

# Linking Preference Falsification and Election Fraud In Electoral Autocracies

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## Abstract

This study sheds new light on whether public opinion polls, namely, preference falsification, can affect the level of election fraud by employing Kuran's model of preference falsification, which is empirically tested on the data collected from the most recent presidential campaign in Russia (2012) as well as a cross-national dataset. My research findings reveal the presence of a statistically significant effect of preference falsification on election fraud, thus enabling me to conclude that preference falsification is, indeed, conducive to election fraud. My findings can be generalized to a broad set of electoral autocracies, enabling scholars to get a better understanding of the mechanism by which survey polls can incentivize officials to commit election fraud.

**Keywords:** election polls, Russian elections, presidential rating, preference falsification, election fraud.

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# Introduction

In elections under authoritarian rule, the ruling party or an incumbent usually enjoy overwhelming electoral support, with the elections often considered fraudulent (Diamond, 2002). Electoral autocracies or hybrid regimes combine democratic and authoritarian elements, masking the authoritarian nature of the regime with democratic political institutions, such as multi-party elections. These regimes conduct public opinion polls in addition to holding elections, and surprisingly, a close match between public opinion polls and election results is often observed, even when obvious vote stealing takes place. What is the general mechanism behind a close match between the polls and the rigged election results? Can pre-election polls constrain the autocrat's ability to commit election fraud? Can pre-election polls be used as a reliable way to detect election fraud? The answers to this set of questions are consequential to our understanding of how elections are organized in electoral autocracies, and of how helpful the polling data can be as a tool of election fraud detection in democracies (Charnin, 2012). Indeed, the importance of pre-election polling is hard to overestimate, since a single opinion poll can serve as a coordination mechanism, having a significant influence on election outcomes and allowing the incumbent to guarantee the credibility of rigged election results (Andonie and Kuzmics, 2012).

The electoral research on preference falsification is usually focused on misprediction of the final outcomes by the pollsters (Bischoping and Schuma, 1992). However, no research has focused, so far, on the striking accuracy of election polls in electoral autocracies when the presence of election fraud is common knowledge among the populace. Major national polling organizations issued election forecasts based on Putin's electoral ratings that successfully predicted official election results within the margin of error (See Table A1 in the Appendix). Surprisingly, however, despite his high popularity oftentimes driven by exaggeration of external threats and terrorist dangers (Mansfield and Snyder, 1995; Arce, 2003; Ekman, 2009) election fraud has always been an integral part of his presidency, and is characterized by an upward trend over Putin's time in office (Mebane and Kalinin, 2009). This especially applies to the most recent Russian presidential election in 2012, which was marked by the spread of massive protests associated with the growing public awareness of alleged election fraud and a substantial voter mobilization effort (Enikolopov et al., 2013; Kalinin and Shpilkin, 2012; Kalinin and Mebane, 2013; Shpilkin, 2011).

The observed close congruence between Putin's official electoral support and the polling election forecasts have three explanations: (1) in reality the election fraud has

never occurred, therefore the election polls are correct; (2) since a significant amount of election fraud is present, the election polls are incorrect; and (3) both electoral results and election polls are fabricated and therefore fraudulent. Based on anecdotal evidence from election observers and scholarly research, this paper argues that the second explanation provides the most plausible argument.

There are many reasons for which polls can be incorrect in electoral autocracies, from crude data fabrication to issues with the sampling frame. The abuse of non-probability sampling design can contribute to unintentional upward inflation. Measurement error, specifically social desirability bias (or preference falsification), can inflate the incumbent's election ratings due to the respondents' eagerness to portray themselves in a socially desirable way. Two explanations can be readily excluded. Previous research on the 2012 presidential election indicates that the non-probability sampling design used by a majority of the organizations cannot explain the observed inflation in the estimates (Kalinin, 2014). Since across all the survey organizations, with a range of relationships to the Kremlin, polling estimates vary within the margin of error, it is unlikely that data fabrication took place. The final explanation is linked to the preference falsification. It implies that respondents give dishonest answers to conform to societal norms, thus contributing to an increase in response bias in the autocrat's electoral ratings.

This paper provides an innovative perspective on the mechanism by which the autocrats in electoral autocracies strategically benefit from preference falsification, which boosts their own electoral ratings and encourages perpetration of election fraud. By doing so, the autocrats are able to organize election fraud up to the level of the discrepancy, effectively hiding the extent of election rigging and avoiding the political risks associated with revealed mismatch. Ideally, the presence of the observed close match between polling forecasts and election results enables the autocrat not only to claim his electoral legitimacy validated by pre-election polling, but also to reveal the weaknesses of political opposition unable to enjoy such extensive public support.

