.006]	-0.011 [0.009]	-0.005 [0.007]

	How do you assess the work of prime minister Vladimir Putin					
	Good and getting better	Good and remains the same	Good and getting worse	Bad, but getting better	Bad and remains the same	Bad and getting worse
Log (number of VK users), Aug 2011	0.163* [0.095]	-0.062 [0.104]	0.008 [0.039]	-0.053 [0.033]	-0.054 [0.062]	-0.007 [0.048]
Log (SPbSU students), one cohort younger than VK founder	-0.017 [0.016]	0.011 [0.008]	0.001 [0.005]	0.006** [0.003]	0.006 [0.008]	0.003 [0.006]
Log (SPbSU students), one cohort older than VK founder	-0.006 [0.016]	-0.022 [0.014]	-0.009 [0.007]	0.005 [0.005]	-0.003 [0.010]	-0.003 [0.007]

	How do you assess the work of the government					
	Good and getting better	Good and remains the same	Good and getting worse	Bad, but getting better	Bad and remains the same	Bad and getting worse
Log (number of VK users), Aug 2011	0.258*** [0.097]	0.090 [0.105]	-0.104* [0.057]	-0.069 [0.064]	-0.064 [0.088]	-0.017 [0.077]
Log (SPbSU students), one cohort younger than VK founder	-0.013 [0.017]	0.018 [0.013]	0.003 [0.007]	0.012** [0.006]	-0.003 [0.011]	-0.001 [0.009]
Log (SPbSU students), one cohort older than VK founder	-0.013 [0.017]	-0.026 [0.016]	0.005 [0.011]	0.005 [0.009]	-0.014 [0.010]	0.001 [0.010]

Pre-election intentions

	Which party are you planning to vote for in December elections					
	United Russia	Just Russia	LDPR	KPRF	Patriots of Russia	Yabloko
Log (number of VK users), Aug 2011	0.220* [0.124]	0.038 [0.047]	-0.045 [0.043]	-0.029 [0.054]	-0.001 [0.007]	-0.007 [0.011]
Log (SPbSU students), one cohort younger than VK founder	-0.001 [0.015]	0.000 [0.005]	0.005 [0.004]	0.003 [0.005]	0.001 [0.001]	0.001 [0.001]
Log (SPbSU students), one cohort older than VK founder	-0.039** [0.020]	-0.004 [0.007]	0.004 [0.008]	0.001 [0.007]	0.000 [0.001]	-0.002 [0.002]

	Do you personally admit or exclude a possibility to take part in any protests		
	Admit	Exclude	Difficult to answer
Log (number of VK users), Aug 2011	-0.238* [0.130]	0.085 [0.155]	0.161 [0.111]
Log (SPbSU students), one cohort younger than VK founder	-0.006 [0.013]	-0.001 [0.014]	0.006 [0.011]
Log (SPbSU students), one cohort older than VK founder	0.023 [0.017]	-0.023 [0.023]	-0.002 [0.020]

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 fractionalized networks are less likely to experience mass protests
 - ▶ with unexpected protests, coordination is more difficult
 - ▶ social pressure is smaller
- Two online social networks very similar in terms of functions and even colors of interface: Facebook and VKontakte



Channels: fractionalization

Panel A. Network fractionalization and protest participation.

	Log (protesters in December 2011)							
	Whole sample				Cities with more than 100 000 inhabitants			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fractionalization of social media networks (Facebook+Vkontakte)	-0.903 [0.670]	-1.009 [0.685]	-0.914 [0.687]	-0.906 [0.674]	-3.193** [1.420]	-3.973** [1.592]	-2.761* [1.507]	-3.553** [1.557]
Log (number of users in both networks)	1.722** [0.321]	1.697** [0.312]	1.682** [0.319]	1.731** [0.315]	1.404** [0.553]	1.324** [0.572]	1.606** [0.596]	1.615** [0.593]
Population controls	Yes***	Yes***	Yes***	Yes**	Yes**	Yes**	Yes**	Yes**
Age cohort controls	Yes**	Yes**	Yes**	Yes**	Yes**	Yes	Yes**	Yes**
Education controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Electoral controls, 1995		Yes*				Yes		
Electoral controls, 1999			Yes*				Yes*	
Electoral controls, 2003				Yes*				Yes
Observations	625	625	625	625	158	158	158	158
R-squared	0.832	0.834	0.836	0.834	0.817	0.832	0.833	0.833

Panel B. Network fractionalization and the incidence of protest

	Incidence of protests in December 2011 (dummy)							
	Whole sample				Cities with more than 100 000 inhabitants			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fractionalization of social media networks (Facebook+Vkontakte)	-0.132 [0.135]	-0.148 [0.135]	-0.135 [0.135]	-0.129 [0.136]	-0.656** [0.313]	-0.702** [0.307]	-0.578* [0.307]	-0.723** [0.321]
Log (number of users in both networks)	0.266*** [0.063]	0.262*** [0.061]	0.259*** [0.061]	0.264*** [0.061]	0.148 [0.108]	0.156 [0.103]	0.177 [0.110]	0.203* [0.106]
Population controls	Yes***	Yes***	Yes***	Yes***	Yes**	Yes***	Yes**	Yes***
Age cohort controls	Yes**	Yes**	Yes**	Yes**	Yes***	Yes*	Yes**	Yes***
Education controls	Yes*	Yes*	Yes*	Yes*	Yes	Yes*	Yes**	Yes*
Electoral controls, 1995		Yes*				Yes		
Electoral controls, 1999			Yes				Yes	
Electoral controls, 2003				Yes**				Yes**
Observations	625	625	625	625	158	158	158	158
R-squared	0.780	0.784	0.784	0.784	0.767	0.789	0.784	0.796

Conclusions

- Evidence consistent with social media boosting protest participation
 - ▶ Cross-city results for the leading Russian social network, VKontakte
 - ▶ Use overtime student flows fluctuations for identification
- Consistent with reducing the costs of collective action
 - ▶ More pro-government vote with social media
 - ▶ Fractionalization is important
 - ▶ Diminishing effect over time

