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

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Abstract

Since the political survival of governors in Russia largely depends on their ability to address the Kremlin's electoral needs during the federal elections, the governors tend to 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.

1 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, 1997b,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/russdiv.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 formulates 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 of my main findings.

2 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 valuable information to the autocrat regarding the risks of potential challengers, their quality of governance, and the political loyalty of subordinates (Wintrobe, 1998; de Mesquita et al., 2004; Gandhi, 2008; Egorov et al., 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 centralized form of federalism, and from a relatively democratic to a more authoritarian political regime.

The first period 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. Popular elections helped the governors to establish political regimes without significant constraints from the Center, concentrating regional political and economic resources in their hands (Filippov et al., 2004, 301–315). This resulted in the federal asymmetry that enabled specific groups of regions to play a greater role in federal politics and implement bargaining policies with growing levels of concessions from the Center. In return for these concessions, 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, the possibility of electoral punishment by regional constituencies could potentially constrain governors from committing election frauds in the regions, making them politically costly to the governors.

The second period, basically, starts after Putin's accession in 2000 when the nature of federal relations was reviewed by Kremlin (Filippov et al., 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). 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 et al., 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).

In fact, the notion of data fabrication has been especially acute during the Soviet period, when governors would use "false accounting" (*pripiski*), designed to affect the measurement of regional output and help them to avoid punishment (Harrison, 2009). Because of this "false accounting", it comes as no surprise that with the start of new Russian recentralization in 2000s, such Soviet practices were restored in relation to contemporary Russian elections. As a result, the presence of electoral fraud became a basic signaling mechanism of regional bosses' loyalty and of their ability to control administrative resources to the Kremlin's benefit. Electoral signaling can be readily detected by analyzing the percentages of electoral outcomes. If electoral signaling occurs, electoral "pripiski" are most likely to take place with rounded percentages of turnout or vote percentages, which is the easiest and most readily

detected way to report basic information to superiors. In such cases, favorable percentages are first sent down from the Kremlin to the regional elections commissions, which passes this information further down to the territory-level commissions and, finally, precincts (Kalinin and Mebane, 2013).

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 up-

coming 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 seriously diminished.

In sum, political loyalty in the form of addressing the Kremlin's electoral needs is viewed as a crucial quality for Russian governors. Among many other factors, such as the Kremlin's electoral support and turnout, the governor's ability to provide falsified electoral outcomes tends to be one of the key markers of gubernatorial loyalty. The Kremlin's eagerness to determine the conditions under which it would be able to reward the loyal type and punish the nonloyal governor's type would be among the most important. The signaling game's setup enables us to explore strategic interaction between the Kremlin and the governor within a specific setting, and derive game-theoretic predictions relevant for each of the explored periods. In this sense, the observed patterns of election fraud for various time periods can be seen as a product of signaling strategies between the regional governors and the Kremlin.

3 A Formal Model

If we consider the signaling game represented by the diagram in Figure 1[1]. $\mathcal{N}$ 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

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

- $t > 0$ 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.

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.

***Figure 1 about here ***

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 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 $(F_1, \neg F_2, P_1, \neg P_2)$, where the loyal governor who commits fraud faces punishment, and nonloyal governor who doesn't commit fraud is not punished, the value of punishment by Kremlin outweighs the value of punishment by the voters.

***Table 1 about here ***

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

Hypothesis 1: In the period from 2000-2005, while the fraud is expected to be punished by both the Autocrat[2] and the voters, with instances of election fraud decreasing the odds of gubernatorial survival, the autocrat's increasing demand for greater loyalty would result in election fraud being positively connected to gubernatorial survival.

Hypothesis 2: In the period from 2005-2012, following the abolition of gubernatorial 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 mostly by the Kremlin and then voters, thus diminishing the gubernatorial survival.

4 Data and Measures

The proposed game-theoretic model limits my empirical analysis to a small set of variables. 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; a measure of transfers; two measures of electoral anomalies based on digit-tests and the estimates based on the finite mixture models. For

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

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 when the governors can be ousted by the electorate; 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, when the governor's future is placed under the Kremlin's discretion. 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 a share of central transfers in the regional budget as an independent variable. 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 limited set of control variables included in empirical analysis helps us to stay closer to my game-theoretic derivations.

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), as if the governor was not

replaced. 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 125 governorships in the first period, 164 governorships in the second period and 137 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.[3] Such standardization enables me to ensure comparability of various context-specific measures used in the models.

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 ***

As the first measure of fraud, this paper utilizes an extension of the last digit test: a proportion of 0s and 5s appearing in the last digit of percentages(Kalinin and Mebane, 2013). This approach argues that the presence of an abnormal proportion of 0s and 5s can be an indication of election fraud. 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. 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

[3]I also conduct separate regression analysis with raw variable scales.

of 0s and 5s in turnout percentage and vote percentages (P05s) for both parliamentary and presidential elections. As a result, for each type of election I end up with two region-level variables: *P05Turnout* and *P05Vote* (See Figure A1 in the Appendix).

The second measure of election fraud is the "finite mixture likelihood model" proposed by Mebane (2016). Based on Klimek et al. (2012)'s algorithm, the model suggests how a winning party/candidate benefits from the votes transferred from other parties/candidates and nonvoters. The model predicts the origin of multipeaked distribution of voting shares and turnout, helping researchers to understand whether additional peaks are caused by fraud or some anomaly that doesn't break the law. It helps to estimate three quantities: 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. Thus, the model enables us to compute the precinct-level probabilities of election fraud, which are aggregated to the regional level and declared in four main variables — finite mixture estimates of incremental and extreme fraud in both presidential and parliamentary elections f_i and f_e(See Figure A1 in the Appendix).

