

Election Fraud and Political Survival of Subnational
Actors: A Case of Russia*

Kirill Kalinin[†]

April 10, 2018

*Prepared for presentation at the 2018 Annual Meeting of the Midwest Political Science Association, Chicago, IL, April 5–8, 2018.

[†]W. Glenn Campbell and Rita Ricardo-Campbell National Fellow at the Hoover Institution, Stanford University (E-mail: kkalinin@stanford.edu)

Abstract

The political survival of governors in Russia largely depends on their ability to address the Kremlin's electoral needs during the federal elections. To ensure their own political survival and address Kremlin's electoral needs, the governors can resort to election fraud in both parliamentary and presidential elections. This research aims to study the degree to which election fraud helps governors to extend their terms in office by analyzing three major periods: 2000-2005 *electoral period*, when the governors were elected by their regional electorate; 2005-2012 *appointment period*, when the governors were appointed by the Kremlin; 2012-present *post-appointment electoral period*, when the gubernatorial elections were restored. In this paper I develop the theory of gubernatorial survival in Russia, formulate research hypotheses and test said hypotheses using a Cox proportional hazards model, which includes finite mixture estimates and last digits in percentages tests as primary measures of election fraud.

Keywords: Election fraud, political survival, governors, Russian elections.

Introduction

Elections play an important role in the political life of the autocrat, by solidifying his legitimacy (Geddes 2006; Magaloni 2006), providing a snapshot of the opposition's strength, and assessing agents abilities to mobilize regional political machines to meet electoral expectations (Gandhi 2008; Gel'man 2009, 167). Based on electoral outcomes from national elections, the autocrat can decide whether to punish the agent by reducing his tenure or reward him by extending it. In this sense, the autocrat's ability to remove the governor from his office can be viewed as a single ultimate punishment in the case of noncompliance with the autocrat's electoral expectations. In contrast, the loyal governor with the outstanding organizational talents necessary to fabricate election outcomes, is expected to benefit by serving additional terms at the will of the autocrat. Consequently, loyalty associated with election fraud becomes an integral part of the governor's survival formula in autocracies. Its variation among the governors will be positively associated with variation in election returns and election fraud. However, the risks of gubernatorial removal by the autocrat can be diminished by institutional constraints: if the governor is elected by popular vote, he might be much less responsive to the autocrat's electoral needs and much more responsive to the needs of regional electorates in clean elections.

The Russian case allows for the comparison of the effect of election fraud on political survival of governors in different periods: specifically, the 2000-2005 *electoral period*, during which the governors were elected by regional population; the 2005-2012 *appointment period*, when the governors were appointed by the Kremlin; and the 2012-present *post-appointment electoral period*, after the gubernatorial elections were restored. Political recentralization under Putin in the 2000s has led to a gradual imposition of the Kremlin's control over the governors: while in the 90s and early-2000s Russian governors, by holding elected offices, were able to deliver the Kremlin with favorable electoral outcomes in exchange for political, institutional and financial resources (Treisman 1997*b,a*), gradual political recentralization during the 2000s—most notably through the cancellation of gubernatorial elections—changed

the governors' survival strategies, making them more dependent on the Kremlin. However, in 2011-2012, following massive protests in Moscow and St. Petersburg against the unfairness and uncleanness of those years' election results, the Kremlin decided to restore the gubernatorial elections in hope of transferring popular expectations to the regional level. This restoration, however, was also accompanied "auxiliary institutions" which helped the Kremlin to centralize its power and limit regional contestation (Smyth and Turovsky 2018).

This paper seeks to contribute to broader theoretical debates in the literature on the role of election fraud in authoritarian regimes. Its contribution is threefold. First, it adjusts a theoretical model of electoral signaling developed in Kalinin and Mebane (2013). Second, it connects implications from formal modeling to survival strategies of governors. Finally, it engages the dataset collected from <http://rulers.org/rusdiv.html> on the governorships 2000-2018, and electoral data from www.izbirkom.ru.

The structure is as follows. Section 2 discusses the gubernatorial survival strategies 2000-2018. Section 3 examines the basic formal model and lists main research hypotheses. Section 4 describes in greater detail the data and measures. Section 5 provides major empirical findings. In the final part, I draw conclusions and discuss prospects for further research.

Evolution of Gubernatorial Survival Strategies

Authoritarian regimes lack mechanisms useful for providing autocratic leaders with credible political information, like a free press and political opposition. In this sense, elections can provide a wealth of useful information to the autocrat regarding the risks of potential challengers, their quality of governance, and the political loyalty of subordinates (Wintrobe 1998; de Mesquita, Smith, Siverson and Morrow 2004; Gandhi 2008; Egorov, Guriev and Sonin 2009; Gel'man 2009; Egorov and Sonin 2011). Even though authoritarian regimes can reward both competence and loyalty, theoretical and the empirical research suggests that loyalty is usually prioritized over competence (Egorov and Sonin 2011; Reuter and Robertson 2012).

Electoral information enables the autocrat to get a snapshot of local agents' loyalty status and assess their success in mobilizing regional "political machines" (Hale 2003). In this sense, the electoral returns and fingerprints of fraud in the official electoral data can help the autocrat to determine the governor's loyalty status. Once individual loyalties are revealed, the loyal governors are rewarded by the Kremlin with higher post-election transfers or longer tenures (Kalinin and Mebane 2013).

The timeline of Russian gubernatorial elections can be roughly divided into three major periods: "electoral", "appointment" and "post-appointment". The first period starts with the demise of the Soviet Union, when between 1991 and 1996 some governors were elected, in the Republics, and some were appointed by the President or the regional legislatures. After the Constitutional Court in 1996 ruled in favor of gubernatorial elections, all regions began to host regular elections until 2004. Even though the law initially restricted the number of terms to two, subsequent revisions allowed the governors to ignore it. The second, a so-called "appointment" period began in September 2004 when President Putin proposed to revive an appointment procedure which implied that the candidate proposed by the president had to be approved by the regional legislatures. The bill abolishing the direct gubernatorial elections was adopted in December 2004, with the last gubernatorial election held in one of the autonomous districts in January 2005. The governors served as long as they maintained the confidence of the Russian President, or until the end of the formal term. The third "post-appointment" period starts when then-President Medvedev decided to restore the gubernatorial elections in October, 2012. Later in Spring 2013, President Putin amended the law by granting regional legislatures the right to replace gubernatorial elections with indirect selection of the regional head by the legislature. This provision was particularly relevant to the Russian ethnic regions, such as Dagestan, Ingushetia, Kabardino-Balkaria, Karachaevo-Cherkessia, North Ossetia, Chechnya, which "voluntarily" abandoned their own elections (except Chechnya). Additional amendments in 2014 and 2015 further expanded "indirect" elections to autonomous okrugs.

All three periods can be viewed through the prism of Russia's dual evolution from a decentralized to a centralization form of federalism, and from a relatively democratic to a more authoritarian political regime.

The first period, basically, describes the situation when by the early 1990s the majority of Russian regions hosted centralized political regimes with executive authority concentrated in the office of chief executives. The governors were able to establish political regimes without significant constraints from the Center, concentrating regional political and economic resources in their hands (Filippov, Ordeshook and Shvetsova 2004, 301–315). The power asymmetry between the Center and the regions resulted in “opportunistic” bargaining during the 1990s. The bargaining included the process of distribution and acquisition of federal resources by the regions in exchange for providing electoral support to the Center during national elections. The resources provided to the regions by the federal center included various institutional resources, which could be used by the regions to systematically violate federal laws. They included economic resources, which assumed distribution of state property and tax revenues in favor of some regions. Finally they included political relations, the change in economic and political status of some of the regions made manifest by the Center signing bilateral treaties with half of the regions (Gel'man 2006). The resulting federal asymmetry enabled specific groups of regions to play a greater role in federal politics and continue their bargaining policies with growing levels of concessions from the center. In a long-term perspective, such bargaining enabled the regions to institutionalize their opportunistic behavior.

In return for concessions from the Center, the governors mobilized their regional “political machines” to provide necessary electoral support to the national ruling elites (Gel'man 2009). Since 1996 all of the Russian regions hosted gubernatorial elections, however, so the possibility of electoral punishment by regional constituencies could constrain governors from committing electoral frauds in the region. In other words, in general electoral frauds were politically costly to the governors. This cost could vary depending on the governor's capacity

to mobilize his or her “political machine” to provide expected fraudulent results. Another factor that could affect a governor’s decision to commit fraud could be the governor’s “moral” obligations to the Center, if the governor was appointed before the elections. During the pre-electoral period financial resources provided by the Center were directed to increased public spending in the region and contributed to increase in electoral support of both office-seekers, i.e. the elected governors, and the President, which could make any electoral frauds simply unnecessary. Treisman offers empirical evidence to support his claim that the governors who opposed Yeltsin would use central transfers in a way that would boost local support for the Center and themselves, though this reduced their leverage in the future bargaining with the Center (Treisman 1999, 111–115).

The second period, basically, starts after Putin’s accession in 2000 when the nature of federal relations was reviewed by Kremlin (Filippov, Ordeshook and Shvetsova 2004, 309). The nature of the superpresidential system (Cheibub 2007, 17–18) inherited from the former Soviet authoritarian institutions helped Center reestablish its control over the regions through administrative recentralization (return of Center’s control over regional branches of federal agencies), recentralization of economic resources (growing concentration of financial resources in the hands of the Center at the expense of the regions), finally, political recentralization (Putin demanded compliance of regional laws and constitutions with that of the federal governance) (Kahn 2002; Gel’man 2006; Cheibub 2007; Taylor 2011). The policy of recentralization was launched to restore the Center’s control over the regions by revision and cancellation of the majority of the bargaining agreements of the 1990s. Specifically, recentralization was expected to undermine the growing bargaining leverage of the Republics, which hindered sustainability of the Russian state.

Recentralization led to considerable reduction of bargaining resources of the regions and dramatic increase of coercive economic and political resources of the Center. As a result, the regions became politically integrated into the superstructure of the Center with economic resources flowing from the Center to the regions. Gubernatorial elections were abolished in

2005, as a result of which the governors lost their independent political base: the political survival of the governor was put under the Center's judgment. This led governors' "political machines" to be co-opted into the power vertical. As a result, political loyalty in addressing Kremlin's political needs was regarded by Kremlin as a crucial quality for the governors. Loyalty implied both the governor's ability to put under his or her control political, social and economic spheres in the region, and it implied that the governor would provide Kremlin with favorable electoral outcomes, especially during national elections. With the abolition of gubernatorial elections, the costs for committing frauds by the governors were reduced: if in the 1990s and early 2000s they could be electorally punished by their regional constituencies, starting 2005 electoral punishment was no longer possible. Consequently, if during this period a governor failed to provide a certain level of political outcome to Kremlin, he or she could be considered as non-loyal and lose the seat. The benefits from committing frauds could far outweigh the actual costs: if Kremlin was satisfied with electoral results, the governor kept the job and the size of transfers could eventually increase.

Additional political control over the governors was ensured with the creation of the party of power, i.e. Unity/United Russia, that was designed to provide strong incentives for elite coordination and generating mechanisms for sanctioning defectors (Smyth, Lowry and Wilkening 2007, 123). The governors were expected to demonstrate their loyalty to United Russia and mobilize both administrative and financial resources of their regional apparatus to help United Russia to win the elections prior to presidential elections (Buzin and Lubarev 2008). After gubernatorial elections were abolished in December 2004, by the spring of 2007, 70 of 85 governors announced their participation in the party of power (Gel'man 2007). The practice was to head the party lists of United Russia, when a governor would head the party list as a poster candidate, helping the party to win more seats, but retreat as soon as elections end (Tkacheva 2009). This not only helped to gain greater electoral support for United Russia in the regions, but also signaled about governor's loyalty and capability to provide electoral results for more crucial presidential elections, which usually followed

parliamentary elections

The research on the determinants of gubernatorial replacement in the second period mainly agrees that provision of favorable results, rather than personal popularity or socio-economic performance, served as a major criteria for the Kremlin (Sharafutdinova 2010; Reuter and Robertson 2012; Reisinger and Moraski 2013; Gorokhov 2017). Reuter and Robertson (2012) find strong and consistent empirical evidence that the Russian authoritarian regime privileged political loyalty over economic competence in their subnational elite appointments, specifically showing that gubernatorial reappointment decisions in Russia were based largely on the governor's ability to mobilize votes for United Russia, rather than economic performance. Reisinger and Moraski (2013) further investigate the "appointment" period by utilizing event-history analysis, and concluding that the gubernatorial survival stems from a combination of factors, such as the strong support for the ruling party in federal legislative elections, the governor's younger age, presiding over populous regions, good performance in terms of life expectancy and economic growth. These factors together reduced the hazard of losing office by the governor. Gorokhov (2017) explores the relations between the governors and the center through the principal-agent paradigm, which views the governors' partisan identification in their relation with the Kremlin as a major factor of loyalty. The author arrives to the conclusion that the governors' support for the dominant party was a key factor in the political survival of the regional governors during the appointment period.

