

We Didn't Start the Fires: Measuring the Effect of the 2010 Russian Wildfires on Support for United Russia

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Abstract

Recent literature has failed to produce a consensus on how effectively elections work as mechanisms of accountability under autocratic states. Moreover, comparatively few studies have either extended analysis of electoral authoritarianism at the regional level or examined specific electoral strategies employed by autocratic leaders. In response, this paper looks at the political consequences of a shock (natural disaster) to an autocratic system, the outbreak of destructive wildfires across Russia in 2010. Did voters punish the ruling United Russia party for their mismanagement of the wildfire crisis in the subsequent October 2010 elections? What strategies did United Russia employ in preparation for the elections? I argue that the ruling party's disastrous response to the fires caused widespread discontent among the voting population, who in turn translated their anger into losses for United Russia and its candidates. Furthermore, this paper shows that the ruling party put forth candidates with less legislative experience, emphasizing a break from the previous elite coalition in order to win votes in afflicted areas. I test my hypotheses by examining elections to six regional legislatures in Russia using an original dataset to identify fire damage.

1 Introduction

This past summer the Russian Federation experienced the hottest weather since the government began keeping records over 130 years ago. The historical temperature levels helped fuel a wave of wildfires (forest fires) across the country. Over 1.8 million hectares of land burned, more than 50 people died directly as a result, and billions of dollars of damage were inflicted to the Russian economy, particularly in the agricultural and industrial sectors. Public anger erupted at both the irresponsibility of the ruling party in relaxing fire prevention regulations over the previous three years as well as the feeble response by local

authorities in battling the fires. Elections to regional legislatures were held in 6 regions (out of 83) just two months after the height of the summer wildfires, offering an opportunity for citizens to translate their dissatisfaction and criticism into potentially reduced mandates for the governing United Russia party. Did voters punish the ruling party United Russia (UR) for their mismanagement of the wildfire crisis in the subsequent October elections? What strategies did United Russia employ in preparation for the elections? How might elections provide accountability mechanisms under autocratic states?

The shock from the wildfires elicited different strategies from the two main actors in the elections, citizens and the ruling party. First, I argue that the disastrous performance of the ruling party in the years prior to the fires caused widespread discontent among the voting population. United Russia experienced greater losses in election districts as the level of fire damage increased for the party was deemed partly responsible for the catastrophe. These regional elections also utilized a mixed proportional representation formula, with half the seats in each regional body allocated to single member districts and the other to party lists. I find remarkable similarities in the effect of fire damage on UR success across both the SMD and PR results, but weaker significance for the majoritarian regressions. I interpret this as evidence of more system-wide blaming than individual legislator-blaming and analyze the significance.

Secondly, the ruling United Russia party anticipated a public backlash to its performance and acted to maintain its grip on power in two ways. First, United Russia altered its nomination strategy in regional elections by putting forth candidates with fewer previous ties to legislative institutions in areas with greater fire damage. This allowed the party to downplay its ties with previous malfeasance and emphasize a clean break with the policies of the past. Secondly, the party used its control over election administration to block potentially threatening candidates from registering, thus resulting in overall less competitive elections and a greater probability of winning seats. This paper thus sheds light on two separate but intertwined responses to natural disasters, that on the part of affected citizens and that on the part of incumbent authorities who wish to mitigate public discontent with their previous performance through electioneering.

This paper hopes to make several contributions to the literature on natural disasters, authoritarian regimes, and more specifically the politics of Russian regional governance. As one of the first to address the effects of natural disasters on authoritarian regimes, it examines how ruling party states manage crisis or shocks. Should we expect that voters under authoritarian regimes react in similar patterns to exogenous shocks to their welfare? Secondly, I provide insights into how authoritarian leaders prepare for and manage purportedly competitive elections. One could argue that removing ineffective incumbents (even through a nondemocratic ruling party) borders on an accountability mechanism and a potential deterrent to future elected officials. Lastly, numerous scholars of Russian politics have argued 1) that United Russia did not suffer greater losses in the wake of the summer

wild fires, and 2) that regional legislatures in Russia are largely unaccountable, powerless, and a faade institution with little to offer in terms of explaining regime dynamics. Using an original dataset based on NASA satellite data, I show that both lines of thought are largely incorrect and raise further questions for scholars wishing to focus on lower-level elections. Recent literature reviews highlight the relative absence of studies of local and regional elections under authoritarianism; this paper is among the first to quantitatively study elections to Russian regional legislatures in the Putin-era.

2 Political Consequences of Natural Disasters

Historically numerous factors have influenced how voters hold politicians accountable for natural disasters. Political repercussions depend on both the resources the politician is able to marshal in response to a disaster as well as how easily voters can assign blame for an absence of pre-disaster preparations (Abney and Hill 1966, Chen 2008, Chen 2009, Healy and Malhotra 2008). Citing the work of psychologists, citizens need to place blame on some identifiable parties in order to maintain the perception that the world is ultimately predictable and controllable (Arceneaux and Klein 2006). In the eyes of citizens, state authorities should shoulder responsibility for proper preparations and responses; when disaster strikes, the weaknesses of these systems uncovers the wider incompetence of elected officials. Knowledge of regional and local politics as well as the subjective severity of the catastrophe both can significantly affect an individuals willingness to punish for a catastrophe (Arceneaux and Klein 2006, Abney and Hill 1996, Yates 1998).

In more comparative works, natural disasters and climate shocks have profound consequences on a variety of political phenomena (and vice-versa). Both global warming and climate-induced economic shocks have been theorized to increase the likelihood of civil war (Miguel et al. 2004, Burke et al 2010). Several authors have found that, controlling for propensity, more people die due to natural disasters under autocracies than under democracies (Cohen and Werker 2008, Flores and Smith 2010, Keefer et al. 2009). Autocracies prefer to spend resources on maintaining elite coalitions than providing public goods to the masses to stay in power (Flores and Smith 2010). Few if any accountability mechanisms exist to ensure that autocratic leaders properly anticipate and minimize the effects of disasters on the wider populace (Keefer et al. 2009). Population density is part and parcel of the story, as natural disasters occurring in population centers and capitals enable displaced populations to mobilize against leaders to show their discontentment.

The above studies offer potent findings on punishment strategies and options available to citizens in response to natural disasters. However, little research outside the United States has focused on the blame game translating into real punishments of officials. Flores and Smith (2010) convey the expectation that if a disaster hits a capital city, we should expect an uprising, something not always borne out in reality. Given the impressive re-

pressive capacity of most autocratic governments, what are other signals besides protests that citizens can use to display their dissatisfaction with disaster preparedness and response policies? Crude comparisons based on regime type also overlook specific strategies employed by autocracies to mitigate political fallout. These models presume a lack of responsiveness and accountability in general by autocratic leaders and fail to look deeper into the aftermath. In addition, solely measuring the number of deaths due to disaster overlooks economic damage. Greater attention to micro-level dynamics in authoritarian states is direly needed, especially to test how these citizens assign responsibility for disaster preparedness and respond to specific policies and outcomes.

