Working Paper 2020-95

Explaining the Tenure of Incumbent Governors in Russia: A Qualitative Comparative Analysis

Ekaterina Paustyan
Department of Political Science
Central European University

Abstract: This paper studies the puzzle related to the tenure of incumbent governors in Russia. It investigates what conditions have accounted for the reappointment of incumbents in the period of 2008-2012. Crisp-set Qualitative Comparative Analysis of 25 cases reveals that, in contrast to expectation, the ability to deliver high voting results at national elections has not guaranteed the reappointment of incumbent governors. On the other hand, the failure to do so has been among sufficient conditions leading to the dismissal of incumbents. The analysis also detects two sufficient combinations of conditions accounting for gubernatorial reappointment. They are in line with the argument that the incumbents stay in office as long as they fulfill the main ”federal priorities” of high voting results and political stability in the regions.

Keywords: Russia, incumbent governors, reappointment, dismissal, QCA

Explaining the Tenure of Incumbent Governors in Russia: A Qualitative Comparative Analysis

Ekaterina Paustyan*

PhD candidate, Central European University**

Abstract

This paper studies the puzzle related to the tenure of incumbent governors in Russia. It investigates what conditions have accounted for the reappointment of incumbents in the period of 2008-2012. Crisp-set Qualitative Comparative Analysis of 25 cases reveals that, in contrast to expectation, the ability to deliver high voting results at national elections has not guaranteed the reappointment of incumbent governors. On the other hand, the failure to do so has been among sufficient conditions leading to the dismissal of incumbents. The analysis also detects two sufficient combinations of conditions accounting for gubernatorial reappointment. They are in line with the argument that the incumbents stay in office as long as they fulfill the main "federal priorities" of high voting results and political stability in the regions.

Keywords: Russia, incumbent governors, reappointment, dismissal, QCA

---

*I would like to thank Ora John Reuter, Andrey Starodubtsev, Nena Oana, Claude Rubinson and the anonymous reviewer for helpful comments.

**Paustyan_Ekaterina@phd.ceu.edu.

1 Introduction

This paper studies the puzzle posed by the tenure of incumbent governors in Russia.[1] In September 2004, President Putin proposed to abolish popular elections of regional executives in all Russian regions and introduced a new system of appointment that was in force between 2005 and 2012.[2] The decision to end gubernatorial elections, however, implied the end of the term limit in office—the maximum of two five-year terms. As a result, some incumbent governors were reappointed and remained in office, with their tenure not being limited by any institutional constraints such as the term limit or compulsory retirement age.

There is consensus in the literature that the results of national elections determine the (re)appointment prospects of governors (Reuter and Robertson, 2012; Reuter, 2013; Rochlitz, 2016; Reisinger and Moraski, 2017). As the heads of ethnic regions deliver the highest electoral results (Reisinger and Moraski, 2010), we should expect that they have the best chances of staying in office. However, this is not the case. It is not the incumbents in the ethnic regions (*republics*) but the incumbents in the regions with a predominantly ethnic Russian population (*oblasts* and *krais*) that have remained in office the longest. For example, the governor of Belgorod Oblast Evgeny Savchenko has been in office since 1993 and is currently serving his seventh consecutive term, which implies that the region has not seen a transfer of power for the past quarter-century. To address the puzzle related to the tenure of incumbent governors in Russia, this paper raises the following research question: *What conditions have accounted for the reappointment of incumbent governors in Russia between 2008 and 2012?*

[1] There are different types of subnational units in Russia including republics, oblasts, krais, cities of federal significance, autonomous okrugs, and an autonomous oblast. In the paper, I refer to all of them as regions and to their heads as governors or regional executives.

[2] In 2012, popular elections were re-introduced.

The analysis concentrates on the period of 2008-2012 that corresponds to the presidency of Dmitry Medvedev. As previous studies suggest that, in contrast to Putin, Medvedev was less willing to reappoint incumbent governors (Turovskii, 2010; Blakkisrud, 2011), this paper explores why he nonetheless reappointed some of them. The analysis investigates an interplay of such conditions as the ability of governors to mobilize voters at national elections and to keep stability in the regions, the effectiveness of governors in managing their territories, as well as the popularity of governors. Rather than untangling their average effect, this study aims to detect what conditions or combinations of conditions have been necessary and sufficient for gubernatorial reappointment and dismissal.

Crisp-set Qualitative Comparative Analysis of 25 cases reveals that delivering high voting results at national elections, contrary to expectation, has not guaranteed the reappointment of incumbent governors. On the other hand, the failure to deliver high voting results has been among sufficient conditions leading to the dismissal of incumbents. The analysis also detects two sufficient combinations of conditions accounting for the reappointment that confirm the argument that the incumbents remain in office as long as they fulfill the main "federal priorities" of high voting results and political stability (Busygina et al., 2018; Libman and Rochlitz, 2019).

The paper is structured following a standard protocol of Qualitative Comparative Analysis. The next section outlines the puzzle of gubernatorial tenure. The third section conceptualizes the outcome and provides background on the reappointment of incumbents between 2008 and 2012. The fourth section reviews relevant literature and lists the main causal conditions that are expected to produce the outcome. The fifth section describes the methodology, data, and the calibration strategy. The sixth section presents and discusses the results. The final section concludes.

2 Gubernatorial tenure in Russia

Russia's national executive Boris Yeltsin first spoke in the spring of 1991 about the creation of the position of a regional executive (a governor) who would be elected by the population (Tolz and Busygina, 1997, 410). First gubernatorial elections took place in Moscow, Leningrad (later renamed in Saint Petersburg), and the Republic of Tatarstan in June 1991. However, because some regional executives supported the August 1991 anti-democratic coup d'état, direct elections in some regions were postponed and Yeltsin received the right to dismiss and appoint governors there. While the newly adopted 1993 Constitution of the Russian Federation prescribed that all regions are entitled to have elected executives, it did not specify the modes of their selection (Golosov, 2018, 2). As a result, they have varied over time.

In the 1990s, gubernatorial elections were postponed in all regions with the exception of the republics because their own legislation required their heads to be popularly elected or appointed by the regional legislative assembly. In October 1994, Yeltsin signed a decree stating that, until indicated otherwise, popular elections of regional executives could take place only if he authorized them. In August 1995, Yeltsin permitted gubernatorial elections in Sverdlovsk Oblast, but already in September he signed another decree to prolong the moratorium on direct elections until 1996 (Gel'man et al., 2000, 99). Eventually, Yeltsin allowed elections in twelve other regions in December 1995. However, as many incumbents lost to opposition candidates from the Communist Party, he again postponed gubernatorial elections. Previous accounts suggest that this prohibition was supposed to "facilitate the mobilization of voters" by the regional governments in support of Yeltsin's re-election next summer (Gel'man et al., 2000, 98). In addition, from late 1995 to early 1996, several incumbents were dismissed because they lacked necessary mobilization abilities (Turovskii, 1996).

The first round of country-wide gubernatorial elections took place between 1996 and 1997 following Yeltsin's re-election in July 1996. In this period, 55 regions elected their heads; 48 of them had elections for the first time since 1991 (Solnick, 1998, 48). Ethnic regions, however, held elections at least once before 1996. The Soviet incumbents tended to receive the majority of votes at these elections due to strong political machines that they managed to build there (Kahn, 2002; Hale, 2003). As a result, in the 1990s, executives in the ethnic regions had stayed in office the longest.

In September 2004, President Putin proposed to abolish direct gubernatorial elections in throughout Russia, including the ethnic regions. The appointment procedure initially implied that the president nominated a gubernatorial candidate for the approval of a regional legislative assembly, which formally had an option to reject a suggested candidate. In December 2005, this procedure was modified: it was the largest party in a regional legislative assembly–as a rule the United Russia party (*Edinaya Rossiya*)–that could propose potential candidates to the president. Since July 2009, following consultations with the Presidential Administration, the leadership of United Russia submitted a list of at least three candidates to the president. After that, the president selected one candidate and nominated him or her for the approval of the regional legislative assembly. This approval was rather symbolic as assemblies unanimously approved the nominated candidates.

Governors were appointed for five years, yet the president could dismiss the incumbent earlier and appoint a new governor instead. In cases of reappointment, however, the tenure of the incumbent could be quite long as he or she did not face any institutional constraints. Although in 1999 gubernatorial tenure was formally limited to the maximum of two five-year terms, in early 2001 the law was reinterpreted in such a way that the counting of terms began from their first election after the law was adopted in 1999 (Slider, 2008, 110). Consequently, the incumbents could remain in office for more than the original term limit. For example, the President of the Republic of Tatarstan Mintimer Shaimiev had

already served two terms in the 1990s, yet ran for office in 2001 and was again re-elected.

The 2004 decision to end gubernatorial elections implied complete abolishment of the term limit as there were no formal constraints regarding the reappointment of incumbents. Even following the re-introduction of popular elections in 2012, the incumbents could still remain in office because in 2015 President Putin signed an amendment to federal law, which stated that the terms of governors are to be counted from 2012. Table 1 below, however, suggests that it is not the incumbents in the *republics* but the incumbents in *oblasts* and *krais* that have stayed in office the longest in the 2000s.

Table 1: Tenure of incumbent governors in Russia, 2005-2020

No	Region	Governor	Term starts	Reappointment year	Reelection year	Term ends	Tenure
1	Kaluga Oblast	Artamonov	2000	2005; 2010	2015	2020	20
2	Marii El Republic	Markelov	2000	2009	2015	2017	17
3	Udmurtia Republic	Volkov	2000	2009	-	2014	14
4	Krasnodar Krai	Tkachev	2000	2007; 2012	-	2015	15
5	Astrakhan Oblast	Zhilkin	2004	2009	2014	2018	14
6	Belgorod Oblast	Savchenko	1993	2007	2012; 2017	In office	27
7	Kemerovo Oblast	Tuleev	1997	2005; 2010	2015	2018	21
8	Kurgan Oblast	Bogomolov	1996	2009	-	2014	18
9	Vladimir Oblast	Vinogradov	1996	2005; 2009	-	2013	17
10	Kursk Oblast	Mikhailov	2000	2005; 2010	2014	2018	18
11	Penza Oblast	Bochkarev	1998	2005; 2010	-	2015	17
12	Tambov Oblast	Betin	1995; 1999	2005; 2010	-	2015	20
13	Ulyanovsk Oblast	Morozov	2004	2006; 2011	2016	In office	16
14	Lipetsk Oblast	Korolev	1998	2005; 2010	2014	2018	20
15	Chita Oblast (Zabaikalsk Krai)	Geniatulin	1996	2008	-	2013	17

Source: Author's dataset.

To address this puzzle, the analysis concentrates on the reappointment of incumbent governors by President Medvedev between 2008-2012. The next section describes the dataset of gubernatorial reappointments and dismissals.

3 Reappointment of incumbent governors between 2008 and 2012

The initial procedure of appointment involved presidential nomination of a gubernatorial candidate for the approval of a regional legislative assembly. Before the nomination, the president was supposed to consult with a presidential envoy (*polpred*) in the corresponding federal district (Goode, 2007, 372). The regional legislative body had the option to reject a suggested candidate and to propose a new candidate. However, if the regional legislative body rejected the candidate nominated by the president three times, the president could dissolve it. The appointment procedure was slightly modified in December 2005, as along with a presidential envoy, the largest party in a regional legislative assembly could also suggest potential candidates to the president.

Since July 2009, it was the political party with the most seats in a regional assembly that proposed at least three gubernatorial candidates to the president. When the term of an incumbent governor was expiring, the regional leadership of the United Russia party (which had the majority in all regional parliaments) started official consultations with the Presidential Administration concerning potential gubernatorial candidates. At this stage, the Presidential Administration played a crucial role approving potential candidates. After that, 45 days before the expiration of the gubernatorial term, the leadership of United Russia submitted a list of candidates to the president. In ten days, the president selected one candidate and nominated him or her for the approval of the regional legislative assembly. However, as before, their approval tended to be rather symbolic; assemblies unanimously approved nominated candidates, who were appointed for five years.

To explain the long-term tenure of incumbent governors, this analysis concentrates on reappointments made by President Medvedev between 2008 and 2012. It is selected because previous accounts suggest that Medvedev explicitly intended to replace incumbent

governors (Turovskii, 2010; Blakkisrud, 2011). Some scholars even argue that by dismissing the incumbents he attempted to carry out "progressive political change in Russia" (Moses, 2014, 1398). In the analysis I have relied on the newly constructed dataset of gubernatorial reappointments and dismissals that covers the period from May 2008 when President Medvedev made his first appointment to May 2012 when Medvedev's presidential term came to an end.[3]

As the first step, I compiled a list of all incumbent governors relying on the public dataset of Russian governors' biographies created by the International Center for the Study of Institutions and Development (ICSID) at the Higher School of Economics in Moscow.[4] The list included 50 incumbents, out of which 14 were reappointed by President Medvedev. Out of 36 incumbents who left their office, I excluded 18 cases of promotions and resignations[5] as well as 5 cases when incumbents publicly asked the president not to consider them as potential candidates,[6] and two cases, for which no systematic data were available.[7] As a result, the data set includes 14 reappointments and 11 dismissals–25 cases in total (see Table A.1). The next section lists the main conditions that are expected to produce the outcome–gubernatorial reappointment.

---

[3]In the 1990s, there were 89 subnational units in Russia. Between 2004 and 2008, their number decreased to 83 because of regions' merger. As a result, there were 83 regions in Russia between 2008 and 2012.

[4]The dataset and the codebook are available at https://iims.hse.ru/en/csid/databases.

[5]I excluded the following cases of promotions: Viktor Tolokonskii in Novosibirsk Oblast, Viktor Ishaev in Khabarovsk Krai, Aleksandr Khloponin in Krasnoyarsk Krai, and Valentina Matvienko in Saint Petersburg and resignations: Vyacheslav Pozgalev in Vologda Oblast, Mikhail Kuznetsov in Pskov Oblast, Yury Evdokimov in Murmansk Oblast, Egor Stroev in Oryol Oblast, Dmitry Zelenin in Tver Oblast, Yury Luzhkov in Moscow, Murtaza Rakhimov in Bashkortostan, Murat Zyazikov in Ingushetia, Vyacheslav Shtyrov in Sakha (Yakutia), Roman Abramovich in Chukotka, Segei Katanodov in Karelia, Aleksandr Chernogorov in Stavropol Krai, Pyotr Sumin in Chelyabinsk Oblast, Sergey Dar'kin in Primorsky Krai

[6]Mintimer Shaimiev in Tatarstan, Yury Neelov in Yamalo-Nenets Autonomous Okrug, Nikolai Volkow in Jewish Autonomous Oblast, Vladimir Chub in Rostov Oblast, and Boris Gromov in Moscow Oblast.

[7]Aleksandr Lebed' in Khakassia and Aleksandr Filipenko in Khanty-Mansy Autonomous Okrug.