The third period was marked by the transition of presidential power from Dmitry Medvedev back to Vladimir Putin back in 2012. In the fall 2011 then-President Medvedev proposed then-Prime Minister Vladimir Putin to run for a third term. This pre-arranged move of two politicians ignited a widespread public discontent and has set the tone for both upcoming Russian parliamentary and presidential elections. The parliamentary elections led to a crushing defeat of the party of power United Russia, which lost its two-thirds constitutional majority it had held prior to the election in spite of the manipulated character of

elections and numerous fraud allegations. Consequently, obvious unfairness and uncleanness of election results provoked the rise of massive protests in Moscow and St. Petersburg, which forced the Kremlin to urgently launch a series of reforms aimed to provide electoral transparency of the forthcoming March presidential elections, such as installation of transparent ballot boxes (one-third of polling stations used transparent ballot boxes) and web cameras in every polling station across the country. One of the major political reforms, however, was the restoration of the gubernatorial elections through which the Kremlin hoped to transfer popular expectations to the regional level. However, the Kremlin also resorted to creation of “auxiliary institutions,” which helped it to centralize power and limit contestation (Smyth and Turovsky 2018). Specifically, the “ballot construction” strategy allowed for the addition of phony and substandard candidates, such as spoilers, and other generally hopeless candidates. The exclusion of real opposition became possible with establishment of a so-called “municipal filter,” which required potential gubernatorial candidates to collect the signatures of 5 – 10% elected municipal executives and local deputies representing three-quarters of the sub-regional municipalities. Consequently, mobilization of friendly voters to increase the Kremlin’s electoral support and demobilization of opposition supporters became increasingly effective after the cancellation of the minimum turnout threshold (Smyth and Turovsky 2018; Mebane and Kalinin 2010). Further limitations introduced by President Putin granted regional legislatures the right to replace gubernatorial elections, especially in Republics and autonomous okrugs with “indirect elections” by the local legislature. While the initial list of candidates was created by the legislature’s parties, the short list of nominees that was voted on was crafted by the Kremlin. To summarize, the literature suggests that even though the third period is characterized by the restoration of gubernatorial elections, the ability of voters to punish unpopular governors was diminished.

A Formal Model

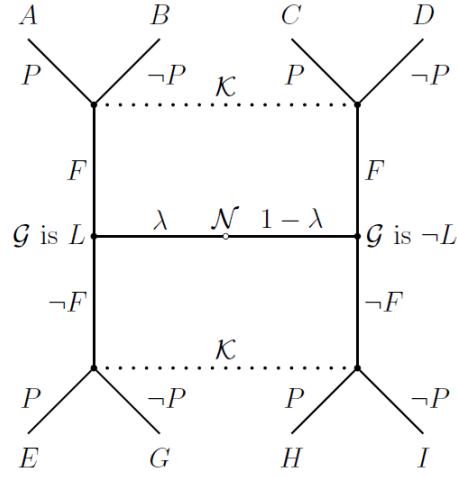
If we consider the signaling game represented by the diagram in Figure 1¹. \mathcal{N} denotes a random move by Nature to produce a first player (the local agent or the governor, \mathcal{G}) who is either loyal (L) or not ($\neg L$). Then $\text{Prob}(L) = \lambda$ and $\text{Prob}(\neg L) = 1 - \lambda$. In the election the governor then either commits fraud (F) or not ($\neg F$). Player 2 (the Autocrat, \mathcal{K}) does not know whether \mathcal{G} is loyal, but \mathcal{K} does observe \mathcal{G} 's move. \mathcal{K} then either punishes (P) or not ($\neg P$). The payoffs are given at the bottom of Figure 1. The interpretation of the symbols used in the payoff definitions is as follows.

- $w \geq 0$ is the value of electoral punishment by voters for fraud committed in the election; $w > 0$ — the value of electoral punishment when elections take place, and $w = 0$ — the value of electoral punishment when elections are absent.
- $p > 0$ is the value of punishment imposed by \mathcal{K}
- $v > 0$ is the value of excess votes produced by fraud
- $t > 0$ is the reward including transfers and duration of \mathcal{G} 's appointment by \mathcal{K}
- b is a coefficient that when multiplied by t gives the present discounted value of the future expected to be produced by the reward
- $d > 0$ is the value to \mathcal{K} of replacing a disloyal \mathcal{G}

In the situation when there is sanction from voters: if \mathcal{G} is loyal and \mathcal{K} always punishes, then playing F gives \mathcal{G} a payoff of $-w - p$ while playing $\neg F$ gives $-p$; if there is no sanction from voters, $w = 0$, then F and $\neg F$ give \mathcal{G} the same payoff given an identical response from \mathcal{K} . The payoffs to \mathcal{G} from F are always w subtracted from the corresponding payoff from $\neg F$, since if $w > 0$ the voters will be inclined to vote down the governor who commits fraud.

¹A more detailed description of the formal model can be found in Kalinin and Mebane (2013)

Figure 1: Game Diagram



symbol	\mathcal{G}	\mathcal{C}
A	$-w - p$	$v - p$
B	$-w + t$	$(b - 1)t + v$
C	$-w - p$	$v - p + d$
D	$-w + (b + 1)t$	$v - t$
E	$-p$	$-p$
G	t	$(b - 1)t$
H	$-p$	$-p + d$
I	$(b + 1)t$	$-t$

According to the signaling model, four parameters are central to my theory: d , the value to the Autocrat of replacing a disloyal governor, λ , the probability that a governor is loyal, which is presumably increased by having the governor be appointed instead of elected, b , the future returns expected to be produced by a transfer, and w , the value of electoral punishment by voters for fraud committed in the election. Here loyalty is regarded as a choice each governor makes and not an immutable personality trait, $\lambda \in (0, 1)$: $\lambda = 0$ indicates no chance of loyal governor at all, and $\lambda = 1$, a high chance of loyalty. If fraud

happens, the Autocrat always gains excess votes v . If the Autocrat doesn't punish, then the governor always gains a reward, in terms of transfer and/or extension of his tenure t , which costs $-t$ to the Autocrat. If, however, the Autocrat decides to punish by firing, then both the governor and the Autocrat lose $-p$; if a disloyal governor is punished, then \mathcal{K} gains d .

In this game one key difference between a loyal and a disloyal governor is who retains any future surplus generated by a reward from the Autocrat. Specifically, the difference between loyal and disloyal governors committing fraud and not being punished is the term bt : it is added to the Autocrat's payoffs in the former case and added to the disloyal governor's payoff in the latter case; a similar situation holds when the governor does not commit fraud and is not punished.

Over all of Russia, regions are diverse, so a single configuration of the parameter values of the game model does not characterize the whole country. The Center plays such a game independently in each region, and that regional actors learn nothing from one another's experience. Reality undoubtedly involves more interaction between regions than this, but it is intractable to extend the game to one in which the Center simultaneously interacts with all 89 regions. The future returns expected from a transfer, b , may be positive or negative. Negative b values we associate with corruption and political opportunism: as far as the Center is concerned, economic resources transferred to a corrupt region are expected to produce no significant value in the future, and if the resources facilitate regions' gaining further autonomy and even independence, the return on transfers to a region may even be evaluated as strictly negative. Or b may be positive. Indeed, if b is like a normal investment, we should have $b \geq 1$: the transfer is at least expected to pay for itself. Different regions may at any one time have different values of b . During the 1990s, the threat of regions leaving the Russian federation was very real, so we think that often b was negative.

The game is presented in multiagent normal form (Myerson 1991). The strategies of the loyal \mathcal{G} are now denoted F_1 and $\neg F_1$ while the disloyal \mathcal{G} 's strategies are F_2 and $\neg F_2$. \mathcal{K} 's strategies are now P_1 and $\neg P_1$ if acting after fraud and are P_2 and $\neg P_2$ if acting after no fraud.

The necessary conditions for a perfect Nash equilibrium are tested for the set of possible pure strategy equilibria. The strategy profiles and a brief description of the requirements for the profile are provided in Table B1 of Appendix B.

In sum, there are ten equilibria profiles for this game. Based on the values of loyalty w and electoral punishment λ we can classify them into three periods of Putin’s presidency: 1) *a period before 2005*: with varying degree of loyalty $\lambda \in [0, 1]$ and non-zero electoral punishment $w > 0$ denoting the presence of gubernatorial elections; 2) *a period 2005-2012*: varying degrees of loyalty $\lambda \in [0; 1]$ and electoral punishment $w = 0$ denoting the absence of electoral punishment for the governor; 3) *a period 2012-present*: with high levels of loyalty $\lambda = 1$, describing regime evolution into a more authoritarian direction, and electoral punishment $w = 1$, denoting the possibility of electoral punishment from the regional electorate.

While there are several equilibria profiles that require too strong conditions $\lambda = 0$ or $\lambda = 1$, i.e. depicting situations of “no loyalty” and “excessive loyalty”. The latter condition seems to help to represent well the regime’s evolution from its democratic form with uncertain lambda to its more dictatorial form with absolute loyalty. Therefore I eliminate two the equilibria profiles with conditions containing $\lambda = 0$, i.e. XI* and XVI*. Also, since equilibria profile XII* lacks defined λ , and profile II* lacks defined w , I exclude them from my further consideration. The remaining equilibria profiles can be successfully mapped onto three studied periods of Putin’s regime, using key parameters, i.e. loyalty and presence/absence of election punishment. The table contains the results of my classification exercise, helping to formulate logically consistent hypotheses.

In the period 2000-2005 XV* takes place with the set of conditions listed in the Table 1. In particular, with $(t + p)/(w + t + p) \leq \lambda < 1$ with $w > -t - p$ and $p > t + v$; also $p \geq (1 - \lambda)d + (1 - \lambda b)t$. If XV* is an equilibrium, then $\lambda < 1$ and $b < 0$, so $(1 - \lambda)d + (1 - \lambda b)t > 0$. This equilibrium predicts the absence of election fraud, which if observed will be punished by the Autocrat. One of the feasible explanations for this is that those regional heads who are engaged in committing election fraud are likely to be ousted by

the voters at the regional elections. This incentivizes the Autocrat to outpace the unhappy voters and punish such a governor after the fraud has been spotted. Indeed, the value of punishment from the governor's dismissal from the office needs to outweigh the sum of the values of transfers and vote fraud $p > t + v$. Also, in this period the condition for III* to be an equilibrium with $0 < \lambda < 1$ is $p \geq t - (v + d)$, where $p > t + v$. It is important to note that as the value d that the Autocrat places on having a loyal governor rises, for fixed values of p and t , the conditions for III* to be an equilibrium become satisfied while the conditions for XV* to be an equilibrium may cease to be satisfied. In other words, whether III* or XV* is enacted depends on the levels of d , p , t , v and w . As d , p , t and v increase, or as w decreases, the prospects of III* happening rather than XV* should be higher. In this sense, III* serves as an intermediary equilibrium to the next stage: allowing for greater election fraud with the absence of punishment.

The period 2005-2012 covering the abolition of gubernatorial elections and absence of electoral punishment, $w = 0$, suggests that III* can be enduring, since w can take 0 value. Moreover, IX* is also possible, because it requires $w = 0$, but then it also requires that loyalty be uncertain ($\lambda < 1$) and that the expected long-term returns from transfers to the regions be very negative ($b \leq -(p + t)/(1 - \lambda)t < 0$). A situation where the governor is appointed by the Autocrat ($w = 0$) but is not certainly loyal is possible. Here the fiscal return condition is unrealistically extreme: for example, if $p = t$, then $b \leq -2/(1 - \lambda) \leq -2$. Therefore the remaining two equilibria seem to provide us with the better explanation.