3 Regional Elections Under Authoritarianism

Studying elections under authoritarianism could provide the answer to these concerns. In such states, regularly held elections can play a multitude of roles, including spreading spoils among elites (Blaydes 2006), inducing the opposition to invest in state structures (Lust-Okar 2005), and gathering vital information about citizens preferences (Magaloni 2008, Brownlee 2005, Pop-Eleches 2011). Besides receiving patronage by elevating preferred elites to prominent positions, citizens can also use elections to monitor officials behavior, punishing accordingly for malfeasance (Lust-Okar 2004, Wang 2008). Numerous incentives thus exist for voters, incumbents, and oppositions to participate in opaque elections and even potentially legitimate and strengthen regimes as a result. Even under authoritarianism, election results may provide a noisy but substantive gauge of public opinion as well as empower citizens to believe they hold officials accountable.

However, we know little about whether the logic of national-level electoral accountability carries over to the regional and local levels. Comparatively few studies have either extended analysis of electoral authoritarianism to these levels or examined the effects of decentralization under autocracy. Most are solely focused on China (Landry 2008, Treisman 2007, Wang 2010, Manion 1996, Pei 2006). Experimentation with local elections in China began in the mid-1980s, as Communist leaders look to reassert the role of the party after the dissolution of the communes (Wang 2010). Truly uncertain local elections have removed incompetent public officials through truly uncertain elections, spurred competition between Communist Party institutions, and increased citizen participation in public dialogues (Manion 1996, Wang 2010, Zhenglin and Bernstein 2004). Albeit flawed and often manipulated, regional and local elections can provide a powerful mechanism for citizens under autocracy to get their feedback heard by authorities (Fiorina 1981). We can also look to the U.S. experience with regional elections where the concept of retrospective voting takes central stage. Studies have found that this type of evaluation may be contingent on a clear identification of the actors responsible for either upswings or declines. When job responsibilities are clearly delineated and partisan identification with politicians

is minimal, elections for local officials may focus on actions, instead of campaign rhetoric or other candidate-specific considerations (Berry and Howell 1996).

How might one apply these insights towards the central question of the effects of natural disasters under authoritarianism? First, I argue that regional elections should be taken seriously by scholars given the pressures placed on autocratic leaders to manage power hierarchies as well as public opinion. The absence of studies of local elections under autocracy outside of China paired with an incomplete understanding of how hegemonic parties penetrate and consolidate power at the local level opens up a host of fruitful areas of research. How do voters in less than free societies evaluate and punish politicians through local elections? How is responsibility for natural disasters assigned? How do autocratic regimes manipulate these elections to attain their most preferred outcomes?

4 The 2010 Summer Wildfires and the Context of Russia

The devastating fires sweeping across Russia during the summer of 2010 provide a unique opportunity to test hypotheses about disasters and punishment mechanisms under authoritarianism. Triggered by a record heat wave in July and August, forest fires spread over 10 million to 12 million hectares throughout Russia. Estimates of the damage reached up to \$300 billion dollars and tens of citizens lost their lives in the blazes (AFP 2010)¹. The destruction of wheat fields prompted officials to temporarily ban wheat exports to stem skyrocketing agricultural prices (BBC 2010). Authorities received widespread criticism for their handling of the crisis, with media outlets and blogs highlighting the passage of a lax Forest Code in 2006 as a primary determinant of the government's feeble response. Vociferous insults and rage flew directly at the ruling United Russia party, as the Kremlin at times deftly and other times awkwardly tried to manage a public relations nightmare.

Using the case of the 2010 summer fires in Russia, I will test several hypotheses about how both voters and parties react to the effects of natural disasters under authoritarianism. Less than three months following the peak of the catastrophe, regularly scheduled elections were held for six regional legislatures (NYT 2010)². Over two thousand candidates ran for 260 open seats, half of which were determined by proportional representation and the other half through single-member districts (as mandated by a 2003 Federal Law). Overall, United Russia won a majority of seats in every legislature up for contest, even sweeping several of the portions of seats allotted to single-member districts (CIKRF 2011). Turnout, at

¹Several estimates claim that the tens of thousands of more people died in Russia this year than on average. Analysts claim these deaths were caused by indirect effects of the fire.

²In Russia, electoral law randomly staggers elections to regional legislatures. In October 2010, the six legislatures up for election varied tremendously in size and geographic location. In addition to regional legislatures, elections to city councils and mayors were held in 77 of the 84 regions and over 7789 localities across the country. Nearly one-quarter of Russias 140 million people were eligible to participate in the polls.

45.93% was slightly higher than corresponding data from the last set of regional elections in the six regions in 2005, which was 38.86% (CIKRF 2011).

Table 1: United Russia Performance in October 2010 Elections

Region	PR Seats	PR (%)	SMD Seats	Total Seats (%)	Turnout (%)
Magadan	10	50.02	7	80.95	40.31
Tyva	15	77.41	14	90.63	65.57
Novosibirsk	30	44.82	18	63.16	35.76
Chelyabinsk	30	55.74	19	81.67	45.70
Kostroma	16	50.02	10	72.22	40.29
Belgorod	17	66.20	12	82.86	64.71

Looking at Table 1 alone, one would be hard pressed to argue that UR struggled to maintain its control on overall majorities. However, given its disproportionate control over administrative resources and electoral laws, it is unsurprising to see these results (Golosoov 2006, Wegren 2007). This paper instead will focus on direct vote counts, electoral strategies, as well as other indicators of competitiveness of the elections as proxies for true UR support. The short time period between the shock caused by the fires and direct regional bodes well for teasing out a causal relationship between the extent of the damage and the consequences of citizen outrage. Russian analysts fiercely debated the effect of the fires on the ruling partys popularity in the run-up to the elections. Some argued that the public relations disaster caused by the fires made a fall in popularity inevitable; even candidate replacement strategies and administrative resources employed could not skew the elections (Petrov 2010). Others claimed the government has simply skated through the potential political consequences of disaster, with aggregate election results showing no marked decline (and potentially gains from years past in the regions) (Time 2010). With no clear consensus of the effect of the fires on either UR’s popularity or its ability to manage elections, this paper derives the hypotheses below.

5 Citizen Strategies: Blaming the Party

First, I argue that citizens punished the United Russia party in the October 2011 elections in areas that experienced greater fire damage. Under an autocratic system with few if any mechanisms for informational feedback from citizens, even fraudulent elections will transmit individual-level preferences to authorities about their previous performance. Moreover, citizens have less difficulty assigning responsibility for improper disaster preparedness and responsiveness because of specific policies passed by UR in 2006. Key to this argument is that voters engage in system-wide blaming (as a response to flawed fire protection policies) conditional on their own direct exposure to the ravages of the wildfires.

First, decentralizing and privatizing actions by the federal government left a glaring hole in states fire-fighting ability. Although weather conditions clearly increased the fire-proneness of regions across the country, the passage of the revamped National Forest Code in 2006 was cited numerous times in the aftermath of the summer fires as a primary cause of the destruction.³ In late 2005, logging interests began lobbying the presidents office in order to decentralize the federal State Forest Service, Goslesohrana, and place its previous responsibilities in the hands of regional authorities and private leaseholders (Reuters 2010, Greenpeace 2010). The entire service, with its civil army of planes, helicopters, and trained forest guards was dismantled. In all, a staff of nearly 200,000, including 70,000 foresters, was reduced to 12,000 bureaucrats in the years leading up to the 2010 fires (AFP 2010). In addition, previously untouched forests were opened to unaccountable developers as part of Putins natural resource development strategy (Reuters 2010). Lastly, very weak punishments exist for starting agricultural fires, which were theorized to have caused most of the forest fires. In years past, lower-scale agricultural fires have been controlled by fire-fighting services, but given the temperature spikes, raged out of control this past year.

