Supplementary Materials

Abstract

In order to demonstrate robustness of results reported in the main section of the paper, we specify an alternative — interrupted time-series design — method to estimate signaling interventions on the rhetorical positions of regional leaders, and consider alternative model specifications that account for selection effects. We also specify the optimal lag search procedure for our main model, and an alternative specification of the redistribution premium variable as a moving average process. In addition, we provide estimation results without the fixed effects. Also, we offer details about variables employed in the empirical analyses, as well as the table of summary statistics. We provide details about sub-national legislative addresses used to estimate regional leaders' preferences. All legislative addresses are collected by the authors from the web portals of regional authorities, regional leaders' own web pages, plus federal and regional media.

| | Interrupted time-series | |
	Daily data	Monthly data
Time	0.048***	0.011**
	(0.011)	(0.003)
Putin's address	-0.072	0.023+
	(1.314)	(0.012)
Between Putin's address and announcement	-0.076***	-0.026***
	(0.019)	(0.004)
Putin's announcement	0.290	0.018
	(2.285)	(0.011)
After announcement about reelection	0.044**	0.019***
	(0.018)	(0.003)
Constant	0.000	0.002
	(0.008)	(0.010)
N	89	17
Adjusted R-squared	0.26	0.73
RMSE	0.028	0.009

Table 1: *: Effect of signaling intervention on rhetorical positions of regional leaders.* Dependent variable are raw wordscores. Estimation results of model specifications that assess whether leaders' signals affect rhetorical positions of regional leaders using interrupted time-series design. Daily data is rescaled to 100-day increments to avoid presenting results with many decimal points. Note:+ $p<0.10$, ** $p<0.05$, ***$p<0.01$

Alternative Estimation of the Effects of Leaders' Informational Signals on Followers' Rhetorical Positions

To gauge the effect of two signaling interventions on the rhetorical positions of regional leaders, we can also employ interrupted time-series design (Shadish, Cook and Campbell, 2002). The model contains three trend terms and two dummies. The two dummies are the two interventions: 'Putin's address' (coded 0 prior to 29 April 2011, 1 after that date) and 'Putin's announcement' (coded 0 prior to 24 September 2010, 1 after that date). The trend terms are 'Time' (continuous variable starting at 1 from 8 December 2010 to 25 April 2012), 'Post-address' (coded 0 before Putin's address and continuous starting at 1 on 20 April 2011 until 25 April 2012) and 'Post-announcement' (coded 0 before Putin's reelection announcement and continuous starting at 1 thereafter). The constant term indicates the baseline position of Putin in our Wordscore estimates at time zero. The data is the daily series used in the linear splines regression, also rescaled to 100-day increments to avoid presenting results with many decimal points. We impute the scores for missing dates, which is necessary to allow for the correct treatment of time in the OLS regression. For robustness we also estimate the model on the monthly averages of scores, which does not require imputation at the cost of smaller sample size. Table 1 presents the results of interrupted time-series design.

The results indicate that a general trend in the rhetoric of regional leaders was to move closer to Putin before the interventions. The two signaling interventions do not present a

sharp discontinuity (as evidenced by insignificant coefficients on intervention dummies), since given the pre-scheduled nature of addresses to parliament we don't have sufficient number of observations immediately on both sides of Putin's addresses and announcements. At the same time, prior to Putin's address to parliament the distance between regional leaders and Putin decreased by 0.048 points per any additional 100 days. However, after the address distance started to increase by 0.028 points (-0.048+0.076) per any additional 100-day period. Finally, after the announcement distance to Putin again started to decrease by 0.044 points per any additional 100-day period.

Alternative specifications and robustness tests

Optimal lag length

In model specifications we conducted the optimal lag selection analysis. We followed general advice in De Boef and Keele (2008) and more specifically the lag search procedure based on the information criteria (see e.g. Winker, 2000), using the distributed lag version of Model 4. Within the constraints of our sample size we selected the optimal lag structure based on the AIC and BIC information.

More specifically, there are three variables where the lag structure could be specified: share of regional taxes in expenditure, media publicity, and redistribution premium. The first of these three variables is lagged one year. Given the annual structure of budgeting and spending, a one-year lag on this variable is in line with the theoretical expectations, and a two-year lag would be highly improbable.