This stage also can be seen through the prism of absolute loyalty ($\lambda = 1$), by bringing in I* and VI* as optional equilibria. I* is feasible when $\lambda = 1 \cap w = 0$, meaning that if both types commit election fraud, none of them will be punished by the Autocrat. This is only partially true for VI*, which in addition to I* contains extra condition $t \geq p \cap b \geq 0$ in which the value of transfers exceeds the value of punishment and the expected long-term returns from transfers are non-negative. Both I* and VI* can happen simultaneously: both predict that the loyal governor commits fraud and none of the actors is punished with the

Table 1: Major Equilibria

Period	N	Profile	Loyalty	Voters punish	Conditions	Frauds	Autocrat punishes
2000-2005	XV*	$(\neg F_1, \neg F_2, P_1, \neg P_2)$		Yes	$\frac{t+p}{w+t+p} \leq \lambda < 1 \cap \frac{-(p+t)}{(1-\lambda)t} \geq b \geq \frac{v+t-p}{t}$	No fraud	Fraud punished
			Uncertain λ				
	III*	$(F_1, F_2, \neg P_1, P_2)$		Yes	Complicated	Both commit fraud	Fraud unpunished
2005-2012	IX*	(F_1, F_2, P_1, P_2)	Uncertain λ	No	$\lambda < 1 \cap w = 0 \cap \frac{-(p+t)}{(1-\lambda)t} \geq b$	Both commit fraud	Fraud punished
	I*	$(F_1, F_2, \neg P_1, \neg P_2)$		No	$\lambda = 1 \cap w = 0$	Both commit fraud	Fraud unpunished
			High λ			Loyal commits fraud	
	VI*	$(F_1, \neg F_2, \neg P_1, \neg P_2)$		No	$\lambda = 1 \cap w = 0 \cap t \geq p \cap b \geq 0$	Loyal commits fraud	Fraud unpunished
2012-Pres	V*	$(F_1, \neg F_2, P_1, \neg P_2)$	High λ	Yes	$\lambda = 1 \cap b \leq 0 \cap (1-b)t \geq p \geq t \cap 2p \geq w$	Loyal commits fraud	Fraud punished

only difference that in the latter case nonloyal governor doesn't commit election fraud.

Finally, in the period 2012–present with $\lambda = 1$ and $w \leq 2p$, V* can be an equilibrium only if $b \leq 0$, because a condition for V* to be an equilibrium with is $(1 - b)t \geq p \geq t$. Interestingly, that the value of punishment by firing, p , is expected to exceed the value of electoral punishment. Even though, the return of electoral punishment with high level of loyalty to the Autocrat results in $(F_1, \neg F_2, P_1, \neg P_2)$, in which fraud is committed by the loyal governor who faces punishment, and nonloyal governor who doesn't commit fraud and who is not punished, the value of punishment by Kremlin outweighs the value of punishment by the voters.

Based on the discussion of the formal model, we can formulate the following set of hypotheses:

Hypothesis 1: In the period from 2000-2005, since the fraud is expected to be punished by both the Autocrat² and the voters, the instances of election fraud are expected to decrease the gubernatorial survival.

Hypothesis 2: In the period from 2005-2012, following the abolition of gubernatorial

²Even though III* predicts that the loyal type won't be punished, the gubernatorial removal by the Kremlin is difficult to implement.

elections, both types of governors are expected to commit fraud. As fraud went largely unpunished from 2005-2012, this period should accompany an increase in gubernatorial survival.

Hypothesis 3: In the period from 2012-present, the restoration of gubernatorial elections marks the change in the strategy: loyal governors committing fraud are expected to be punished by the Kremlin, diminishing the gubernatorial survival.

Data and Measures

My dependent variable is comprised of two parts: an *event indicator* – the replacement of the governor, and *measure of time* – the number of months until the governor is removed from office. The proposed empirical model partly replicates a game-theoretic model by including such measures of interest as candidate’s/party’s vote shares associated with Kremlin (Putin’s, Medvedev’s and United Russia’s vote shares); a measure of voter turnout in both presidential and parliamentary elections; two measures of electoral anomalies based on digit-tests and the estimates based on the finite mixture models; and two measures of transfers. For simplification purposes, in the model the concept of loyalty is defined by two variables – candidate’s/party’s vote shares and election fraud. Also, electoral punishment, w , is viewed as an effect of election fraud on gubernatorial survival during two “electoral” periods; and p , i.e. the value of punishment imposed by \mathcal{K} , as an effect of election fraud on gubernatorial survival during the “appointment” period. All variables, such as turnout, incumbent’s vote shares and indicators of anomalies are taken from the federal election preceding the governor’s dismissal, meaning that even though the governor could have organized several elections, only one election is taken into account.

The model contains two measures of transfers: transfers per capita and share of central transfers in the regional budget as dependent variables. Besides the intrinsic value for the theory in which t is one of the parameters, one would expect to find different patterns of

appointments in a “donor” or “debtor” regions: while governors of donor regions would be relatively safe, the governors in debtor regions would be more likely to be dismissed (Smyth and Turovsky 2018). In addition to main variables of interest, I also include several controls: *gross regional product per capita* (GRP), governor’s age, type of the region (ethnic region, i.e. Republic or Russian region).

The entire time under study spans four electoral cycles: 1999-2000 (the data for 1999 parliamentary election is missing therefore only 2000 presidential election is included), 2003-2004, 2007-2008 and 2011-2012. Since there is a considerable variation between the electoral contexts I split my analysis into three disjoint periods: *early electoral period* – from January 2000 to January 2005, when all the governors were elected; *appointment period* – from January 2005 to October 2012; and *post-appointment electoral period* – from October 2012 to the present.

Following Reuter and Robertson (2012), I treat special cases in the following way: the deaths in the office are simply coded as 0 (no replacement), i.e. treating them as if the governor was not replaced. Also, promotions are treated as instances of governors “retaining” their office by being coded as 0³. Moreover, the governors who lost their offices as a result of merging several ethnic autonomous okrugs with the higher predominantly Russia administrative units were also coded as 0. Since I am interested in the governorships with organized federal elections, I remove any governorships, in particular short-term or interim governorships, which never organized federal elections. As a result, I end up with 124 governorships in the first period, 167 governorships in the second period and 140 governorships in the third period. Because the general context across the federal elections varies, for instance, with different average levels of election support, turnout or fraud, following Reisinger and Moraski (2017)’s advice I standardize all the variables included in the analysis.⁴ Hence, standardization enables me to ensure comparability of various context-specific measures used in the models.

³This part has not been implemented yet

⁴I also conduct separate regression analysis with raw variable scales

The histogram in Figure 2 shows the number of regions with changeover in governorship: in the first period the most change in elected governors happened in early 2000s; in the second period, the number of new appointments spiked in 2010 and 2012 right before the return of gubernatorial elections; in the third period, most reappointments spiked in 2014 and 2017.

*** Figure 2 about here ***

Digit tests are built on a comparison of the empirical digit distributions with pre-specified theoretical distributions of vote counts or vote shares. Among the most popular version of this test are the first digit test of aggregate vote totals (Cantu and Saiegh 2011), the second significant digits test (Pericchi and Torres 2011; Mebane 2011), the last digits in vote counts test (Beber and Scacco 2008) and last digits in percentages test (Kalinin and Mebane 2013). This paper utilizes an extension of the last digit test: a proportion of 0s and 5s appearing in the last digit of percentages. The rationale for this is that the data manipulation is most likely to take place with rounded percentages of turnout and electoral support as this is the easiest to give direction to political clients and the most readily detectable way to signal responsiveness to political principals. This approach argues that the presence of an abnormal proportion of 0s and 5s can be an indication of election fraud. In the case of Russia, for example, 0s and 5s were a mechanism for signaling the loyalty of regional bosses' to the center and of their ability to mobilize the administrative resources to the center's electoral benefit (Kalinin and Mebane 2013). Specifically, to assess the possibility of signaling mechanisms I compute the proportion of 0s and 5s in turnout percentage and vote percentages (P05s) for both parliamentary and presidential elections. As a result, I end up with four region-level variables: $P05Turnout(Parl)$, $P05Vote(Parl)$, $P05Turnout(Pres)$, $P05Vote(Pres)$.

Based on Klimek, Yegorov, Hanel and Thurner (2012)'s algorithm, Mebane (2016) proposes a finite mixture likelihood model, which is the second method used in my analysis. The original Klimek model suggests how a winning party/candidate benefits from the votes

transferred from other parties/candidates and nonvoters by modeling three parts: votes without fraud; votes with incremental fraud; and votes with extreme fraud. While the *no fraud* votes are viewed as a product of the normal distribution, *incremental fraud* as a product of small proportion of nonvotes and a large proportion of stolen opposition votes going to the leading party/candidate, *extreme fraud* reflects the opposite idea: a large proportion of the nonvotes and small proportion of stolen votes from the opposition are counted for the leading party/candidate. Mebane (2016)’s finite mixture model develops Klimek’s model by proposing the likelihood model. It is called the mixture because for each observation we obtain estimates that each observation belongs to each of the three components: no fraud, incremental fraud or extreme fraud. Thus, the model enables us to compute: a) the precinct-level probability that election fraud occurs; b) the magnitude of the frauds as the number of fraudulent votes; c) the type of fraud: vote manufacturing or vote stealing.

Mebane (2016)’s model is as follows:

$$F(\mathbf{W}, \mathbf{O}, \mathbf{A} \mid \mathbf{N}; \Psi) = \sum_{j \in \{0, i, e\}} f_j \prod_{i=1}^n g_{jW}(W_i \mid N_i; \Psi) g_{jA}(A_i \mid N_i; \Psi) \quad (1)$$

In the model f_0 , f_i and f_e are the probabilities of no fraud, incremental fraud and extreme fraud, where $f_0 + f_i + f_e = 1$. The model describes the joint density of the observed vote counts for the winning party/candidate W_i , the observed sum of votes cast for all other parties/candidates O_i and the number of observed nonvotes A_i , i.e. $(W_i; O_i; A_i)$ as being conditioned on the number of eligible voters in each precinct N_i and estimated parameters $\Psi = (\alpha, \nu, \tau, \sigma_\nu, \sigma_\tau, \phi)'$ defined by Klimek’s model. The estimated precinct-level parameters are α – the intensity of incremental fraud, ν – the winner’s vote proportion and its standard deviation, σ_ν , τ – the turnout and its standard deviation, σ_τ , and θ – incremental fraud garnering a higher number of votes for the leading party. The analytic integration of the finite mixture estimates with the estimates computed from alternative data sources, such as

election monitoring reports or postelection complaints, provide the most fruitful strategy for election forensics research (Mebane 2016).

The finite mixture precinct-level estimates obtained from the model are aggregated to the regional level with four main variables — finite mixture estimates of incremental and extreme fraud in the presidential $f_i(Pres)$, $f_e(Pres)$, and parliamentary elections $f_i(Parl)$, $f_e(Parl)$.

Findings

Figure 3 contains three subfigures of Kaplan-Meier survival functions with 95% confidence intervals. Kaplan-Meier survival function is a non-increasing step function showing likelihood of continuing in office within the period of interest. The method is based on the basic idea that the probability of surviving k or more periods from entering the study is a product of the k observed survival rates for each period.

The survival curves show some variability in steepness: while the first period covering Putin's early presidency displays small steepness of survival curve, the second period exhibits greater steepness; finally, the third period shows medium steepness of survival curve. The observed variation in patterns shows that the odds of a governor to remain in office varies depending on the period. Specifically, in the first period, those in office for one year or less have 90% likelihood of continuing in office. After two years or fewer, about 81%. In the second period, those in office for one year or less have about 94% likelihood of continuing in office. After two years or fewer, about 93%. After five years or fewer, only about 75%. Finally, in the third period, those in office for one year or less have about 94% likelihood of continuing in office. After two years or fewer, about 94%. After five years or fewer, about 61%.