At the regional level, authorities acted complacently in preparing for and equipping teams to combat fires. Though gaining access to federal funds was described as overly bureaucratic and time intensive, regional governments shared the blame with federal authorities for ignoring a pressing problem. Contractors were caught off-guard by the demands placed on their stretched budgets and few mechanisms existed to ensure cooperation between private lease-holders and the responsible fire-fighting parties. It is hard to accurately identify where the problems in procurement and budget allocation lie, but regional governments were especially faulted for their own weaknesses in disseminating information about impending fires and fighting for federal funds to properly staff agencies.

The result was a chaotic, disorganized, and feeble response to devastating fires across western and central Russia. Scores of complaints arose about insufficient manpower and equipment to stop the spread of rapidly escalating fires. The vast majority of those involved with combating previously containable fires was not designated service officials or contracted agencies. Instead, volunteer firemen, military units, and local resident bore the brunt of the burden (RFERL 2010). These individuals' direct exposure to the calamity sparked direct outrage towards Putin himself as well as the policies that generated the disorderliness and pathetic response.

For the purposes of this study, this blaming is especially illustrative. Beginning in

³Natural weather conditions clearly played a role in the magnitude of the fires sweep. Russia indeed experienced record-high temperatures over this summer. An unpredictable, extreme heat wave scorched the country, contributing to drought conditions and a greater fuel load for wildfires (NOAA 2010). This exogenous shock raised temperatures by up to five degrees Celsius in western Russia and up to three degrees in Siberia. I argue that the small variability between regions offers evidence that fire spread is more the product of the futility of combat efforts and not underlying structural conditions (see below for controls included).

the 1960s, Soviet policy to drain peat bog for energy production created hazardously dry conditions for wildfire outbreak. Moreover, the abnormal heat wave (see footnote 3) was tangible evidence of uncontrollable and ferocious nature. Instead of blaming these causes, popular wrath was directed at both federal and regional authorities for depriving the affected areas of the tools and resources to combat what were believed to be manageable phenomenon. Short-term factors here matter possibly more than long-term ones. Therefore, variation in fire spread proxies for damage inflicted by ineffective institutions and policies caused by both the federal and the regional government. I argue that voters used their direct experience with local conditions to blame two different actors for the chaos: the ruling United Russia party and specific UR candidates running for regional legislature.

Since 2000, Putin's ruling party, United Russia, has forcefully established itself as the dominant player on the federal, regional, and local scenes. Beginning with regional legislatures and moving down into mayor and city manager positions, the party has co-opted rivals, ousted independent officials, and usurped previously democratic institutions (Gelman and Lankina 2008, Moses 2010, Stoner-Weiss 2006). Top-down policy changes are now the norm, with powerful interest groups and lobbyists concentrating their efforts on gaining access to Kremlin officials. The fusion of party and state makes for an easily identifiable structure of partisan authority for Russian citizens. When citizens have difficulty assigning responsibility for policy areas to specific sets of authorities, they will blame the ruling party as a whole for incompetent performance. The opacity and lack of accountability mechanisms within bureaucratic systems under autocracy, especially Russia, has been widely established (Orttung 2006, Desai 2005, Shliefer and Vishny 2008). Therefore, I argue the problems with governance and public goods provision that plague autocratic bureaucracies only serve to perceive the entire party as culpable for the problems.

Hypothesis 1. *The more extensive fire damage was to a given rayon, the fewer votes United Russia won in subsequent October regional legislatures on the proportional representation ballot.*

Beyond the party, I also argue that individual legislators will be blamed conditional on how much damage wildfires inflicted on their constituencies. As described above, regional governments assumed partial responsibility for fire prevention and combating after the passage of the 2007 Forest Code. The overwhelming control United Russia asserted over regional legislatures from 2005 to 2010 put responsibility for policies squarely on those legislators connected to the party. Therefore, voters perceive UR-affiliated incumbents and candidates as not helpless and at the whim of federal authorities, but also directly implicated in the morass of the wildfires.

Hypothesis 2. *The more extensive fire damage was to a given rayon, the fewer votes United Russia candidates won in subsequent October regional legislatures on the majoritarian ballot.*

An important corollary to the above line of argumentation is that citizens recognize the implications of the shift in fire-fighting policy after 2007. Critics of this approach might claim that individuals directly experiencing the effects of fires are simply recasting their anger over the situation into an anti-incumbent vote, without connecting the policy and responsibility dots (see Achen and Bartels 2004). This model of an irrational voter would cast into doubt any hypotheses which assert that citizens punished United Russia for their performance or that the party itself engaged in implicit accountability measures to censure its own. As a partial test of this question, I posit that an association between rampant fire damage and decreased electoral success for the UR party only emerged after the 2007 policy changes. Before this date, no relationship between the two measures should exist, since the reforms that would shift public opinion have not yet passed. Below I test this at both the regional level looking at elections to the regional legislature in 2005 and to the Russian State Duma in 2007, which at that time oversaw the State Forest Service that was gutted by the changes to the Forest Code.

Hypothesis 3. *Prior to the 2007 changes to the Forest Code, districts with greater fire damage were not associated with less support for the United Russia ruling party.*

Voters thus approached the October 2010 regional elections enraged about past government performance and directly aware about the shortcomings of previous policies. Clearly articulated reforms forced volunteers to take up fire-fighting responsibilities in the face of state incapacity and weakness. The ballot box was the natural place to direct discontent as the government, and not necessarily the weather, contributed to the destruction of homes and livelihoods.

6 Party Strategies: Setting the Slate

Given the uproar and negative media attention surrounding the response to the fires, United Russia clearly anticipated the possibility of electoral fallout in the October 2010. At that juncture, several main electoral strategies were available to party leaders. First, using their control over Central Election Commission in each region, regional party leaders could have chosen to physically manipulate vote counts. Blatant electoral fraud often involves party officials placing pressure on individuals to vote for the party, inappropriately excluding voters, or altering vote totals to advantage UR candidates. Unfortunately, uncovering and measuring electoral fraud is nearly impossible given the overall opacity of the Russian electoral system and the absence of independent and objective election observers. Even arriving at a rough estimate of fraud during national-level elections is at a preliminary stage, further compounding problems for regional analysis (Mygakov 2009).

Besides engaging in blatant and illegal ballot rigging, I argue that instead UR party

officials focused their attention on candidate selection and slate creation. Refurbishing the party's image through replacing incumbents with fresh faces required offering voters a "clean break" with old configurations and promises of renewal and change. Therefore, United Russia stayed within the legal bounds of electioneering. Removing "bad apple" incumbents in fire-ravaged regions signaled a responsiveness and openness on the part of the party to its constituents. Several prominent Russia-watchers observed the practice of sidelining prominent members from ballots in favor of previously unknown or legislatively inexperienced substitutes (Petrov 2010). Governors were taken off party lists and distance created between the previous ruling coalition and that put forth on the ballot (Von 2010). The party itself ran an anti-UR campaign by nominating individuals not affiliated previously with legislative activities (Moscow Times 2010). At the regional electoral district level, one indicator of the freshness of the UR candidate is his or her previous legislative experience.