If, however, any of such mismatches occur these goals are severely undermined. Politically sensitive questions in pre-election polls in electoral autocracies and democracies have been studied in a fairly large body of literature (Geddes and Zaller, 1989; Bischooping and Schuma, 1992; Anderson, 1994; Beltran and Valdivia, 1999; Sieger, 1990). This literature is usually focused on misprediction of the final outcomes by the pollsters due to contextual effects related to the authoritarian nature, flaws in sampling, last minute changes in preferences or preference falsification. For instance, according to Bischooping and Schuma (1992) almost all polls in Nicaragua forecasted a clear victory for the incumbent Sandinistas, but their opponent won the race, which was attributed to the

preference falsification due to the perceived partisanship of a poll by the respondents.

Theoretically, this paper builds on Timur Kuran's work on preference falsification, by adjusting his basic model to the topic of election fraud (Kuran, 1987, 1991). Within this framework, election fraud is designed to mask the discrepancy between endogenously determined public and private pre-electoral preferences, and guarantee the autocrat a stable equilibrium. My theory suggests that election fraud serves as a by-product of pre-election forecasts that are contaminated with the preference falsification, creating leeway for numerous electoral violations, including election fraud. Theoretical implications of the model are tested on empirical data from the 2012 Russian presidential elections, thereby opening the door to empirical estimation of election fraud by means of election polls and survey experiments. In order to extend my findings beyond the Russian case and perform robustness checks of my main findings, I also apply a statistical analysis of cross-national data.

The contribution of this paper to the existing literature is threefold. First, this paper extends Kuran's model by adding to the model the concept of election fraud, and thus offers a mechanism by which an incumbent insures his most desirable electoral outcome. Second, this paper tests the theoretical implications of the model by utilizing original survey data collected by the author in Spring 2012 during the Russian presidential campaign. In contrast to conventional election forensics research, which does not consider the dimension of public opinion surveys, this research demonstrates strong empirical findings with respect to the effect of preference falsification on the level of election fraud in electoral autocracy. Third, I compare the reliability of two types of election fraud indicators: two digit-based tests and the model-based measure of election fraud.

The structure of this paper is as follows. Section 1 discusses three key actors involved in the mechanism linking preference falsification with election fraud, while reviewing the literature on this topic. Section 2 describes the specifics of Russian context and provides detail on the organization of election fraud in Russia. Section 3 offers a short description of Kuran's model of preference falsification, adapted for the topic of election fraud. In Section 4, I conduct an empirical analysis of the model's implications by employing the Russian data. In the final part I draw conclusions and discuss prospects of future research.

## Theory

In the combined theory of election fraud and preference falsification, there are three key actors: the voter/respondent, the autocrat and the survey organization. All three actors

are affected by pre-election polling: the voter/respondent by falsifying his preferences and inadvertently instilling a pro-incumbent bias in the polls, the autocrat by organizing election fraud aimed to match the magnitude of pro-incumbent bias, and the survey organization by computing biased electoral ratings and making them accessible to the general public.

**Voter/Respondent** The importance of pre-election polling in a voter's strategic choice has been the subject of several studies. Since elections with voters acting strategically typically have multiple equilibria, they exacerbate a coordination problem (Palfrey, 1989; Kuran, 1991), which can be alleviated by pre-election polls. For example, the experimental evidence described in Forsythe (1993) suggests that elections can be regarded as a function of poll results: through the polls the majority can guarantee itself the most favorable outcome. Usually, however, more precise information about pre-election preferences can result in a drastic increase in turnout, thus boosting the aggregate cost and reducing total welfare (Taylor and Yildirim, 2010). The authors argue that pre-election polls can be used by voters as an equilibrium selection device in which the respondents truthfully indicate their favorite candidate. The lying respondent, however, triggers a non-coordinated outcome, thus increasing the probability of an outcome with a tie and consequential payoff loss. From this perspective the strategic behavior of respondents enables them to use a chance of being selected into the survey as a way to influence the voting decisions of other voters.