The second variable (*media publicity*) is lagged by a quarter. This variable is a quarterly index (as we explain in the variables and data section below) collected by a respected Russian newspaper, *Kommersant*. Theoretically, alternatives to our current lag structure selection for this variable are (i) including values of media exposure that are contemporaneous to wordscores which would increase endogeneity of model specification, and (ii) including two-quarter lagged values of this variable. We believe that the two-quarter lag structure (and longer lags) is counterintuitive. Indeed, in the highly fluid environment of Russian politics, media signals received half a year ago are unlikely to be remembered or acted upon by political elites. Therefore, the choice of one-quarter lags as opposed to contemporaneous or two-quarter lags is driven by reasons of data availability and theoretical expectations. However, we also conducted information criteria tests on half-a-year lag specification for this variable using Model 4 of the paper. The results of the distributed lag estimation of Model 4 are presented below. They indicate that the one-quarter lag has a lower information criteria (both AIC and BIC) and should be chosen for model specification:

The third variable (*redistribution premium*) is lagged by a month. Similarly, using the distributed lag version of Model 4, we conducted optimal lag specification searches. The results are presented in Table 3 below.

In the main results we assumed a very simple model by which regional executives update their decision calculus with information on redistribution premium by lagging the value

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Media publicity	AIC	BIC
1 quarter lag	-860.8116	-820.2
2 quarters lag	-855.9859	-802.8785

Table 2: Information criteria for alternative lag specification of the *Media publicity* variable.

Redistribution premium	AIC	BIC
6 months lag	-863.5641	-791.7129
5 months lag	-858.2061	-792.6029
4 months lag	-860.1763	-800.821
3 months lag	-860.0974	-806.99
2 months lag	-858.8607	-812.0012
1 month lag	-860.8116	-820.2
Moving average	-864.4595	-823.848

Table 3: Information criteria for alternative lag specification of the *Redistribution premium* variable.

of the premium to the previous month. While we assessed the distributed lag structure for longer lags, the one-month lag outperformed the alternatives based on the information criteria (AIC and BIC). However, there is a possibility for a more complex structure of incorporating available information (informational and non-informational) into the decision calculus of governors.[1] One such possibility is that governors form their decision calculus based on the combination of retrospective and forward looking assessment of redistribution premium. We created a variable that is a moving average of the premium for the past three months, the situation in the markets during the month of the speech, and the next two months (short-term futures markets provide sufficiently accurate assessment of future prices, and this information may be available to governors). We re-estimated our main results with this alternative specification for the redistribution premium (with the MA{ 3,1,2} moving average component). The results are presented in Table 5. The information criteria results with the moving average premium are included in Table 3.

It should be emphasised that the lag specification check using the information criteria uses the distributed lag setting of Model 4. That is, for example, for the six-month lag all lags are included in the estimation (including their interactions with the media publicity variable). Our lag search results indicate that, based on the balance of both information criteria, a one-month lag outperforms longer lag structures. Also, the results for the redistribution premium and media publicity (and their interaction) are consistent throughout the lag specification search. However, what is also clear from Table 3 is that the moving average specification outperforms (in terms of information criteria) all other lag specifications. Re-estimated results using this variable are presented in Table 5.

We have also compared the specification with the moving average redistribution premium and alternative lags on media publicity. The results in Table 4 support our earlier

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[1]We thank an anonymous reviewer for raising this issue

Moving average and media publicity	AIC	BIC
1 quarter lag	-864.4595	-823.848
2 quarters lag	-859.9126	-806.8052

Table 4: Information criteria for alternative lag specification of the *Media publicity* variable with the moving average *Redistribution premium*.
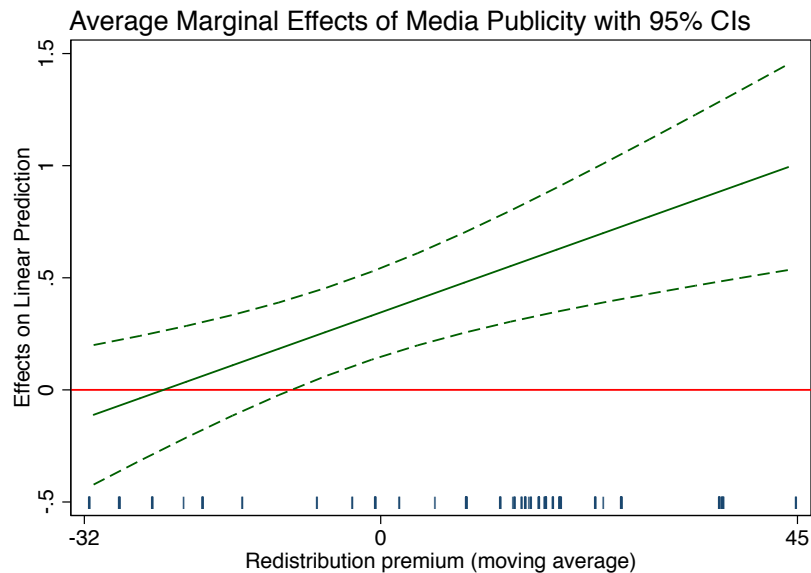