Hypothesis 4. *United Russia will be more likely to run a candidate with less legislative experience in areas more afflicted by the summer fires.*

Terming this replacement strategy a form of electoral accountability may be difficult. On one hand, such a strategy may result in increased representation and constituent-services down the line. UR-benefitting candidates understand the possibility of them being removed from future lists if their performance severely disappoints voters in their districts. By deterring negligence, the strategy benefits voters, even if the choice to replace a candidate occurs before the election even takes place. Alternately, United Russia in a sense holds all the cards through its control over the entire edifice of state power. Though voters may not see a candidate's name on the ballot and believe he or she is being punished, that individual might simply be relocated to another branch as compensation for taking the electoral sacrifice. A shared understanding that Putin or other party leaders are simply shuffling the cards in order to trick voters into believing in the legitimacy of the accountability mechanism will not prevent incompetent politicians from continuing to enjoy access to power. Exploring this puzzle is a potent avenue for future research.

Next, besides rearranging their own slate of candidates, United Russia leaders also have the ability to affect the menu of opposition choices to their rule. Control over electoral commissions easily translates into a grip on access to the ballot and the prevention of strong challengers from jeopardizing the prospects of UR candidates. I argue that United Russia engaged in this strategy by intimidating opposition candidates from running and offer the following hypotheses.

Hypothesis 5. *The more extensive fire damage was to a given rayon, the greater number of disqualified candidates in that electoral district.*

However, because much of the intimidation occurs before candidates even submit their registration, the overall level of electoral competition may be a better indicator than just

disqualified candidates. I argue that electoral officials associated with UR contributed to reduced competition in fire-stricken regions by preventing strong challengers from again reaching the ballot. Therefore, without these challengers, the overall level of competition will be theorized to be lower, even with reduced vote shares for ruling party candidates. Below I measure electoral competition through a measure of the effective number of candidates.

Hypothesis 6. *The more extensive fire damage is to a given rayon, the fewer effective number of candidates in that district.*

Some scholars would argue that fraudulent or at least partially unfair elections under autocracy do not constitute a clear signal of individual preferences. The noise from manipulated vote counts and use of administrative resources distorts the feedback from voters (Lehoucq 2003). The October regional elections appear especially plagued by this issue. Though opposition parties refrained from boycotting legislative institutions as in the past, the outcry from both monitors and observers was hardly ignorable (Moscow Times 2010, RFERL 2010). Such inconsistencies however should bias any effect from the natural disaster downwards for the incentive of the ruling party would be to limit any expression of public anger over its policies. Concerns have also been raised about UR tactics to remove incompetent party members from electoral lists, replacing them with individuals with deeper ties to the region and less connections to the fire catastrophe (Moscow Times 2010). Such behavior first reflects an intention on the part of the ruling party to take the elections seriously. A party ready to falsify results should not be concerned with who is on the ballot. In Russia, elections may be the only remaining institutional feedback mechanism designed to gauge popular demands. Independent media has been shuttered and polls only provide snapshots of popularity at the national level.

7 Data and Empirical Strategy

To test my hypotheses, the primary independent variable of interest relates to the damage caused by the 2010 summer wildfires. In an ideal world, we would have data on the number of houses or business destroyed, the level of economic losses, or for example the number of people displaced by the fires. This information however is not available (nor will it likely to be); therefore, I have constructed a proxy using satellite data from made available by the Fire Information for Resource Management System (FIRMS) through the University of Maryland and the National Aeronautics and Space Administration (NASA). MODIS (Moderate Resolution Imaging Spectroradiometer) sensors from NASA's EOS Terra and Aqua satellites identify active fire locations daily over the last seven years (NASA 2002). A mid-infrared radiation-sensing algorithm flags an active fire location as the center of 1 km pixel, denoting the presence of a fire on the date and time picked up. Recent scholarship

has argued that in the U.S. this active fire product data captures large fires well, but may under-represent small or rapidly-burning fires as well as those in areas under frequent cloud cover (Hawbaker et al. 2010). For the purposes of this study, these weaknesses will not introduce systematic bias into the study.

Fire season in Russia usually begins around May 1st and continues until the end of September. I calculated first the number of fires in each rayon of the six regions holding legislative elections on October 10th, 2010 for this five-month period (May 1st to October 10th), each year from 2005 to 2010. As a robustness check, I also put together full year (January 1st to October 10th) and summer (July 1st to October 10th) counts for the same seven years. Many fires across Russia occur in uninhabited or extremely isolated areas that have are not believed to directly affect citizens livelihoods. Therefore, using data from the Gridded Population of the World dataset, version 3 (GPWv3), I matched in ArcGIS each individual active fire location to the value of population density (persons per square mile) at that point. These values were then averaged for each rayon, for each time period, and for each year. Multiplying the number of fires a given rayon experienced during a time period (such as May to October 2010) by the average population density from GPWv3 gives us a estimate of the number of people affected by fires that season *firedensity*. Next, to give a sense of the shock experienced in 2010, I subtracted the average of the logged values of *firedensity* from 2005-2009 and subtracted it from the logged value for 2010.⁴ The result, *fireshock*, will be the main explanatory variable for the OLS and other regressions that follow. The unit of analysis is the rayon as indicated in the level two administrative boundaries map of Russia.

The first dependent variables are related to the percentage of votes United Russia won in each rayon. Election data was taken from the Election Commission of the Russian Federation. Unfortunately, electoral districts and rayons do not match up perfectly in the dataset. In the case of proportional representation votes, this caused few problems, as over 90% of rayons and districts perfectly matched. Electoral results for those rayons that did not were summed and average to keep the unit of analysis at the rayon level, the variable *ur-pr*. For the single member districts, the same process was applied, but this time vote counts for UR candidates that did not match neatly to rayons were summed across, even if two or three different candidates ran in a single rayon. Again over 90% were perfectly matched for this variable, *ur-smd*.

⁴Clearly there are many ways to aggregate this data. The main independent variable of interest here uses the logged values. I also ran the following models using both the unlogged values, as well as the percentage change. The results stand put, often times showing increased significance (presented below in the Robustness section). The variable *fireshock* used here employs the logarithmic transformation because of the skewedness of the variable.