Theories based on the general model of voting and polls are built on the assumption of guaranteed anonymity and privacy for the respondents, when there are no external threats inhibiting them from openly sharing politically sensitive information with the survey organization. In an authoritarian setting, however, the respondents might fear repercussions for failing to mention the "right" candidate. If these fears persist, respondents will be inclined to falsify their preferences, thus reducing the probability of the desirable outcome to the voters and consequently increasing the probability of the desirable outcome to the autocrat. Besides high repression costs for the support of opposition due to the coercive capacity of the state, additional incentive for respondents to falsify their preferences can be associated with the small probability of tied elections in such regimes, thus reducing rational benefits for sharing truthful information about such elections (Way and Levitsky, 2006). Moreover, because the regime controls ballot access, credible opposition candidates can be left off the ballot, thus inducing the respondents to make suboptimal choices with low-valued outcomes. In such cases, the respondents can be prone to falsifying their preferences in favor of the autocrat. This affects pre-election polls and exacerbates a coordination problem, in which the majority cannot guarantee

itself the most favorable outcome and the autocrat enjoys an increase in the likelihood of his most preferred outcome.

The concept of preference falsification implies that respondents give dishonest answers to conform to societal norms and to not be embarrassed by their responses, thus contributing to an increase in response bias and measurement error. It has long been a subject of survey research literature (Groves and Kahn, 1979; Dillman and Tarnai, 1991; Tourangeau and Smith, 1996; Couper et al., 2003). Kuran’s theory of preference falsification is especially helpful for our understanding of how electoral preferences can be endogenously determined in electoral autocracies (Kuran, 1991). According to Kuran, the incentive of an individual to reveal his private preference is a function of the size of public opposition and psychological cost of preference falsification. With the growth of public opposition, while keeping private preferences constant, there comes a point where his external cost of joining the opposition falls below his internal cost of preference falsification (i.e. bandwagon effect) (Kuran, 1991, 18). For instance, according to mail surveys in the Soviet Union, the presence of preference falsification and low response rates could be largely attributed to the consequences the Soviet citizen could face if his political reputation were negatively affected. Authoritarian regimes are always concerned about preference falsification and try to keep themselves informed about the private preferences of their constituencies, by withholding and manipulating certain parts of data polls (Otava, 1988), thus contributing to the rise of “spiral of silence” (Noelle-Neumann, 1984).

**Autocrat** In the pre-election period, the autocrat is well-motivated to exploit all resources to remain in power. He may use violence, polls, and media in an effort to prevent an unfavorable electoral outcome, by weakening the opposition and solidifying his own political dominance. Indeed, repression of various information channels, providing the opposition and the citizenry with information on the relative balance of power, loyalty and dissatisfaction, helps an autocrat to deter the emergence of any possible challengers and minimize his own political risks (Wintrobe, 1998; Egorov et al., 2009; Miller, 2014). However, this impacts the autocrat as well, since political transparency is often seriously circumscribed, leading to information shortages, inefficiency, and low quality of the public policies. One reliable information channel is local elections, which the autocrat regards as an important trial ground for handpicked successors (Magaloni, 2010; Boix and Svulik, 2007; Malesky and Schuler, 2010; Reuter and Robertson, 2012).

Another alternative to consider are public opinion polls. As a rule, in electoral autocracies public opinion polls conducted by polling organizations tend to help autocrats to gauge their popularity prior to an election, and, ideally, serve the goal of creating

a public impression of his own political dominance, which might discourage the political opposition from its quest for power (Lohmann, 1994; Simpser, 2004; Gel'man, 2005; Simpser, 2013). As Lohmann (1994) points out, repression and censorship enable an autocrat to maintain negative information within the private domain, thus preventing political entrepreneurs from taking advantage of it to mobilize the opposition. In this sense election polls can be especially useful for an autocrat if they contain a survey error that inflates the autocrat's public support. The autocrat can also rely on diversification of data sources by engaging security agencies in the polling, though given the methodological opaqueness of the data collected by these agencies, its quality is unknown and its reliability is often compromised (FSO, 2014). If, however, public opinion polls are known to be anticipatorily unreliable, the incumbent might have difficulty estimating his true popularity. He may therefore be over-responsive towards the threats from the opposition and may excessive violence or election fraud, as a result potentially undermining his own prospects of political survival (Hafner-Burton et al., 2013). For instance, elections in Zimbabwe (2000-2008) show how the lack of reliability of pre-election polls within the suppressed informational environment motivated Mugabe to employ tactics of election violence and fraud (Hafner-Burton et al., 2013).