Figure 1: *Average Marginal Effects of Media Publicity Over the Range of Redistribution Premium: Alternative specification with moving average redistribution premium.* The figure plots average marginal effects of media publicity over the range of redistribution premium (difference between actual monthly oil price and anticipated oil price used to draft the federal budget), which is set to follow the moving average process (3,1,2) – three past months, present month, and two future months. The results are based on the interaction effects in Model 4, Table 5. The rug plot shows the distribution of raw data for redistribution premium.

conclusion that longer lags on the media publicity variable are not warranted.

We would like to emphasise that given our sample size we could not perform a lag specification search with a fully saturated distributed lag model that would include all the lags of the media publicity variable (and their interactions with other variables) in addition to all the lags of the redistribution premium variable (and their interactions with other variables). However, the results presented above should provide sufficient evidence for our lag selection which is fully supported by theoretical considerations and an alternative specification of the moving average redistribution premium signal in Table 5.

Substantive interpretation of the interaction effect from alternative specification (no fixed effects) of Model 4 is presented in Figure 1.

	Model 5	Model 6	Model 7	Model 8
Media publicity$_{(t-1)}$	0.280**	0.264**	0.504**	0.544**
	(0.104)	(0.102)	(0.220)	(0.199)
Redistribution premium	0.001**	0.001+	-0.009**	-0.011**
	(0.000)	(0.000)	(0.003)	(0.004)
Media publicity × Redistribution premium			0.013**	0.015**
			(0.004)	(0.004)
Appointed and reappointed by Putin	0.018	0.001	0.100	0.135
	(0.013)	(0.016)	(0.184)	(0.175)
Media publicity × Appointed and reappointed by Putin			-0.111	-0.187
			(0.240)	(0.230)
Due for re-appointment	-0.009	-0.010	0.183	0.200
	(0.009)	(0.009)	(0.119)	(0.140)
Media publicity × Due for re-appointment			-0.250	-0.272
			(0.156)	(0.183)
Time after Medvedev's speech		0.023+		0.035**
		(0.014)		(0.014)
Share of regional taxes in expenditure		-0.003		-0.004
		(0.017)		(0.018)
Democratic background		-0.005		-0.021
		(0.034)		(0.031)
Electoral experience		0.028		0.040+
		(0.023)		(0.022)
Constant	-0.207**	-0.202**	-0.378**	-0.421**
	(0.081)	(0.084)	(0.169)	(0.158)
N	168	168	168	168
N regions	74	74	74	74
Overall "R-squared"	0.42	0.37	0.41	0.29
RMSE	0.019	0.019	0.018	0.018