5 Findings

The 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 97% likelihood of continuing in office. After two years or fewer, about 90%. In the second period, those in office for one year or less have about 96% likelihood of continuing in office. After two years or fewer, about 93%. After five years or fewer, only about 74%. Finally, in the third period, those in office for one year or less have about 97% likelihood of continuing in office. After two years or fewer, about 89%. After five years or fewer, about 66%.

***Figure 3 about here ***

I also build a series of graphs that helps us to visualize the differences in governors' survival probabilities between a group with the winner's vote shares, turnout, and election fraud above and below the mean (See Figures A2, A3, A4 in the Appendix). While the first period fails to demonstrate statistically significant findings, the second shows that survival rates are higher among those who provide higher support for UR and less election fraud measured by both indicators; moreover, the third period demonstrates higher survival rates for the governors who show higher predisposition to election fraud. Even though the first and the third electoral periods are more or less consistent with my theoretical expectations, my findings from the second period fail to match my theoretical expectations.

On the next stage, I proceed with the multivariate model – Cox proportional hazards model. Its 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). To overcome this violation the separate models for the parliamentary and presidential elections containing smaller number of independent variables are estimated. Then, the assumption is tested using the Schoenfeld residuals test – this assumption has been met almost in every regression model.

Each explored time period contains three models containing different sets of variables: the first reduced model contains key electoral variables and the finite mixture estimates; the second reduced model includes an added set of "signaling" measures; the third full 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 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, and less than one – the decreased hazard. Formally speaking, if $e^{\beta} > 0$ implies a positive effect on the hazard, when a one-unit increase in an independent variable is followed by an increase in $h(t)$ by a factor

of $(e^{\beta}-1)\times 100$; if $e^{\beta}<0$ implies a negative effect on the hazard, when a one-unit increase in an independent variable is followed by a decrease in $h(t)$ by a factor of $(1-e^{\beta})\times 100$.

***Tables 2 and 3 about here ***

The first period (2000-2005) provides us with quite mixed findings. According to Table 2, Putin's standardized support shows a $32\%(e^{0.28}-1)$ statistically significant increase in hazard in the first model, and significant decrease in hazard of being removed from the office in the third model by $21\%(1-e^{-0.23})$. A positive effect is observed for voter turnout: a unit increase in turnout increases a hazard of punishment by the voters by $97\%(e^{0.68}-1)$. The effects of electoral anomalies on gubernatorial survival are quite consistent. Across all the models, the effects of the finite mixture estimates are negative and oftentimes statistically significant. For instance, in the full model the effect of incremental fraud on gubernatorial survival is statistically significant: a unit increase in f_i decreases a hazard of punishment by the voters by 64% $(1-e^{-1.02})$. The same is true for the extreme fraud which yields significant effects for all the models, i.e. in the full model 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, in the full model 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 14% $(1-e^{-0.15})$ and in Putin's vote shares by about $12\%(e^{-0.13}-1)$. Almost the same results hold for the parliamentary elections. Thus, my first hypothesis stating that the autocrat's increasing demand for greater loyalty, results in a positive correlation of election fraud with gubernatorial survival, is supported by my analysis. Even with electoral punishment punishment in place, the autocrat's higher value of loyalty contributes to stronger association between election fraud and gubernatorial survival. My findings for both types of elections agree about the positive relationship between election fraud and the length of terms in office.

The second "appointment" period(2005-2012) shows in Table 2 that while Putin's electoral support fails to exhibit statistical significance, in the full model, voter turnout demonstrates negative effect: a unit increase in turnout decreases a hazard of Kremlin's punishment

by about $62\%(1-e^{-0.98})$. The same is partially true for turnout associated with the parliamentary election: while the second model demonstrates that higher turnout decreases hazard of being removed from the office by $69\%(1-e^{-1.16})$, it fails to display statistical significance in the full model (See Table 3). The electoral anomalies in the presidential election show inconsistent signs of effects across the models: in the first two models the negative sign of f_i coefficient meets my expectation that election fraud decreases the hazard of removal by $24\%(1-e^{-0.27})$, whereas in the third model it exhibits a positive effect with election fraud reducing the hazard by almost 99% $(e^{0.69}-1)$. In the Table 3 f_i associated with the parliamentary election also displays significant positive effects, running against my expectations. While for the presidential election f_e fails to demonstrate any non-null findings, for the parliamentary election the full model displays that extreme fraud can decrease the hazard removal by about $93\%(1-e^{-2.7})$. Finally, the signaling approach for reduced models displays mixed findings for both types of elections: the abolition of gubernatorial elections is followed by the hazard's decrease at presidential and increase at parliamentary elections. Given my mixed findings, the second hypothesis stating that in the 2005-2012 with abolition of gubernatorial elections would lead to increase in election fraud and decrease in the hazard of punishment, is only partially confirmed. One of the most feasible explanations discussed in Reisinger and Moraski (2013) can be the factor of global economic crisis, which impacted the Russian economy and increased public dissatisfaction with poorly performing governors. The Kremlin's replacement of governors due to purely economic rather than loyalty-related reasons could interfere with my basic findings.