Figure 1: Heat Map of Fire Incidence, May-October 2004

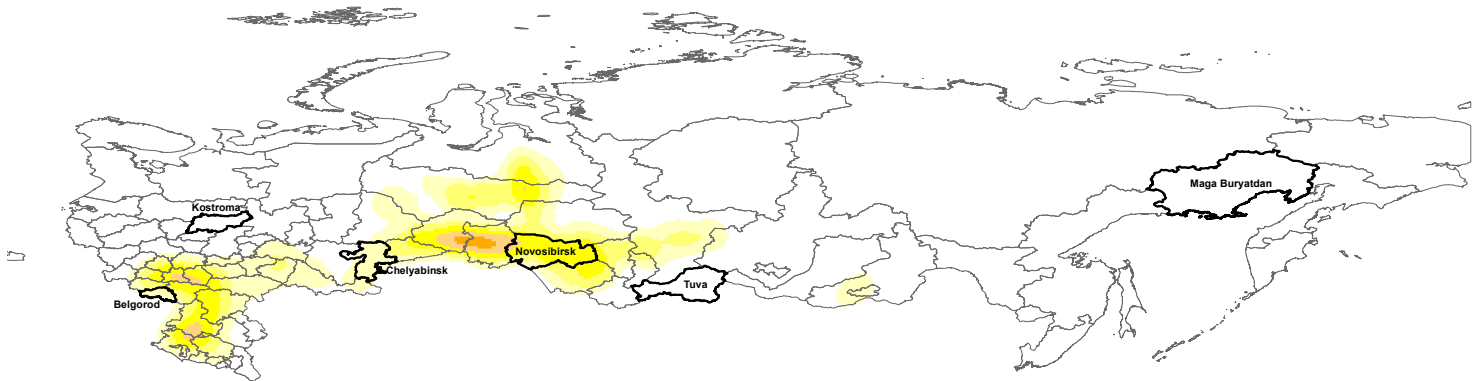
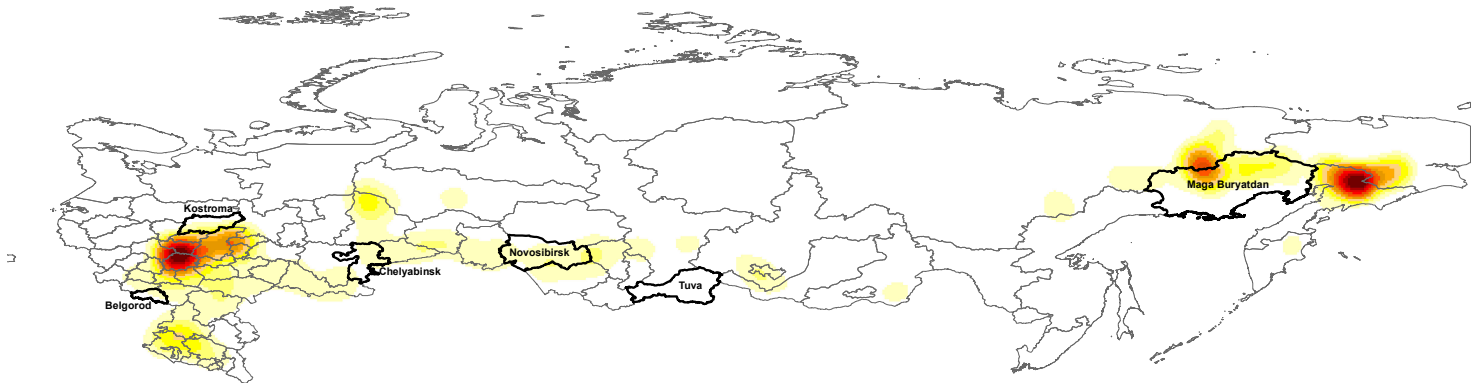


Figure 2: Heat Map of Fire Incidence, May-October 2010



The next set of dependent variables is specific to the single-member districts. The variable for legislative experience denotes how much legislative experience a UR candidate has at the time of his or her candidacy and is taken from the Election Commission. A clear difficulty arises in calculating this variable. When electoral districts and rayons do not neatly match, averages are needed to indicate what percentage of candidates in a given rayon have experience. Therefore, I coded every electoral district according to whether the UR candidate had experience in the previous session of the regional legislature (2) or whether they served in a lower level legislative body (1). I then derived two variables when I averaged the districts into the rayons (approximately 10 rayons did not match up perfectly, all between the no experience and full duma experience categories). The variable *incumb-half* rounds downward (any value for a rayon less than .5 takes the lower category below it). The variable *incumb-full* rounds upward (any value greater between the two categories takes the upper value). I include regressions on both variables below.

The number of rejected candidates, *blocked*, is taken again from the Election Commission of the Russian Federation and includes all candidates who were refused registration status. Lastly, I define the effective number of candidates according to the following formula given by Cox 1997: where v_i refers to the percentage of votes for the i th candidate, the Effective Number of Candidates (ENC) can be defined by the equation $\frac{1}{\sum v_i^2}$. The measure of the concentration of vote shares provides a window into the competitiveness of elections in a given district, with higher scores indicating more competitive and fragmented elections. I use this variable to test the hypothesis that through its control over electoral commissions, United Russia will prevent the emergence of strong challengers in what it perceives to be vulnerable districts.

To control for previous United Russia performance in each region, I turned to the Election commission for the partys result in the 2005 regional legislative election (*ur-2005*) and the 2007 federal parliamentary election (*ur-2007*). Control variables are also taken from the Federal State Statistics Service and its database of Municipality Indicators (www.gks.ru). First, I included a variable indicated the logged value of the population of each rayon, called *lpopulation*. The total amount of land as measured in hectares was logged as the variable *ltotalland*. These two variables are used to control for the fact that larger and more populous regions may more extensive networks and support for the ruling party. Next, I calculated the percentage of agricultural land in the rayon by dividing the total amount of land by the land available for agricultural purposes and created the variable, *percagr*. This gives a sense of the different employment prospects for residents as well as the land available for agricultural burning, a main spark of the fires. Lastly, I included a variable for the municipal budget of the rayon, *budget*. Though imperfect, this will proxy for the institutional capacity of the local level government as well as give some sense of the average wealth of the residents.⁵

⁵Overall, statistical information at the rayon level is not readily available. For example, the region of

Lastly, I include two variables to control for natural structural factors that might contribute to fire incidence. These are important in order to establish the link between fire damage and institutional quality, and not some other underlying factors that might contribute to their spread. Above I argue that by taking the absolute difference between the 2010 damage and its preceding six-year average, we introduce an ostensibly "fixed-effect" approach which accounts for fire propensity. In addition to this approach, I include a data from the World Wildlife Fund and ESRI in 2008. The variable *biome* includes information about broad kinds of ecoregions that have comparable climatic regimes, vegetation structure, spatial patterns of biodiversity, flora and fauna and sensitivities to human disturbance (WWF 2008). This set of classifications is remarkably similar to that found in the Holdridge life zones bioclimatic scheme and helps to break down the Russian landscape into areas with similar vegetation and climactic makeup. In the six regions where elections were held, six classifications appeared across the rayons, which were each coded as dichotomous variables (Boreal Forests and Taiga: *boreal*; Deserts and Xeric Shrublands: *deserts*; Montane Grasslands: *grasslands*; Broadleaf Forests: *broadleaf*; Conifer Forests: *conifer*; Savannahs: *savannah*; and Tundra: *tundra*). I also use a variable from ESRI that measures average precipitation in each rayon, *precip* (ESRI 2008). These controls buttress my ability to argue that abnormalities due to the 2010 shock help explain political outcomes.

8 Results

Citizen Strategies - Hypotheses 1-3

The first set of hypotheses deal with what I term citizen strategies in responding to the shock from the 2010 wildfires. I run a set of OLS regressions on the first two variables, *ur-pr* and *ur-smd*, which track how well the ruling party did on the proportional representation and majoritarian ballots in the October regional legislatures. From the hypotheses above, we expect that the more fire damage inflicted onto a rayon, the worse the party will do electorally.