*** Figures 4, 5 and 6 about here ***

The next part contains a series of graphs that helps us to visualize the differences in gov-

ernors' survival probabilities in each respective period. My main variables of interest include the Kremlin's vote shares and turnout in both presidential and parliamentary elections, as well as the measures of fraud, such as 0s and 5s in the last digits of percentages and the finite mixture estimates (f_i and f_e). For each measure of interest I divide the governorships into two groups – above and below the measure's mean value.

The first period in Figure 4 depicts the red dotted curve for selected cases greater than the measure's mean and the black dotted curve – smaller than the mean. Specifically, while Figure (a) shows that Putin's high percentage of support can lead to lower political survival, turnout demonstrates the opposite, i.e. increase in political survival for those governors who exhibit higher figures of turnout. The figures displaying the survival curves for the finite mixture model estimates (f_i and f_e) show that those governors who commit large frauds also exhibit higher survival rates; the “signaling” digit-tests with inconsistent patterns fail to display particularly interesting findings.

The second “appointment” period is depicted in Figure 5, which shows quite inconsistent pattern with regard to the governors' survival prospects for the section on parliamentary elections. Specifically, the survival curves for those who deliver large vote shares for United Russia are indistinguishable from the one who do not; the survival advantage of those who exhibit high turnout rates wanes over time becoming negative by the end of the period. The patterns of election anomalies in the majority of cases don't yield particularly interesting findings with one important exception of $P05(Votes)$, showing that increase in “signaling patterns” can, in fact, decrease the governor's survival prospects. Finally, the observation of decreased survival prospects due to election manipulation also extends into the presidential election – higher turnout rates, higher finite mixture and “signaling” measures – display lower survival probabilities for the governors.

Finally, the third period presented in Figure 6 shows increased association between higher levels anomalies and larger survival probabilities. Higher levels of turnout, measures of anomalies f_i , f_e , and party signaling at the parliamentary elections exhibit higher survival

rates; same is true for the finite mixture estimates and signaling estimates for the presidential elections.

On the next stage, I proceed with the multivariate model – Cox proportional hazards model. The main results are provided in Table 2. Even though Cox’s model doesn’t rely on any distribution assumption, nevertheless, it is assumed that the hazard ratio does not depend on time. The model allows for the analysis of gubernatorial survival with respect to several factors simultaneously and estimate the effect magnitude for each factor. It also helps to examine how the factors of interest influence the rate of a gubernatorial removal, i.e. hazard rate, at a particular point in time. Unfortunately, the earlier discussed Kaplan-Meier survival functions show that this initial assumption can be violated. While it is expected that the proportional hazards should appear as approximately parallel hazard curves to satisfy the assumption, in many instances the hazard curves diverge, converge and intersect. There exist different opinions on the importance of this assumption: some authors state that such violation makes us think in terms of “average effect” over timepoints that are observed in a dataset (Allison 1995), others stress the importance of this assumption (Hosmer and Lemeshow 1999). In my case when the variables fail to satisfy the proportional hazard assumption, the “average effect” interpretation will be satisfactory.

Each explored time period contains three alternative models with different groups of variables: the first model contains key electoral variables and the finite mixture estimates; the second model includes an added set of “signaling” measures; the third model incorporates an additional set of socio-demographic characteristics of the governors and region-specific indicators. To distinguish between the governors under Yeltsin, Putin and Medvedev, who most likely share similarities, following Reisinger and Moraski (2017), I add to the model a cluster function that captures clustering effects of governors who served only under Putin, Medvedev, both Yeltsin and Putin, or both Medvedev and Putin.

The coefficients in Cox model are log-relative hazards: the negative sign indicates that as the value of the covariate increases, the hazard of being removed from the offices decreases,

the positive sign indicates the opposite, i.e. the increase in the hazard of being removed, and thus the increase of the length of survival. Alternative measure of interest simplifying my interpretation are hazard ratios, i.e. exponentiated coefficients e^β , to which I'll be referring during the discussion of regression results: hazard ratios greater than one indicate an increased hazard of having gubernatorial replacement.

*** Table 2 about here ***

The first period provides us with quite mixed findings. Putin's standardized support shows a 13% statistically significant increase in hazard in my first model ($e^{0.12} = 1.13$), and significant decrease in hazard in the third model by 27% ($1 - e^{-0.32} = 0.27$). Positive effect is observed for voter turnout: a unit increase in turnout increases a hazard of punishment by the voters by 141% ($e^{0.88} = 2.41$). The effects of electoral anomalies on gubernatorial survival are inconsistent. Across two models, the effects of the finite mixture estimates are negative and statistically significant: for the incremental fraud significant effect is present in the full model, where a unit increase in f_i decreases a hazard of punishment by the voters by 67% ($1 - e^{-1.1}$). The same is true for the extreme fraud, i.e. a unit increase in f_e decreases a hazard of electoral punishment by about 21% ($1 - e^{-0.24}$). As far as the signaling explanation is concerned, a unit increase in the standardized mean of 0s and 5s in the last digit of percentage of turnout decreases the probability of punishment by about 5% ($1 - e^{-0.05}$) and in Putin's vote shares by about 18% ($1 - e^{-0.20}$). Thus, my first hypothesis stating that in the 2000-2005 election fraud is expected to be punished by both the Autocrat and the voters is not supported by my empirical findings. Election fraud seems to positively affect the gubernatorial survival even in the presence of gubernatorial elections.

The second "appointment" period shows that while Putin's electoral support fails to exhibit statistical significance, in the full model voter turnout exhibits negative effect: a unit increase in turnout decreases a hazard of Kremlin's punishment by about 42% ($1 - e^{-0.55}$); the same is partially true for turnout measure associated with the parliamentary election:

whereas in the second model it decreases hazard by $63\%(1 - e^{-1.00})$, it loses statistical significance in the full model. The anomalies associated with the presidential election show inconsistent signs across the models: in the first two models the negative effect of f_i matches my expectation that election fraud will lead to decrease in hazard by $37\%(1 - e^{-0.46})$ or $42\%(1 - e^{-0.51})$, whereas the third model shows the positive effect; f_i associated with the parliamentary election also displays significant positive effects running against the expectation. While f_e associated with the presidential election also yields a positive sign (a unit increase in turnout increases a hazard of being punished by about $12\%(e^{0.11})$), f_e associated with the parliamentary election in the full model decreases hazard by about $89\%(1 - e^{-2.22})$. Finally, the signaling approach displays insignificant results with the exception of *P05Vote(Parl)* which shows an increase in hazard by about 28%. Given contradictory findings, my second hypothesis, stating that in the 2005-2012 with abolition of gubernatorial elections would lead to increase in election fraud and decrease in hazard of punishment, is only partially confirmed.

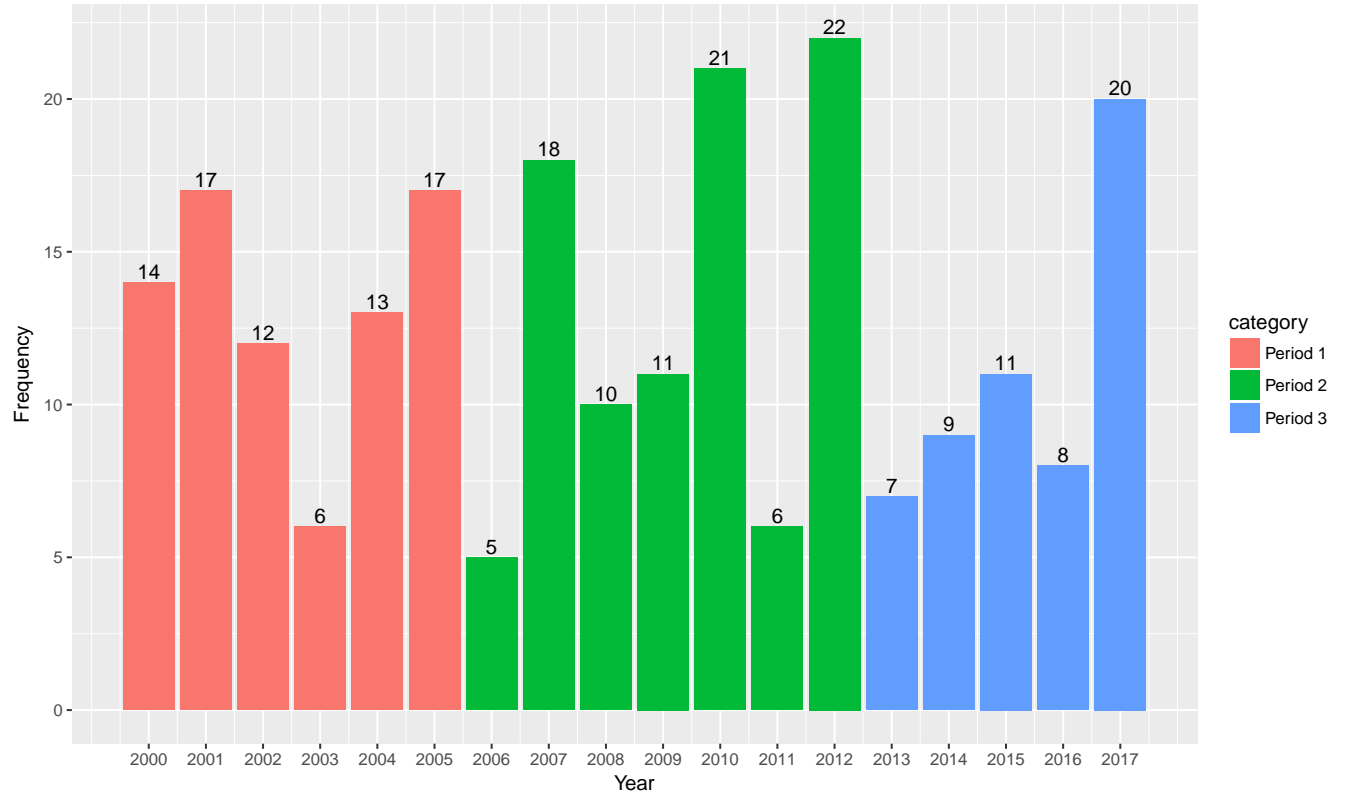
The “post-appointment” electoral period shows that in the full model turnout associated with presidential elections exhibits a positive effect: a unit increase in turnout leads to increase in hazard by about $52\%(e^{0.42})$. The finite mixture measures associated with the presidential election show consistent negative effects across the models, but only in the third model f_i gains statistical significance: a unit increase in f_i decreases hazard by $78\%(1 - e^{-1.53})$; for f_e , however, the negative effects are consistent across all the models, but significant only in the first two: in the second model hazard due to f_e decreases almost by $100\%(1 - e^{-7.42})$. With regard to the parliamentary elections, the effect of extreme election fraud in the first and third models becomes statistically significant: for instance, in the third model a unit increase in f_i increases hazard by $0.27\%(1 - e^{-0.31})$. At last, the signaling measures demonstrate some inconsistency: while *P05Turnout* for the presidential elections decreases hazard by about $0.19\%(1 - e^{-0.21})$, all other estimates show statistically significant positive effect. Moreover, based on the third model the increase in signaling patterns in

P05Vote in both elections increase hazard of removal by roughly 30 – 40%. Thus, given my inconsistent findings, the third hypothesis, claiming that the restoration of gubernatorial elections would eventually lead to governors being punished for fraud, is only partially supported by my data analysis.

Conclusion

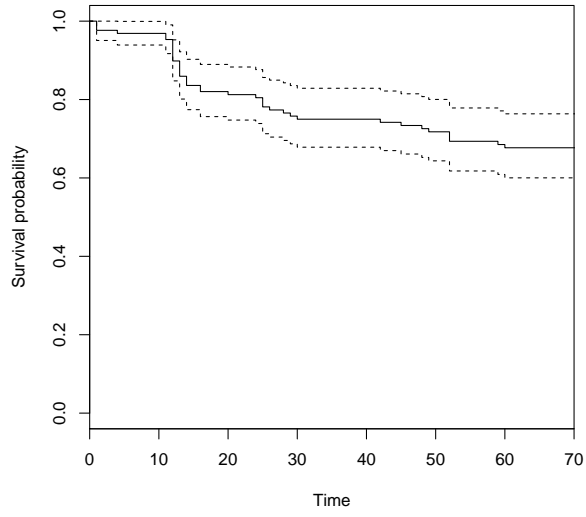
My findings demonstrate that in the first period, election fraud seems to positively affect the gubernatorial survival, even in the presence of gubernatorial elections, which contradicts my theoretical expectations. In the second period, my theoretical expectation that abolition of gubernatorial elections would lead to increase in election fraud and decrease in hazard of punishment, is only partially confirmed. Finally, my expectation that the restoration of gubernatorial elections in the third period would lead to governors being punished for fraud is also only partly supported by my data analysis. In my future research I hope to replicate previous research on gubernatorial survival in Russia, test robustness of its findings by inclusion of the fraud measures in the models, and, finally, estimate the effect of election fraud on gubernatorial survival.