The "post-appointment" electoral period (2012-2016) demonstrates that, in the full model, turnout associated with presidential elections exhibits a positive effect: a unit increase in turnout increases hazard by about $95\%(e^{0.67}-1)$. The finite mixture measures associated with the presidential election show consistent negative effects across the models. For instance, in the full model, a unit increase in f_i decreases hazard by $81\%(1-e^{-1.66})$, and in f_e by $57\%(1-e^{-0.86})$. In the parliamentary elections, extreme fraud yields a positive and

statistically significant effect: for instance, in the full model, a unit increase in f_i increases hazard of removal by $8\%(e^{0.08}-1)$. At last, my findings with respect to the signaling measures in the presidential elections contradict theoretical expectations: in the full model, a proportion of 0s and 5s appearing in the last digit of percentages demonstrate an increase in the hazard by about $10\%(e^{0.09}-1)$ for turnout and $77\%(e^{0.57}-1)$ for the vote shares. In the parliamentary elections none of the signaling measures demonstrate statistically significant effects.

Hence, in the third period while the restoration of gubernatorial elections has led to increased gubernatorial punishment for signaling-related election fraud at the presidential elections and extreme fraud at the parliamentary elections, the effects of anomalies measured by the finite mixture model at the presidential election yield the positive sign, suggesting that the latter can be more beneficial for survival prospects compared to the parliamentary elections. Therefore, my third hypothesis, claiming that the restoration of gubernatorial elections would eventually lead to governors being punished for fraud, is only partially confirmed by my data analysis.

6 Conclusion

In this paper it is argued that, along with such factors as electoral support and turnout, the presence of anomalies in both Russian presidential and parliamentary elections significantly impact gubernatorial survival strategies.

The history of gubernatorial survival in Russia can be roughly divided into three periods. In the first period, spanning the mid-1990s and early 2000s, Russian governors used strategies of bargaining, in which powerful regions provided the center with favorable electoral outcomes in exchange for political, institutional and financial resources. The second period describes the political recentralization of the early and middle 2000s, when the revision of bargaining agreements and the imposition of electoral signaling incentivized the governors to signal

their loyalty to the Center by means of fraudulently augmented electoral results, in order to receive certain rewards, such as political survival, in exchange. If prior to 2005, the possibility of electoral punishment by regional constituencies potentially deterred governors from committing election frauds in the regions, then after 2005, with the replacement of gubernatorial elections by appointment procedures, the non-loyal governors could easily lose a seat for failing to provide a certain level of "fraudulent" political outcomes to the Kremlin. Finally, the third period, symbolizing the return of the gubernatorial elections, is expected to impact the gubernatorial strategies by imposing greater constraints on the organization of election fraud, thus, as my formal model predicts, decreasing chances of gubernatorial survival.

My paper's findings are somewhat mixed. In the first period, the autocrat's increasing demand for greater loyalty results in a positive association between election fraud and gubernatorial survival. In other words, my empirical evidence suggests that even in the period preceding the abolition of gubernatorial elections, electoral anomalies can be viewed as significant factor of gubernatorial continuation in office. In the second period, as shown in my data analysis, the abolition of gubernatorial elections is followed by a decrease in the hazard of gubernatorial removal in the presidential elections, and an increase in the parliamentary elections. The observed contradiction can perhaps be explained by the consequences of the global economic crisis, which incentivized the Kremlin to replace governors on purely economic grounds, rather than the loyalty-related purposes described in the signaling model. Finally, the third period yields quite mixed findings for the presidential elections: according to the data, the restoration of gubernatorial elections eventually leads to gubernatorial punishment for election fraud, as the digit-based tests suggest, which, however, contradicts the effects of the finite mixture estimates on gubernatorial survival.

In general, this paper helps us to reconsider the role of election fraud in the Russian national elections by viewing it as a crucial factor of gubernatorial survival strategies and regime's internal sustainability.

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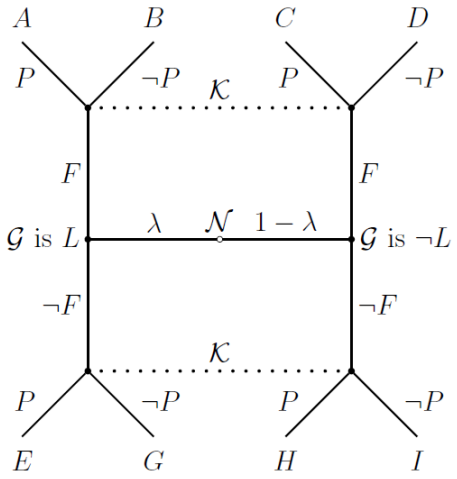
Figure 1: Game Diagram