I will use the same four model set-ups for all the regressions below for the sake of consistency. Column 1 shows a model with regional fixed effects as well as controls for urban/rural, total land, population, population density, as well as the party's previous performance. Column 2 includes all the variables from Column 1, but adds two variables for the size of each rayon's budget as well as the percentage of agriculture land. Unfortunately, there is no data for Magadan, which may be important theoretically as well. Magadan experienced what is known as a catastrophic fire, or "a single high-severity fire that covers more than 10,000 ha and results in total consumption of the litter and humus layers and in

Magadan has no information available for the last two variables (*agrland* and *budget*). Moreover, statistics on educational attainment of residents, average income, or even average age are not included within the Federal State Statistics Service.

Table 1: Summary Statistics

Variable	Observations	Mean	S.D.
ur-pr	149	.5957047	.1308767
ur-smd	147	.5889796	.1607974
ur-2005	149	.427651	.1580771
incumb-half	148	1.594595	.7362142
incumb-full	148	1.648649	.6887321
enc	147	2.577959	.9245976
blocked	148	1.202703	3.991418
fireshock	149	.207286	2.334445
lpopulation	148	10.20018	1.104372
ltotalland	148	12.2806	1.611374
budget	139	13.12244	.9709011
percagr	139	.0753084	.1624822
boreal	149	.3221477	.4688753
deserts	149	.0268456	.1621773
grasslands	149	.0067114	.0819232
broadleaf	149	.1543624	.3625143
conifer	149	.0402685	.1972512
savannah	149	.4295302	.4966786
tundra	149	.0201342	.1409331
precip	149	428.1879	126.7209

high tree mortality, or the simultaneous occurrence of several high-severity fires in a given region with a total area exceeding 10,000 km²” (Sukhumin et al. 2010). These fires happen relatively rarely (three times over the past 30 years) in Magadan and may bias our overall estimates. Therefore, Column 2 drops nine observations from Magadan, while introducing further controls. Lastly, Column 3 includes all the previous variables, while introducing indicator variables for *biome* (not shown) and precipitation, *precip*. All the models include robust standard errors.

The results from Table 3 provide confirmatory results for both the PR and SMD hypotheses. The effect of fires on PR results is range from -.007 to -.009 and is significant at the 95% level. Since this variable is logged, we must interpret it accordingly. Since the mean of *freshock* is roughly 0.21, we can argue that a six time increase in the fire damage will reduce UR’s vote share by 4-5%. A much larger shock of ten times the mean will reduce UR’s vote share by 7-9%, a substantial hit in popularity. The value of R-squared for the first three columns is around 78%, meaning we are explaining a substantial proportion of the variation in electoral results. As for the SMD shares, the coefficients are of similar magnitude (-.007-0.1) to those of the PR list, but the significance of each is reduced as is the overall R-squared. I argue below that although greater fire damage is indeed associated with decreases in electoral share, the effect is weaker for the single-member districts.

Next, a important piece of the argument involves establishing that citizens are blaming specific government policies for the 2010 wildfire damages. I test this through Hypothesis 3 which holds that we should not expect a negative correlation between fire damage and electoral results before the policy was enacted in 2007. Validating this claim shows first that citizens are both responding to the policy shift, and secondly that there are no particular political leanings of these areas beforehand that could act as an unobserved variable explaining electoral outcomes. Table 4 presents the results below. In Column 1, I run the complete model (rayon-level characteristics, natural factors, and region fixed effects) on United Russia’s performance in the 2005 regional elections on the PR list. The coefficient is positive but not significant. Column 2-5 regress on the dependent variable of UR’s 2007 federal level performance in State Duma elections, using the same model but this time controlling for UR’s performance in the 2005 regional elections. The independent variables measure the difference between 2007 fire damage and the three years preceding individually, as well as the difference between 2007 and the three-year preceding average. All the coefficients are positive, and only the final one is mildly significant at the 10% level. These findings provide evidence that voters did not blame the United Russia party for fire damage in any electoral cycle prior to the 2007 policy shift.

Party Strategies - Hypotheses 4-6

Moving onto the strategies employed by United Russia itself in preparation for the elections, I first run a set of OLS regressions on the level of legislative experience UR candidates possessed, *incumb-half* and *incumb-full*. The two different ways of creating the

Table 2: United Russia Electoral Results - PR and SMD

VARIABLES	(1) ur_pr	(2) ur_pr	(3) ur_pr	(4) ur_smd	(5) ur_smd	(6) ur_smd
fireshock	-0.00685** (0.00337)	-0.00922** (0.00361)	-0.00830** (0.00368)	-0.00730* (0.00421)	-0.01000** (0.00447)	-0.00940** (0.00465)
city	-0.0317 (0.0220)	-0.0305 (0.0223)	-0.0257 (0.0208)	-0.0413 (0.0289)	-0.0421 (0.0304)	-0.0386 (0.0296)
ltotalland	0.00395 (0.00523)	-0.00441 (0.00691)	-0.00475 (0.00694)	-0.00240 (0.00718)	-0.0131 (0.00949)	-0.0164 (0.0105)
lpopulation	-0.0103 (0.00704)	-0.00769 (0.0162)	-0.00889 (0.0167)	0.000421 (0.0109)	-0.0214 (0.0242)	-0.0211 (0.0227)
lpopdensity	-0.00699 (0.00644)	-0.00245 (0.00700)	-0.00154 (0.00745)	-0.0217** (0.00939)	-0.0177* (0.0100)	-0.0133 (0.0102)
chelyabinsk	-0.101*** (0.0233)	-0.0875*** (0.0239)	-0.0913*** (0.0312)	-0.0993*** (0.0294)	-0.0741** (0.0328)	-0.0621 (0.0477)
kostroma	-0.190*** (0.0288)	-0.171*** (0.0323)	-0.155*** (0.0422)	-0.244*** (0.0461)	-0.206*** (0.0484)	-0.164** (0.0680)
novosibirsk	-0.206*** (0.0247)	-0.185*** (0.0298)	-0.185*** (0.0344)	-0.229*** (0.0368)	-0.199*** (0.0396)	-0.188*** (0.0506)
tuva	0.0503* (0.0286)	0.0706** (0.0301)	0.0632 (0.0435)	-0.0937* (0.0503)	-0.0790 (0.0509)	-0.145 (0.0950)
magadan	-0.144*** (0.0394)			-0.118** (0.0509)		
ur_2005	0.128** (0.0639)	0.118* (0.0640)	0.132* (0.0725)	0.187** (0.0927)	0.157* (0.0902)	0.153 (0.105)
lbudget		-0.000699 (0.0194)	0.00136 (0.0209)		0.0305 (0.0299)	0.0321 (0.0265)
percagr		-0.0988* (0.0577)	-0.111* (0.0635)		-0.131 (0.0803)	-0.188** (0.0891)
precip			-8.12e-05 (5.71e-05)			-7.46e-06 (9.14e-05)
Constant	0.736*** (0.108)	0.804*** (0.156)	0.814*** (0.158)	0.740*** (0.163)	0.681*** (0.249)	0.655*** (0.235)
Observations	148	139	139	146	137	137
R-squared	0.769	0.783	0.789	0.526	0.527	0.557

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Past United Russia Electoral Results - 2005 (Regional PR) and 2007 (Duma)