Figure 2: Changeover in Governors, 2000-2017, by years

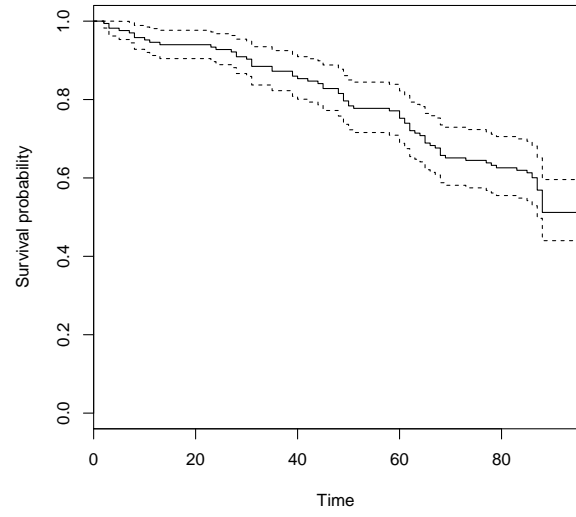


Notes: The governors whose tenure period didn't span elections were excluded from my analysis.

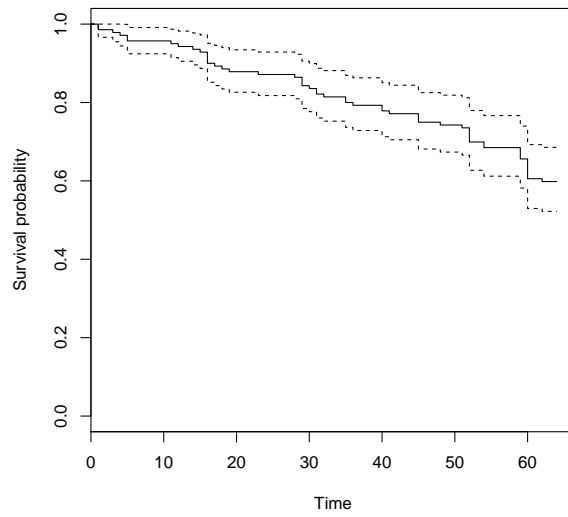
Figure 3: Kaplan-Meier Survival Curves



(a)



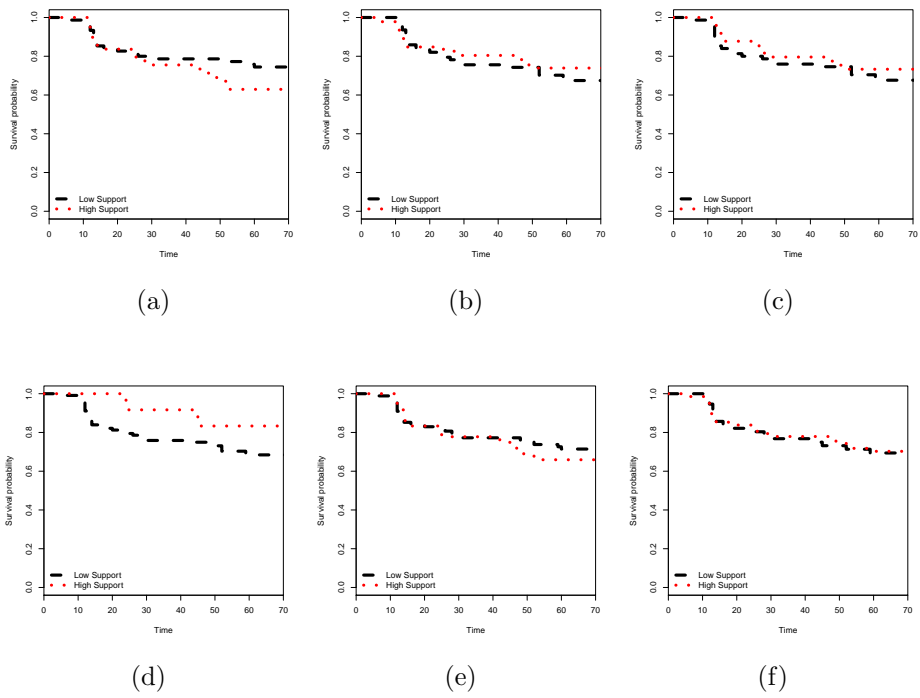
(b)



(c)

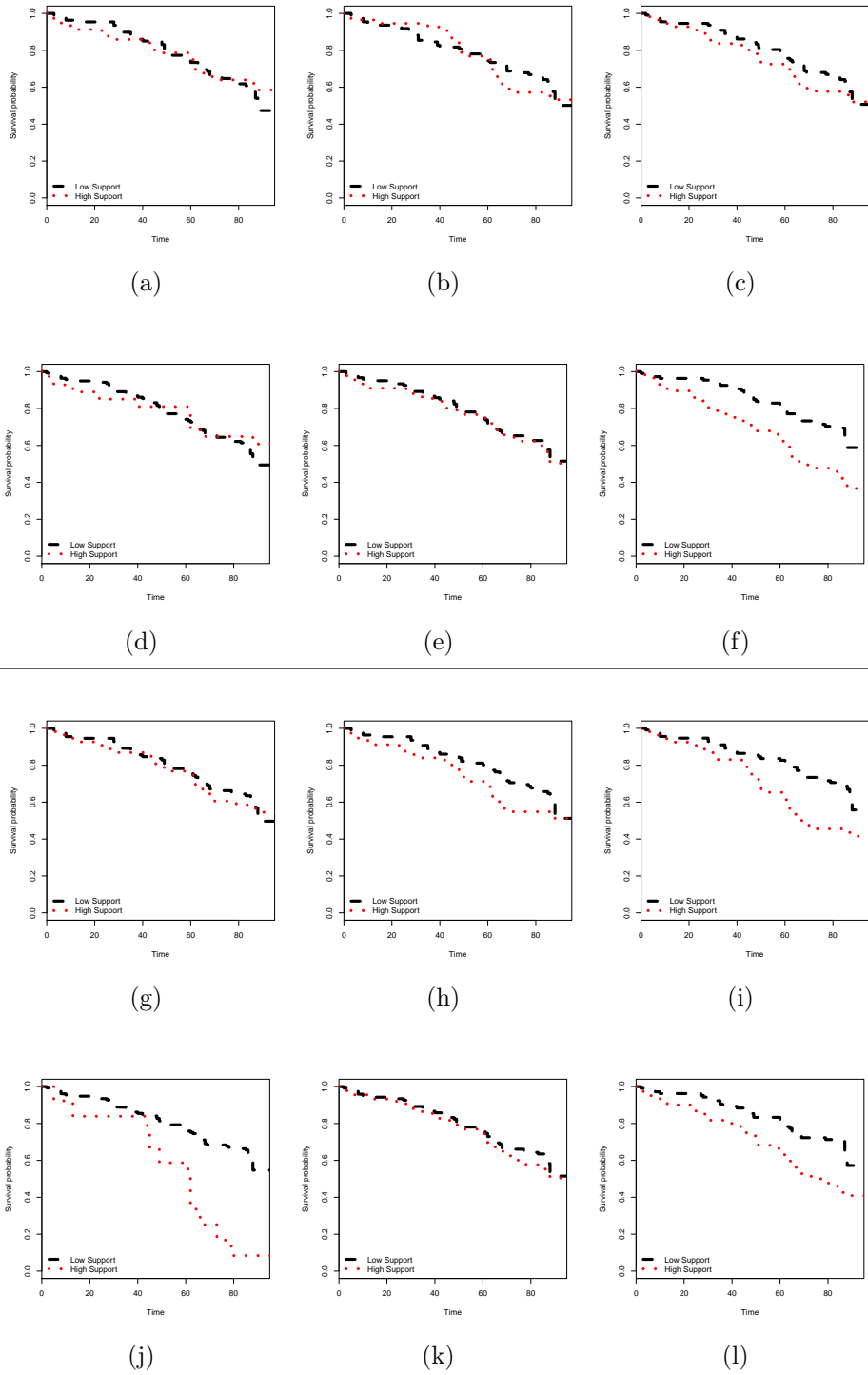
Notes: (a) Period 1; (b) Period 2; (c) Period 3.

Figure 4: Kaplan-Meier Survival Curve (Period 1)



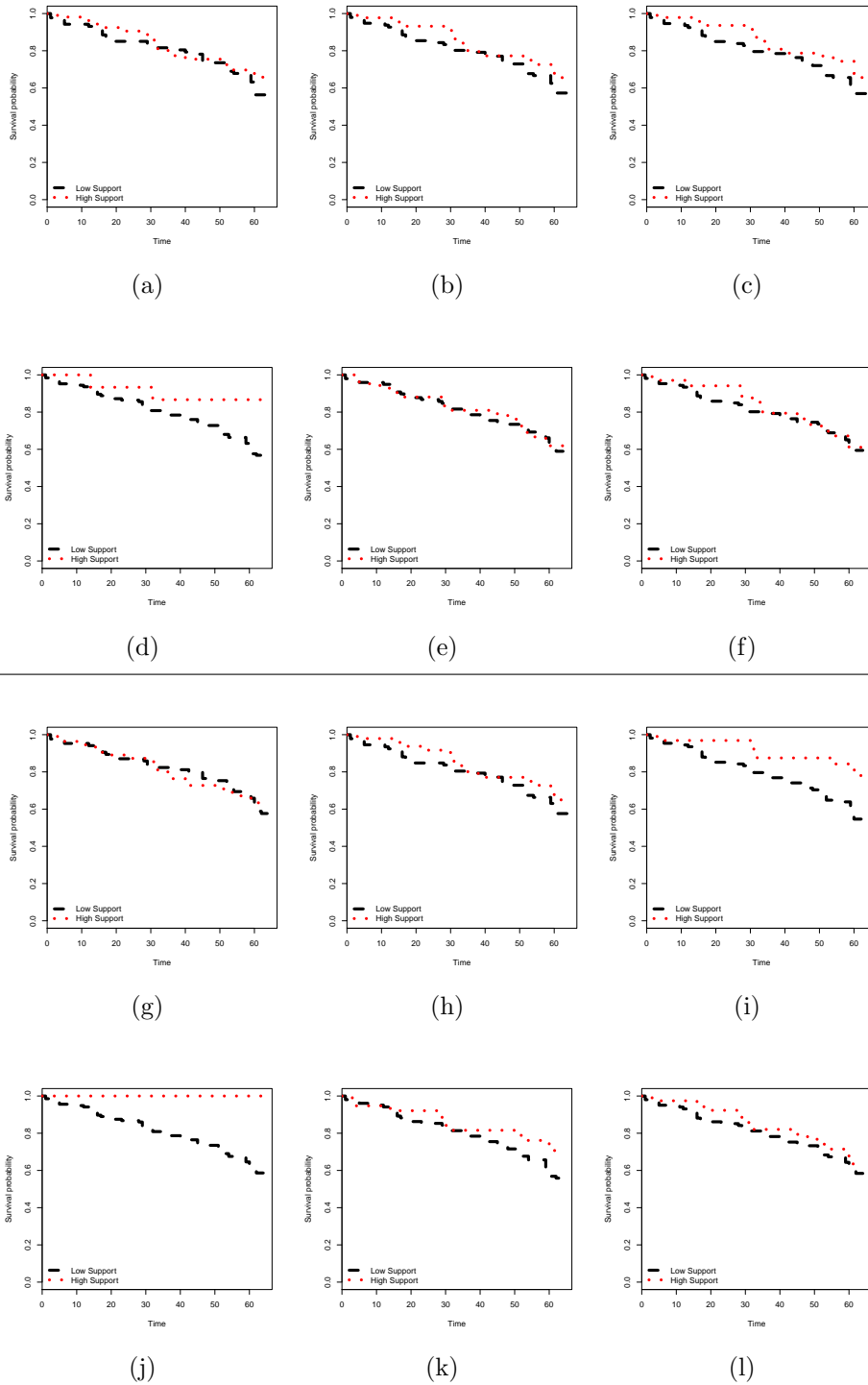
Notes: Presidential election: (a) – Vote share; (b) – Turnout; (c) – f_i ; (d) – f_e ; (e) – P05(Turnout); (f) – P05(Votes).