4 Conditions of gubernatorial reappointment

The *"top-down"* explanation tends to dominate the existing literature on gubernatorial (re)appointment. It posits that the (re)appointment of governors has been entirely depended on the Presidential Administration. This implies that as long as governors fulfill the main "federal priorities" of high electoral results and political stability they could remain in office (Busygina et al., 2018; Libman and Rochlitz, 2019). Empirical studies confirm that the results of the State Duma elections had the strongest effect on (re)appointment chances of governors (Reuter and Robertson, 2012; Rochlitz, 2016; Reisinger and Moraski, 2017). Based on these results, *the ability of governors to mobilize voters* is the first condition in the analysis.

Electoral incentives, however, are likely to matter more in the periods before elections and less in the periods after elections (Reuter and Robertson, 2012, 1016). As governors play a vital role in maintaining political stability in the regions (Sharafutdinova, 2010; Zubarevich, 2015), this condition could account for the reappointment of incumbents during the economic and financial crisis of 2008-2009 and a wave of mass protests of 2011-2012. Consequently, *the ability of governors to keep stability* in the regions is the second condition in the analysis. So far, it has not been systematically evaluated by existing empirical studies.

According to the alternative, *"bottom-up"* explanation, the efficiency of incumbents in governing their territory as well as their popularity could also account for their reappointment. It is plausible that the former is likely to matter in times of economic crisis (Konitzer, 2005). However, Reuter and Robertson (2012) find "weak and inconsistent evidence" that economic indicators have any effect on gubernatorial (re)appointment. Rochlitz (2016, 15) even shows a negative relationship between average economic

performance of a governor[8] and the likelihood of his or her (re)appointment. This study evaluates whether the efficiency of governors as perceived by the Kremlin has played any role in the reappointment process in times of crisis. Therefore, *the efficiency of governors in managing their territory* is the third condition included in the analysis.

Additionally, previous empirical studies provide mixed evidence concerning the impact of the popularity of governors on their (re)appointment chances. Reuter and Robertson (2012, 1034) find that the relationship between the popularity of incumbents and the likelihood of their (re)appointment has changed over time, playing a more important role in the period prior to 2008. By contrast, Rochlitz (2016, 15) finds a strong positive effect of popularity on (re)appointment chances of governors. This analysis assesses whether the popularity of incumbents has played any role at the later stage of the appointment process; consequently, *the popularity of governors* is the fourth condition.

The broad expectation is that these conditions lead to the reappointment of incumbent governors in their presence. However, this analysis is different from previous accounts in three respects. First, rather than untangling their 'average effect' it detects what conditions or combinations of conditions are necessary and/or sufficient for gubernatorial reappointment. Second, it concentrates on the reappointment of incumbent governors. This outcome has not been tackled by any of previous studies that focus on gubernatorial appointments (Reuter and Robertson, 2012; Rochlitz, 2016; Reisinger and Moraski, 2017). Third, this is the first paper that employs Qualitative Comparative Analysis (QCA) to explain the reappointment of incumbent governors in Russia.[9] As a result, this study builds on the assumption of asymmetric causation and, therefore, performs separate analyses of gubernatorial reappointment and dismissal.

[8] Rochlitz (2016, 12-13) describes in detail the constructed measure.

[9] Although recently, several QCA studies on regional governments have been published (e.g., Blatter et al., 2010; Mello, 2020; Oppermann and Brummer, 2020).

The theoretical expectation is that *the ability of governors to mobilize voters* has been necessary for gubernatorial reappointment as necessity implies that the outcome could not be achieved without the condition. Sufficiency, on the other hand, requires the presence of a condition or combinations of conditions where the outcome is also present. The *"top-down"* logic of gubernatorial reappointment suggests that *the ability of governors to mobilize voters* combined with *the ability of governors to keep stability in the regions* is sufficient for gubernatorial reappointment. Following Reuter (2013), who finds that popular governors can better mobilize voters for the United Russia party, the third expectation is that *the ability to mobilize voters* combined with *the popularity of governors* is also sufficient for the reappointment of incumbents. The final expectation is that *the ability to mobilize voters* combined with *the effectiveness of incumbent governors in managing their territory* is sufficient for reappointment.

The present analysis is limited to political and economic factors and does not account for all potentially relevant factors. For example, Petrov (2010) claims that a public conflict between a governor and the center has often led to the dismissal of the incumbent. Indeed, Moscow's Yury Luzhkov, reappointed in 2007, was dismissed in 2010 because of a conflict with President Medvedev. Similarly, Bashkortostan's Murtaza Rakhimiv and Dagestan's Mukhu Aliev, both reappointed in 2006, resigned in 2010 because of their conflict with the center. Such conflicts, however, tended to happen quite sporadically and require a separate consideration and, therefore, are not included in this analysis.

Some authors also emphasize the increasing role of people with a background in security and military services (*siloviki*) under Putin and suggest that the president could have a motivation to dismiss an incumbent and to appoint a *silovik* instead (Bremmer and Charap, 2006; Petrov, 2012). However, Buckley et al. (2014) have examined the background of all newly appointed governors and found that *siloviki* accounted for only nine percent of them. Therefore, this condition is not considered in the present analysis.

Finally, as only the party with the majority of seats in a regional legislative assembly had the power to suggest potential gubernatorial candidates to the president, membership of the incumbents in the United Russia party might also matter as it dominated regional assemblies across the country (Petrov and Titkov, 2010; Moses, 2014, 1397). However, Reuter (2010, 2013) demonstrates that strong incumbent governors tended to join United Russia much later than less independent governors. Consequently, in this analysis, I assume that the membership in United Russia is not as important for the incumbents as for the newly appointed governors.

5 Methodology, data and calibration

5.1 Methodology

This study employs Qualitative Comparative Analysis (QCA) as it provides more opportunities for making inferences regarding the cases. QCA belongs to set-theoretic methods that perceive relations between social phenomena as set relations and emphasize complex causality that unfolds through equifinality, conjunctural causation, and asymmetry (Schneider and Wagemann, 2012, 5-6).[10] As other set-theoretic methods, QCA operates on data, which consist of membership scores of cases in sets. The next subsection describes the calibration strategy in more detail.

[10] Equifinality means that several conditions or combinations of conditions can produce the same outcome, therefore, there might be several alternative paths. Conjunctural causation refers to a situation when a single condition leads to the outcome only in a combination with other conditions and may not produce the outcome on its own. Finally, asymmetry suggests that the absence of conditions leading to the outcome may not lead to the absence of the outcome. For this reason, the analysis of occurrence and non-occurrence of the outcome is performed separately. Furthermore, it implies multifinality meaning that the same factor can produce different outcomes depending on the context.

5.2 Calibration of the outcome

The outcome of interest is *the reappointment of incumbent governor* (REAP). As the logic of the outcome concept as well as the data at hand is binary, the outcome was calibrated as a crisp set meaning if a governor was reappointed by President Medvedev he[11] gets 1, if dismissed – 0.

5.3 Calibration of the conditions

As the outcome set has been calibrated as a crisp set, I calibrated the conditions similarly as crisp sets to establish qualitative differences in kind between the cases. The robustness tests confirm that it is not really meaningful to account for differences in degree in the conditions, but not the outcome, when assessing subset relations.[12] Crisp-set QCA (csQCA) operates on sets where cases have either full membership (1) or full non-membership (0) in the sets (Ragin, 1987). The calibration strategy for each condition set is described below.

The ability of governors to mobilize voters (VOT)

The results of the presidential and State Duma elections are of interest to the center. In the 2008 presidential election, Dmitry Medvedev received the majority of votes in all Russian regions. The results of the State Duma elections, however, display more variation across the country.[13] Therefore, I collected the data on the share of the United Russia party in the 2007 and 2011 elections and considered in the analysis the results of the elections that took place prior to the reappointment or dismissal of the incumbent. The database on economic and political indicators for the Russian regions in 1998-2014 provides information

[11] All incumbents in this analysis are males.

[12] I thank Eva Thomann for making this point.

[13] For example, in 2007, the share of votes for the United Russia party varied from 48.78 to 99.36. In 2011, its share varied from 29.04 percent to 99.48 percent.

about the electoral results.[14] To assign membership scores to cases, I set 51 percent as a threshold for inclusion in the set as this denotes a majority of votes in each region.

The ability of governors to keep stability (STAB)

In this analysis, protest activity is taken as a proxy for social and political stability in the Russian regions. There are several sources providing information about protest activity across the country. For example, the Russian protest event database by Lankina[15] contains detailed data on protests across the country. However, it systematically covers mainly political protests and has limited information about their turnout. For this reason, I have relied on the monitoring reports published by the Communist Party that provide extensive data on political, social, and economic protests and their turnout.[16] The data on protests' turnout in each region one year preceding the reappointment or dismissal of the incumbent governors were employed in the calibration. Based on the observable gaps in the raw data, I set the inclusion threshold at 20,000 participants.[17] The incumbents in the republics of Karachay-Cherkessia and Kalmykia, however, were assigned a score of 0 despite having low protest activity one year prior to their dismissal. Karachay-Cherkessia's Mustafa Batdyev was dismissed as early as 2008 largely due to massive protests against Batdyev organized in 2004 following shocking kidnapping and then killing of seven people that involved Batdyev's son-in-law (RBK, 2004). The local opposition in Kalmykia was actively protesting against the reappointment of Kirsan Ilyumzhivov for the fifth term (Ar'kov, 2010).

[14] The dataset is available at https://iims.hse.ru/en/csid/databases.

[15] The database and the codebook are available at https://popularmobilization.net/about/.

[16] The reports are available at https://kprf.ru/analytics/.

[17] Figure A.1 provides the distribution of the raw data.

The effectiveness of governors in managing their territory (EFF)

In 2007, the Kremlin introduced a new system for evaluating the efficiency of governors consisting of 43 indicators[18] (Rochlitz et al., 2015; Rochlitz, 2016; Libman and Rochlitz, 2019, 58-59). The integral index showed the rank of all governors from 1 to 83 depending on their performance in managing a regional economy as well as such policy spheres as healthcare, education, construction, and housing. As the evaluation was based on statistical data and on assessments of citizens, the integral index may correlate with the approval rating of governors. Having this in mind, I employed a component of the integral index that is specifically related to statistical economic indicators of the region and governors' performance: "working efficiency of executive authorities." The ICSID dataset provides the integral index of governors' efficiency as well as its components. To assign crisp-set membership scores to cases, I set 40 as the inclusion threshold in the set as it is close to the mid-point of the index.

The popularity of governors (POPUL)

Several public opinion surveys rank governors according to their popularity. For example, the Russian Public Opinion Polling Center (*VTSIOM*) collects data about the satisfaction of citizens with government performance and public services measured as a percentage of total positive responses. An alternative source are GeoRating surveys conducted by the Public Opinion Foundation (*Fond Obshchestvennoe Mnenie*) in 68 Russian regions. The respondents were asked, "Do you think the leader of your region is doing a good job or a bad job?" The results of only the March 2009 survey are publicly available, while other survey data are private. Ora John Reuter kindly shared the commercial data by the Public Opinion Foundation (personal communication, January 2020). The database

[18]It included 319 indicators in 2010. In August 2012, another presidential decree introduced a new list of 12 more general indicators for evaluating governors' performance. Once gubernatorial elections were reintroduced in late 2012, these indicators were no longer used for the assessment of regional executives.

includes the approval and disapproval rates of the governor. For the analysis, the data on the approval and disapproval of the incumbents one year preceding their reappointment or dismissal were used. To assign crisp-set membership scores to cases, I set the approval rate of 40 percent as the inclusion threshold because the incumbents with the approval rate of higher than 40 percent had at the same time quite low disapproval rate. For example, the approval rate of Astrakhan's Aleksandr Zhilkin and Chuvashia's Nikolay Fedorov was 38.50 and 38.75 percent, respectively. Their disapproval rate, however, was 41.25 and 41.75 percent, correspondingly. In contrast, the approval rate of Penza's Vasily Bochkarev and Krasnodar's Aleksandr Tkachev was 42.00 and 44.50 percent with their disapproval rate being 29.50 and 21.25 percent, respectively. Table A.2 and Table A.3 display the raw and calibrated data.[19]

6 Results and discussion

6.1 The analysis of the outcome gubernatorial reappointment

A condition is considered necessary if it passes a consistency threshold of at least 0.9 (Ragin, 2006).[20] In line with expectation, the ability of governors to mobilize voters passes this threshold with perfect consistency of 1.00. However, its relevance is only 0.182, which indicates its trivialness and implies that it should not be interpreted as a substantially necessary condition (Schneider and Wagemann, 2012, 236-237). Table A.4 reports parameters of fit for other conditions.

[19] See also Figure A.2 and Figure A.3 for the distribution of the crisp set membership scores and the plots of the raw data against the crisp set membership scores.

[20] For the analysis, the R programming packages 'QCA' (Dusa, 2019) and 'Set Methods' (Oana and Schneider, 2018) were used.

The analysis of sufficiency is based on the logical minimization of sufficient truth table rows. Table 2 below displays the truth table representation of set membership scores of 25 cases in the condition sets and the outcome set.

Table 2: Truth table, outcome reappointment

									Cases	
Row	VOT	STAB	EFF	POPUL	OUT	n	incl.	PRI	Reappointment	Dismissal
14	1	1	0	1	1	4	1.000	1.000	Korolev_LIP Markelov_ME Merkushkin_MO Morozov_ULY	-
15	1	1	1	0	1	2	1.000	1.000	Betin_TAM Vinogradov_VLA	-
16	1	1	1	1	1	2	1.000	1.000	Artamonov_KLU Tuleev_KEM	-
12	1	0	1	1	0	3	0.667	0.667	Bochkarev_PNZ Tkachev_KDA	Rossel_SVE
13	1	1	0	0	0	3	0.667	0.667	Bogomolov_KGN Mikhailov_KRS	Torlopov_KO
9	1	0	0	0	0	4	0.250	0.250	Zhilkin_AST	Maksyuta_VGG Batdyev_KC Ilyumzhinov_KL
11	1	0	1	0	0	5	0.200	0.200	Volkov_UD	Chernyshov_ORE Fedorov_CU Kulakov_VOR Shaklein_KIR
7	0	1	1	0	0	2	0.000	0.000	-	Polezhaev_OMS Kress_TOM
1	0	0	0	0	?	0	-	-	-	-
2	0	0	0	1	?	0	-	-	-	-
3	0	0	1	0	?	0	-	-	-	-
4	0	0	1	1	?	0	-	-	-	-
5	0	1	0	0	?	0	-	-	-	-
6	0	1	0	1	?	0	-	-	-	-
8	0	1	1	1	?	0	-	-	-	-
10	1	0	0	1	?	0	-	-	-	-

Consistency cut-off = 1.00.

The first column indicates the row number as it appears in the software output. Columns two through five display the status of four conditions: 1 means present and 0 means absent. The column "OUT" denotes if a truth table row is sufficient for the outcome. The consistency score displayed in the column "incl." along with the PRI score shown in the column "PRI"[21] determine the decision about sufficiency. A recommended threshold for consistency is higher or equal to 0.75 (Schneider and Wagemann, 2010, 10). Taking into account the gaps in consistency and PRI scores, the threshold is set to 1.00. The column "n" shows how many cases belong to a given row; and the column "Cases" names them. The columns "Reappointment" and "Dismissal" speak for themselves.