**Survey organization** Since some survey errors can be beneficial to the autocrat, he might try to encourage false polling data through bad polling techniques or crude data fabrication. There are two important constraints making this strategy suboptimal. One constraint is related to autocrat's interest in obtaining private information about his genuine support. Knowing this, the survey organization would be interested not so much in wholesale fabrication of data, but rather in data collection that would permit derivation of "quantifiable" biases and errors, making it possible to extract the genuine information from the biased estimates. This strategy encourages the survey organization to utilize relatively cheap survey techniques in its polls, which permit extraction of valuable pieces of information to be shared with the autocrat. This enables the survey organizations to substantially cut back on data collection costs by conducting the survey only once, and at the same time send separate information signals to the general public and the autocrat. As a result, while the general public receives inflated estimates based on the respondents' public preferences, in contrast, the autocrat receives deflated estimates based on the respondents' private preferences.

Another constraint prohibiting survey organizations from data fabrication is associated with reputation costs. For instance, organizations such as Levada-Center extensively work with foreign customers interested in the high quality data. Levada-Center periodically conducts the Omnibus survey, utilized in this research, with a mix of questions from

both foreign and domestic clients. This incentivizes Levada-Center to exercise quality control over the entire data collection cycle. Therefore unlike other survey organizations, Levada-Center financially independent from Kremlin can be viewed as least interested in data fabrication. However, Levada's electoral forecast for Putin's support turned out to be higher than those issued by state-controlled organizations that are presumably more prone to fabricating data. This observation indirectly refutes the notion that all forecasting data produced by the survey organizations can be easily fabricated in the autocrat's interest.

## Context

During Vladimir Putin's presidency in the 2000s, growing authoritarian tendencies in Russia exacerbated the problem of blatant election fraud in favor of pro-Kremlin candidates and parties (Buzin and Lubarev, 2008; Mebane and Kalinin, 2009; Myagkov et al., 2009; Kalinin and Shpilkin, 2012; Kobak et al., 2012; Enikolopov et al., 2013; Kobak et al., 2016). Evidence of election fraud is based on multiple sources, such as electoral and survey data and observer reports. Statistical analysis of the Russian presidential election 2012 estimates election fraud reaching 5% for Putin's electoral support and 10% for turnout (Kalinin and Shpilkin, 2012). Other studies show that in 2012 the estimated proportion of precincts with the election fraud reached about 40% (Klimek et al., 2012).

The organization of election fraud is usually assigned to regional and local authorities. In federal states, such as Russia, federal elections are organized by regional authorities who are responsible for the provision of favorable electoral outcomes that match general social expectations in respective regions. This phenomenon became especially acute with Putin's centralization policies of the 2000s, which led to the cooptation of governors' "political machines" into the power vertical. As a result, political loyalty in addressing the Kremlin's political needs was regarded as a crucial quality for the governors. Although with the abolition of gubernatorial elections, the costs for committing fraud by the governors were reduced because the credibility of electoral outcomes could be guaranteed by their close match with the regional pre-election polls. To comply with Kremlin's expectations, the regional governors can resort to a broad range of methods, such as ballot stuffing, ballot switching or protocol tampering (Harrison, 2009). All three methods of election fraud are widely used in Russia, with the first two methods used on the level of precincts and the third, at the level of territorial commissions.

Since the manufacturing of results is not directed from the Kremlin, the regional variation in Putin's electoral support is expressed in standard deviation is 10%, ranging



from 47% of electoral support in Moscow to 99% in Chechnya. Importantly, the abnormal zones of the Russian elections with reference to turnout and voting have almost always been associated with the ethnic regions, such as Republics of the North Caucasus (such as Chechnya), and rural areas where mobilization of political machines and clientelistic networks by the regional authorities has been most effective. According to this logic over time we expect to observe a “race to the top” with more election fraud and polling weakly associated with election results. However, this race has an additional constraint: since electoral results must meet the credibility criteria, a “race to the top” has to be strongly associated with the bias in the regional election ratings. Otherwise, excessive election fraud can make election fraud easily detectable by the voters, consequentially raising the probability of mass protests and higher attributed costs to both the autocrat and the governor. While this observation is supported by analysis of Russian electoral data, demonstrating positive progression of electoral anomalies over time Mebane and Kalinin (2009) it has to consistently match the magnitude of the social desirability bias in election polls as well.