Figure 5: Kaplan-Meier Survival Curves (Period 2)



Notes: Above the line – parliamentary election; below the line – presidential election. (a),(i) – Vote share; (b),(j) – Turnout; (c),(k) – f_i ; (d),(l) – f_e ; (e),(m) – P05(Turnout); (f),(n) – P05(Votes).

Figure 6: Kaplan-Meier Survival Curves (Period 3)



Notes: Above the line – parliamentary election; below the line – presidential election. (a),(i) – Vote share; (b),(j) – Turnout; (c),(k) – f_i ; (d),(l) – f_e ; (e),(m) – P05(Turnout); (f),(n) – P05(Votes).

Table 2: Results from Cox Regression Model (standardized scales)

	2000-2005			2005-2012			2012-2016		
	M(01)	M(02)	M(03)	M(04)	M(05)	M(06)	M(07)	M(08)	M(09)
Putin	0.12*	0.03	-0.32*	0.17	0.19	0.05	0.11	0.21	0.39
	(0.06)	(0.04)	(0.14)	(0.27)	(0.29)	(0.35)	(0.44)	(0.57)	(0.73)
Turnout(Pres)	-0.08	-0.01	0.88**	0.42**	0.46*	-0.55***	0.1	0.21	0.42***
	(0.11)	(0.09)	(0.33)	(0.15)	(0.18)	(0.05)	(0.37)	(0.38)	(0.04)
UR				0.2	0.22	0.27	-0.05	-0.14	-0.61
				(0.41)	(0.48)	(0.67)	(0.35)	(0.48)	(0.86)
Turnout(Parl)				-0.92*	-1*	-0.09	0.09	-0.06	0.48
				(0.36)	(0.45)	(0.38)	(0.23)	(0.11)	(0.33)
f_i (Pres)	-0.24	-0.28 ^x	-1.06***	-0.46*	-0.51***	0.61*	-0.74	-0.83	-1.53 ^x
	(0.15)	(0.15)	(0.25)	(0.18)	(0.07)	(0.24)	(1.01)	(1.13)	(0.9)
f_e (Pres)	-0.15***	-0.15***	-0.24***	0.01	-0.05	0.11*	-3.15***	-7.42***	-7.94
	(0.01)	(0.03)	(0.02)	(0.04)	(0.13)	(0.04)	(0.82)	(0.22)	(6.72)
f_i (Parl)				0.58**	0.62***	0.01	0.17	0.2	0.1
				(0.2)	(0.15)	(0.12)	(0.62)	(0.59)	(0.58)
f_e (Parl)				-0.27	-0.48	-2.22***	-0.07 ^x	-0.04	-0.31***
				(0.29)	(0.36)	(0.15)	(0.04)	(0.12)	(0.09)
P05Turnout(Pres)		0.14***	-0.05 ^x		-0.08	0.06		-0.21***	-0.1
		(0.03)	(0.02)		(0.07)	(0.17)		(0.05)	(0.23)
P05Vote(Pres)		-0.16***	-0.2***		0.2	0.14		0.56***	0.32***
		(0.04)	(0.01)		(0.15)	(0.24)		(0.11)	(0.09)
P05Turnout(Parl)					0.08	-0.05		0.21*	0.25 ^x
					(0.06)	(0.17)		(0.08)	(0.13)
P05Vote(Parl)					0.02	0.25*		0.07	0.25**
					(0.00)	(0.08)		(0.13)	(0.11)
GRP per capita			0.38***			0.13			0.25***
			(0.01)			(0.23)			(0.04)
Age			0.71***			1.25***			0.83 ^x
			(0.19)			(0.12)			(0.45)
Budget			0.68***			0.14			0.41
			(0.07)			(0.13)			(0.35)
Transfers			-0.12			0.14			-0.08
			(0.11)			(0.09)			(0.16)
Republic			-0.69**			-0.01			-0.16
			(0.25)			(0.47)			(0.35)
Obs.	124	124	105	167	167	148	140	140	133
LR	2	4	15	12	13	62	6	9	27
Prob.	0.68	0.71	0.17	0.17	0.35	0	0.6	0.74	0.05
R^2	0.02	0.03	0.14	0.07	0.08	0.34	0.05	0.06	0.19

Notes: Clustered standard errors in parentheses. Significance levels: ^x $p \leq 0.1$, * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

References

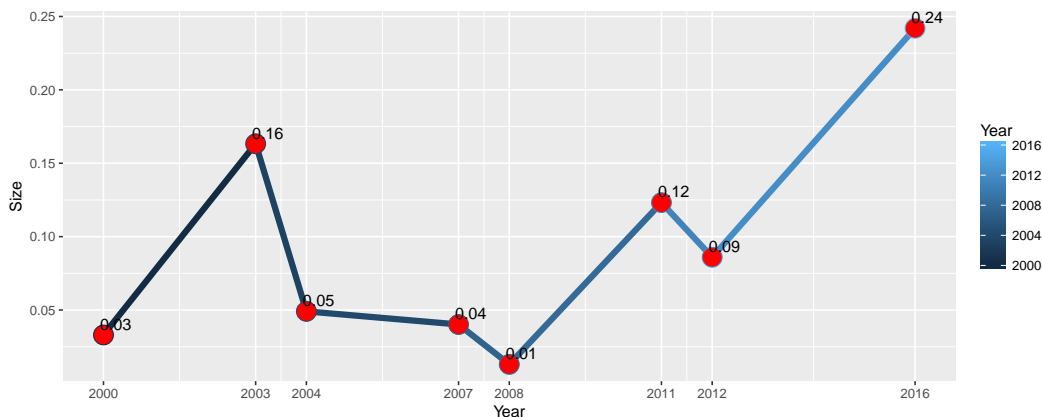
- Allison, Paul D. 1995. *Survival Analysis Using SAS. A Practical Guide*. Cary.
- Beber, Bernd and Alexandra Scacco. 2008. “What the Numbers Say: A Digit-Based Test for Election Fraud Using New Data from Nigeria.”
- Buzin, Andrei and Arkadii Lubarev. 2008. *Crime without Punishment: Administrative Technologies of Federal Elections of 2007–2008 (In Russian: Prestupleniye bez nakazaniya. Administrativniye tekhnologii federal’nih viborov 2007–2008 godov)*. Moscow: Nikkolo M.
- Cantu, Francisco and Sebastian M. Saiegh. 2011. “Fraudulent Democracy? An Analysis of Argentina’s Infamous Decade Using Supervised Machine Learning.” *Political Analysis* 19(4):409–433.
- Cheibub, Jose Antonio. 2007. *Presidentialism, Parliamentarism, and Democracy*. New York: Cambridge University Press.
- de Mesquita, Bruce Bueno, Alastair Smith, Randolph M. Siverson and James D. Morrow. 2004. *The Logic of Political Survival*. The MIT Press.
- Egorov, Georgy and Konstantin Sonin. 2011. “Dictators and Their Viziers: Endogenizing the Loyalty-Competence Trade-off.” *Journal of the European Economic Association* 9(5):903–30.
- Egorov, Georgy, Sergei Guriev and Konstantin Sonin. 2009. “Why Resource-poor Dictators Allow Freer Media: A Theory and Evidence from Panel Data.” *American Political Science Review* 103(4):645–668.
- Filippov, Mikhail, Peter C. Ordeshook and Olga Shvetsova. 2004. *Designing Federalism: A Theory of Self-Sustainable Federal Institutions*. New York: Cambridge University Press.
- Gandhi, Jennifer. 2008. *Political Institutions under Dictatorship*. New York: Cambridge University Press.
- Geddes, Barbara. 2006. “Why Parties and Elections in Authoritarian Regimes?” UCLA.
- Gel’man, Vladimir. 2006. “Vozvrasheniye Levafana? Politika Recentralizatsii v Sovremennoi Rossii.” *POLIS* 2:90–109.
- Gel’man, Vladimir. 2007. “Political Trends in the Russian Regions on the Eve of State Duma Elections.” *Russian Analytical Digest* 21:27.
- Gel’man, Vladimir. 2009. “The Dynamics of Sub-National Authoritarianism: Russia in Comparative Perspective.” Paper prepared for the Annual Meeting of the American Political Science Association, Toronto, Canada, September 3–6, 2009.
- Gorokhov, Vitalii. 2017. “I will Survive: Regional Chief Executives (Governors) and the Principal-Agent Paradigm after the Abolition of Gubernatorial Elections in Russia.” *Journal of Contemporary Central and Eastern Europe* 25(1):103–115.

- Hale, Henry E. 2003. "Explaining Machine Politics in Russia's Regions: Economy, Ethnicity, and Legacy." *Post-Soviet Affairs* 19(3):228–263.
- Hosmer, David and Stanley Lemeshow. 1999. *Applied survival analysis. Regression modeling time to event data*. New York: .
- Kahn, Jeffrey. 2002. *Federalism, Democratization, and the Rule of Law in Russia*. Oxford: Oxford University Press.
- Kalinin, Kirill and Walter R. Mebane, Jr. 2013. "Understanding Electoral Frauds through Evolution of Russian Federalism: the Emergence of Signaling Loyalty." Paper prepared for the Annual Meeting of Midwest Political Science Association, Chicago.
- Klimek, Peter, Yuri Yegorov, Rudolf Hanel and Stefan Thurner. 2012. "Statistical Detection of Systematic Election Irregularities." *Proceedings of the National Academy of Sciences of the United States of America* 109(41):16469–16473.
- Magaloni, Beatriz. 2006. *Voting for Autocracy: Hegemonic Party Survival and its Demise in Mexico (Cambridge Studies in Comparative Politics)*. 1st ed. Cambridge Studies in Comparative Politics.
- Mebane, Jr., Walter R. 2011. "Comment on "Benford's Law and the Detection of Election Fraud"." *Political Analysis* 19(3):269–272.
- Mebane, Jr., Walter R. 2016. "Election Forensics: Frauds Tests and Observation-level Frauds Probabilities." Prepared for presentation at the 2016 Annual Meeting of the Midwest Political Science Association, Chicago, IL, April 7–10.
- Mebane, Jr., Walter R. and Kirill Kalinin. 2010. "Electoral Fraud in Russia: Vote Counts Analysis using Second-digit Mean Tests." Paper prepared for the 2010 Annual Meeting of the Midwest Political Science Association, Chicago, IL, April 22–25.
- Myerson, Roger B. 1991. *Game Theory: Analysis of Conflict*. Cambridge, MA: Harvard University Press.
- Pericchi, Luis Raul and David Torres. 2011. "Quick Anomaly Detection by the Newcomb-Benford Law, with Applications to Electoral Processes Data from the USA, Puerto Rico and Venezuela." *Statistical Science* 26(4):502–516.
- Reisinger, William M. and Bryon J. Moraski. 2013. *Russia's Regions and Comparative Subnational Politics*. Routledge chapter 3 Deference or Governance? A Survival Analysis of Russia's Governors under Presidential Control, pp. 40–62.
- Reisinger, William M. and Bryon J. Moraski. 2017. *The Regional Roots of Russia's Political Regime*. Ann Arbor: University of Michigan Press.
- Reuter, Ora John and Graeme B. Robertson. 2012. "Subnational Appointments in Authoritarian Regimes: Evidence from Russian Gubernatorial Appointments." *Journal of Politics* 74(4):1023–1037.