Table 5: *Alternative specification of Table 2: moving average of redistribution premium.*
Dependent variable is the raw wordscores. Positive coefficients stand for positions closer to Putin. Estimation is conducted with two-way fixed effects (region and year). HAC robust standard errors in parentheses. Note: + p<0.10, ** p<0.05, ***p<0.01.
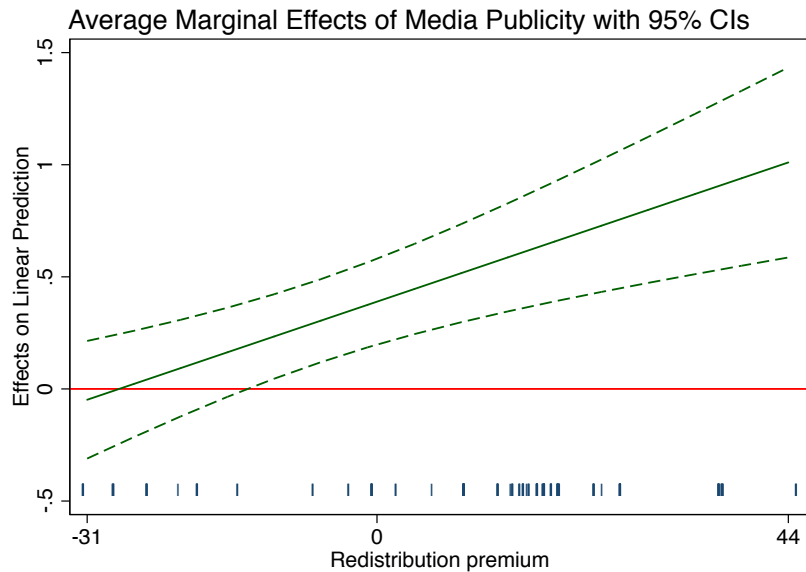
Figure 2: *Average Marginal Effects of Media Publicity Over the Range of Redistribution Premium: Alternative specification without two-way fixed effects.* The figure plots the average marginal effects of media publicity over the range of redistribution premium (difference between actual monthly oil price and anticipated oil price used to draft the federal budget). The results are based on the interaction effects in Model 4, Table 6. The rug plot shows the distribution of raw data for redistribution premium.

Estimation without fixed effects

Our main results (Table 2 in the main text) rely on two-way fixed effects that allow us to identify causal effects despite unobserved unit heterogeneity or period-specific shocks. We replicate the results without two-way fixed effects in Table 6.

Substantive interpretation of the interaction effect from alternative specification (no fixed effects) of Model 4 is presented in Figure 2.

Informational Tools, Governors' Preferences, and Selection

Leaders employ informational and non-informational tools in order to coordinate their followers. One of the non-informational tools that we discuss in the paper is the power of patronage, or appointment of followers to political posts, by leaders. We posited that followers who are appointed by particular leaders will be more likely to follow them leaders due to personal loyalty. In every model specification we employed the indicator of appointment by Putin: while it had the correct direction of effects it was not statistically significant. This result suggests that in the chosen case study followers were driven primarily by informational tools and particular non-informational tools (rents), but not by loyalty norm. In the conclusion to the paper we acknowledge that in the context of Medvedev's presidency the patron-client relationship can be "contaminated", that is, governors formally appointed by

	Model 9	Model 10	Model 11	Model 12
Media publicity$_{(t-1)}$	0.417***	0.426***	0.313	0.332+
	(0.093)	(0.101)	(0.190)	(0.188)
Redistribution premium	0.000**	0.000**	-0.011***	-0.011***
	(0.000)	(0.000)	(0.003)	(0.003)
Media publicity × Redistribution premium			0.014***	0.014***
			(0.004)	(0.004)
Appointed and reappointed by Putin	0.007	0.008	-0.097	-0.070
	(0.007)	(0.007)	(0.174)	(0.179)
Media publicity × Appointed and reappointed by Putin			0.133	0.100
			(0.225)	(0.230)
Due for re-appointment	-0.010	-0.010	0.020	0.010
	(0.007)	(0.007)	(0.133)	(0.140)
Media publicity × Due for re-appointment			-0.039	-0.026
			(0.171)	(0.181)
Time after Medvedev's speech		-0.008		-0.006
		(0.012)		(0.012)
Share of regional taxes in expenditure		-0.002		-0.001
		(0.003)		(0.003)
Democratic background		0.009		0.007
		(0.014)		(0.015)
Electoral experience		-0.003		-0.005
		(0.006)		(0.006)
Constant	-0.323***	-0.326***	-0.241	-0.252+
	(0.074)	(0.079)	(0.148)	(0.146)
N	168	168	168	168
N regions	74	74	74	74
Adjusted R-squared	0.12	0.11	0.14	0.13
RMSE	0.038	0.039	0.038	0.038

Table 6: *Alternative specification of Table 2: without region and year fixed effects.* Dependent variable is the raw wordscores. Positive coefficients stand for positions closer to Putin. Estimation is conducted without two-way fixed effects (region and year). HAC robust standard errors in parentheses. Note: + p<0.10, ** p<0.05, ***p<0.01.

Medvedev, and despite considerable evidence about the president's influence over appointments, might have been also "appointed" by Prime Minister Putin who retained considerable influence.