In sum, we would expect the following causal mechanism to be in place: by falsifying their preferences, respondents inadvertently instill a pro-autocrat or a pro-incumbent bias in surveys, which in turn incentivizes regional governors to mobilize their political machines for election fraud, in order to match the expectations expressed in the biased public polls and meet Kremlin’s electoral expectations. In this mechanism the autocrat comes into play indirectly: by creating an unsafe polling environment, contributing to inflation of his public polls, and setting up the power vertical in which political loyalty in addressing the autocrat’s electoral needs is regarded as a crucial quality for the governors.

## Model

The proposed theoretical model is built on three basic assumptions: first, on the day of elections all voters vote in accordance with their private preferences; second, the observed inflation in pre-election ratings originates from preference falsification rather than crude data fabrication conducted by the survey organizations; third, governors do not coordinate their strategies with governors of neighboring regions.

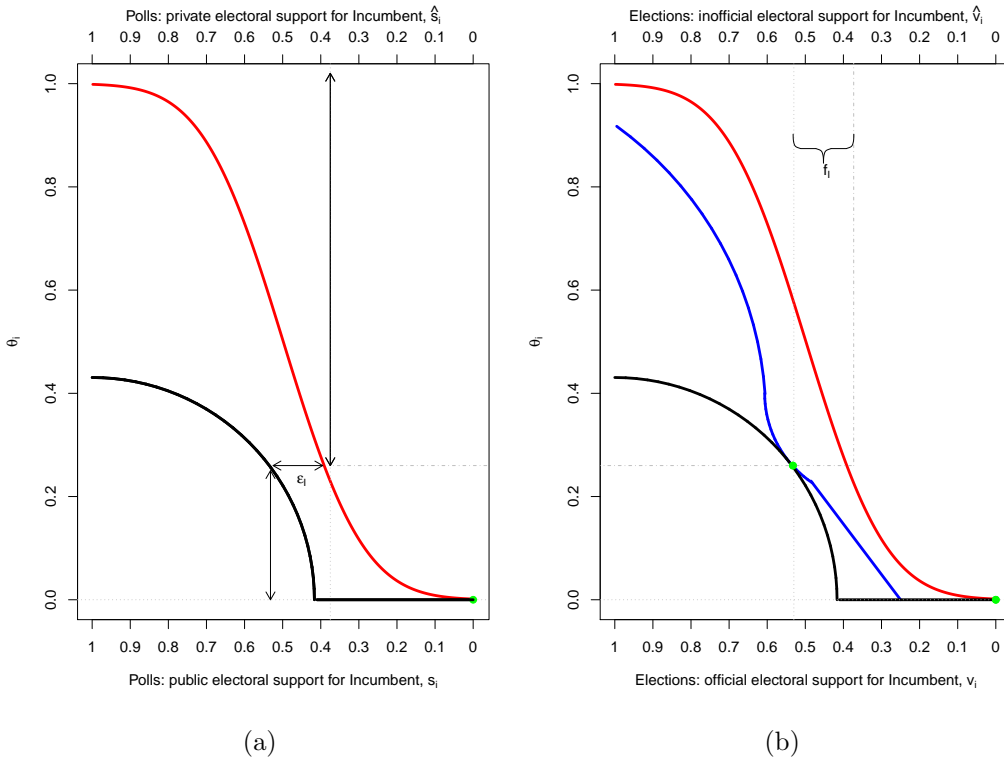
The first assumption implies the presence of voting by secret ballot would be enough to ensure sincere voting similar to secret polling. The second assumption has stronger implications by proposing that pre-election polls are not fabricated by polling organizations to satisfy the governor or the autocrat (see the Theory section for more discussion). The third assumption implies that the governors act independently from each other.

The stylized model is a revised version of Kuran (1987)'s, and will be limited only to analysis of the governor's strategy of selected region to provide a favorable electoral outcome to the autocrat. This game is played in each of the regions. In the game there are  $N$  individuals  $S = \{1, \dots, N\}$ , from which the respondent  $i$  is chosen into the survey. Using the survey, the survey organization is able to measure both types of preferences: individual private and public preferences. It is assumed that two competing candidates enjoy certain level of electoral support. One of the candidates is the autocrat labeled here as incumbent ( $I$ ) and another one is an opposition candidate ( $O$ ). For voting for a particular candidate, the voter expects to receive a direct benefit  $B_i(\theta_i^{pr})$ , where  $\theta_i^{pr} \in [0, 1]$ , i.e. the proportion of those who falsify their preferences. In his decision to reveal the vote he is influenced by the subjectively perceived social pressure, which is a function of the respondent's assessment of pre-electoral vote margin between two major candidates  $\hat{s}_I - \hat{s}_O = \lambda_i$ . As a result, the respondent's utility function takes the following form:  $U_i = B_i - \lambda_i$ . The function is single-peaked, meaning there exists a unique policy at which the utility is maximized. Following this, I will subdivide respondents into two groups: *committed respondents*, who are strongly tied to specific candidates and reveal their political preferences in any case ( $\lambda_i = 0$ ), and those who respond to social pressures with a certain degree of preference falsification, i.e. *reluctant respondents* with  $\lambda_i \in (0, 1)$ .