The analysis of sufficiency applies rules of the Boolean algebra to reduce the complexity of sufficient truth table rows. It produces conservative, parsimonious, and intermediate solution formulas.[22] In the present analysis, the parsimonious solution formula displays model ambiguity–see Table A.5. Conservative and intermediate solution formulas look identical and include two combinations of conditions.[23] The first combination is the ability of governors to mobilize voters and to keep stability combined with the effectiveness of governors in managing their territory (VOT*STAB*EFF). The second combination is the ability of governors to mobilize voters and to keep stability combined with the popularity of governors (VOT*STAB*POPUL). Table 3 below reports parameters of fit and cases.[24]

[21] PRI means proportional reduction in inconsistency and indicates "how much it helps to know that a given X is specifically a subset of Y and not a subset of Y" (Schneider and Wagemann, 2012, 242).

[22] The conservative solution formula is the most complex one as it is based only on empirically observed evidence. The parsimonious solution formula is based on assumptions about the logical remainders, which contribute to parsimony and called simplifying assumptions. It is the least complex solution. The intermediate solution formula is based only on those simplifying assumptions that at the same time represent easy counterfactuals meaning they are consistent with theoretical directional expectations. The intermediate solution is often but not necessarily always less complex than the conservative solution and more complex than the parsimonious solution (Schneider and Wagemann, 2012, 174).

[23] Directional expectations state that all conditions contribute to the outcome in their presence.

[24] Figure A.4 displays sufficiency plot of the solution formula.

Table 3: Conservative solution formula, outcome reappointment

	Cons.	PRI	Raw cov.	Uniq. cov.	Typical cases
VOT*STAB*EFF +	1.000	1.000	0.286	0.143	**Betin_TAM** **Vinogradov_VLA** Artamonov_KLU Tuleev_KEM
VOT*STAB*POPUL	1.000	1.000	0.429	0.286	**Korolev_LIP** **Markelov_ME** **Merkushkin_MO** **Morozov_ULY** Artamonov_KLU Tuleev_KEM
Overall solution	1.000	1.000	0.571		

[1] Capital letters denote presence, * stands for logical AND, + stands for logical OR.
[2] Uniquely covered cases are in bold.

Solution consistency is 1.000, which is perfect. However, solution coverage that shows how much of the outcome is in line with the results is only 0.571, which is quite modest. Typically, low coverage value means that many cases remain uncovered by the theoretical model (Rubinson et al., 2019, 5). In other words, it suggests that in some cases the reappointment process involved additional factors that were not included in the analysis. Two conditions, VOT and STAB, are present in both sufficient combinations. None of them, however, is individually necessary for the reappointment. Consistency of the intersection is also low–only 0.714. Moreover, Figure A.5 displays the necessity plot with four deviant cases confirming that the intersection of VOT*STAB should not be interpreted as necessary but rather as very important INUS conditions.[25]

The first sufficient combination (VOT*STAB*EFF) has consistency of 1.000 and coverage of 0.286. Typical uniquely covered cases include the governors of Tambov and Vladimir oblasts. Consistency of the second combination (VOT*STAB*POPUL) is 1.000

[25]INUS means "Insufficient but Necessary part of a combination that is itself Unnecessary but Sufficient for the outcome" (Schneider and Wagemann, 2012, 4).

and its coverage is 0.429. The governors of Lipetsk and Ulyanovsk oblasts along with the heads of the republics of Mari El and Mordovia represent typical uniquely covered cases. The unique coverage that indicates how much of the outcome is explained by the single solution path is 0.143 and 0.286 for the first and the second combinations, respectively.

6.2 The analysis of the outcome gubernatorial dismissal

The analysis of necessity confirms that VOT represents a trivial necessary condition as its consistency is 0.818, while its relevance is only 0.125. Additionally, the analysis shows that the lack of incumbent's popularity (popul) has consistency of 0.909 and relevance of 0.600. However, as the necessity plot displays that Sverdlovsk Oblast's Eduard Rossel represents a deviant case, this condition is not interpreted as substantively necessary.[26]

For the analysis of sufficiency, a consistency threshold is set to 0.75–see Table A.7 for the truth table. Parsimonious and intermediate solution formulas look identical and are reported in Table A.8. As conservative solution formula provides richer evidence for interpretation, it is selected for substantive discussion. The solution formula includes two combinations of conditions. The first combination is the ability of governors to mobilize voters combined with their inability to keep stability in the regions and the lack of governors' popularity (VOT*stab*popul). The second combination is the ability of governors to keep stability and the effectiveness of governors in managing their territory combined with the absence of other the two conditions (vot*STAB*EFF*popul). Solution consistency is 0.818, which is at the acceptable level. Solution coverage is also 0.818 meaning that these results "cover" the majority of cases. Table 4 below reports parameters of fit and displays the typical and deviant cases.

[26] Table A.6 and Figure A.6 display the parameters of fit and for the necessity plot, respectively.

Table 4: Conservative solution formula, outcome dismissal

	Cons.	PRI	Raw cov.	Uniq. cov.	Typical cases	Deviant cases
VOT*stab*popul +	0.778	0.778	0.636	0.636	**Batdyev_KC**	Zhilkin_AST
					Ilyumzhinov_KL	Volkov_UD
					Kulakov_VOR	
					Maksyuta_VGG	
					Shaklein_KIR	
					Chernyshov_ORE	
					Fedorov_CU	
vot*STAB*EFF*popul	1.000	1.000	0.182	0.182	**Polezhaev_OMS**	
					Kress_TOM	
Overall solution	0.818	0.818	0.818			

[1] Capital letters denote presence, small letters indicate absence, * stands for logical AND, + stands for logical OR.
[2] Uniquely covered cases are in bold.

The first combination (VOT*stab*popul) has consistency of 0.778 and coverage of 0.636. The governors of Voronezh, Volgograd, Kirov and Orenburg oblasts along with the heads of Karachay-Cherkessia and Kalmykia represent typical uniquely covered cases. The governor of Astrakhan Oblast and the head of Udmurtia are deviant cases. Consistency of the second combination (vot*STAB*EFF*popul) is 1.000 and its coverage is 0.182. Typical uniquely covered cases include the governors of Omsk and Tomsk oblasts. The unique coverage is 0.636 and 0.182 for the first and the second combinations, respectively. The next subsection reports the results of the robustness tests.

6.3 Robustness tests

To test robustness of the results, Wagemann and Schneider (2015, 41) suggest to check if changes in the calibration, in the case selection, and in the raw consistency levels produce any "substantively different results." The original analysis has been performed with the data assigned crisp set membership scores. Therefore, the alternative calibration strategy involves the assignment of fuzzy-set membership scores to cases in the the condition sets.

First, I employed the 'indirect' or theoretical method of calibration opting for a four-value fuzzy scale and assigning scores of 0, 0.33, 0.67, and 1 to cases (Ragin, 2009). The alternative analysis of the reappointment has yielded similar conservative solution formula as the one produced in the original analysis (see Table B.1 and Table B.2 for the truth table and the solution formula). However, it was not possible to perform the alternative analysis of the dismissal as none of the truth table rows had a consistency value of higher than or equal to 0.75 (see Table B.3).

For the second alternative analysis, I employed the 'direct' method of calibration, which fits the raw data in-between three qualitative anchors denoting full inclusion in the set, crossover point, and full exclusion from the set (Ragin, 2008; Schneider and Wagemann, 2012).[27] The alternative conservative solution formula for the outcome reappointment consists of only one term–VOT*STAB*POPUL. This is because rows 14 and 16 were included in the minimization procedure, while raw 15 was not included due to its low consistency of 0.675 (see Table B.4 and Table B.5 for the truth table and the solution formula). Similarly, only the raw 9 was included in the alternative analysis of the dismissal. Raw 7 with two cases of dismissal has a consistency of 0.709 and, therefore, was not included in the minimization procedure. The alternative conservative solution formula consists of one combination–VOT*stab*eff*popul (see Table B.6 and Table B.7 for the truth table and the solution formula). These two alternative analyses have confirmed the point that when accounting for differences in kind in the outcome, it is meaningful to account in differences in kind in the conditions as well.

For the third alternative analysis, I excluded the incumbents who served in office only for one term before being reappointed or dismissed as they had the shortest tenure. These

[27]The replication script provides the alternative calibration anchors for both the 'indirect' and 'direct' calibration strategies.

cases are Aleksandr Zhilkin and Sergey Morozov in Astrakhan and Ulyanovsk oblasts whose terms started in 2004 and 2005, respectively; and also Nikolay Shaklein in Kirov Oblast who was elected in 2004. The alternative solution formulas of the reappointment and dismissal look identical as the ones produced in the original analysis (see Table B.8 and Table B.9).

Finally, for the fourth alternative analysis, I employed the integral index of governors' effectiveness to calibrate the condition the effectiveness of governors in managing their territory. The alternative solution formulas closely resemble the solutions of the original analysis (see Table B.10 and Table B.11). Overall, the alternative analyses have confirmed the robustness of the results.[28] The next subsection provides their substantive interpretation.

6.4 Discussion of the results

The analysis has not confirmed the expectation that the ability of incumbent governors to deliver high electoral results ultimately leads to their reappointment. This is a very important insight as previous studies find a strong relationship between the electoral results and the chances of gubernatorial (re)appointment (Reuter and Robertson, 2012; Rochlitz, 2016; Reisinger and Moraski, 2017; Libman and Rochlitz, 2019). The present analysis reveals that the ability to deliver high electoral results, in fact, represents a trivial necessary condition meaning that it cannot be linked to the outcome or its absence because it is present in both instances of the outcome. There are two possible interpretations of this finding. The first interpretation is that the center expects all governors to deliver high electoral results so this is an established 'rule of the game.' Consequently, there are

[28] I did not perform the alternative analysis altering the consistency cut-off as it was set in the original analysis at 1.00. The alternative cut-off would be 0.66, which is below the recommended inclusion score of 0.75.

no rewards for those who comply with the rules. The second interpretation is that the incumbent governors having stayed in office for many years are simply better skilled in delivering votes. Existing literature posits that to deliver votes, regional elites rely on political machines that are based on informal elite networks (Reuter, 2013; Golosov, 2014; Hertel-Fernandez, 2016). These theories assume that the longer the regional patron stays in office, the more extensive networks he or she builds, and the more effective they are in mobilizing voters (Frye et al., 2014, 2019a,b). Although this assumption is plausible, little empirical work has assessed it so far.

Additionally, the analysis of sufficiency has revealed two paths leading to gubernatorial reappointment. The first is the ability to mobilize voters and to keep stability in the regions in combination with the effectiveness of incumbents in managing their territory (VOT*STAB*EFF). The second is the ability to mobilize voters and to keep stability in combination with the popularity of incumbents (VOT*STAB*POPUL). These findings suggest that an intersection of VOT*STAB represents a very important INUS condition which is in line with the *"top-down"* explanation. It means that as long as the main "federal priorities" of high voting results and political stability in the region are fulfilled the incumbents stay in office (Busygina et al., 2018; Libman and Rochlitz, 2019).

On the other hand, this analysis suggests that intergovernmental interactions in Russia are quite complex and there is still some space for the *"bottom-up"* dynamics. It is a combination of fulfilled "federal priorities" either with the effectiveness of incumbents in managing their territory or with the popularity of incumbents. The latter scenario has been theorized in previous studies. For example, Reuter (2013) finds that the United Russia party performs better when governors are popular. This is because "even as appointed officials, regional governors remained by far the most powerful players in Russian regional politics" (Reuter, 2013, 106). However, none of previous analyses has found empirical support for the former scenario attempting to reveal "an average effect" of certain

independent variables (Reuter and Robertson, 2012; Rochlitz, 2016; Reisinger and Moraski, 2017). Yet it is quite plausible that during the economic crisis, President Medvedev paid attention to the development of the regional economy and rewarded a few incumbents who performed well. Then, further analysis is needed to explain why the incumbents, for example, in Kaluga or Vladimir oblasts, have performed as effective managers in the absence of any incentives from the center.

The present analysis has evaluated two explanations of gubernatorial (re)appointment that have been so far the most common in the literature. The analysis of sufficiency for the outcome reappointment, however, has yielded the solution formula with quite modest coverage of 0.571. This implies that the results cover slightly more than half of all cases of reappointment. Formal theory evaluation indicates that the theory formulated as VOT*STAB + EFF*POPUL explains 32 percent of total number of cases. It explains more than 57.14 percent of cases that display the outcome reappointment. These results confirm the complexity of the reappointment process and suggest that it involved additional factors that have not been detected by previous studies.

7 Conclusion

Existing literature suggests that under Putin the ability of regional elites to deliver high electoral results has become a crucial element of intra-elite bargaining and territorial politics in Russia more generally. This study, however, shows that the ability to deliver high voting results alone could not guarantee the reappointment of incumbent governors in Russia between 2008 and 2012. On the other hand, it reveals that the failure to do so has been among sufficient conditions leading to the dismissal of incumbents. The analysis also detects two sufficient combinations accounting for gubernatorial reappointment. They support the argument that the incumbents stay in office as long as they fulfill the main

"federal priorities" of high electoral results and political stability in the regions (Busygina et al., 2018; Libman and Rochlitz, 2019).

In contrast to the 1990s, when it was the executives in the ethnic regions who stayed in office the longest, in the 2000s it was the incumbents in the regions with a predominantly ethnic Russian population (*oblasts* and *krais*) who had the longest tenure. The findings of this analysis suggest that, being dependent on electoral results, the regional executives not only in the ethnic regions but also in the regions with a predominantly ethnic Russian population have relied on strong political machines to influence electoral outcomes. By doing so they have contributed to the authoritarian regression that took place in Russia over the 2000s.

According to the literature, elections at the subnational level is a distinctive feature of democratic federations (Filippov et al., 2004). The puzzle of Russian federalism is then that, despite the return to gubernatorial elections in 2012, it still displays clear authoritarian features (Obydenkova and Swenden, 2013; Kropp, 2019; Libman and Rochlitz, 2019). Therefore, further research needs to study how authoritarian federations mimic democratic federations by combining institutions that are associated with democracy (e.g., elections) with authoritarian distribution and reproduction of power.

References

Ar'kov, V. (2010, April). Perenaznachit] Ilyumzhivova na Pyuatyi Srok - Amoral'no [To Reappoint Ilyumzhivov for the Fifth Term Is Immoral]. http://www.politrus.com/2010/04/20/kalmyikiya-ilyumzhinov/.

Blakkisrud, H. (2011). Medvedev's New Governors. *Europe-Asia Studies 63*(3), 367–395.

Blatter, J., M. Kreutzer, M. Rentl, and J. Thiele (2010). Preconditions for Foreign Activities of European Regions: Tracing Causal Configurations of Economic, Cultural, and Political Strategies. *Publius: The Journal of Federalism 40*(1), 171–199.