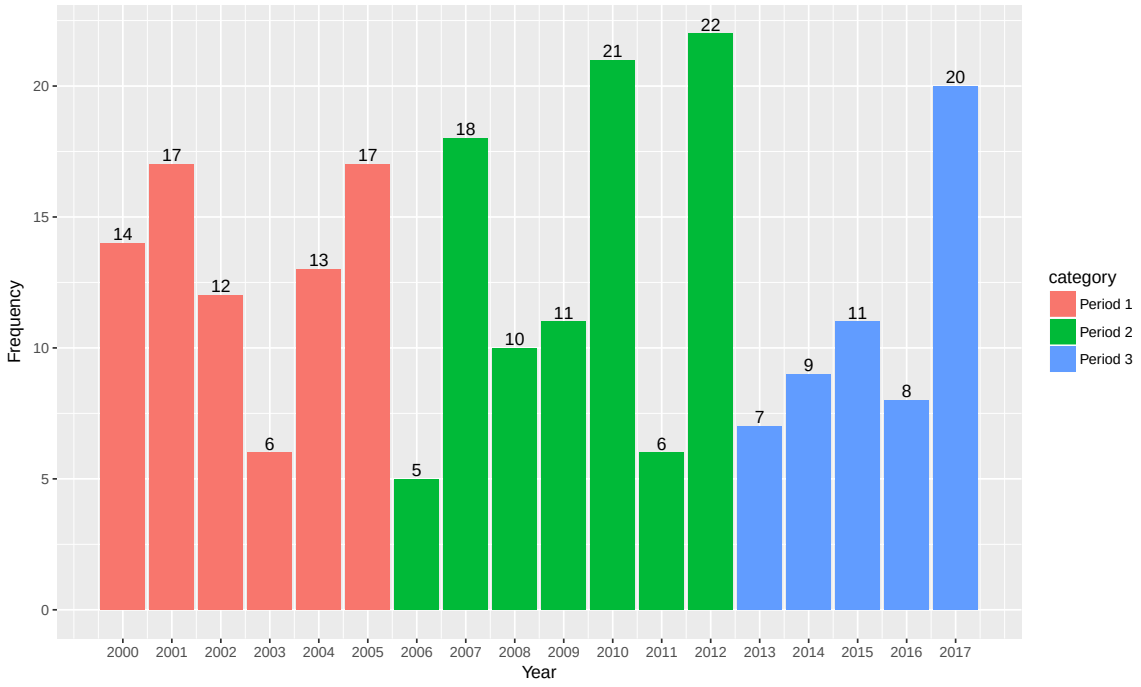


symbol	$\mathcal{G}$	$\mathcal{C}$
A	$-w-p$	$v-p$
B	$-w+t$	$(b-1)t+v$
C	$-w-p$	$v-p+d$
D	$-w+(b+1)t$	$v-t$
E	$-p$	$-p$
G	t	$(b-1)t$
H	$-p$	$-p+d$
I	$(b+1)t$	$-t$

Table 1: Major Equilibria

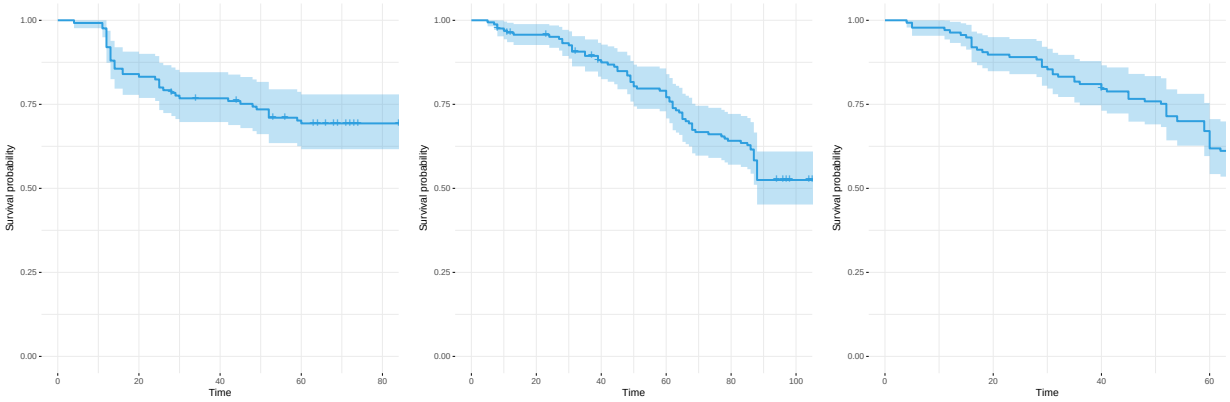
Period	N	**Profile**	**Loyalty**	**Conditions**	**Frauds**	**Autocrat punishes**	**Voters punish**
2000-2005	XV*	$(\neg F_1, \neg F_2, P_1, \neg P_2)$	Uncertain λ	$\frac{t+p}{w+t+p} \leq \lambda < 1 \cap \frac{-(p+t)}{(1-\lambda)t} \geq b \geq \frac{v+t-p}{t}$	No fraud	Yes	Yes
	III*	$(F_1, F_2, \neg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

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.

Table 2: Results from Cox Regression Model for Presidential Elections

	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	0.28***	0.18***	-0.23^{x}	0.19	0.14	0.09	0.06	0.06	-0.17
	(0.05)	(0.02)	(0.13)	(0.18)	(0.19)	(0.1)	(0.2)	(0.2)	(0.19)
Turnout	-0.23	-0.17	0.68*	-0.08	-0.02	-0.98***	0.34***	0.48***	0.67***
	(0.16)	(0.13)	(0.28)	(0.41)	(0.36)	(0.24)	(0.03)	(0.07)	(0.05)
f_i	-0.19	-0.22	-1.02***	-0.24	-0.27**	0.69***	-0.95***	-1.24***	-1.66***
	(0.17)	(0.19)	(0.19)	(0.15)	(0.09)	(0.15)	(0.21)	(0.3)	(0.26)
f_e	-0.16***	-0.17***	-0.24***	0.01	0.07^{x}	0.06	-2.75*	-3.84*	-0.86***
	(0.03)	(0.01)	(0.00)	(0.01)	(0.04)	(0.19)	(1.24)	(1.58)	(0.1)
P05Turnout		0.16**	-0.15*		0.09***	0.08		0.05***	0.09***
		(0.05)	(0.06)		(0.01)	(0.15)		(0.01)	(0.00)
P05Vote		-0.18***	-0.13***		-0.12***	-0.01		0.55**	0.57***
		(0.02)	(0.03)		(0.03)	(0.04)		(0.18)	(0.12)
GRP per capita			0.39***			0.24			0.35***
			(0.03)			(0.21)			(0.02)
Age			1.00***			1.56***			0.84***
			(0.24)			(0.02)			(0.04)
Republic			-0.5**			0.22			-0.03
			(0.16)			(0.24)			(0.08)
Budget			0.74***			0.35***			0.49***
			(0.05)			(0.02)			(0.02)
Obs.	124	124	107	164	164	148	137	137	133
Events	37	37	31	74	74	66	53	53	52
LL	-207	-207	-170	-353	-353	-370	-270	-270	-264
R^2	0.01	0.01	0.05	0.001	0.001	0.13	0.02	0.03	0.08