It is conceivable that patrons appoint clients with a shared political ideology (e.g. Van Riper, 1958). For instance, the selection of Geisel, a protege of the moderate ruler Castelo Branco, as the president of Brazil, and in turn, of Figueiredo — by Geisel — put the brakes on the repressive turn that the military regime had taken earlier and ushered in political liberalisation. In the Russian context, if more liberal governors are appointed by Medvedev who at the same time express more liberal rhetoric, then it is possible that the estimated effect of appointment is biased. Likewise, more statist governors may be more likely to be (re-) appointed by Putin: their statist rhetoric may be due to their personal ideology rather than to the effects of various tools that leaders employ. In other words, how serious is the possibility that appointment and individual ideology of governors co-vary, and that more liberal and statist governors are selected by Medvedev and Putin, respectively?

We believe that the problem of selection on the basis of ideology is minor, however. While the literature on patronage in non-democratic regimes in general, or Russia in particular, is vast (e.g., Ledeneva, 2006; Remington, 2008), it does not provide a strong evidence to suggest that clients support patrons for ideological reasons, and shared ideological affinity. For instance, (Reuter and Robertson, 2011) find that in Russia elites are appointed primarily on the basis of their ability to deliver votes for the ruling party, rather than ideology or economic competence. Indeed, it is more plausible (and consistent with the explanation we advance in this paper) that political actors, whatever their latent ideology, simply react strategically to the present opportunities. Indeed, primarily authoritarian elites are driven by the perception of power rather than ideology or even loyalty (Bueno de Mesquita et al., 2003, 65-68). We also know, for instance, that political actors, whatever their ideological and personal background, primarily consider regime performance and personal benefits and this in turn determines their political beliefs and behavior in the short-term (Hooghe, 2001). If political actors act strategically irrespective of their personal traits and beliefs, and their preferences are highly transient, then appointment is not necessarily conflated with their ideology and only accounts for the possible loyalty norm to the person who appointed them and not for their ideological predisposition. Likewise, symmetric preferences of followers are common in informational theories of leadership for which we provide an empirical test in the paper. This is entirely consistent with the argument we advance: followers will shift their policy stances based on the mixture of informational and non-informational tools rather than underlying personal ideology.

However, as a test of robustness, we can examine the possibility of selection formally. The chosen model specification tests for the possibility that the selection of governors (appointment) and their political rhetoric are not independent, so that the main model may produce biased estimates. Because governors may differ in their personal (intransient) ideology that makes their appointment by Putin or Medvedev more or less likely, we fit a selection model to explain whether their appointment by a particular president and their subsequent political rhetoric are linked. The Heckman two-step model can account for this possibility where the first stage model predicts appointment by either Putin or Medvedev. The model generates an inverse Mills ratio that accounts for the unobserved factors that supposedly influence the appointment of governors and their political rhetoric. This ratio is then included

in the second stage model that explains how informational and non-informational tools lead to changes in political rhetoric. Because some governors appointed or re-appointed by Putin can be subsequently re-appointed by Medvedev, two separate models are estimated for two subsamples of governors: those appointed and re-appointed by Medvedev (after 2008), and those appointed and re-appointed by Putin (before 2008). Because of the limited number of observations and the fact that the Heckman model specification is sensitive to the choice of first-stage predictors, we only include the key predictors from the main model.

To predict the likelihood of selection, we include several variables in the first-stage model. The survival of regional leaders hinges on their ability to deliver high electoral results for *United Russia* (UR), irrespective of who occupies the presidency (Reuter and Robertson, 2011). Therefore, this factor should account for selection but should not influence preferences. Once selected, governors are exposed to the same strategic calculus of informational and non-informational tools whether they perform better or worse at elections, and they must still rally to the most influential leader. The variable *UR electoral performance* is calculated as the difference between the UR regional vote and the national average in the latest election. Secondly, Medvedev is younger than his predecessor and it is conceivable that he will be more likely to promote politicians from his own generation.[2] Thus, we also control for the *Age* of regional leader. In contrast, Putin promoted many individuals with a security background (Rivera and Rivera, 2006), so it is possible that Putin favored *Siloviki* in his appointments of regional leaders. In the selection stage we also include *Democratic background* and *Electoral experience*. Table 7 presents the estimation results.