Bremmer, I. and S. Charap (2006). The Siloviki in Putin's Russia: Who They Are and What They Want. *The Washington Quarterly 30*(1), 83–92.

Buckley, N., T. Frye, G. Garifullina, and O. J. Reuter (2014). The Political Economy of Russian Gubernatorial Election and Appointment. *Europe-Asia Studies 66*(8), 1213–1233.

Busygina, I., M. Filippov, and E. Taukebaeva (2018). To Decentralize or to Continue on the Centralization Track: The Cases of Authoritarian Regimes in Russia and Kazakhstan. *Journal of Eurasian Studies 9*(1), 61–71.

Dusa, A. (2019). *QCA with R: A Comprehensive Resource*. Cham: Springer Nature.

Filippov, M., P. C. Ordeshook, and O. Shvetsova (2004). *Designing Federalism: A Theory of Self-Sustainable Federal Institutions*. New York: Cambridge University Press.

Frye, T., O. J. Reuter, and D. Szakonyi (2014). Political Machines at Work Voter Mobilization and Electoral Subversion in the Workplace. *World Politics 66*(02), 195–228.

Frye, T., O. J. Reuter, and D. Szakonyi (2019a). Hitting Them With Carrots: Voter Intimidation and Vote Buying in Russia. *British Journal of Political Science 49*(3), 857–881.

Frye, T., O. J. Reuter, and D. Szakonyi (2019b). Vote Brokers, Clientelist Appeals, and Voter Turnout: Evidence from Russia and Venezuela. *World Politics 71*(4), 710–746.

Gel'man, V., S. I. Ryzhenkov, and M. Brie (2000). *Rossiia Regionov : Transformatsiia Politicheskikh Rezhimov [Russia's Regions: Transformation of Political Regimes]*. Moskva: "Ves Mir".

Golosov, G. V. (2014). The Territorial Genealogies of Russia's Political Parties and the Transferability of Political Machines. *Post-Soviet Affairs 30*(6), 464–480.

Golosov, G. V. (2018). Russia's Centralized Authoritarianism in the Disguise of Democratic Federalism: Evidence from the September 2017 Sub-National Elections. *International Area Studies Review 21*(3), 231–248.

Goode, J. P. (2007). The Puzzle of Putin's Gubernatorial Appointments. *Europe-Asia Studies 59*(3), 365–399.

Hale, H. E. (2003). Explaining Machine Politics in Russia's Regions: Economy, Ethnicity, and Legacy. *Post-Soviet Affairs 19*(3), 228–263.

Hertel-Fernandez, A. (2016). How Employers Recruit Their Workers into Politics—And Why Political Scientists Should Care. *Perspectives on Politics 14*(2), 410–421.

Kahn, J. (2002). *Federalism, Democratization, and the Rule of Law in Russia*. Oxford: Oxford University Press.

Konitzer, A. (2005). *Voting for Russia's Governors: Regional Elections and Accountability under Yeltsin and Putin*. Washington, D.C: Woodrow Wilson Center Press.

Kropp, S. (2019). The Ambivalence of Federalism and Democracy: The Challenging Case of Authoritarianism—With Evidence from the Russian Case. In N. Behnke, J. Broschek, and J. Sonnicksen (Eds.), *Configurations, Dynamics and Mechanisms of Multilevel Governance*, pp. 213–230. Springer.

Libman, A. and M. Rochlitz (2019). *Federalism in China and Russia: Story of Success and Story of Failure?* Northampton, MA: Edward Elgar Pub.

Mello, P. A. (2020). Paths towards coalition defection: Democracies and withdrawal from the Iraq War. *European Journal of International Security 5*(1), 45–76.

Moses, J. C. (2014). The Political Resurrection of Russian Governors. *Europe-Asia Studies 66*(9), 1395–1424.

Oana, I.-E. and C. Q. Schneider (2018). SetMethods: an Add-on Package for Advanced QCA. *The R Journal 10*, 1–27.

Obydenkova, A. and W. Swenden (2013). Autocracy-Sustaining Versus Democratic Federalism: Explaining the Divergent Trajectories of Territorial Politics in Russia and Western Europe. *Territory, Politics, Governance 1*(1), 86–112.

Oppermann, K. and K. Brummer (2020). Who Gets What in Foreign Affairs? Explaining the Allocation of Foreign Ministries in Coalition Governments. *Government and Opposition 55*(2), 241–259.

Petrov, N. (2010). Regional Governors under the Dual Power of Medvedev and Putin. *Journal of Communist Studies and Transition Politics 26*(2), 276–305.

Petrov, N. (2012). The Evolution of Siloviki Elites Federal 'Generals' in Russian Regions. *PonarsEuarasia - Policy Memos*.

Petrov, N. and A. Titkov (Eds.) (2010). *Vlast, Biznes, Obshchestvo v Regionakh: Nepravilnyĭ Treugolnik [Power, Business, and Society: An Irregular Triangle in the Regions]*. Moskva: ROSSPĖN.

Ragin, C. C. (1987). *The Ccomparative Method*. Berkeley: University of California Press.

Ragin, C. C. (2006). Set Relations in Social Research: Evaluating Their Consistency and Coverage. *Political Analysis* (3), 291.

Ragin, C. C. (2008). *Redesigning social inquiry: Fuzzy sets and beyond*. Chicago: IL: University of Chicago Press.

Ragin, C. C. (2009). Qualitative Comparative Analysis Using Fuzzy Sets (fsQCA). In B. Rihoux and C. C. Ragin (Eds.), *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and Related Techniques*, Number 51, pp. 87–121. Thousand Oaks: Sage.

RBK (2004, October). Zyuat' Prezidenta Karachaevo-Cherkessiii Prichasten k Ubiistvam [Son-in-law of Karachay-Cherkessia's President Has Involved in Murders]. https://www.rbc.ru/politics/22/10/2004/5703b6709a7947783a5a5c42.

Reisinger, W. M. and B. J. Moraski (2010). Regional Changes and Changing Regional Relations with the Center. In V. Gelman and C. Ross (Eds.), *The Politics of Sub-national Authoritarianism in Russia*, pp. 67–84. Ashgate Publishing, Ltd.

Reisinger, W. M. and B. J. Moraski (2017). *The Regional Roots of Russia's Political Regime*. University of Michigan Press.

Reuter, O. J. (2010, March). The Politics of Dominant Party Formation: United Russia and Russia's Governors. *Europe-Asia Studies 62*(2), 293–327.

Reuter, O. J. (2013). Regional Patrons and Hegemonic Party Electoral Performance in Russia. *Post-Soviet Affairs 29*(2), 101–135.

Reuter, O. J. and G. B. Robertson (2012). Subnational Appointments in Authoritarian Regimes: Evidence from Russian Gubernatorial Appointments. *The Journal of Politics 74*(4), 1023–1037.

Rochlitz, M. (2016). Political Loyalty vs Economic Performance: Evidence from Machine Politics in Russia's Regions. SSRN Scholarly Paper ID 2778007.

Rochlitz, M., V. Kulpina, T. Remington, and A. Yakovlev (2015). Performance Incentives and Economic Growth: Regional Officials in Russia and China. *Eurasian Geography and Economics 56*(4), 421–445.

Rubinson, C., L. Gerrits, R. Rutten, and T. Greckhamer (2019). Avoiding Common Errors in QCA: A Short Guide for New Practitioners. *COMPASSS Working Papers*. http://compasss.org/wp-content/uploads/2019/07/Common_Errors_in_QCA.pdf.

Schneider, C. Q. and C. Wagemann (2010). Standards of Good Practice in Qualitative Comparative Analysis (QCA) and Fuzzy-Sets. *Comparative Sociology 9*(3), 397–418.

Schneider, C. Q. and C. Wagemann (2012). *Set-Theoretic Methods for the Social Sciences: A Guide to Qualitative Comparative Analysis*. Strategies for social inquiry. Cambridge: Cambridge University Press.

Sharafutdinova, G. (2010). Subnational Governance in Russia: How Putin Changed the Contract with His Agents and the Problems It Created for Medvedev. *Publius 40*(4), 672–696.

Slider, D. (2008). Putin and the Election of Regional Governors. In C. Ross and A. Campbell (Eds.), *Federalism and Local Politics in Russia*, pp. 106–119. New York: Rutledge.

Solnick, S. (1998). Gubernatorial Elections in Russia, 1996-1997. *Post-Soviet Affairs 14*(1), 48–80.

Tolz, V. and I. Busygina (1997). Regional Governors and the Kremlin: The Ongoing Battle for Power. *Communist and Post-Communist Studies 30*(4), 401–426.

Turovskii, R. F. (1996). Ural'skii Platsdarm Borisa Yel'tsina [Boris Yeltsin's Ural Bridgehead]. *Moskovskaya Pravda*.

Turovskii, R. F. (2010). Regional Political Regimes in Russia. *Russian Politics & Law 48*(2), 27–49.

Wagemann, C. and C. Q. Schneider (2015). Transparency Standards in Qualitative Comparative Analysis. *Qualitative {&} Multi-Method Research Newsletter* (13), 38–42. https://zenodo.org/record/893091.

Zubarevich, N. (2015). Otnoshenia Tsentra i Regnov v Rossii: Ispytanie Krizisom [Center-Region Relations in Russia: Facing the Challenge of the Economic Crisis].

A Appendix

Table A.1: Cases selected for the analysis

No	Region	Region code	Governor	Case label	Year	Outcome
1	Astrakhan Oblast	AST	Aleksandr Zhilkin	Zhilkin_AST	2009	reappointment
2	Udmurtia	UD	Aleksandr Volkov	Volkov_UD	2009	reappointment
3	Vladimir Oblast	VLA	Nikolay Vinogradov	Vinogradov_VLA	2009	reappointment
4	Kemerovo Oblast	KEM	Aman Tuleev	Tuleev_KEM	2010	reappointment
5	Mordovia	MO	Nikolay Merkushkin	Merkushkin_MO	2010	reappointment
6	Kursk Oblast	KRS	Aleksandr Mikhailov	Mikhailov_KRS	2010	reappointment
7	Marii El	ME	Leonid Markelov	Markelov_ME	2010	reappointment
8	Lipetsk Oblast	LIP	Oleg Korolev	Korolev_LIP	2010	reappointment
9	Kurgan Oblast	KGN	Oleg Bogomolov	Bogomolov_KGN	2010	reappointment
10	Penza Oblast	PNZ	Vasily Bochkarev	Bochkarev_PNZ	2010	reappointment
11	Tambov Oblast	TAM	Oleg Betin	Betin_TAM	2010	reappointment
12	Kaluga Oblast	KLU	Anatoly Artamonov	Artamonov_KLU	2010	reappointment
13	Ulyanovsk Oblast	ULY	Sergey Morozov	Morozov_ULY	2011	reappointment
14	Krasnodar Krai	KDA	Aleksandr Tkachev	Tkachev_KDA	2012	reappointment
15	Karachay-Cherkessia Republic	KC	Mustafa Batdyev	Batdyev_KC	2008	dismissal
16	Kirov Oblast	KIR	Nikolay Shaklein	Shaklein_KIR	2009	dismissal
17	Sverdlovsk Oblast	SVE	Eduard Rossel	Rossel_SVE	2009	dismissal
18	Voronezh Oblast	VOR	Vladimir Kulakov	Kulakov_VOR	2009	dismissal
19	Volgograd Oblast	VGG	Nikolay Maksyuta	Maksyuta_VGG	2010	dismissal
20	Kalmykia Republic	KL	Kirsan Ilyumzhinov	Ilyumzhinov_KL	2010	dismissal
21	Orenburg Oblast	ORE	Aleksey Chernyshev	Chernyshov_ORE	2010	dismissal
22	Komi Republic	KO	Vladimir Torlopov	Torlopov_KO	2010	dismissal
23	Chuvashia Republic	CU	Nikolay Fedorov	Fedorov_CU	2010	dismissal
24	Omsk Oblast	OMS	Leonid Polezhaev	Polezhaev_OMS	2012	dismissal
25	Tomsk Oblast	TOM	Viktor Kress	Kress_TOM	2012	dismissal

Table A.2: The raw data

No	Case label	VOT_raw	STAB_raw	EFF_raw	POPUL_raw	REAP
1	Zhilkin_AST	58.00	26250	45	38.50	1
2	Volkov_UD	60.57	45125	17	29.00	1
3	Vinogradov_VLA	56.75	11560	30	29.25	1
4	Tuleev_KEM	76.82	7958	6	79.75	1
5	Merkushkin_MO	93.41	16150	44	46.50	1
6	Mikhailov_KRS	62.74	7020	70	20.75	1
7	Markelov_ME	67.54	4610	57	45.50	1
8	Korolev_LIP	62.30	14730	42	50.75	1
9	Bogomolov_KGN	64.43	7175	59	21.00	1
10	Bochkarev_PNZ	70.31	27403	16	42.00	1
11	Betin_TAM	59.79	13900	30	23.00	1
12	Artamonov_KLU	61.65	16680	18	52.25	1
13	Morozov_ULY	66.24	9407	45	56.25	1
14	Tkachev_KDA	56.15	22648	15	44.50	1
15	Batdyev_KC	92.90	14500	77	20.00	0
16	Shaklein_KIR	55.38	30910	36	27.25	0
17	Rossel_SVE	62.04	26403	9	51.33	0
18	Kulakov_VOR	57.46	39770	39	14.25	0
19	Maksyuta_VGG	57.74	220549	41	23.25	0
20	Ilyumzhinov_KL	72.43	7340	80	20.00	0
21	Chernyshov_ORE	60.31	21990	38	12.00	0
22	Torlopov_KO	62.06	8820	47	19.25	0
23	Fedorov_CU	62.27	27240	36	38.75	0
24	Polezhaev_OMS	39.60	15363	25	35.75	0
25	Kress_TOM	37.51	8458	26	36.75	0

Table A.3: The calibrated dataset

No	Case label	VOT	STAB	EFF	POPUL	REAP
1	Zhilkin_AST	1	0	0	0	1
2	Volkov_UD	1	0	1	0	1
3	Vinogradov_VLA	1	1	1	0	1
4	Tuleev_KEM	1	1	1	1	1
5	Merkushkin_MO	1	1	0	1	1
6	Mikhailov_KRS	1	1	0	0	1
7	Markelov_ME	1	1	0	1	1
8	Korolev_LIP	1	1	0	1	1
9	Bogomolov_KGN	1	1	0	0	1
10	Bochkarev_PNZ	1	0	1	1	1
11	Betin_TAM	1	1	1	0	1
12	Artamonov_KLU	1	1	1	1	1
13	Morozov_ULY	1	1	0	1	1
14	Tkachev_KDA	1	0	1	1	1
15	Batdyev_KC	1	0	0	0	0
16	Shaklein_KIR	1	0	1	0	0
17	Rossel_SVE	1	0	1	1	0
18	Kulakov_VOR	1	0	1	0	0
19	Maksyuta_VGG	1	0	0	0	0
20	Ilyumzhinov_KL	1	0	0	0	0
21	Chernyshov_ORE	1	0	1	0	0
22	Torlopov_KO	1	1	0	0	0
23	Fedorov_CU	1	0	1	0	0
24	Polezhaev_OMS	0	1	1	0	0
25	Kress_TOM	0	1	1	0	0