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

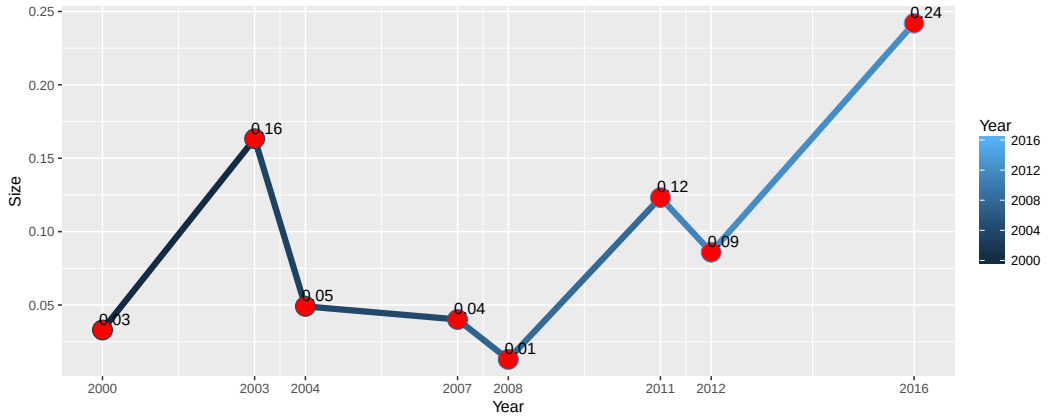
Table 3: Results from Cox Regression Model for Parliamentary Elections

	2000-2005			2005-2012			2012-2016		
	M(01)	M(02)	M(03)	M(04)	M(05)	M(06)	M(07)	M(08)	M(09)
UR	-1.52***	-1.52***	-1.01^{x}	0.26***	0.25***	0.12*	-0.14	-0.13	-0.55
	(0.31)	(0.34)	(0.53)	(0.01)	(0.02)	(0.06)	(0.27)	(0.3)	(0.36)
Turnout	1.79***	1.57***	2.91***	-1.15***	-1.16***	-0.34	-0.11	-0.12	-0.07
	(0.4)	(0.4)	(0.08)	(0.15)	(0.12)	(0.29)	(0.14)	(0.18)	(0.31)
f_i	-0.66***	-0.33**	-1.66***	0.81***	0.76***	0.26***	-0.06	-0.06	0.06
	(0.29)	(0.12)	(0.24)	(0.12)	(0.07)	(0.06)	(0.11)	(0.1)	(0.12)
f_e	-8.51***	-9.78***	-5.84*	-0.14	-0.33	-2.7*	0.13***	0.13***	0.08*
	(2.5)	(2.42)	(2.49)	(0.31)	(0.54)	(0.65)	(0.01)	(0.02)	(0.04)
P05Turnout		-0.35***	-0.01		-0.03**	0.09		-0.01	0.04
		(0.08)	(0.08)		(0.01)	(0.15)		(0.04)	(0.06)
P05Vote		-0.3	-0.21		0.22*	0.42***		0.00	0.04
		(0.22)	(0.29)		(0.11)	(0.02)		(0.00)	(0.03)
GRP per capita			0.3			0.18			0.31***
			(0.87)			(0.22)			(0.02)
Age			-0.31			1.42***			0.78***
			(0.25)			(0.02)			(0.03)
Republic			-27.79***			0.09			-0.14
			(1.5)			(0.24)			(0.17)
Budget			1.52***			0.27***			0.5***
			(0.08)			(0.03)			(0.00)
Obs.	124	124	107	164	164	148	137	137	133
Events	37	37	31	74	74	66	53	53	52
LL	-26	-26	-26	-418	-418	-310	-270	-270	-264
R^2	0.03	0.03	0.06	0.02	0.03	0.1	0.01	0.01	0.06

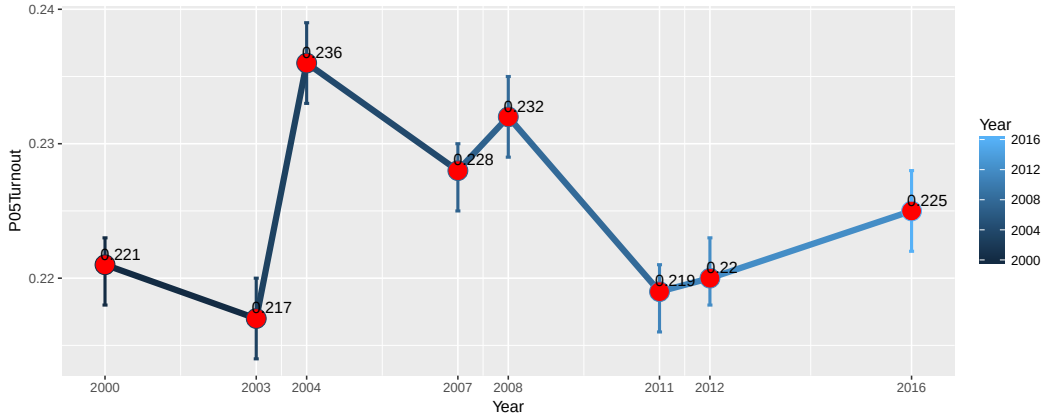
Notes: Clustered standard errors in parentheses. Significance levels: $^{x}p \leq 0.1$, $^{\star}p \leq 0.05$, $^{\star\star}p \leq 0.01$, $^{\star\star\star}p \leq 0.001$.