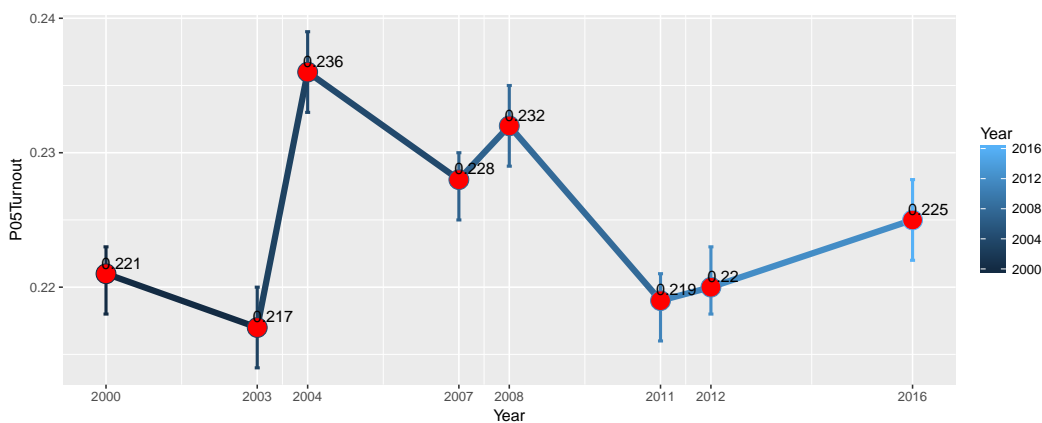
- Sharafutdinova, Gulnaz. 2010. "Subnational Governance in Russia: How Putin Changed the Contract with His Agents and the Problems It Created for Medvedev. 40 (4): 672-96." *Publius: The Journal of Federalism* 40(4):672-96.
- Smyth, Regina, Anna Lowry and Brandon Wilkening. 2007. "Engineering Victory: Institutional Reform, Informal Institutions, and the Formation of a Hegemonic Party Regime in the Russian Federation." *Post-Soviet Affairs* 23(2):118-137.
URL: <https://www.tandfonline.com/doi/abs/10.2747/1060-586X.23.2.118>
- Smyth, Regina and Rostislav Turovsky. 2018. "Legitimising Victories: Electoral Authoritarian Control in Russias Gubernatorial Elections." *Europe-Asia Studies* 70(2):182-201.
URL: <https://doi.org/10.1080/09668136.2018.1436697>
- Taylor, Brian D. 2011. *State Building in Putin's Russia: Policing and Coercion After Communism*. New York: Cambridge University Press.
- Tkacheva, Olesya. 2009. "Governors as Poster-Candidates in Russia's Legislative Elections, 2003-2008." Working paper. University of Michigan, Ann Arbor.
- Treisman, Daniel. 1997a. "Dollars and Democratization: The Role and Power of Money in Russia's Transitional Elections." *Comparative Politics* 31(1):1-21.
- Treisman, Daniel. 1997b. "Russia's "Ethnic Revival": The Separatist Activism of Regional Leaders in a Postcommunist Order." *World Politics* 49(2):212-249.
- Treisman, Daniel. 1999. *After the Deluge. Regional Crisis and Political Consolidation in Russia*. Ann Arbor, MI: University of Michigan Press.
- Wintrobe, Ronald. 1998. *The political economy of dictatorship*. Cambridge, UK; New York, NY: Cambridge University Press.

A Appendix. Tables and Figures

Figure A1: Measures of Election Fraud



(a)



(b)



(c)

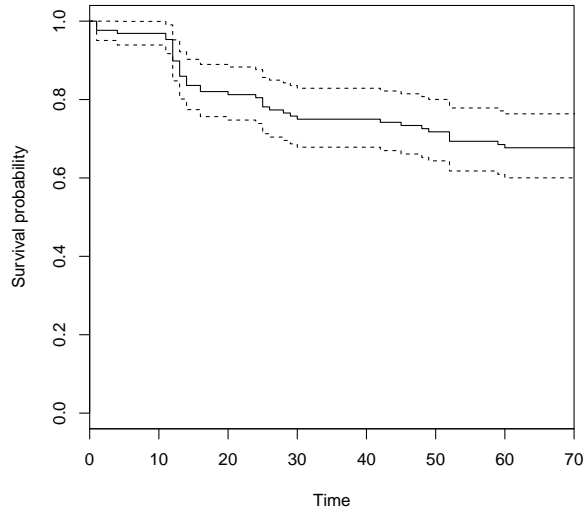
Notes: Red-filled circle – statistically significant measure. (a) finite mixture estimates: $f_i + f_e$; (b) the national mean of a variable indicating whether the last digit of the rounded percentage of turnout is 0 or 5; (c) the national mean of a variable indicating whether the last digit of the rounded percentage for the referent party or candidate is 0 or 5.

Table A1: Results from Cox Regression Model (raw scale)

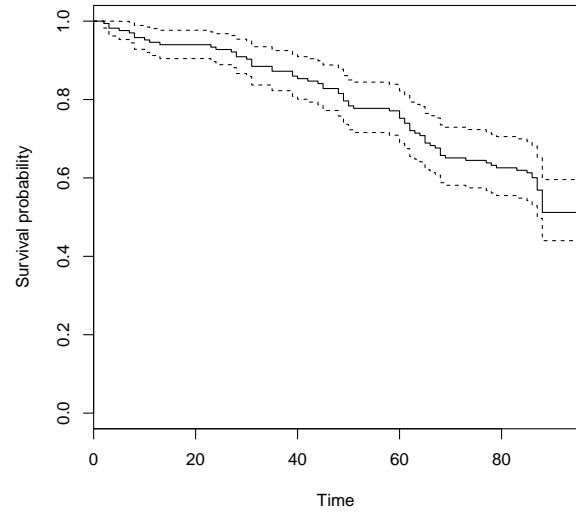
Putin	-9.65 (1.6)	-10.32 (1.39)	-6.98 (0.72)	13.23 (6.74)	13.68 (5.35)	12.85 (2.38)	1.13 (4.46)	2.15 (5.74)	4.78 (7.29)
Turnout(Pres)	8.43 (1.25)	8 (1.37)	8.14 (1.23)	3.64 (2.38)	2.99 (3.24)	4.8 (1.08)	1.07 (3.82)	2.13 (3.94)	4.33 (0.44)
UR				-0.44 (5.13)	-0.25 (4.03)	-2.53 (2.59)	-0.32 (2.07)	-0.82 (2.86)	-4.64 (5.22)
Turnout(Parl)				-6.92 (1.77)	-7.17 (2.08)	-8.69 (1.11)	0.69 (1.74)	-0.46 (0.89)	4.29 (2.7)
f_i (Pres)	-3.86 (4.31)	-5.59 (4.29)	-11.61 (0.17)	-18.6 (13.65)	-20.49 (12.04)	-15.58 (7.15)	-6.8 (9.19)	-7.59 (10.28)	-14.93 (8.16)
f_e (Pres)	-1.82 (0.31)	-1.23 (0.27)	-0.76 (0.03)	-0.64 (0.55)	-0.75 (0.51)	-0.41 (0.43)	-0.12 (0.03)	-0.28 (0.01)	-0.24 (0.25)
f_i (Parl)				2.49 (3.27)	3.82 (2.21)	0.36 (1.51)	1.5 (5.45)	1.75 (5.21)	1.16 (5.04)
f_e (Parl)				-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	0 (0)	0 (0.01)	-0.02 (0.01)
P05Turnout(Pres)		5.88 (0.46)	5.95 (0.08)		-0.55 (2.72)	5.92 (11.2)		-4.15 (0.99)	-2 (4.39)
P05Vote(Pres)		-12.96 (3.03)	-4.71 (0.78)		8.13 (2.47)	0.51 (5.88)		7.84 (1.51)	4.91 (1.22)
P05Turnout(Parl)					3.38 (1.27)	0.71 (3.32)		4.16 (1.63)	5.94 (2.64)
P05Vote(Parl)					-9.37 (4.83)	13.71 (5.18)		1.57 (2.98)	5.33 (2.29)
GRP per capita			-0.03 (0)			-0.01 (0)			0 (0)
Age			-0.01 (0.01)			0.03 (0)			0.07 (0.04)
Budget			-2.07 (0.05)			-2.71 (0.91)			2.68 (1.82)
Transfers			-0.03 (0.07)			0.03 (0)			0 (0.01)
Republic			0.06 (0.18)			-0.44 (0.46)			-0.25 (0.39)
Obs.	124	124	105	167	167	148	140	140	133
LR	52	59	100	102	107	133	6	9	29
Prob.	0	0	0	0	0	0	0.6	0.74	0.04
R^2	0.34	0.38	0.61	0.46	0.47	0.59	0.05	0.06	0.19

Notes: Clustered standard errors in parentheses. Significance levels: * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$, **** $p \leq 0.001$.

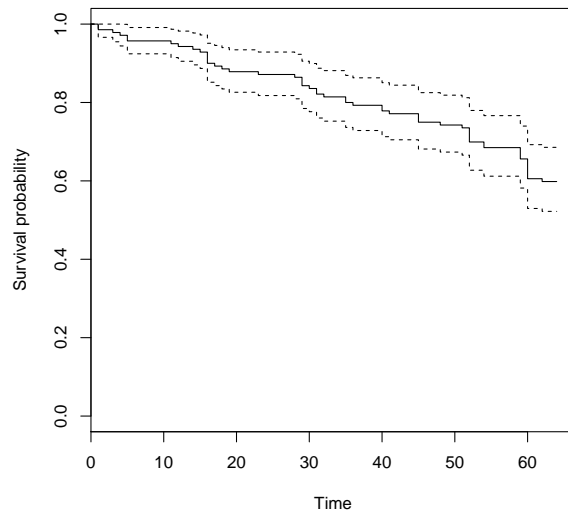
Figure A2: Kaplan-Meier Survival Curves, raw scale



(a)



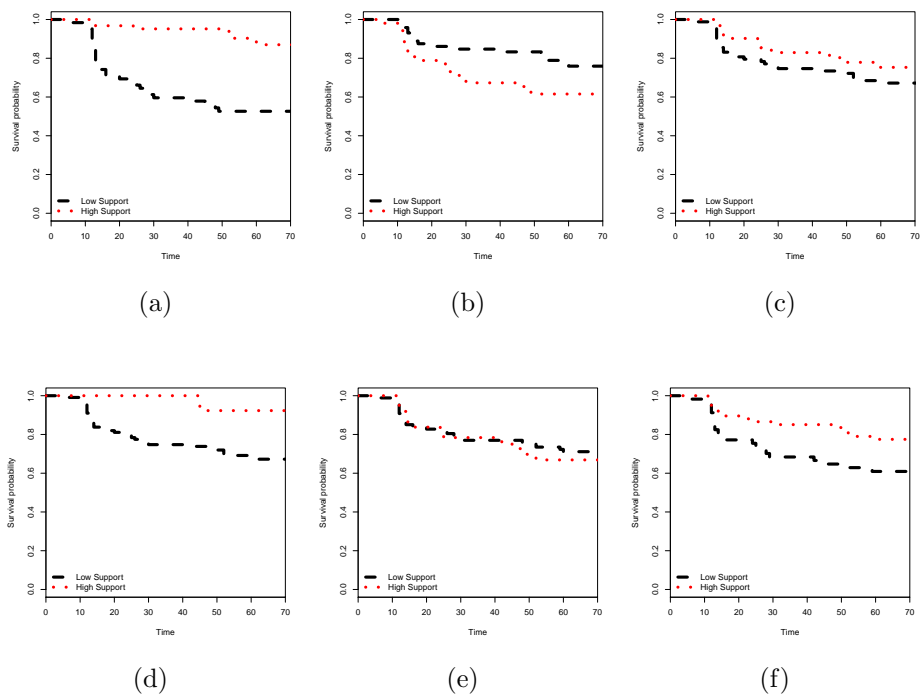
(b)



(c)