Figure A.1: Distribution of the raw data

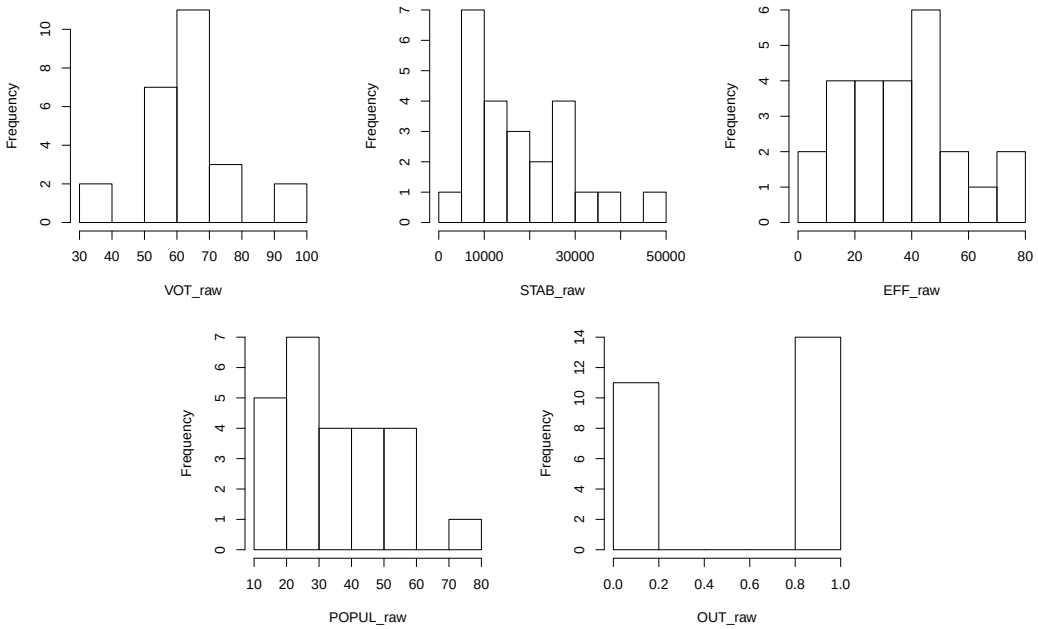

Figure A.2: Distribution of the crisp set membership scores

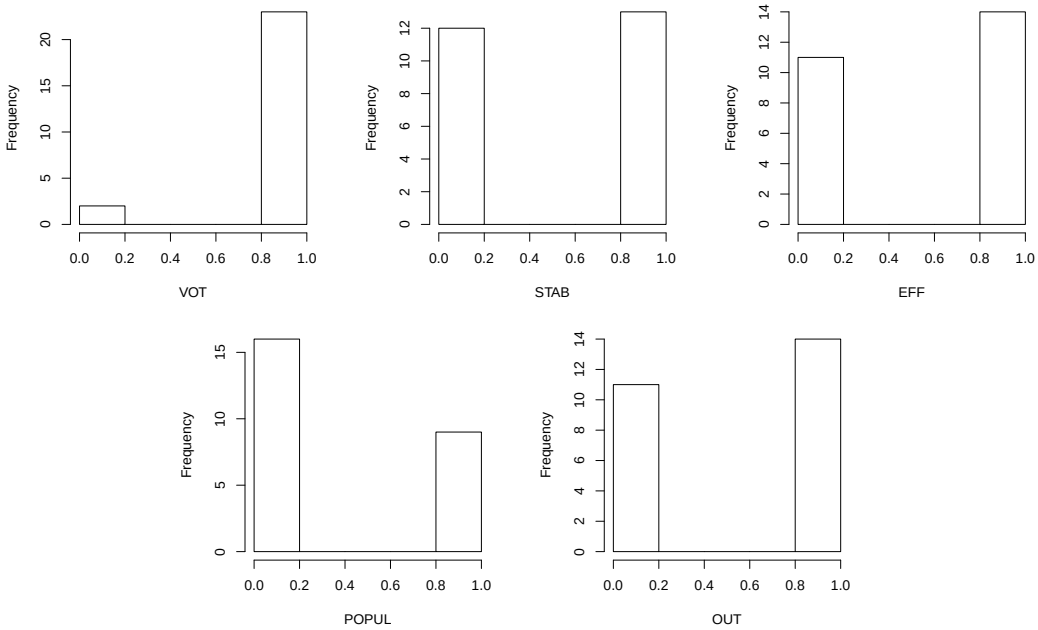

Figure A.3: Plots of the raw data against the crisp set membership scores

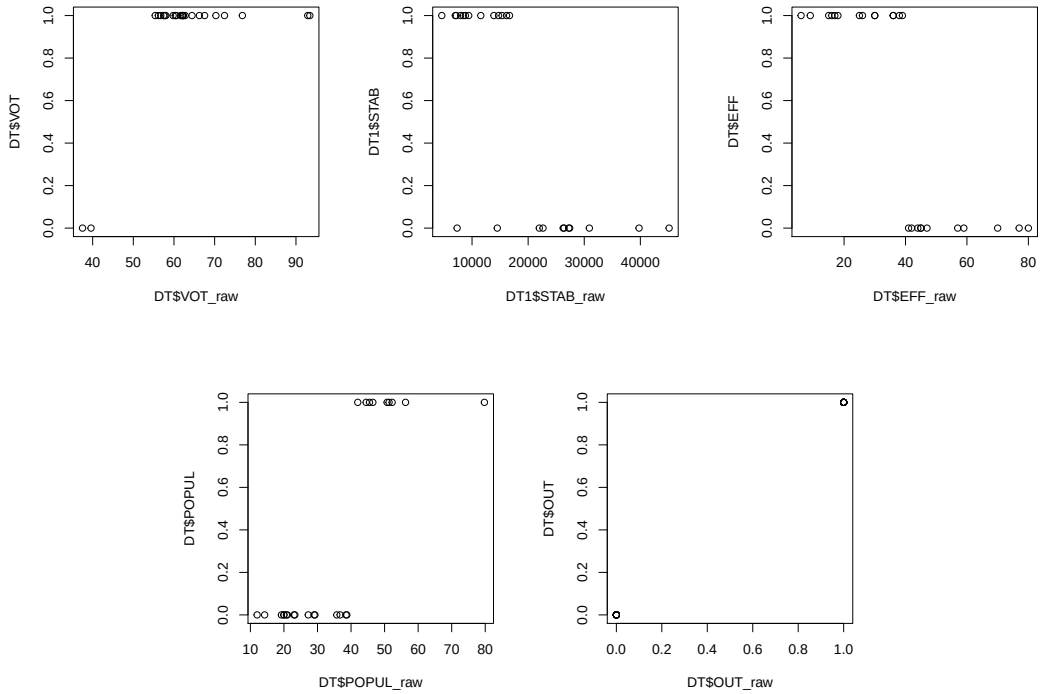

Table A.4: Parameters of fit, necessity, outcome reappointment

Condition	Consistency of Necessity	Coverage of Necessity	Relevance of Necessity
VOT	1.000	0.609	0.182
STAB	0.714	0.769	0.800
EFF	0.500	0.500	0.611
POPUL	0.571	0.889	0.941
vot	0.000	0.000	0.920
stab	0.286	0.333	0.619
eff	0.500	0.636	0.778
popul	0.429	0.375	0.474

Table A.5: Parsimonious solution formula, outcome reappointment (two models)

	Cons.	PRI	Raw cov.	Uniq. cov.	(M1)	(M2)
VOT*STAB*EFF +	1.000	1.000	0.286	0.143	0.143	0.286
STAB*POPUL	1.000	1.000	0.429	0.000	0.286	
VOT*eff*POPUL	1.000	1.000	0.286	0.000		0.286
Overall solution (M1)	1.000	1.000	0.571			
Overall solution (M2)	1.000	1.000	0.571			

[1] Capital letters denote presence, small letters indicate absence, * stands for logical AND, + stands for logical OR.
[2] Simplifying assumptions for M1 are 0101 and 0111; for M2 - 1001.

Figure A.4: Sufficiency plot, conservative solution formula, outcome reappointment

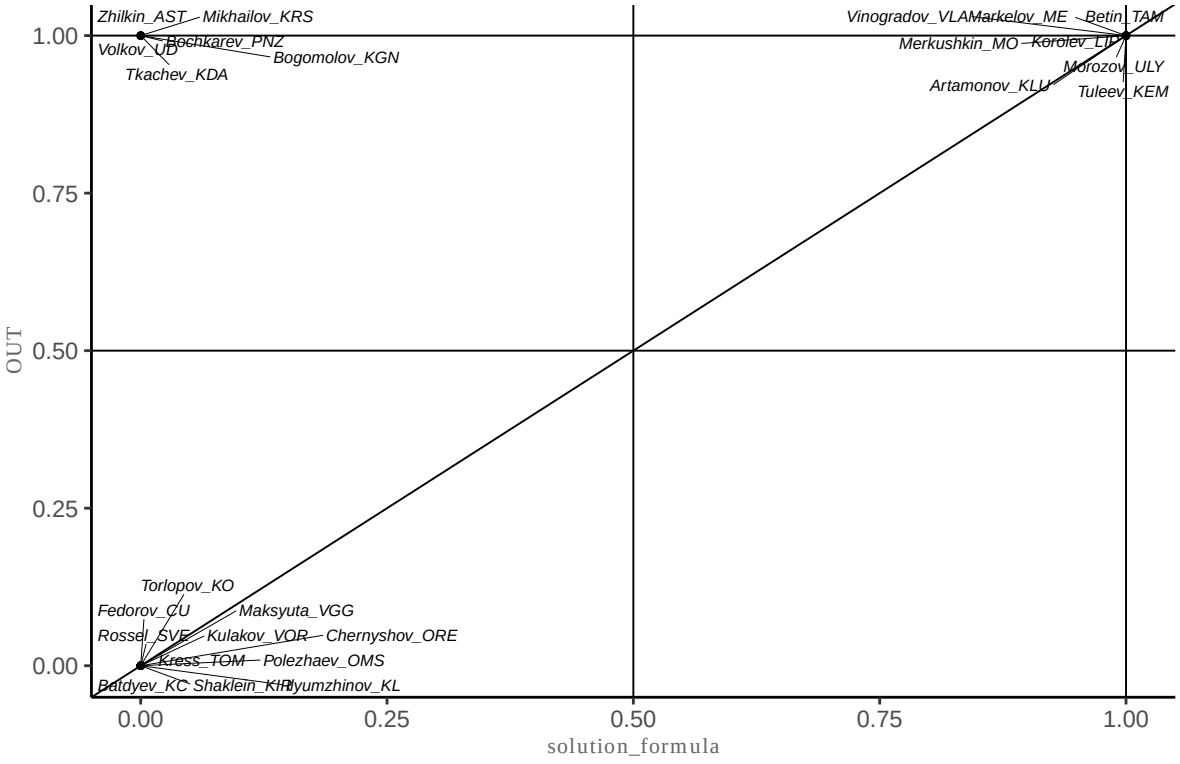

Figure A.5: Necessity plot, outcome reappointment

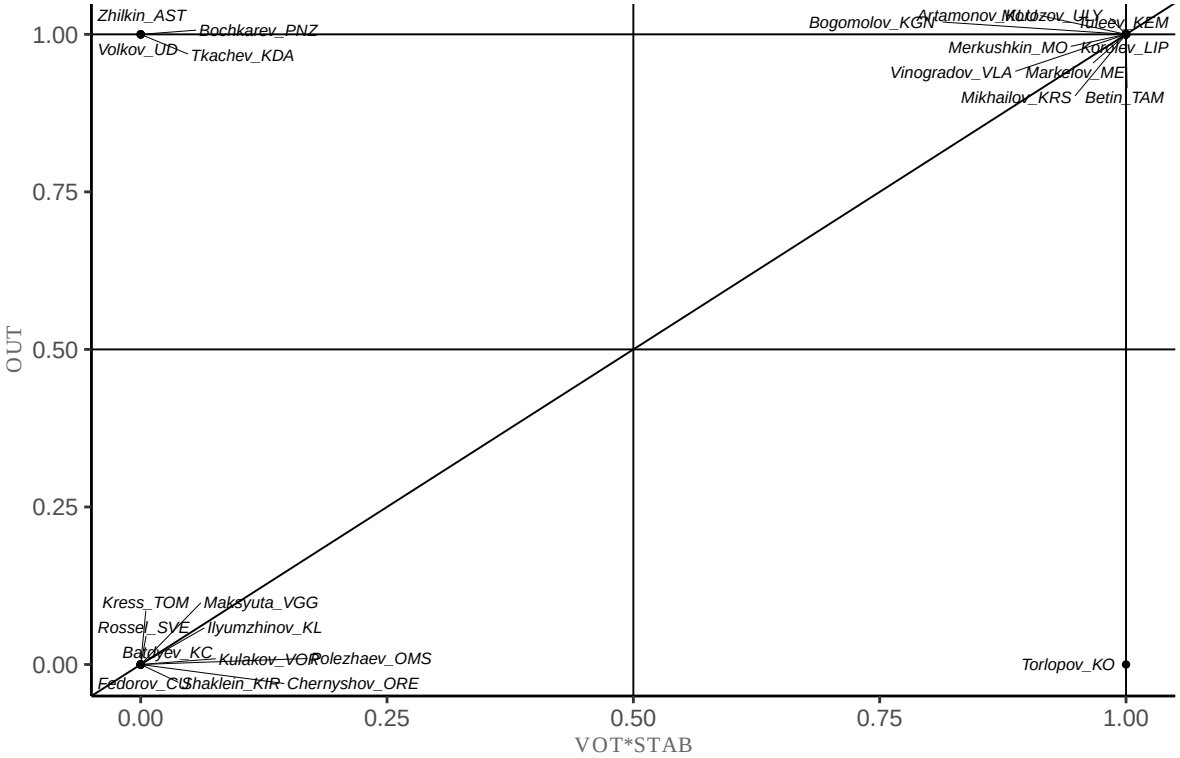

Table A.6: Parameters of fit, necessity, outcome dismissal

Condition	Consistency of Necessity	Coverage of Necessity	Relevance of Necessity
VOT	0.818	0.391	0.125
STAB	0.273	0.231	0.546
EFF	0.636	0.500	0.611
POPUL	0.091	0.111	0.667
vot	0.182	1.000	1.000
stab	0.727	0.667	0.765
eff	0.364	0.364	0.667
popul	0.909	0.625	0.600