VARIABLES	(1) ur_2005	(2) ur_2007	(3) ur_2007	(4) ur_2007	(5) ur_2007
diff_2004-2005	0.00841 (0.00674)				
diff_2004-2007		0.00283 (0.00189)			
diff_2005-2007			0.00298 (0.00185)		
diff_2006-2007				0.00305 (0.00188)	
diffaverage_2004-2007					0.00364* (0.00208)
city	-0.109** (0.0426)	-0.0349*** (0.0120)	-0.0346*** (0.0119)	-0.0383*** (0.0121)	-0.0360*** (0.0119)
ltotalland	-0.0289** (0.0121)	0.00841** (0.00361)	0.00846** (0.00355)	0.00895** (0.00368)	0.00875** (0.00360)
lpopulation	-0.0126 (0.0186)	-0.0179*** (0.00411)	-0.0178*** (0.00413)	-0.0184*** (0.00409)	-0.0180*** (0.00412)
lpopdensity	-0.00759 (0.0137)	0.0116*** (0.00423)	0.0117*** (0.00412)	0.0128*** (0.00412)	0.0120*** (0.00410)
chelyabinsk	0.0835* (0.0444)	-0.0258 (0.0210)	-0.0350 (0.0212)	-0.0283 (0.0212)	-0.0293 (0.0208)
kostroma	-0.248*** (0.0461)	-0.0564** (0.0282)	-0.0541* (0.0286)	-0.0522* (0.0286)	-0.0549* (0.0284)
magadan	-0.156** (0.0677)	-0.0638* (0.0328)	-0.0588* (0.0330)	-0.0587* (0.0332)	-0.0625* (0.0332)
novosibirsk	-0.221*** (0.0446)	-0.0134 (0.0224)	-0.0186 (0.0217)	-0.0145 (0.0220)	-0.0142 (0.0220)
tuva	-0.114* (0.0579)	0.232*** (0.0258)	0.228*** (0.0276)	0.233*** (0.0270)	0.230*** (0.0266)
ur_2005		0.188*** (0.0382)	0.193*** (0.0379)	0.184*** (0.0377)	0.188*** (0.0378)
precip	0.000151** (7.07e-05)	-4.47e-05 (4.10e-05)	-4.72e-05 (4.15e-05)	-4.15e-05 (4.11e-05)	-4.52e-05 (4.11e-05)
Constant	0.975*** (0.216)	0.661*** (0.0726)	0.658*** (0.0723)	0.660*** (0.0731)	0.659*** (0.0725)
Observations	148	148	148	148	148
R-squared	0.667	0.874	0.874	0.875	0.875

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

variables are described above, but I present both here as a robustness check. Columns 103 show regressions on the first cut *incumb-half*. The coefficients on the independent variable of interest, *fireshock*, are all negative (roughly -0.75) and significant at the 95% level. Accordingly, a ten-times shock in the fire damage to a particular rayon will reduce the level of legislative experience by nearly a full category, indicating the United Russia is running relatively new politicians in these regions. The R-squared values range from 20% to 26%. As for the other cut of the data, *incumb-full*, the coefficients are a bit smaller, but similarly significant. Values of R-squared also are slightly lower. In sum, there is considerable evidence that the ruling party chooses individuals farther away from legislative institutions to run in places where dissatisfaction is high over fire damage.

Next, I take up the claim that we should expect to see more disqualified candidates in rayons with greater damage, as an indicator of a party trying to prevent strong candidates from reaching the ballot. Table 5 presents negative binomial regressions on count data for the number of blocked candidates. I use negative binomial models because the conditional variance is ten times greater than the conditional mean. However, maximum likelihood regression still may not be the most appropriate choice here because of the small sample size. None of the coefficients on *fireshock* are significant, but all are negative. Though entirely inconclusive, the sign is in the right direction. As a robustness check, I ran OLS and Poisson models on the dependent variable *blocked* but also found negative coefficients and low levels of significance.

Lastly, I ran the same models on the effective number of candidates, calculated above. This variable gives an indication of the level of fragmentation in the electoral system. As we can see from Table 6, the coefficients on *fireshock* are consistently significant and negative (ranging from -0.05-0.06). A shock of ten times above the mean will reduce the number of effective candidates by nearly an entire person. The R-squared values all come in at just under 40%. Rayons with greater fire damage appear to see fewer viable candidates, I argue, as a result of limited opportunities for popular opposition candidates to get on the ballot.

9 Robustness Checks

The models above incorporate numerous robustness checks, including slicing and dicing both independent and dependent variables in different ways. I also ran a series of regression on different calculations of the independent variable of interest, *fireshock*. Not only were differences in logged values taken during the May-October time period, but also for the full year (January-October) and the summer (July-January). Several of the models dropped in significance to the 90% level, but there was no consistent trend of significance for any of the hypotheses. Above I used absolute differences above in the logged values. Two other calculations could have been alternately presented, each with highly similar results.

Table 4: UR Candidate Legislative Experience

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	incumb_half	incumb_half	incumb_half	incumb_full	incumb_full	incumb_full
fireshock	-0.0718** (0.0304)	-0.0753** (0.0331)	-0.0749** (0.0357)	-0.0559** (0.0279)	-0.0620** (0.0303)	-0.0555* (0.0325)
city	0.126 (0.269)	0.184 (0.281)	0.163 (0.276)	0.183 (0.266)	0.201 (0.278)	0.202 (0.270)
ltotalland	0.0993 (0.0682)	0.0188 (0.0897)	0.0199 (0.0950)	0.0998 (0.0692)	0.0748 (0.0885)	0.0881 (0.0892)
lpopulation	-0.124 (0.137)	0.0267 (0.158)	0.0118 (0.166)	-0.0741 (0.118)	-0.0121 (0.138)	-0.0295 (0.138)
lpopdensity	0.0155 (0.0819)	0.0311 (0.0814)	0.0472 (0.0844)	0.0584 (0.0847)	0.0710 (0.0810)	0.0731 (0.0862)
chelyabinsk	0.0535 (0.233)	0.0620 (0.252)	-0.292 (0.279)	-0.0481 (0.224)	-0.0306 (0.249)	-0.430 (0.274)
kostroma	0.384 (0.325)	0.332 (0.384)	-0.163 (0.440)	0.334 (0.309)	0.326 (0.378)	-0.198 (0.435)
novosibirsk	0.209 (0.291)	0.264 (0.287)	0.0558 (0.306)	0.134 (0.295)	0.158 (0.289)	-0.0729 (0.309)
tuva	-0.749** (0.302)	-0.626** (0.313)	-1.096*** (0.415)	-0.416 (0.300)	-0.358 (0.283)	-0.513 (0.353)
magadan	0.114 (0.309)			0.239 (0.317)		
ur_2005	-0.217 (0.638)	-0.312 (0.661)	-0.281 (0.630)	-0.288 (0.600)	-0.353 (0.620)	-0.218 (0.583)
lbudget		-0.178 (0.160)	-0.139 (0.176)		-0.0754 (0.159)	-0.0395 (0.155)
percagr		-1.019 (0.840)	-0.970 (0.888)		-0.308 (0.941)	-0.0794 (0.971)
precip			-0.000953 (0.000794)			-0.00157** (0.000779)
Constant	1.626 (1.661)	3.436* (1.844)	4.026** (1.863)	1.079 (1.505)	1.733 (1.727)	2.569 (1.682)
Observations	148	139	139	148	139	139
R-squared	0.203	0.210	0.262	0.130	0.120	0.199