The selection model therefore gauges the link between the propensity of regional leaders to rhetorically support national leaders and to be appointed by the latter in the first place. Our results indicate that younger governors are more likely to be appointed or re-appointed by (younger) Medvedev (0.05 level), governors that are able to bring more votes for the ruling party (*UR electoral performance*) are also more likely to be appointed (0.1 level). Likewise, older governors are more likely to be appointed by (older) Putin (0.05 level) and *siloviki* is borderline significant. Other predictors have the correct sign of the effects. In the second-stage equation, *Redistribution premium* remains the most important predictor, while *Media publicity* also retains its statistical significance, albeit in the second model only. However, the coefficient of λ is not statistically significant from zero and the hypothesis that the two equations are independent cannot be rejected: it does not appear that the selection of particular governors by two leaders and subsequent political rhetoric by those governors are related. Overall, the results of this model specification are consistent with the argument advanced in the paper that regional leaders are primarily driven by the minute informational signals from the federal centre.

Summary Statistics and Variable Details

Details about the explanatory variables are available in the relevant sections of the paper. In addition and more specifically:

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[2]For example, Medvedev appointed his former university classmate, Anton Ivanov, as the Chief Justice of Supreme Arbitration Court.

	Model 1	Model 2
Media publicity$_{(t-1)}$	0.252	0.333***
	(0.178)	(0.095)
Redistribution premium	0.001**	0.001+
	(0.000)	(0.000)
Due for re-appointment	-0.004	-0.011+
	(0.019)	(0.006)
Constant	-0.194	-0.223**
	(0.135)	(0.076)
Appointed and re-appointed by:	*Medvedev*	*Putin*
Governor's age	-0.058**	0.078***
	(0.019)	(0.018)
Electoral experience	-0.284	0.159
	(0.305)	(0.315)
UR electoral performance	0.023+	0.008
	(0.014)	(0.014)
Democratic background	0.536	–
	(0.482)	
Siloviki	–	0.534
		(0.394)
Constant	3.833***	4.163***
	(1.021)	(0.970)
λ	0.021	-0.011
	(0.014)	(0.010)
N	86 (168)	59 (168)

Table 7: *Informational tools, governors' preferences, and selection* Models 1-2 are Heckman selection models, two-step estimation. Model 1 and 2 predict whether governors are appointed or re-appointed by Medvedev, and whether they are appointed or re-appointed by Putin, respectively (governors previously appointed by Putin can also be re-appointed by Medvedev), in the first stage, and regional leaders' distance to Putin is then estimated in the second stage. All model specifications include year fixed effects. + p<0.10, ** p<0.05, ***p<0.01

Media publicity is sourced from one of the constituent indices included in *Rating of Publicity of Politicians* quarterly report — 'publicity rankings of Russian politicians, civil servants and businessmen, estimated by their total references in Russian media'. Individual scores are reported as a share of the president's score. Therefore, *media publicity* is a share of references to Putin, and it can decrease or increase in relation to the president. Results are available quarterly, for instance see *Kommersant-Vlast*, 24 January 2011, Rating of Publicity of Politicians (Rejting Publichnosti Vlasti), N3 (907). In the rating, individual scores are reported for several categories, such as overall references, references in article titles, citation, etc. The data is collected from more than 40 leading newspapers, magazines and TV and radio news. Initially, approximately 250 actors are included and the top 50 are reported in the majority of published reports. In 2002 this index was known as *the Most Influential People in Russia* and published monthly, in 2003 it came under the new title and was published quarterly. Rankings were retrieved 1 November 2011 and are available from www.kommersant.ru, quarterly. *Media publicity* values used in the analyses are from the previous quarter.

Medvedev's and *Putin's perceived political influence* are derived from the monthly expert survey of perceived political influence conducted by the Agency of Political and Economic Communications (Agenstvo Politicheskih i Ekonomicheskih Kommunikacij), commissioned by the Russian daily *Nezavisimaya Gazeta* from May 2007. *Nezavisimaya Gazeta*-APEK survey of the 100 leading politicians in Russia assesses "on a scale between 1 and 10, the influence of the following Russian politicians in the Presidential Administration, government, Federal legislature?" See, for instance, *Nezavisimaya Gazeta*, 30 November 2011, 100 Leading Politicians of Russia in November, p. 9. The average score is calculated and reported, the experts can also propose up to five new politicians, and should at least two experts include a new person, the latter will be included in the following month's survey. Rankings and the methodology are available from www.ng.ru monthly. The list of experts includes political scientists, political pundits and commentators, as well as six representatives of the political parties.