Figure A.6: Necessity plot, outcome dismissal

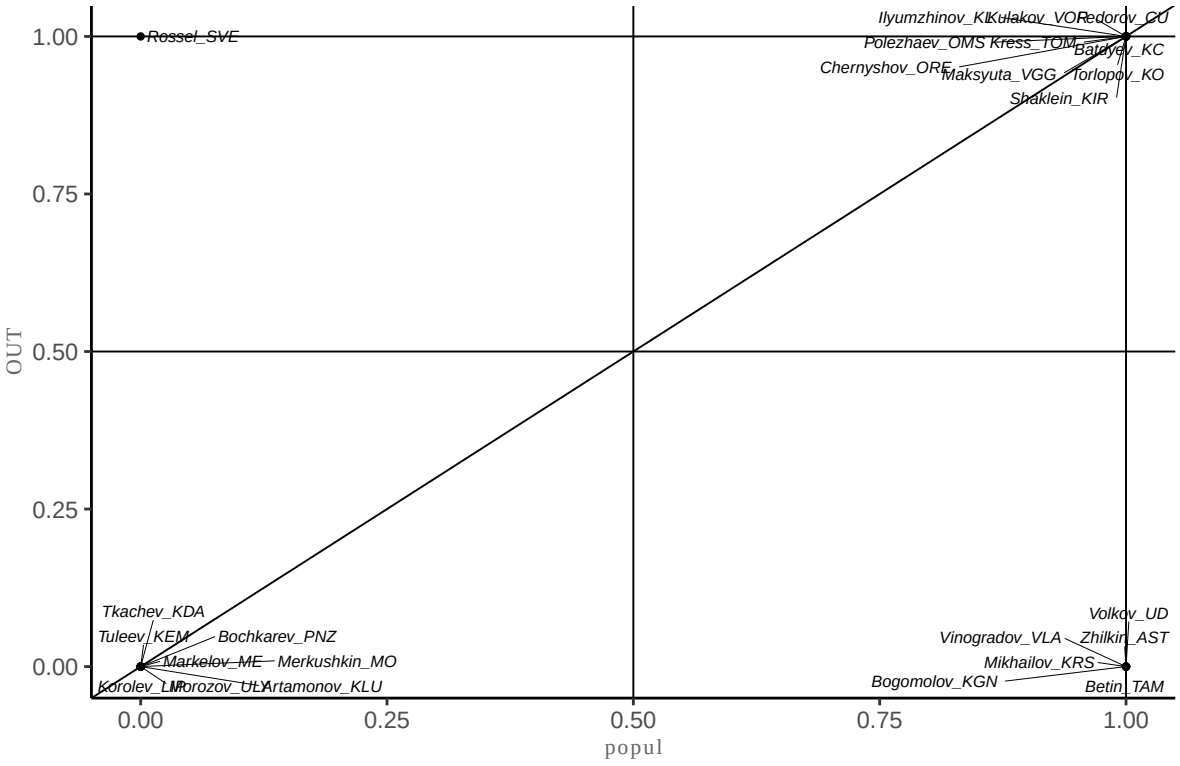

Table A.7: Truth table, outcome dismissal

									Cases	
Row	VOT	STAB	EFF	POPUL	OUT	n	incl.	PRI	Dismissal	Reappointment
7	0	1	1	0	1	2	1.000	1.000	Polezhaev_OMS Kress_TOM	-
11	1	0	1	0	1	5	0.800	0.800	Chernyshov_ORE Shaklein_KIR Kulakov_VOR Fedorov_CU	Volkov_UD
9	1	0	0	0	1	4	0.750	0.750	Batdyev_KC Ilyumzhinov_KL Maksyuta_VGG	Zhilkin_AST
12	1	0	1	1	0	3	0.333	0.333	Rossel_SVE	Bochkarev_PNZ Tkachev_KDA
13	1	1	0	0	0	3	0.333	0.333	Torlopov_KO	Mikhailov_KRS Bogomolov_KGN
14	1	1	0	1	0	4	0.000	0.000	-	Markelov_ME Merkushkin_MO Korolev_LIP Morozov_ULY
15	1	1	1	0	0	2	0.000	0.000	-	Vinogradov_VLA Betin_TAM
16	1	1	1	1	0	2	0.000	0.000	-	Tuleev_KEM Artamonov_KLU
1	0	0	0	0	?	0	-	-	-	-
2	0	0	0	1	?	0	-	-	-	-
3	0	0	1	0	?	0	-	-	-	-
4	0	0	1	1	?	0	-	-	-	-
5	0	1	0	0	?	0	-	-	-	-
6	0	1	0	1	?	0	-	-	-	-
8	0	1	1	1	?	0	-	-	-	-
10	1	0	0	1	?	0	-	-	-	-

Consistency threshold = 0.75.

Table A.8: Parsimonious solution formula, outcome dismissal

	Cons.	PRI	Raw cov.	Uniq. cov.	Typical cases	Deviant cases
vot*popul +	1.000	1.000	0.182	0.182	**Polezhaev_OMS**	-
					Kress_TOM	
stab*popul	0.778	0.778	0.636	0.636	**Batdyev_KC**	Zhilkin_AST
					Ilyumzhinov_KL	Volkov_UD
					Kulakov_VOR	
					Maksyuta_VGG	
					Shaklein_KIR	
					Chernyshov_ORE	
					Fedorov_CU	
Overall solution	0.818	0.818	0.818			

[1] Small letters indicate absence, * stands for logical AND, + stands for logical OR.
[2] Intermediate solution formula looks identical. Directional expectations state that all conditions contribute to the outcome in their absence.
[3] Simplifying assumptions are as follows: 0000, 0010, 0100.
[4] Uniquely covered cases are in bold.

B Robustness tests

Table B.1: Alternative truth table 1, outcome reappointment

									Cases	
Row	VOT	STAB	EFF	POPUL	OUT	n	incl.	PRI	Reappointment	Dismissal
14	1	1	0	1	1	4	0.901	0.901	Korolev_LIP Markelov_ME Merkushkin_MO Morozov_ULY	-
16	1	1	1	1	1	2	0.858	0.858	Artamonov_KLU Tuleev_KEM	-
15	1	1	1	0	1	2	0.770	0.770	Betin_TAM Vinogradov_VLA	-
12	1	0	1	1	0	3	0.727	0.727	Bochkarev_PNZ Tkachev_KDA	Rossel_SVE
13	1	1	0	0	0	3	0.600	0.600	Bogomolov_KGN Mikhailov_KRS	Torlopov_KO
11	1	0	1	0	0	5	0.468	0.468	Volkov_UD	Chernyshov_ORE Fedorov_CU Kulakov_VOR Shaklein_KIR
7	0	1	1	0	0	2	0.362	0.362	-	Polezhaev_OMS Kress_TOM
9	1	0	0	0	0	4	0.333	0.333	Zhilkin_AST	Maksyuta_VGG Batdyev_KC Ilyumzhinov_KL
1	0	0	0	0	?	0	-	-	-	-
2	0	0	0	1	?	0	-	-	-	-
3	0	0	1	0	?	0	-	-	-	-
4	0	0	1	1	?	0	-	-	-	-
5	0	1	0	0	?	0	-	-	-	-
6	0	1	0	1	?	0	-	-	-	-
8	0	1	1	1	?	0	-	-	-	-
10	1	0	0	1	?	0	-	-	-	-

Consistency cut-off = 0.75.

Table B.2: Alternative conservative solution formula 1, outcome reappointment

	Cons.	PRI	Raw cov.	Uniq. cov.	Typical cases
VOT*STAB*EFF +	0.811	0.811	0.404	0.119	**Betin_TAM** **Vinogradov_VLA** Artamonov_KLU Tuleev_KEM
VOT*STAB*POPUL	0.896	0.896	0.405	0.121	**Korolev_LIP** **Markelov_ME** **Merkushkin_MO** **Morozov_ULY** Artamonov_KLU Tuleev_KEM
Overall solution	0.848	0.848	0.524		

[1] Capital letters denote presence, * stands for logical AND, + stands for logical OR.
[2] Uniquely covered cases are in bold.

Table B.3: Alternative truth table 1, outcome dismissal

									Cases	
Row	VOT	STAB	EFF	POPUL	OUT	n	incl.	PRI	Dismissal	Reappointment
9	1	0	0	0	0	4	0.667	0.667	Batdyev_KC Ilyumzhinov_KL Maksyuta_VGG	Zhilkin_AST
7	0	1	1	0	0	2	0.638	0.638	Polezhaev_OMS Kress_TOM	-
11	1	0	1	0	0	5	0.532	0.532	Chernyshov_ORE Shaklein_KIR Kulakov_VOR Fedorov_CU	Volkov_UD
13	1	1	0	0	0	3	0.400	0.400	Torlopov_KO	Mikhailov_KRS Bogomolov_KGN
12	1	0	1	1	0	3	0.273	0.273	Rossel_SVE	Bochkarev_PNZ Tkachev_KDA
15	1	1	1	0	0	2	0.230	0.230	-	Vinogradov_VLA Betin_TAM
16	1	1	1	1	0	2	0.142	0.142	-	Tuleev_KEM Artamonov_KLU
14	1	1	0	1	0	4	0.099	0.099	-	Markelov_ME Merkushkin_MO Korolev_LIP Morozov_ULY
1	0	0	0	0	?	0	-	-	-	-
2	0	0	0	1	?	0	-	-	-	-
3	0	0	1	0	?	0	-	-	-	-
4	0	0	1	1	?	0	-	-	-	-
5	0	1	0	0	?	0	-	-	-	-
6	0	1	0	1	?	0	-	-	-	-
8	0	1	1	1	?	0	-	-	-	-
10	1	0	0	1	?	0	-	-	-	-

Table B.4: Alternative truth table 2, outcome reappointment

									Cases	
Row	VOT	STAB	EFF	POPUL	OUT	n	incl.	PRI	Reappointment	Dismissal
14	1	1	0	1	1	4	0.892	0.892	Korolev_LIP Markelov_ME Merkushkin_MO Morozov_ULY	-
16	1	1	1	1	1	2	0.864	0.864	Artamonov_KLU Tuleev_KEM	-
15	1	1	1	0	0	2	0.675	0.675	Betin_TAM Vinogradov_VLA	-
12	1	0	1	1	0	3	0.627	0.627	Bochkarev_PNZ Tkachev_KDA	Rossel_SVE
13	1	1	0	0	0	3	0.571	0.571	Bogomolov_KGN Mikhailov_KRS	Torlopov_KO
11	1	0	1	0	0	5	0.423	0.423	Volkov_UD	Chernyshov_ORE Fedorov_CU Kulakov_VOR Shaklein_KIR
7	0	1	1	0	0	2	0.291	0.291	-	Polezhaev_OMS Kress_TOM
9	1	0	0	0	0	4	0.243	0.243	Zhilkin_AST	Maksyuta_VGG Batdyev_KC Ilyumzhinov_KL
1	0	0	0	0	?	0	-	-	-	-
2	0	0	0	1	?	0	-	-	-	-
3	0	0	1	0	?	0	-	-	-	-
4	0	0	1	1	?	0	-	-	-	-
5	0	1	0	0	?	0	-	-	-	-
6	0	1	0	1	?	0	-	-	-	-
8	0	1	1	1	?	0	-	-	-	-
10	1	0	0	1	?	0	-	-	-	-

Consistency cut-off = 0.75.

Table B.5: Alternative conservative solution formula 2, outcome reappointment

	Cons.	PRI	Raw cov.	Uniq. cov.	Typical cases
VOT*STAB*POPUL	0.907	0.907	0.406	-	Korolev_LIP Markelov_ME Merkushkin_MO Morozov_ULY Artamonov_KLU Tuleev_KEM
Overall solution	0.907	0.907	0.406		

[1] Capital letters denote presence, * stands for logical AND.
[2] Uniquely covered cases are in bold.

Table B.6: Alternative truth table 2, outcome dismissal

						Cases				
Row	VOT	STAB	EFF	POPUL	OUT	n	incl.	PRI	Dismissal	Reappointment
9	1	0	0	0	1	4	0.757	0.757	Batdyev_KC Ilyumzhinov_KL Maksyuta_VGG	Zhilkin_AST
7	0	1	1	0	0	2	0.709	0.709	Polezhaev_OMS Kress_TOM	-
11	1	0	1	0	0	5	0.577	0.577	Chernyshov_ORE Shaklein_KIR Kulakov_VOR Fedorov_CU	Volkov_UD
13	1	1	0	0	0	3	0.429	0.429	Torlopov_KO	Mikhailov_KRS Bogomolov_KGN
12	1	0	1	1	0	3	0.373	0.373	Rossel_SVE	Bochkarev_PNZ Tkachev_KDA
15	1	1	1	0	0	2	0.325	0.325	-	Vinogradov_VLA Betin_TAM
16	1	1	1	1	0	2	0.136	0.136	-	Tuleev_KEM Artamonov_KLU
14	1	1	0	1	0	4	0.108	0.108	-	Markelov_ME Merkushkin_MO Korolev_LIP Morozov_ULY
1	0	0	0	0	?	0	-	-	-	-
2	0	0	0	1	?	0	-	-	-	-
3	0	0	1	0	?	0	-	-	-	-
4	0	0	1	1	?	0	-	-	-	-
5	0	1	0	0	?	0	-	-	-	-
6	0	1	0	1	?	0	-	-	-	-
8	0	1	1	1	?	0	-	-	-	-
10	1	0	0	1	?	0	-	-	-	-

Table B.7: Alternative conservative solution formula 2, outcome dismissal

	Cons.	PRI	Raw cov.	Uniq. cov.	Typical cases	Deviant cases
VOT*stab*eff*popul	0.757	0.757	0.332	-	Batdyev_KC Maksyuta_VGG Ilyumzhinov_KL	Zhilkin_AST
Overall solution	0.757	0.757	0.332			

[1] Capital letters denote presence, small letters indicate absence, * stands for logical AND.

Table B.8: Alternative conservative solution 3, outcome reappointment

	Cons.	PRI	Raw cov.	Uniq. cov.	Typical cases
VOT*STAB*EFF +	1.000	1.000	0.333	0.167	**Betin_TAM** **Vinogradov_VLA** Artamonov_KLU Tuleev_KEM
VOT*STAB*POPUL	1.000	1.000	0.417	0.250	**Korolev_LIP** **Markelov_ME** **Merkushkin_MO** Artamonov_KLU Tuleev_KEM
Overall solution	1.000	1.000	0.583		

[1] Capital letters denote presence * stands for logical AND, + stands for logical OR.
[2] Uniquely covered cases are in bold.

Table B.9: Conservative solution formula 3, outcome dismissal

	Cons.	PRI	Raw cov.	Uniq. cov.	Typical cases	Deviant cases
VOT*stab*popul +	0.857	0.857	0.600	0.600	**Batdyev_KC** **Ilyumzhinov_KL** **Kulakov_VOR** **Maksyuta_VGG** **Chernyshov_ORE** **Fedorov_CU**	Volkov_UD
vot*STAB*EFF*popul	1.000	1.000	0.200	0.200	**Polezhaev_OMS** **Kress_TOM**	
Overall solution	0.889	0.889	0.800			

[1] Capital letters denote presence, small letters indicate absence, * stands for logical AND, + stands for logical OR.
[2] Uniquely covered cases are in bold.