Figure 1(a) depicts the incumbent's electoral support of respondents at the pre-election polls. In the Figure, the collective threshold function gives the range of average public support for the incumbent defined by the black curve  $\bar{\theta}^{pu}(\hat{s}_I)$ : the larger is  $\hat{s}_I$  the higher is the probability of  $\Phi(\bar{\theta}^{pu})$  of the incumbent's public support by the respondent. The red curve in Figure 1(b)  $\Phi(\bar{\theta}^{pr})$  denotes the cumulative density function, which measures the share of individuals whose private preferences are to support the incumbent, i.e.  $1 - \Phi(\bar{\theta}^{pr})$ . As a result, the actual shares of electoral support of the incumbent become:  $s_I = 1 - \Phi[\bar{\theta}^{pr}(\hat{s}_I)]$ . In Figure 1(a) one observes the presence of disequilibrium due to the preference falsification  $\epsilon$ , since the average public electoral support for the incumbent is 0.52, but the actual share is 0.38, resulting in the proportion of preference falsification in favor of incumbent  $\epsilon = 0.14$ . The only depicted equilibrium in this graph results from the bandwagon effect at the bottom: if the incumbent is publicly supported by less 40% of respondents, he will end up in losing all the electoral support.

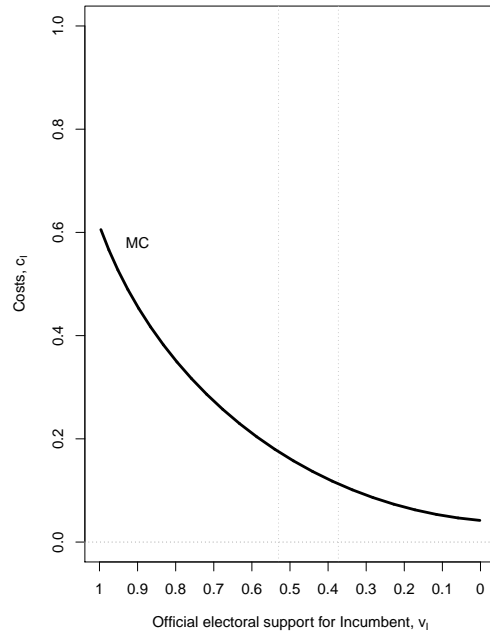
Figure 1(b) depicts the electoral stage with the blue curve  $f[\Phi(\bar{\theta}^{pr})]$ , representing the manufactured distribution of official "electoral support", which has been shifted in the direction towards the official electoral support by a governor engaging in election fraud. According to the model, the second equilibrium emerges once the amount of election fraud  $f_I$  is equal to the magnitude of the preference falsification  $f_I = \epsilon_I$  within the margin of

Figure 1: Preference falsification and Election Fraud in the elections



(a)

(b)



(c)

error. Hence, Figure 1(b) illustrates the presence of two equilibria at the elections: the first equilibrium outcome is most desirable for the autocrat and the governor, since it guarantees the majority of the vote (52%); in contrast, if the election fraud is not enough to win elections (less than 41%), this contributes to a reverse bandwagon process with none of the individuals supporting the incumbent. Thus, if  $f_I < \epsilon_I$ , then equilibrium with desirable properties for the governor never takes place and he will end up in the inferior Pareto outcome by losing elections. As Simpson's theory suggests, in Figure 1(b), the governor will seek to maximize incumbent's vote margin  $V_I = v_i - v_o$  and votes  $v_i$  by shifting the average public support, defined by the black curve in the upward direction. This is possible through the increase in social pressure  $\lambda_i$  on the respondent exogenously determined by the autocrat and organization of more election fraud  $f_I$ . However, the imposed costs for the incumbent defined by  $c_I = f_I + \epsilon_I^2$ , can serve as an additional check on his actions: greater levels of preference falsification require more vote stealing and higher costs associated with it, thus increasing the marginal cost of each additional vote:  $\frac{\Delta c_I}{\Delta V_I} \left( \frac{\Delta c_I}{\Delta v_I} \right)$  (See Figure 1(c)).