A Appendix. Tables and Figures

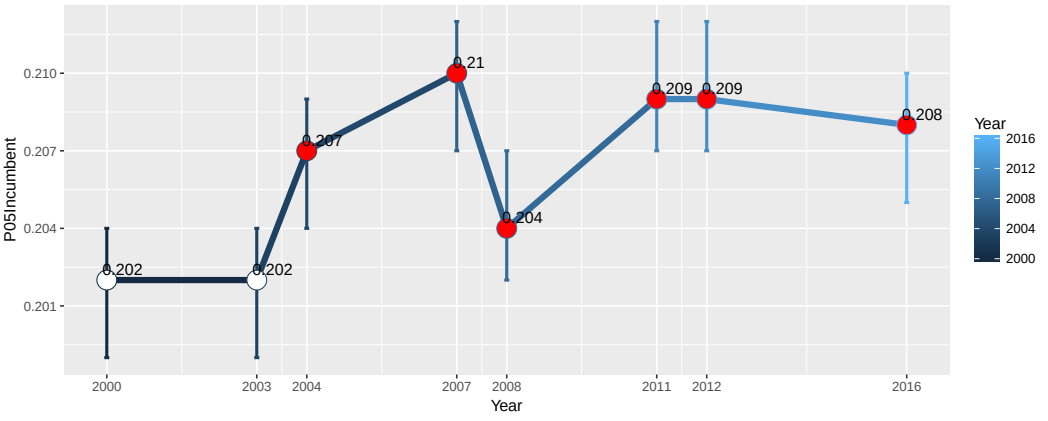
Figure A1: Measures of Election Fraud



(a)



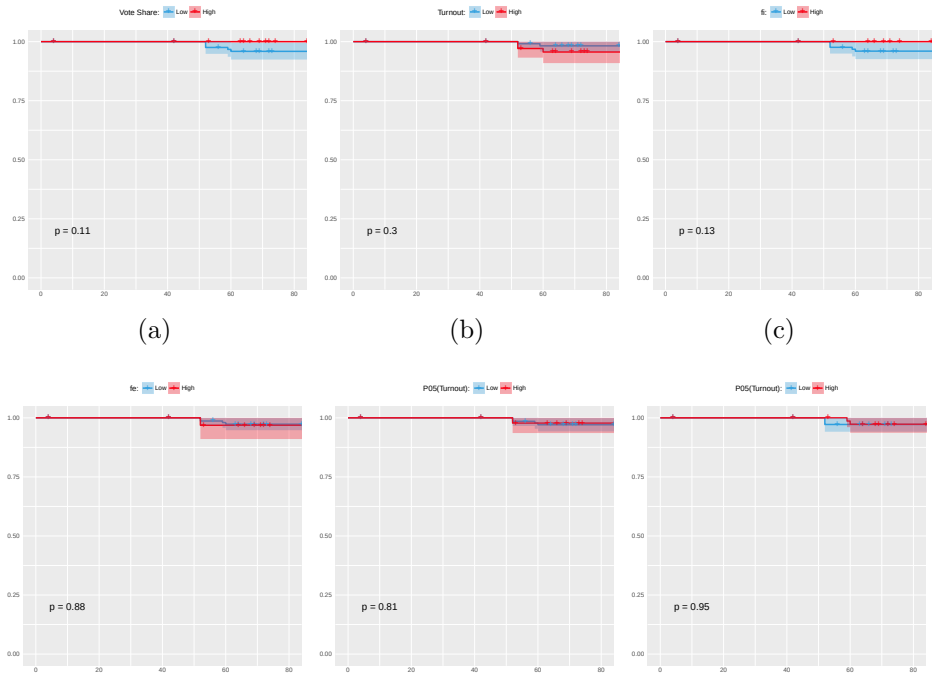
(b)



(c)

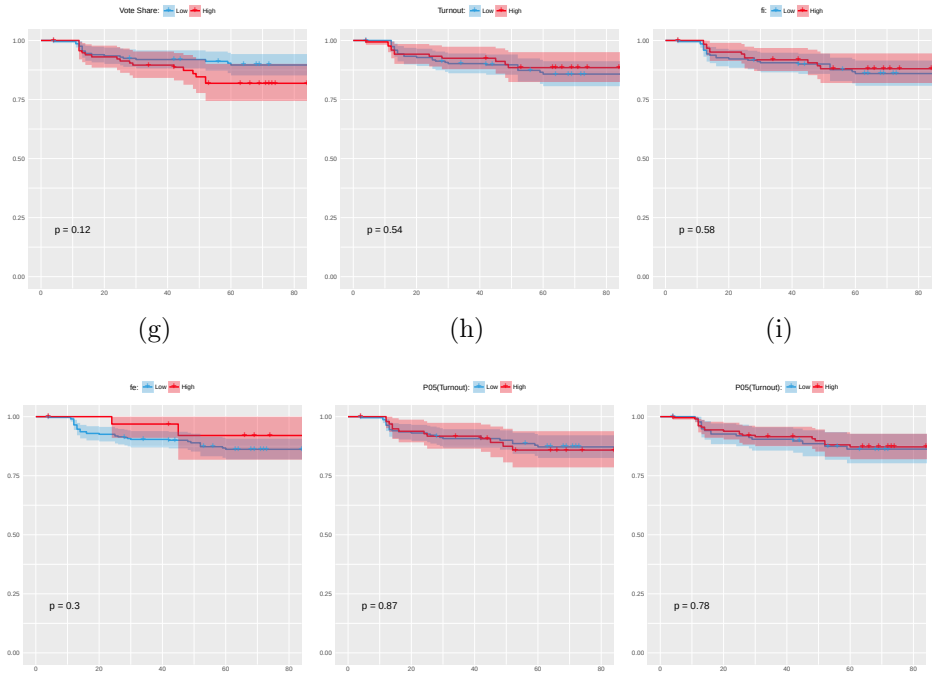
Notes: Red-filled circle – statistically significant measure. (a) finite mixture estimates: $f_i + f_e$; (b) the national mean of a variable indicating whether the last digit of the rounded percentage of turnout is 0 or 5; (c) the national mean of a variable indicating whether the last digit of the rounded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