Table B.10: Alternative conservative solution 4, outcome reappointment

	Cons.	PRI	Raw cov.	Uniq. cov.	Typical cases
VOT*STAB*EFF +	1.000	1.000	0.357	0.143	**Betin_TAM** **Vinogradov_VLA** Artamonov_KLU Merkushkin_MO Tuleev_KEM
VOT*STAB*POPUL	1.000	1.000	0.429	0.214	**Korolev_LIP** **Markelov_ME** **Morozov_ULY** Artamonov_KLU Merkushkin_MO Tuleev_KEM
Overall solution	1.000	1.000	0.571		

[1] Capital letters denote presence, * stands for logical AND, + stands for logical OR.
[2] Uniquely covered cases are in bold.

Table B.11: Conservative solution formula 4, outcome dismissal

	Cons.	PRI	Raw cov.	Uniq. cov.	Typical cases
VOT*stab*EFF*popul +	1.000	1.000	0.182	0.182	**Chernyshov_ORE** **Fedorov_CU**
vot*STAB*EFF*popul	1.000	1.000	0.182	0.182	**Polezhaev_OMS** **Kress_TOM**
Overall solution	1.000	1.000	0.364		

[1] Capital letters denote presence, small letters indicate absence, * stands for logical AND, + stands for logical OR.
[2] Uniquely covered cases are in bold.

C Replication Script

```
### Replication script to "Explaining the Tenure of Incumbent Governors
### in Russia: A Qualitative Comparative Analysis"
### by Ekaterina Paustyan

# Remove everything from the working environment:
rm(list=ls())

# Set your working directory:
setwd()
getwd()

# Load the packages:
library(QCA)
library(SetMethods)

# Load the raw data:
DT <- read.csv("raw_data.csv", row.names = 1, sep=",")
head(DT)

# Calibration ====

# VOT #
# Check the distribution of the raw data
hist(DT$VOT_raw,
     xlab = "VOT_raw",
     main = paste("Histogram of the raw VOT scores"))

VOT <- calibrate(DT$VOT_raw, type = "crisp", thresholds = 51)
VOT
DT$VOT<-VOT


# Visualize the crisp set scores using a histogram:
hist(DT$VOT,
     xlab = "VOT",
     main = paste("Histogram of the crisp set VOT scores"))

# Plot the raw data against the crisp set scores:
plot(DT$VOT_raw, DT$VOT)

# STAB #

# Check the distribution of the raw data
hist(DT$STAB_raw,
     xlab = "STAB_raw",
     main = paste("Histogram of the raw STAB scores"))

# To remove Maksyuta_VGG as it represents a significant outlier
DT1 <-DT[-c(19), ]
```

```
50
51 # Check the distribution of the raw data again
52 hist(DT1$STAB_raw,
53       xlab = "STAB_raw",
54       main = paste("Histogram of the raw STAB scores"))
55
56 # Calibrate the raw data
57 STAB <- NA #empty vector
58 STAB[DT$STAB_raw<=20000]<-1
59 STAB[DT$STAB_raw>20000]<-0
60 STAB
61
62 # Add the new calibrated set to the data frame:
63 DT$STAB<-STAB
64
65 # for Batdyev_KC
66 DT[15, 1-7]
67 DT[15, 7] <- 0
68 DT[15, 1-7]
69
70 # for Ilyumzhinov_KL
71 DT[20, 1-7]
72 DT[20, 7] <- 0
73 DT[20, 1-7]
74
75 # Visualize the crisp set scores using a histogram:
76 hist(DT$STAB,
77       xlab = "STAB",
78       main = paste("Histogram of the crisp set STAB scores"))
79
80 # Plot the raw data against the crisp set scores:
81 plot(DT$STAB_raw, DT$STAB)
82
83 # Maksyuta_VGG again distorts the distribution of the scores,
84 # let us plot the scores without it
85
86 # Calibrate the raw scores
87 STAB <- NA #empty vector
88 STAB[DT1$STAB_raw<=20000]<-1
89 STAB[DT1$STAB_raw>20000]<-0
90 STAB
91
92 # Add the new calibrated set to the data frame:
93 DT1$STAB<-STAB
94
95 # for Batdyev_KC
96 DT1[15, 1-7]
97 DT1[15, 7] <- 0
98 DT1[15, 1-7]
99
100 # for Ilyumzhinov_KL
```

```
DT1[19, 1-7]
DT1[19, 7] <- 0
DT1[19, 1-7]

# Visualize the crisp set scores using a histogram:
hist(DT1$STAB,
     xlab = "STAB",
     main = paste("Histogram of the crisp set STAB scores"))

# Finally, plot the raw data against the crisp set scores:
plot(DT1$STAB_raw, DT1$STAB)

head(DT)

# EFF #

# Check the distribution of the raw data:
hist(DT$EFF_raw,
     xlab = "EFF_raw",
     main = paste("Histogram of the raw EFF scores"))

# Calibrate the raw data:
EFF <- NA #empty vector
EFF[DT$EFF_raw<=40]<-1
EFF[DT$EFF_raw>40]<-0
EFF

# Add the new calibrated sets to the data frame:
DT$EFF<-EFF

# Check the distribution of the crisp set scores:
hist(DT$EFF,
     xlab = "EFF",
     main = paste("Histogram of the crisp set EFF scores"))

# Plot the raw data against the crisp set scores:
plot(DT$EFF_raw, DT$EFF)
head(DT)

# POPUL #

# Check the distribution of the raw data:
hist(DT$POPUL_raw,
     xlab = "POPUL_raw",
     main = paste("Histogram of the raw POPUL scores"))

# Calibrate the raw data:
POPUL <- calibrate(DT$POPUL_raw, type = "crisp", thresholds = 40)
POPUL

# Add the calibrated set to the data frame:
```

```
152 DT$POPUL<-POPUL
153
154 # Check the distribution of the crisp set scores:
155 hist(DT$POPUL,
156      xlab = "POPUL",
157      main = paste("Histogram of the crisp set POPUL scores"))
158
159 # Plot the raw data against the crisp set scores:
160 plot(DT$POPUL_raw, DT$POPUL)
161 head(DT)
162
163 # OUT #
164
165 # Check the distribution of the raw data:
166 hist(DT$OUT_raw,
167      xlab = "OUT_raw",
168      main = paste("Histogram of the raw OUT scores"))
169
170 # Calibrate the raw data:
171 OUT <- DT$OUT_raw
172 OUT
173
174 # Add to the data frame:
175 DT$OUT<-OUT
176
177 # Check the distribution of the crisp set scores:
178 hist(DT$OUT,
179      xlab = "OUT",
180      main = paste("Histogram of the crisp set OUT scores"))
181
182 # Plot the raw data against the crisp set scores:
183 plot(DT$OUT_raw, DT$OUT)
184
185 # Remove columns with the raw data:
186 DT <- DT[,-c(1:5)]
187 DT
188
189 # Examine skewness of the data:
190 skew.check(DT)
191
192 # Save calibrated data set as a csv file
193 write.csv(DT, "calibrated.csv")
194
195 # Outcome: reappointment -----
196
197 # Analysis of necessity -----
198 rm(list=ls())
199
200 DT <- read.csv("calibrated.csv", row.names = 1, sep=",")
201 head(DT)
202
```

```
QCAfit(DT[, 1:4], DT$OUT, names(DT[, 1:4]), necessity = TRUE)

# VOT has consistency of 1.000, but low relevance of 0.182,
# it is more likely to be a trivial necessary condtion

# Let us plot it:
xy.plot("VOT",
        "OUT",
        data = DT,
        xlab="VOT",
        ylab="OUT",
        necessity=TRUE,
        jitter = TRUE)

# No deviant cases, yet clearly trivial necessary condition

# Let us also check for SUIN conditions
SUIN_y <- superSubset(data = DT,
                      outcome = "OUT",
                      conditions = c("VOT", "STAB", "EFF",
                                     "POPUL"),
                      relation = "necessity",
                      incl.cut = 0.90,
                      cov.cut = 0.5,
                      ron.cut = 0.5,
                      depth = 2)
SUIN_y

# No

# Analysis of sufficiency ----

# Create a truth table setting a cut-off at 1.00

TT <- truthTable(DT, outcome = "OUT",
                 conditions = c("VOT", "STAB", "EFF",
                                "POPUL"),
                 incl.cut1 = 1.00,
                 complete = TRUE,
                 show.cases = TRUE,
                 PRI = TRUE,
                 sort.by = c("OUT","incl", "n"))

TT

# Conservative solution

sol_c <- minimize(TT, details = TRUE,
                  show.cases = TRUE,
                  use.tilde=FALSE)

```

```
sol_c

# Typical cases
cases.suf.typ(results = sol_c, outcome = "OUT")

# Deviant cases
cases.suf.dcn(results = sol_c, outcome = "OUT")
# no

# Let us examine conservative solution with pimplot:
pimplot(data = DT,
        results = sol_c,
        outcome = "OUT",
        all_labels = TRUE,
        jitter = TRUE)

# VOT*STAB are present in both solution terms

# Let us check if they are necessary together
INTERSECTION <- DT$VOT*DT$STAB
DT$INTERSECTION<-INTERSECTION

QCAfit(DT[, 6], DT$OUT, names(DT[, 6]), necessity = TRUE)
# low consistency of 0.714, RoN of 0.933

# Let us creat an XY plot
xy.plot("INTERSECTION",
        "OUT",
        data = DT,
        xlab="VOT*STAB",
        ylab="OUT",
        necessity=TRUE,
        jitter = TRUE)

# four deviant cases,
# should not be interpreted as necessary,
# but definitely an important INUS condition

# Most parsimonious solution

# Exclude simplifying assumption 2
#    VOT STAB EFF POPUL
#     0    0   0     1
# as at least two conditions are expected to be present
# to produce the outcome reappointment

sol_p <- minimize(TT, details = TRUE,
                  include = "?",
                  show.cases = TRUE,
                  exclude = "2")

```

```
sol_p
# model ambiguity

# Check simplifying assumptions
sol_p$SA

# Typical cases
cases.suf.typ(results = sol_p, outcome = "OUT", 1)
cases.suf.typ(results = sol_p, outcome = "OUT", 2)

# Deviant cases
cases.suf.dcn(results = sol_p, outcome = "OUT", 1)
# no
cases.suf.dcn(results = sol_p, outcome = "OUT", 2)
# no

# Intermediate solution
# directions expectations: all conditions are expected
# to contribute to the outcome in their presence

sol_i <- minimize(TT, details = TRUE, include = "?",
                  show.cases = TRUE,
                  dir.exp = c(1,1, 1, 1))


sol_i
# same as conservative

# Check easy counterfactuals
sol_i$i.sol$C1P1$EC
# no

# Outcome: dismissal ------

# Analysis of necessity -----
QCAfit(DT[, 1:4], DT$OUT, names(DT[, 1:4]),
       necessity = TRUE, neg.out = TRUE)

# popul has consistency of 0.909
# and relevance of 0.600

# Let us examine it with XY plot
xy.plot("~POPUL",
        "~OUT",
        data = DT,
        xlab="~POPUL",
        ylab="OUT",
        necessity=TRUE,
        jitter = TRUE)

# one deviant case - Rossel_SVE
```

```
356
357 # Let us also check SUIN conditions
358 SUIN_ny <- superSubset(data = DT,
359                        outcome = "~OUT",
360                        conditions = c("VOT", "STAB", "EFF",
361                                       "POPUL"),
362                        relation = "necessity",
363                        incl.cut = 0.90,
364                        ron.cut =  0.5,
365                        cov.cut = 0.6,
366                        depth = 2)
367
368 SUIN_ny
369
370 # popul
371 # vot+stab
372 # none stands for any higher order concept
373
374 # Analysis of sufficiency ----
375
376 # Create a truth table setting a cut-off at 0.75
377
378 TT_n <- truthTable(DT, outcome = "~OUT",
379                    conditions = c("VOT", "STAB", "EFF",
380                                   "POPUL"),
381                    incl.cut1 = 0.75,
382                    complete = TRUE,
383                    show.cases = TRUE,
384                    sort.by = c("OUT","incl", "n"))
385 TT_n
386
387 # Conservative solution
388
389 sol_c_n <- minimize(TT_n,
390                     details = TRUE,
391                     show.cases = TRUE)
392
393 sol_c_n
394
395 # Typical cases
396 cases.suf.typ(results = sol_c_n,outcome = "~OUT")
397
398 # Deviant cases
399 cases.suf.dcn(results = sol_c_n, outcome = "~OUT")
400
401 # Let us examine the solution with pimplot
402
403 pimplot(data = DT,
404         results = sol_c_n,
405         outcome = "~OUT",
406         all_labels = TRUE,
```

```
        jitter = TRUE)

# Most parsimonious solution

# Exclude rows "4", "8", and "10"
# as they include two or more conditions in their presence

sol_p_n <- minimize(TT_n,
                    details = TRUE,
                    include = "?",
                    show.cases = TRUE,
                    exclude = c("4", "8", "10"))


sol_p_n

# Typical cases
cases.suf.typ(results = sol_p_n,outcome = "~OUT")

# Deviant cases
cases.suf.dcn(results = sol_p_n, outcome = "~OUT")

# Check simplifying assumptions
sol_p_n$SA

# Intermediate solution
sol_i_n <- minimize(TT_n, details = TRUE, include = "?",
                    show.cases = TRUE,
                    dir.exp = c(0,0, 0, 0))

sol_i_n
# same as parsimonious

# Check easy counterfactuals
sol_i_n$i.sol$C1P1$EC
# same as simplifying assumptions

# Check for simultaneous subset relations
SSR<-intersect(rownames(TT$tt)[TT$tt$OUT==1],
               rownames(TT_n$tt)[TT_n$tt$OUT==1])
SSR
# no

# Check for any contradictory simplifying assumptions
CSA <- intersect(rownames(sol_p$i.sol$sol_p$C1P1$SA),
                 rownames(sol_p_n$i.sol$C1P1$sol_p_n$SA))
CSA
# no

# Check for any contradictory easy counterfactuals
CEC <- intersect(rownames(sol_i$i.sol$C1P1$EC),
```

```
                    rownames(sol_i_n$i.sol$C1P1$EC))
CEC

# Theory evaluation ----

# Intersect theory with the conservative solution
TH <- theory.evaluation(theory = "VOT*STAB + EFF*POPUL",
                        empirics = sol_c,
                        outcome = "OUT",
                        sol=1,
                        print.fit=FALSE,
                        print.data=FALSE,
                        use.tilde = TRUE)
TH

# Obtain just the parameters of fit for each intersection
TH$fit

# Obtain just the names of cases for each intersection
TH$cases


# Robustness ----

# Test 1 ----
# Alternative calibation strategy 1: theoretical or 'indirect' calibration:
# 0, 0.33, 0.67, and 1

rm(list=ls())
DT <- read.csv("raw_data.csv", row.names = 1, sep=",")
head(DT)

# VOT #
# To calibrate the set VOT
# I use the following threshold values:
# less than or equal to 40 percent - 0;
# more than 40 but less than 50 - 0.33;
# more than 50 but less than 65 - 0.67;
# more than 65 percent - 1.

VOT <- NA
VOT[DT$VOT_raw<=40]<-0
VOT[DT$VOT_raw>40 & DT$VOT_raw<=50]<-0.33
VOT[DT$VOT_raw>50 & DT$VOT_raw<=65]<-0.67
VOT[DT$VOT_raw>65 & DT$VOT_raw<=100]<-1
VOT

# To add the new calibrated set to the data frame:
DT$VOT<-VOT
head(DT)