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Blocked Candidates

VARIABLES	(1) blocked	(2) blocked	(3) blocked
fireshock	-0.110 (0.0695)	-0.0591 (0.0751)	-0.0743 (0.0768)
city	-0.0128 (0.570)	-0.0456 (0.559)	-0.362 (0.511)
ltotalland	0.0451 (0.147)	0.150 (0.188)	0.135 (0.192)
lpopulation	0.450*** (0.119)	0.669*** (0.203)	0.795*** (0.221)
chelyabinsk	2.105*** (0.760)	1.859*** (0.713)	2.690*** (0.739)
kostroma	1.935** (0.858)	1.506* (0.835)	1.687* (0.923)
novosibirsk	1.992*** (0.763)	1.601** (0.753)	1.959*** (0.710)
tuva	4.222*** (0.744)	4.087*** (0.692)	5.205*** (0.830)
magadan	1.843** (0.800)		
lpopdensity	0.273* (0.148)	0.221 (0.141)	0.227 (0.151)
ur_2005	-3.338** (1.310)	-3.202** (1.302)	-4.285*** (1.373)
lbudget		-0.304 (0.237)	-0.529* (0.281)
percagr		1.218 (1.126)	1.659 (1.194)
precip			0.00216* (0.00124)
ln alpha	-0.475 (0.423)	-0.519 (0.420)	-0.754 (0.507)
Constant	-7.164*** (2.308)	-6.440** (2.817)	-5.653** (2.605)
Observations	148	139	139

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6: Effective Number of Candidates

VARIABLES	(1) enc	(2) enc	(3) enc
fireshock	-0.0627** (0.0289)	-0.0504 (0.0318)	-0.0595* (0.0349)
city	0.411 (0.344)	0.393 (0.371)	0.352 (0.330)
ltotalland	0.123 (0.0772)	0.171** (0.0834)	0.159* (0.0862)
lpopulation	-0.116 (0.0995)	-0.0890 (0.128)	-0.0915 (0.133)
lpopdensity	0.190** (0.0874)	0.167* (0.0938)	0.165* (0.0985)
chelyabinsk	1.038*** (0.249)	0.956*** (0.272)	0.883*** (0.319)
kostroma	1.623*** (0.282)	1.502*** (0.311)	1.298** (0.535)
novosibirsk	1.521*** (0.248)	1.401*** (0.285)	1.386*** (0.306)
tuva	0.347 (0.242)	0.253 (0.267)	0.151 (0.307)
magadan	0.654 (0.409)		
ur_2005	-0.166 (0.546)	-0.0875 (0.546)	-0.0488 (0.607)
lbudget		-0.0457 (0.151)	-0.0348 (0.155)
percagr		0.566 (0.751)	0.579 (0.761)
precip			0.000125 (0.000699)
Constant	0.763 (0.996)	0.586 (1.343)	0.761 (1.451)
Observations	147	138	138
R-squared	0.391	0.374	0.381

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

First, I took the difference in the non-logged values and found even stronger support for Hypotheses 1-4, reaching the 99% of significance in many cases. However, the distribution of that variable was highly skewed and I preferred to present the logged version here. Secondly, I took the percentage change in logged fire damage at each of the cuts, defined as $\frac{FIRE_t - FIRE_{t-1}}{FIRE_{t-1}}$. This variable also results in similar levels of significance for Hypotheses 1-4. None of the different calculations however resulted in shifts for Hypotheses 5 and 6 (blocked candidates and ENC).

Besides checking the values of the independent variable, I also ran above different cuts on the values of incumbent experience. I changed the measure to an indicator value (0,1) for whether a candidate served directly in the previous legislative session and ran regression to similar effects. I also ran OLS and Poisson models for the blocked candidates and ENC models to no greater success in identifying significance. In the future, I hope to use an alternate measure for competition, such as the margin between the winner and his or her closest competitor, as well as expand the dataset to include regional elections in March 2011 in nine other regions. More observations would help with problems with significance above, although the temporal benefits for establishing causality would be diluted.

10 Conclusion

The above results provide compelling statistical evidence for the hypotheses derived above. First, it seems clear that Russian votes punished the United Russia party for its performance in battling wildfires. Controlling for a number of structural and political factors, citizens in especially fire-stricken areas (roughly ten times the average level of shock from the fires) punished the party through the proportional list system by eight percentage points. In similarly afflicted districts, United Russia candidates in single-member districts lost upwards of nine percentage points. However, the models explaining SMD outcomes are much weaker at explaining variation and the level of significance for the coefficients of interest is lower. I interpret this result as signifying that citizens engage in greater system-wide blaming than individual politician blaming. The party itself was perceived to be more responsible for not adequately responding to the fires, though UR candidates also suffered.

Critics of these finding might argue the Russian public engaged in irrational voting behavior in blaming the incumbent party for fires that were out of their control. In this story, abnormal weather conditions sparked fires that instigated outrage over economic losses, and United Russia emerged as an easy target for punishment. I argue instead that Russian voters identified a clear policy shift in 2007 that drastically weakened the state's ability to control wildfires. Knowledge of this lapse in capacity was present in Russian media and the public specifically blamed the state for deficiency in fire-fighting resources. this criticism was also refuted empirically by results showing that no correlation between

fire damage and electoral punishments existed prior to the 2010 catastrophe (such as the 2005 regional and 2007 national elections). Fire-prone districts have not been inherently anti-regime and the swing against UR in 2010 can be attributed to greater fire damages.

Lastly, this paper traced how the United Russia party anticipated and prepared for the translation of public dissatisfaction with its performance into vote share losses. In the run-up to the election, UR leaders put forth candidates with less legislative experience in districts that were especially afflicted by the wildfires in an attempt. Empirically, it is difficult to determine how genuine an accountability mechanism such a strategy represents. Placing novice candidates on slates afflicted districts does not tell us precisely whether previous incumbents were punished by the party for their performance or if UR is instead manipulating ballots to trick the voter into thinking the party has reformed. If the former holds, then such a strategy may act as a deterrent for future legislators to take a more active role in assuaging the interests of their constituents for fear of being deprived of the opportunity of running for re-election. This claim suggests that elections themselves are only one part of holding local leaders accountable; preventing access to the ballot may have equivalent effects. However, only partial evidence emerged to support the claim that UR prevented viable and potentially threatening opposition candidates from achieving electoral support.

Several future research questions emerge from this project. Significant redistribution mechanisms were put into place after the fires to assist with reconstruction. Prime Minister Putin allotted vast sums to particularly fire-stricken regions. Over 1 billion rubles (\$30 million) were allocated to families claiming losses. The government also made a point to monitor food prices in election areas in order to ensure that skyrocketing prices did not negatively affect voters welfare. The ban that Prime Minister Putin placed on wheat exports could have helped farmers recover from damages by sending prices much higher. Therefore, the government actively engaged in distributional efforts in order to offset any public anger towards its previous performance. Post-disaster spending thus actively works in the governments favor in this respect. However, data on these efforts has not been released by the Prosecutor Generals Office. Questions about how these spending efforts weighed in voters mind merit further attention. Lastly, to accurately test whether the substitution strategy actually deters future incompetence, an exciting research avenue would to examine the next round of regional elections in five years to analyze which incumbents were kept on the UR ballot.

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