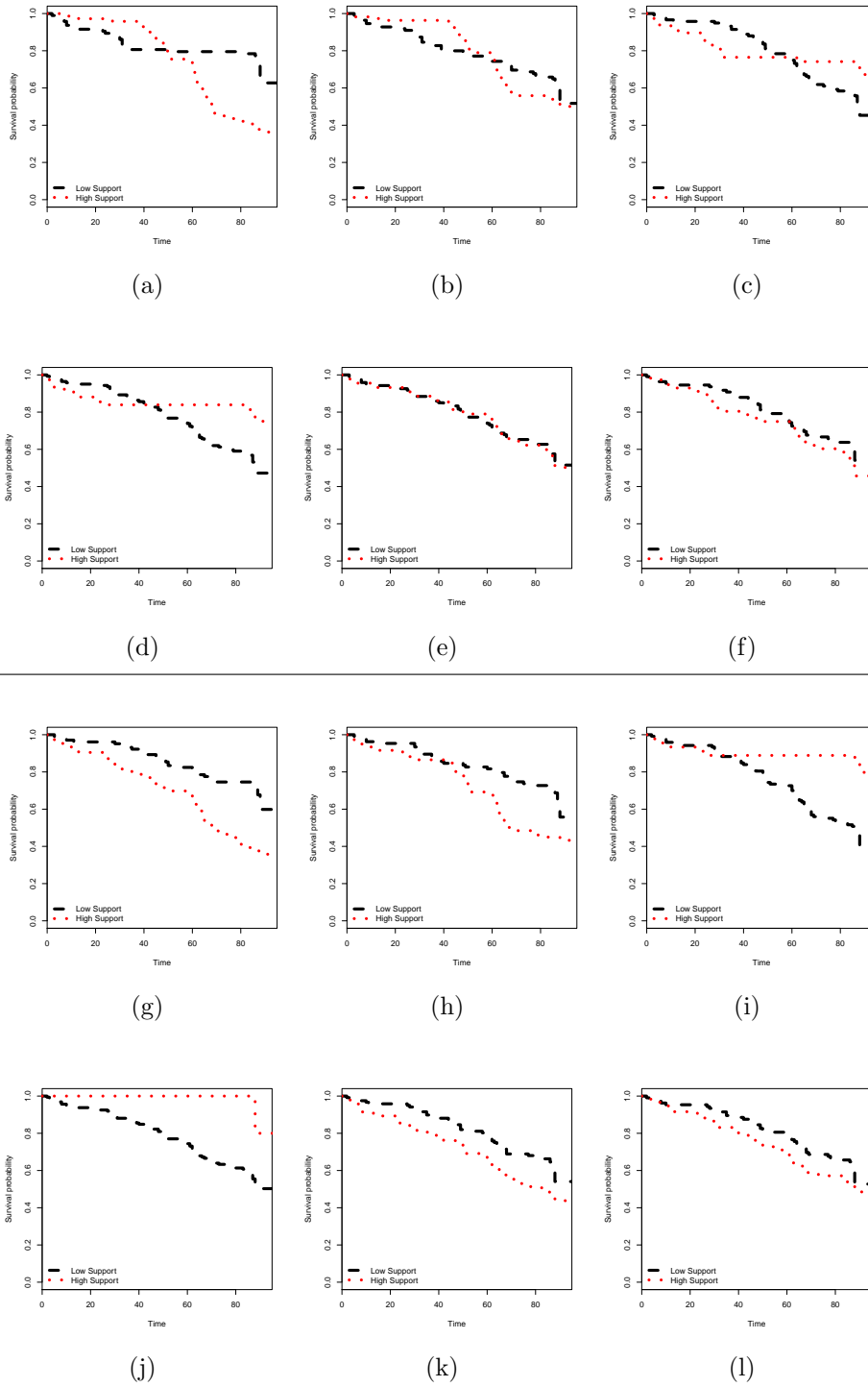
Notes: (a) Period 1; (b) Period 2; (c) Period 3.

Figure A3: Kaplan-Meier Survival Curve (Period 1), raw scale



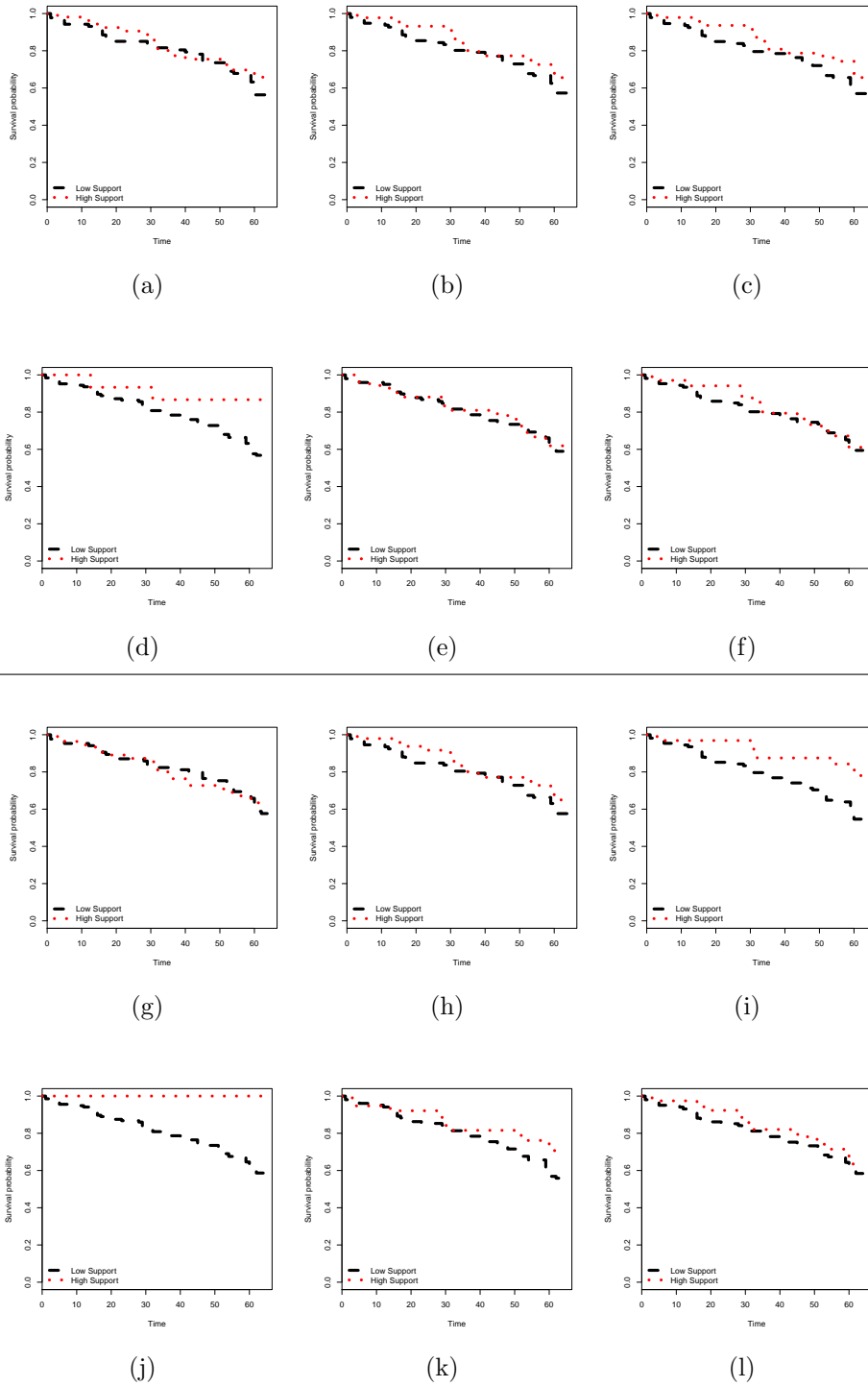
Notes: presidential election. (a) – Vote share; (b) – Turnout; (c) – f_i ; (d) – f_e ; (e) – P05(Turnout); (f) – P05(Votes).

Figure A4: Kaplan-Meier Survival Curves (Period 2), raw scale



Notes: above the line – parliamentary election; below the line – presidential election. (a),(i) – Vote share; (b),(j) – Turnout; (c),(k) – f_i ; (d),(l) – f_e ; (e),(m) – P05(Turnout); (f),(n) – P05(Votes).

Figure A5: Kaplan-Meier Survival Curves (Period 3), raw scale



Notes: above the line – parliamentary election; below the line – presidential election. (a),(i) – Vote share; (b),(j) – Turnout; (c),(k) – f_i ; (d),(l) – f_e ; (e),(m) – P05(Turnout); (f),(n) – P05(Votes).

B Appendix. Formal Model

Table B1: Some Equilibrium Tests

label	profile	equilibrium conditions
I*	$(F_1, F_2, \neg P_1, \neg P_2)$:	$\lambda = 1 \cap w = 0$
II*	$(F_1, \neg F_2, \neg P_1, P_2)$:	$\lambda = 0 \cap \frac{-p-t}{t} \geq b, \lambda = 1 \cap \frac{t+p}{t} \geq b \geq \frac{t-p-v}{t}$
III*	$(F_1, F_2, \neg P_1, P_2)$:	complicated (see Table B2)
IV*	$(F_1, \neg F_2, P_1, P_2)$:	never
V*	$(F_1, \neg F_2, P_1, \neg P_2)$:	$\lambda = 0 \cap p \geq -(1+b)t,$ $\lambda = 1 \cap b \leq 0 \cap (1-b)t \geq p \geq t \cap 2p \geq w$
VI*	$(F_1, \neg F_2, \neg P_1, \neg P_2)$:	$\lambda = 1 \cap w = 0 \cap t \geq p \cap b \geq 0$
VII*	$(\neg F_1, \neg F_2, \neg P_1, \neg P_2)$:	never
VIII*	$(\neg F_1, \neg F_2, P_1, P_2)$:	never
IX*	(F_1, F_2, P_1, P_2) :	$\lambda < 1 \cap w = 0 \cap \frac{-(p+t)}{(1-\lambda)t} \geq b$
X*	$(\neg F_1, F_2, P_1, P_2)$:	never
XI*	$(\neg F_1, F_2, \neg P_1, P_2)$:	$\lambda = 0 \cap w = 0 \cap b \geq \frac{w-p-t}{t}$
XII*	$(\neg F_1, \neg F_2, \neg P_1, P_2)$:	$w \geq p+t \cap t+d \geq p+v$
XIII*	$(F_1, F_2, P_1, \neg P_2)$:	never
XIV*	$(\neg F_1, F_2, P_1, \neg P_2)$:	never
XV*	$(\neg F_1, \neg F_2, P_1, \neg P_2)$:	$\frac{t+p}{w+t+p} \leq \lambda < 1 \cap \frac{-(p+t)}{(1-\lambda)t} \geq b \geq \frac{v+t-p}{t}$
XVI*	$(\neg F_1, F_2, \neg P_1, \neg P_2)$:	$\lambda = 0 \cap w = 0 \cap b \geq 0 \cap p \geq d+t$

Table B2: Equilibrium Tests for Profile III*

	profile	governor's payoff	Autocrat's payoff
III*	$(F_1, F_2, \neg P_1, P_2)$	$-w + t[1 + b(1 - \lambda)]$	$v + t(\lambda b - 1)$
	conditions:		
	$\lambda = 0 \Rightarrow t(b + 1) \geq w - p \cap v + d \geq t - p \cap p - t \geq d$		
	$\lambda = 1 \Rightarrow t \geq w - p \cap t(b - 1) \geq -p$		
	$0 < \lambda < 1 \Rightarrow t + p \geq w \cap t(b + 1) + p \geq w \cap v + t(b - 1) + p \geq 0 \cap v + d + p \geq t$		
	$\cap t(b+1)+p \geq \lambda bt \geq (1 - \lambda)d + t - p$		
	$\Rightarrow \begin{cases} 1 + \frac{t+p}{bt} \leq \lambda \leq 1 - \frac{t(b-1)+p}{bt+d}, & \text{if } b < 0 \\ \lambda \geq 1 + (t-p)/d, & \text{if } b = 0, \text{ requires } p \geq t \\ 1 + \frac{t+p}{bt} \geq \lambda \geq 1 - \frac{t(b-1)+p}{bt+d}, & \text{if } b > 0 \end{cases}$		
$b < 0$:	$1 + \frac{t+p}{bt} = 0$ if $b = -\frac{t+p}{t}$, $1 - \frac{t(b-1)+p}{bt+d} = 1$ if $b = \frac{t-p}{t}$		
$b > 0$:	$\lim_{t \rightarrow \infty} (1 + \frac{t+p}{bt}) = 1 + \frac{1}{b}$, $\lim_{t \rightarrow \infty} (1 - \frac{t(b-1)+p}{bt+d}) = \frac{1}{b}$		