Figure A2: Kaplan-Meier Survival Curve (Period 1)



(a) (b) (c)

(d) (e) (f)

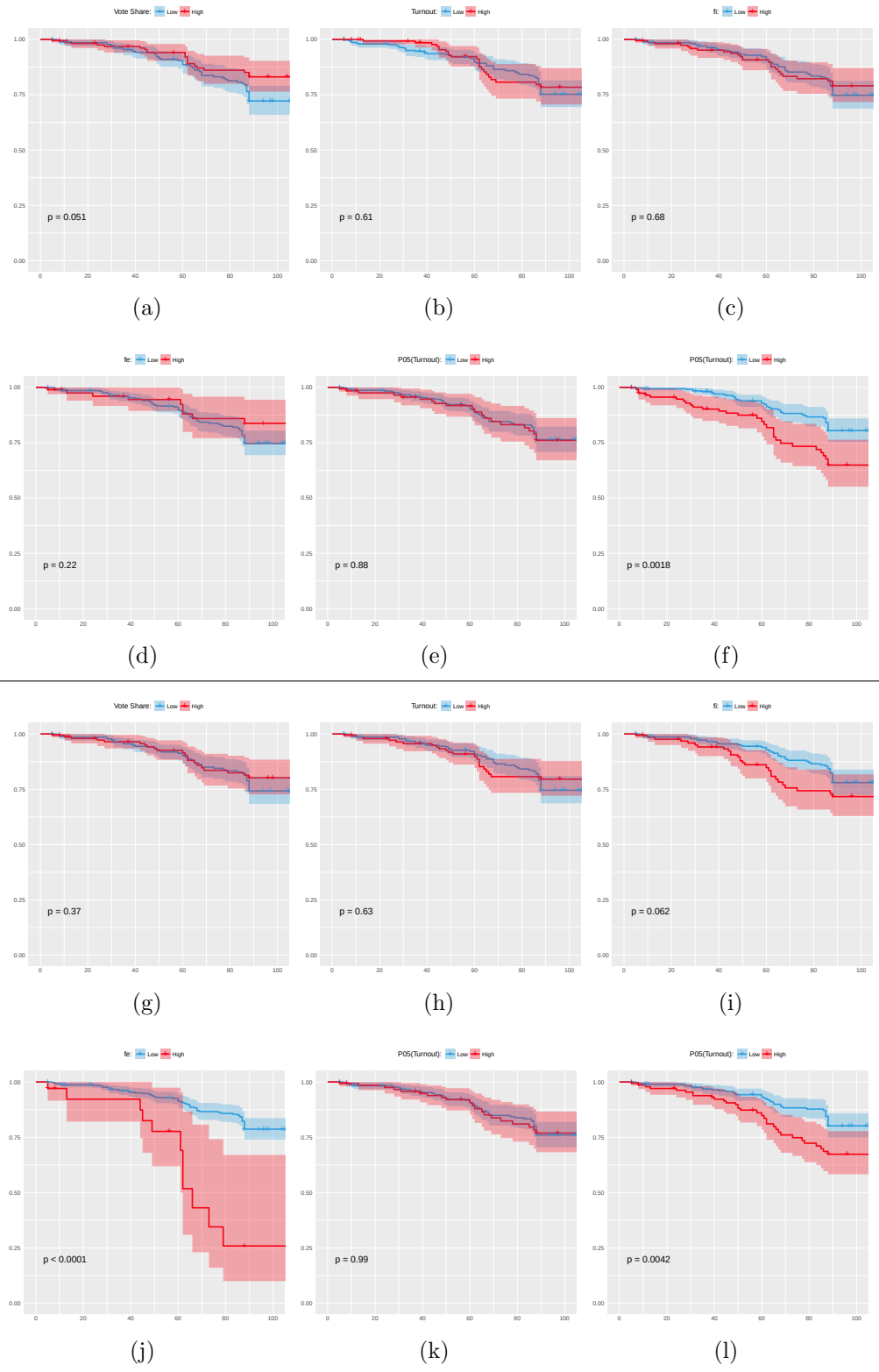


(g) (h) (i)

(j) (k) (l)