```

```
# To visualize the raw data using a histogram:
hist(DT$VOT_raw)

# To visualize the fuzzy set scores using a histogram:
hist(DT$VOT)

# To plot the raw data against the fuzzy set scores:
plot(DT$VOT_raw, DT$VOT)

DT

# for Tkachev_KDA - 2011 State Duma elections
DT[14, 1-6]
DT[14, 6] <- 1
DT[14, 1-6]

# STAB #
# To calibrate the set STAB
# I use the following threshold values:
# more than 30,000 - 0;
# more than 20,000 but less than 30,000 - 0.33;
# more than 10,000 but less than 20,000 - 0.67;
# less than or equal to 10,000 - 1.

STAB <- NA
STAB[DT$STAB_raw<=10000]<-1
STAB[DT$STAB_raw>10000 & DT$STAB_raw<=20000]<-0.67
STAB[DT$STAB_raw>20000 & DT$STAB_raw<=30000]<-0.33
STAB[DT$STAB_raw>30000 & DT$STAB_raw<=250000]<-0
STAB

# To add the new calibrated set to the data frame:
DT$STAB<-STAB
head(DT)

# To visualize the raw data using a histogram:
hist(DT$STAB_raw)

# To visualize the fuzzy set scores using a histogram:
hist(DT$STAB)

# To plot the raw data against the fuzzy set scores:
plot(DT$STAB_raw, DT$STAB)

DT

# for Batdyev_KC
DT[15, 1-7]
DT[15, 7] <- 0.33
DT[15, 1-7]

```

```
# for Ilyumzhinov_KL
DT[20, 1-7]
DT[20, 7] <- 0.33
DT[20, 1-7]

# EFF #
# To calibrate the set EFF
# I use the following threshold values:
# more than 60 - 0;
# more than 40 but less than 60 - 0.33;
# more than 20 but less than 40 - 0.67;
# less than or equal to 20 - 1.

EFF <- NA
EFF[DT$EFF_raw<=20]<-1
EFF[DT$EFF_raw>20 & DT$EFF_raw<=40]<-0.67
EFF[DT$EFF_raw>40 & DT$EFF_raw<=60]<-0.33
EFF[DT$EFF_raw>60 & DT$EFF_raw<=83]<-0
EFF

# To add the new calibrated set to the data frame:
DT$EFF<-EFF
head(DT)

# To visualize the raw data using a histogram:
hist(DT$EFF_raw)

# To visualize the fuzzy set scores using a histogram:
hist(DT$EFF)

# To plot the raw data against the fuzzy set scores:
plot(DT$EFF_raw, DT$EFF)

# POPUL #
# To calibrate the set POPUL
# I use the following threshold values:
# less than or equal to 30 percent - 0;
# more than 30 but less than or equal to 40 - 0.33;
# more than 40 but less than or equal to 50 - 0.67;
# more than 50 and less than or equal to 100 - 1.

POPUL <- NA
POPUL[DT$POPUL_raw<=30]<-0
POPUL[DT$POPUL_raw>30 & DT$POPUL_raw<=40]<-0.33
POPUL[DT$POPUL_raw>40 & DT$POPUL_raw<=50]<-0.67
POPUL[DT$POPUL_raw>50 & DT$POPUL_raw<=100]<-1
POPUL

# To add the new calibrated set to the data frame:
DT$POPUL<-POPUL
head(DT)
```

```
611
612 # To visualize the raw data using a histogram:
613 hist(DT$POPUL_raw)
614
615 # To visualize the fuzzy set scores using a histogram:
616 hist(DT$POPUL)
617
618 # To plot the raw data against the fuzzy set scores:
619 plot(DT$POPUL_raw, DT$POPUL)
620
621 # OUT #
622 OUT <- DT$OUT_raw
623 DT$OUT <- OUT
624
625 # Remove columns with the raw data:
626 DT <- DT[,-c(1:5)]
627
628 # Examine skewness of the calibrated data:
629 skew.check(DT)
630
631 # Save calibrated data set as a csv file
632 write.csv(DT, "calibrated_indirect.csv")
633
634 rm(list=ls())
635
636 DT <- read.csv("calibrated_indirect.csv", row.names = 1, sep=",")
637
638 # Alternative analysis of sufficiency 1
639 # Outcome: reappointment
640
641 # To create a truth table
642
643 TT1 <- truthTable(DT, outcome = "OUT",
644                   conditions = colnames(DT[,1:4]),
645                   incl.cut1 = 0.75,
646                   complete = TRUE,
647                   show.cases = TRUE,
648                   PRI = TRUE,
649                   sort.by = c("OUT","incl", "n"))
650
651 TT1
652
653 # Alternative conservative solution 1
654
655 sol_c1 <- minimize(TT, details = TRUE,
656                    show.cases = TRUE,
657                    use.tilde=FALSE)
658
659 sol_c1
660
661 # Typical cases
```

```
cases.suf.typ(results = sol_c1,outcome = "OUT")

# Deviant cases
cases.suf.dcn(results = sol_c1, outcome = "OUT")

# Let us produce XY-plot of the conservative solution formula

pimplot(data = DT,
        results = sol_c1,
        outcome = "OUT",
        all_labels = TRUE,
        jitter = TRUE)

# Alternative analysis of sufficiency 1
# Outcome: dismissal

# To create a truth table

TT_n1 <- truthTable(DT, outcome = "OUT", neg.out = TRUE,
                    conditions = colnames(DT[,1:4]),
                    incl.cut1 = 0.75,
                    complete = TRUE,
                    show.cases = TRUE,
                    sort.by = c("OUT","incl", "n"))
TT_n1

# none of the truth table rows has consistency of higher than or equal to 0.75

# Test 2 ----
# Alternative calibation strategy 2: 'direct' calibration

# VOT_raw column needs to be duplicated,
# as the results of 2007 and 2011 State Duma elections
# calibrated differently

# Calibrate the results of State Duma elections in 2007
VOT <- calibrate(DT$VOT_raw1,
                 type = "fuzzy",
                 thresholds = c(48.00, 51.00, 65.00),
                 logistic = TRUE, idm = 0.95)
VOT

# Calibrate the results of State Duma elections in 2011
VOT2 <- calibrate(DT$VOT_raw2,
                  type = "fuzzy",
                  thresholds = c(29.00, 51.00, 55.00),
                  logistic = TRUE, idm = 0.95)
VOT2

# Add the new calibrated sets to the data frame:
DT$VOT<-VOT
```

```
713 DT$VOT2 <-VOT2
714
715 # Replace data in VOT using fuzzy-set membership scores
716 # from VOT2 for the following three cases:
717 # Kress_TOM, Polezhaev_OMS, Tkachev_KDA
718
719 # for Kress_TOM
720 DT[25, 1-7]
721 DT[25, 7] <- 0.1411857
722 DT[25, 1-7]
723
724 # for Polezhaev_OMS
725 DT[24, 1-7]
726 DT[24, 7] <- 0.1786157
727 DT[24, 1-7]
728
729 # for Tkachev_KDA
730 DT[14, 1-7]
731 DT[14, 7] <- 0.9779245
732 DT[14, 1-7]
733
734 # Remove column VOT2
735 DT <- DT[,-8]
736 head(DT)
737
738 # Visualize the fuzzy set scores using a histogram:
739 hist(DT$VOT)
740
741 # Plot the raw data against the fuzzy set scores:
742 plot(DT$VOT_raw1, DT$VOT)
743
744 # STAB #
745
746 # Check the distribution of the raw data
747 hist(DT$STAB_raw)
748
749 # Calibrate the raw scores
750 STAB <- calibrate(DT$STAB_raw, type = "fuzzy",
751                   thresholds = c(30000, 20000, 10000),
752                   logistic = TRUE, idm = 0.95)
753 STAB
754
755 # Add the new calibrated set to the data frame:
756 DT$STAB<-STAB
757
758 # for Batdyev_KC
759 DT[15, 1-8]
760 DT[15, 8] <- 0.33
761 DT[15, 1-8]
762
763 # for Ilyumzhinov_KL
```

```
764 DT[20, 1-8]
765 DT[20, 8] <- 0.33
766 DT[20, 1-8]
767
768 # Plot the raw data against the fuzzy set scores:
769 plot(DT$STAB_raw, DT$STAB)
770
771 # Visualize the fuzzy set scores using a histogram:
772 hist(DT$STAB)
773
774 # EFF #
775
776 # Check the distribution of the raw data:
777 hist(DT$EFF_raw)
778
779 # Calibrate the raw data:
780 EFF <- calibrate(DT$EFF_raw, type = "fuzzy",
781                  thresholds = c(70, 40, 20),
782                  logistic = TRUE, idm = 0.95)
783 EFF
784
785 # Add the new calibrated sets to the data frame:
786 DT$EFF<-EFF
787
788 # Plot the raw data against the fuzzy set scores:
789 plot(DT$EFF_raw, DT$EFF)
790
791 # Check the distribution of the fuzzy set scores:
792 hist(DT$EFF)
793
794 head(DT)
795
796 # POPUL #
797
798 # Check the distribution of the raw data:
799 hist(DT$POPUL_raw)
800
801 # Calibrate the raw data:
802 POPUL <- calibrate(DT$POPUL_raw, type = "fuzzy",
803                    thresholds = c(30, 40, 50),
804                    logistic = TRUE, idm = 0.95)
805 POPUL
806
807 # Add the calibrated set to the data frame:
808 DT$POPUL<-POPUL
809
810 # Plot the raw data against the fuzzy set scores:
811 plot(DT$POPUL_raw, DT$POPUL)
812
813 # Check the distribution of the fuzzy set scores:
814 hist(DT$POPUL)
```

```
815
816 # OUT #
817
818 OUT <- DT$OUT_raw
819 DT$OUT<-OUT
820
821 # Remove columns with the raw data:
822 DT <- DT[,-c(1:6)]
823
824 # Round up to two digits:
825 DT <- round(DT, digits=2)
826
827 # Examine skewness of the calibrated data:
828 skew.check(DT)
829
830 # Save calibrated data set as a csv file
831 write.csv(DT, "calibrated_direct.csv")
832
833 rm(list=ls())
834 DT <- read.csv("calibrated_direct.csv", row.names = 1, sep=",")
835
836 # Alternative analysis of sufficiency 2
837 # Outcome: reappointment
838
839 # To create a truth table
840
841 TT2 <- truthTable(DT, outcome = "OUT",
842                   conditions = colnames(DT[,1:4]),
843                   incl.cut1 = 0.75,
844                   complete = TRUE,
845                   show.cases = TRUE,
846                   PRI = TRUE,
847                   sort.by = c("OUT","incl", "n"))
848
849 TT2
850
851 # Alternative conservative solution 2
852
853 sol_c2 <- minimize(TT2, details = TRUE,
854                    show.cases = TRUE,
855                    use.tilde=FALSE)
856
857 sol_c2
858
859 # Typical cases
860 cases.suf.typ(results = sol_c2,outcome = "OUT")
861
862 # Deviant cases
863 cases.suf.dcn(results = sol_c2, outcome = "OUT")
864 # no
865
```

```
# Alternative analysis of sufficiency 2
# Outcome: dismissal

# To create a truth table

TT_n2 <- truthTable(DT, outcome = "OUT", neg.out = TRUE,
                    conditions = colnames(DT[,1:4]),
                    incl.cut1 = 0.75,
                    complete = TRUE,
                    show.cases = TRUE,
                    sort.by = c("OUT","incl", "n"))
TT_n2

# Alternative conservative solution 2

sol_c_n2 <- minimize(TT_n2,
                     details = TRUE,
                     show.cases = TRUE)


sol_c_n2

# Typical cases
cases.suf.typ(results = sol_c_n2,outcome = "~OUT")

# Deviant cases
cases.suf.dcn(results = sol_c_n2, outcome = "~OUT")

# XY-plot of the conservative solution formula
pimplot(data = DT,
        results = sol_c_n2,
        outcome = "~OUT",
        all_labels = TRUE,
        jitter = TRUE)


# Test 3 ----
# Analysis of 22 cases
# Exclude Zhilkin_AST, Morozov_ULY, and Shaklein_KIR

rm(list=ls())

DT <- read.csv("calibrated.csv", row.names = 1, sep=",")
DT2 <- DT
DT2
# Remove these cases

# Zhilkin_AST
DT2[1,]
DT2 <- DT2[-1,]

```

```
# Morozov_ULY
DT2[12,]
DT2 <- DT2[-12,]

# Shaklein_KIR
DT2[14,]
DT2 <- DT2[-14,]

# Produce alternative conservative 3
# Outcome: reappointment

sol_c3 <- minimize(data = DT2,
                   outcome  = "OUT",
                   conditions = c("VOT", "STAB", "EFF",
                                  "POPUL"),
                   incl.cut = 0.75,
                   details = TRUE, show.cases = TRUE)

sol_c3

# Typical cases
cases.suf.typ(results = sol_c3,outcome = "OUT")

# Produce alternative conservative 3
# Outcome: dismissal

sol_c_n3 <- minimize(data = DT2,
                   outcome  = "OUT", neg.out = TRUE,
                   conditions = c("VOT", "STAB", "EFF",
                                  "POPUL"),
                   incl.cut = 0.75,
                   details = TRUE, show.cases = TRUE)

sol_c_n3

# Typical cases
cases.suf.typ(results = sol_c_n3,outcome = "~OUT")

# Deviant cases
cases.suf.dcn(results = sol_c_n3, outcome = "~OUT")

# Test 4 ----
# Use alternative indicator for EFF -
# the integral index of governors efficiency

DT4 <- read.csv("eff_alt.csv", row.names = 1, sep=",")

# Produce alternative conservative 4
# outcome: reappointment
sol_c4 <- minimize(data = DT4,
                   outcome  = "OUT",
```

```
                        conditions = c("VOT", "STAB", "EFF",
                                       "POPUL"),
                        incl.cut = 0.75,
                        details = TRUE, show.cases = TRUE)

sol_c4

# Typical cases
cases.suf.typ(results = sol_c4,outcome = "OUT")

# Produce alternative conservative 4
# Outcome: dismissal
sol_c_n4 <- minimize(data = DT4,
                         outcome  = "OUT", neg.out = TRUE,
                         conditions = c("VOT", "STAB", "EFF",
                                        "POPUL"),
                         incl.cut = 0.75,
                         details = TRUE, show.cases = TRUE)

sol_c_n4

# Typical cases
cases.suf.typ(results = sol_c_n4,outcome = "~OUT")

# Deviant cases
cases.suf.dcn(results = sol_c_n4, outcome = "~OUT")
```