The *Redistribution premium* is estimated as the difference between monthly Urals oil price (basis to estimate Russian export oil mixture), using the data from U.S. Energy Information Administration at http://www.eia.gov/ and www.topoilnews.com oil prices portal, retrieved 1 October 2012, and the projected average annual oil price used to estimate oil revenues for a given budgetary year, as reported in Federal Laws 'On Federal Budgets for 2008, 2009, 2010 and 2011', available at Ministry of Finance of the Russian Federation, http://www1.minfin.ru/ru/budget/federal_budget/, retrieved 1 October 2012. For an overview of the Russian oil taxation regime, see Locatelli and Rossiaud (2011).

As a possible proxy for pro-democratic leanings, we account for *democratic background* of any kind. The number of governors under particular party banners in the past is too small for us to gauge their possible ideological leanings. Still, several governors were affiliated with pro-democratic parties in the past, such as Belyh of Kirov (*SPS*), Men's of Ivanovo (*Yabloko*) or Zhilkin of Astrakhan' (*Smena* democratic faction in the early 1990s).

Share of regional taxes in expenditure is calculated as follows: (the amount of *taxes collected to the regional budget* plus the amount of *taxes collected to the federal budget*, divided by *total regional government expenditure*. *Share of regional taxes in expenditure*,

percentage, that is used in the estimations is for the previous year, so that 2010 values are for 2011, for example. The amount of *taxes collected to the regional budget* is from the Federal Exchequer web page, "Report on the execution of the consolidated budget of the subject of RF and budget of the territorial state extrabudgetary fund (budgetary activities)" ('fiscal and non-fiscal revenues' row, 'approved budgetary appointments: consolidated budget of the subject of RF and budget of the territorial state extrabudgetary fund' column), retrieved from `http://www.roskazna.ru/reports/mb.html`. The amount of *taxes paid into federal budget* is sourced from the Federal Tax Service, "Report on added and received taxes, dues and other compulsory returns", available from the regional departments of the federal tax service, reports for respective years ('Fiscal and other revenue, altogether' row, 'received taxes, dues and other compulsory payments into revenue: federal budget' column). Each region is accessed separately, retrieved from `http://www.nalog.ru/`. *Regional expenditure* is taken from "Report on the execution of the consolidated budget of the subject of RF and budget of the territorial state extrabudgetary fund (budgetary activities)", Federal Exchequer web page ('budgetary expenditure, altogether' row, 'approved budgetary appointments: consolidated budget of the subject of RF and budget of the territorial state extrabudgetary fund' column'), available from `http://www.roskazna.ru/reports/mb.html`. Retrieved 24 October 2011. The calculation of *Share of regional taxes in expenditure* follows the methodology of *Fiscal rating of regions*, retrieved from `http://taxes.tellary.ru/` for 2010 only, missing values for 2010 are additionally calculated and two previous years are added.

UR electoral performance is calculated as follows. For example, if the *United Russia* (UR) party obtained 64.25 per cent of votes in a particular region, and 7 regions scheduled elections for that particular date and on average the ruling party received 61 per cent in those seven regions, the indicator for a particular governor in that region takes the value of 3.25, but only if the same governor was in office at the time of election and on the day of his or her legislative address. If the old governor is replaced by a new one, the value of 0 is assigned as he or she is untested in terms of electoral performance. The vote is calculated as the combined measure of both list and majoritarian election results for each governor and particular year. See Russian Central Election Commission. Retrieved 1 November 2011 from `http://www.izbirkom.ru/region/izbirkom`.

Time after Medvedev's speech is the time calculated as the proportion of calendar year that passed between Medvedev's speech and a governor's legislative address.

Table 8 presents summary statistics for our data in the estimation sample.