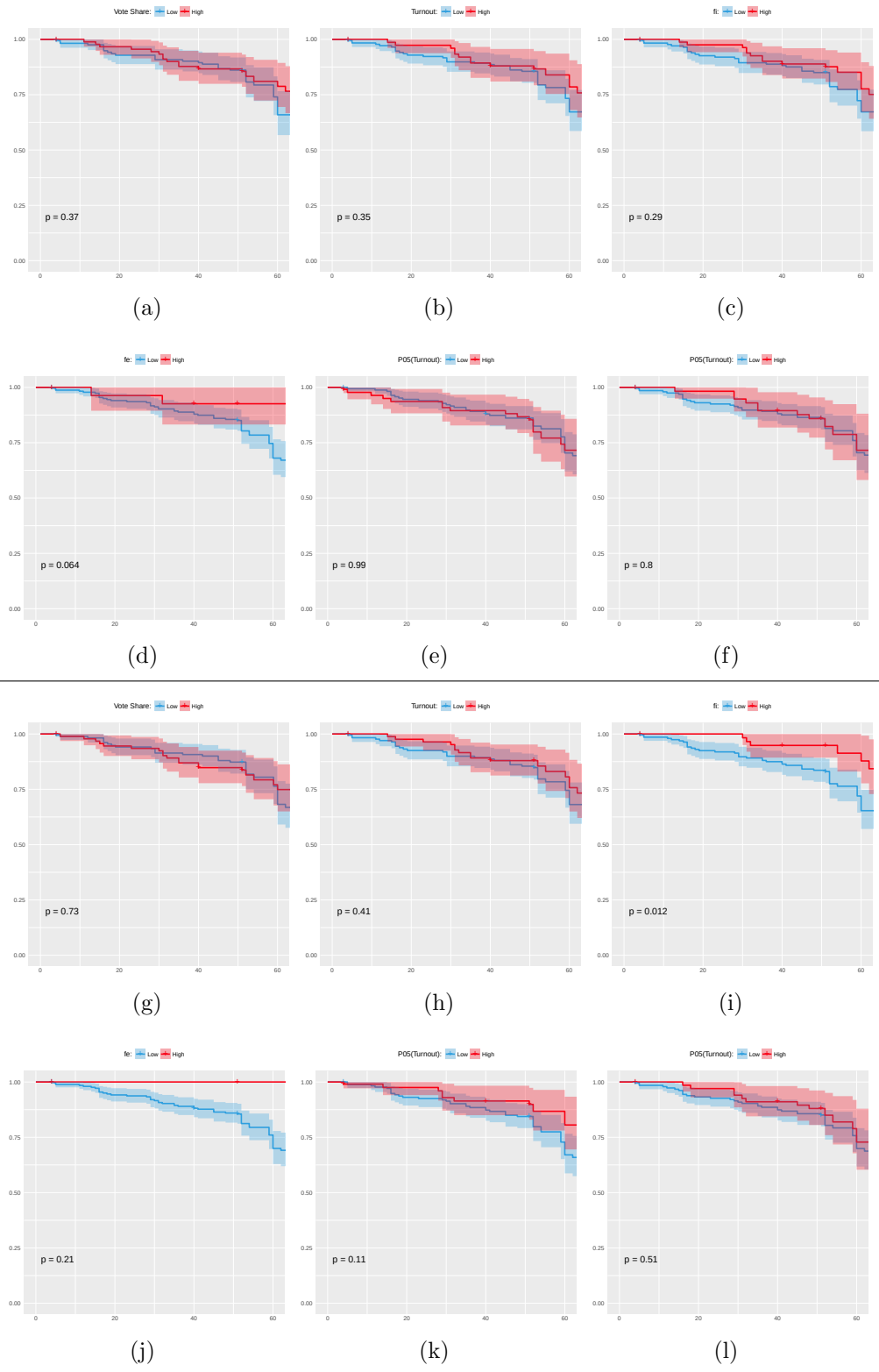
Notes: Above the line – parliamentary election; below the line – presidential election. (a),(g) – Vote share; (b),(h) – Turnout; (c),(i) – f_i; (d),(j) – f_e; (e),(k) – P05(Turnout); (f),(l) – P05(Votes).

Figure A3: Kaplan-Meier Survival Curves (Period 2)



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

Figure A4: Kaplan-Meier Survival Curves (Period 3)



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

$\lambda = 0 \Rrightarrow t(b+1) \geq w - p \cap v + d \geq t - p \cap p - t \geq d$

$\lambda = 1 \Rrightarrow t \geq w - p \cap t(b-1) \geq -p$

$0 < \lambda < 1 \Rrightarrow t + p \geq w \cap t(b+1) + p \geq w \cap v + t(b-1) + p \geq 0 \cap v + d + p \geq t$

$\cap$t(b+1)+p$\geq \lambda bt \geq (1-\lambda)d + t - p$

$$\Rightarrow \begin{cases} 1 + \dfrac{t+p}{bt} \leq \lambda \leq 1 - \dfrac{t(b-1)+p}{bt+d}, & \text{if } b < 0 \\ \lambda \geq 1 + (t-p)/d, & \text{if } b = 0, \text{ requires } p \geq t \\ 1 + \dfrac{t+p}{bt} \geq \lambda \geq 1 - \dfrac{t(b-1)+p}{bt+d}, & \text{if } b > 0 \end{cases}$$

$b < 0$: $\quad 1 + \dfrac{t+p}{bt} = 0$ if $b = -\dfrac{t+p}{t}$, $\quad 1 - \dfrac{t(b-1)+p}{bt+d} = 1$ if $b = \dfrac{t-p}{t}$

$b > 0$: $\quad \lim_{t\to\infty}(1 + \dfrac{t+p}{bt} = 1 + \dfrac{1}{b}$, $\quad \lim_{t\to\infty}(1 - \dfrac{t(b-1)+p}{bt+d} = \dfrac{1}{b}$