Speeches by the President, Prime Minister and Regional Leaders, 5 November 2008 to 1 August 2012

Overall, there are 233 speeches by regional leaders delivered to their regional parliaments from 5 November 2008 (first annual address to parliament by President Medvedev) to July 2012, of which 168 were delivered before Putin's re-election announcement on 24 September 2011. This number is very close to the complete population of official governor ad-

Variable	Mean	Std. Dev.	Min.	Max.	N
Raw wordscore	0.007	0.041	-0.112	0.132	168
Media publicity	0.778	0.028	0.724	0.845	168
Redistribution premium	11.456	18.849	-31.41	44.87	168
Appointed and re-appointed by Putin	0.649	0.479	0	1	168
Appointed and re-appointed by Medvedev	0.488	0.501	0	1	168
Due for re-appointment	0.286	0.453	0	1	168
Time after Medvedev's speech	0.39	0.27	0.014	1.074	168
Share of regional taxes in expenditure	0.935	0.765	0.08	5.891	168
UR electoral performance	-0.551	8.793	-29.59	26.12	168
Democratic background	0.065	0.248	0	1	168
Electoral experience	0.274	0.447	0	1	168
Governor's age	53.827	7.835	34	72	168
Siloviki	0.113	0.318	0	1	168

Table 8: *Summary Statistics for Variables in the Estimation Sample.*

dresses in this period. We estimate that between 6 and 12 speeches made in this period are very likely to be missing (six were made but they were either not available in public domain, not available at the time of writing, or were available in video format only, and it is also probable that six more were probably made judging from secondary sources). Regarding 'missing' observations for governors who made no addresses at all, we treat these political actors as fundamentally uncertain, who could not make their preference known about either political leader. The sample is largely representative of the wider population of governors in general in terms of their appointment history, backgrounds, and career trajectories and includes regions across the whole country. The dataset is described in detail in Baturo and Mikhaylov (2012).

Since we estimate the determinants of regional leader preferences under uncertainty, when the duality of power existed (before 24 September 2011), 168 speeches made in this period are employed in three annual panels to derive wordscores used in model specifications reported in Table 2 of the paper (described in supplementary Tables A1, A2 and A3 in Baturo and Mikhaylov (2012)). However, in some analyses (section *Do leaders' signals affect followers' rhetoric?*) we also estimate followers' reaction to the announcement that Putin was nominated for presidency on 24 September 2011, and therefore use speeches made after that date. We also include a corresponding geographical map of Russia with the color intensity representing raw wordscores from our analysis.
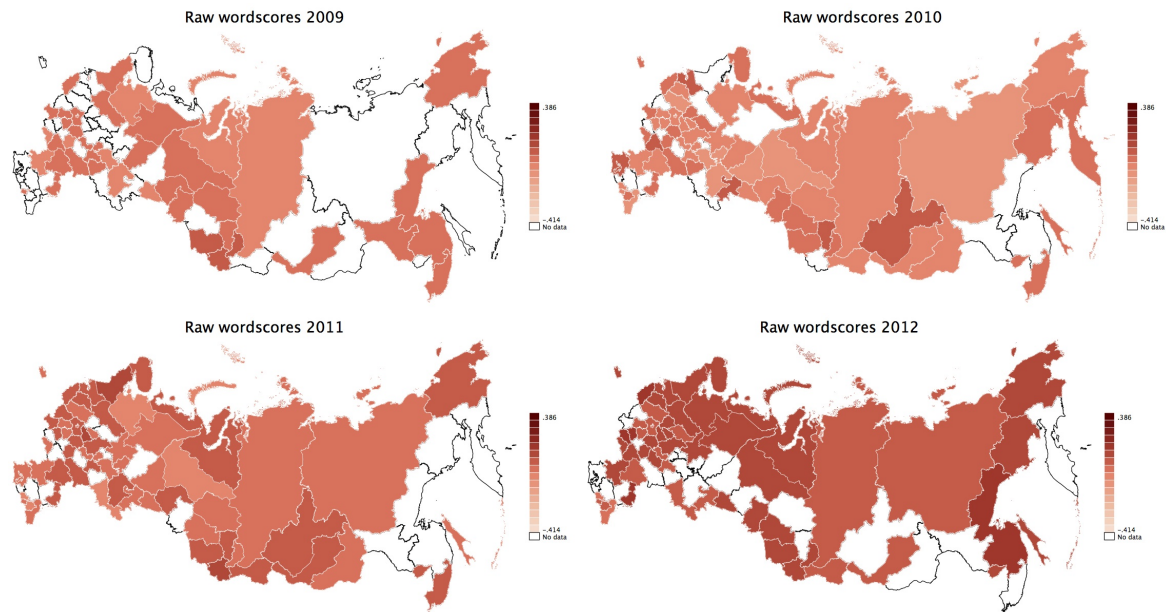
Figure 3: *Geographical map of Russia with raw wordscores mapped for corresponding federal subunits.* Darker shades represent positions closer to Putin.

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