Hence, given biased election polls, election fraud  $f_I$  is beneficial to the incumbent and the governor, if the following set of necessary conditions is satisfied:

$$\text{Necessary conditions for Fraud: } \begin{cases} \hat{v}_I = \hat{s}_I & (1) \\ \hat{s}_I - s_I = \epsilon_I & \text{if } \epsilon_I > 0 \quad (2) \\ f_I = \epsilon_I & \text{if } \epsilon_I > 0 \quad (3) \end{cases}$$

If any of these necessary conditions is not satisfied than election fraud will never occur. The first condition states that the official vote share  $v_I$  is expected to be equal to the incumbent's electoral support in the polls,  $\hat{s}_I$ . The second condition exposes the magnitude of preference falsification. The third condition implies that the magnitude of election fraud in the election  $f_I$  and amount of preference falsification  $\epsilon_I$  and must be equal. The marginal cost was not included into the set, because in this set it's not necessary, but a sufficient condition for election fraud.

The main implication of this model is related to the expected relationship between preference falsification and election fraud: one would expect that higher levels of preference falsification would require a higher level of election fraud to compensate for the disparity between the pre-election polling results and voting. Thus, the observed inflation in election ratings would encourage the governors to compensate for mismatch by mobilizing their political machines. Hence, my **Hypothesis 1** is that preference falsification shall positively affect the amount of election fraud across Russian regions. From here I also derive my **Hypothesis 2**, stating that for the higher magnitude of pre-electoral preference falsification one would expect greater electoral support for the incumbent.

Since with a decrease in the margin of victory, the marginal cost of election fraud also decreases, the incumbent will be more interested in election fraud than otherwise when the margin of victory is large. Here my **Hypothesis 3** states that the larger the vote margin is between two major candidates, the weaker the effect of preference falsification on election fraud will be.

My further analysis of empirical data aims to test the set of conditions for emergence of election fraud and provide empirical evidence in support of the proposed hypotheses.

## Data and Measurements

In this empirical part I utilize the official electoral and polling data from the 2012 Russian presidential elections aggregated to the regional level. The polling data was collected by the national polling organization Levada-Center as part of the Omnibus longitudinal study on February 17-20 and February 24-27 of 2012. These both polls are most proximate to the official date of elections, March 4th 2012. For this part of analysis all the electoral data was downloaded from the Russia's Central Election Commission website.

The difficulty of my empirical analysis is related to the hidden nature of election fraud and preference falsification: very often, not only measuring, but even detecting election fraud and preference falsification is problematic. The existing methods of fraud detection combine qualitative, based on the observer reports, and quantitative, based on election forensics, techniques. The field of election forensics includes several methods of election fraud detection, such as digit tests based on the assumption about inability of humans to randomly produce figures in an unbiased way, as well as, parametric models with a set of important distribution assumptions. Last digit tests (“VL”, “V05”) The last digit test is founded on the assumption that last digits of the vote counts or turnout are uniformly distributed if election fraud does not take place (Beber and Scacco, 2008). An application of last digit tests has demonstrated that manipulations of turnout increased over the period 2003 to 2008 in Russia (Mebane and Kalinin, 2009). The last digit approach was further extended by a new test of last digit of percentages, supported by the concept of signaling games. The presence of election fraud becomes a basic signaling mechanism of regional bosses' loyalty and of their ability to control the administrative resources to the Kremlin's benefit (Kalinin and Mebane, 2013). If electoral signaling occurs, data manipulation is most likely to take place with rounded percentages of electoral support, which is the easiest and most readily detected way to report basic information to superiors. In such cases, favorable percentages are first sent down from the Kremlin to regional elections commissions, which pass this information to territory-level commissions

and, finally, to precincts.

Higher levels of election fraud are therefore associated with a lower mean of last digit of vote counts, and higher proportion of 0s and 5s in the electoral data. This test has been also supported the literature focusing on exploration of spikes in the kernel density estimate of the distribution of both precinct turnout and incumbent’s vote shares for values of 60%, 70%, 80%, 90% and 100% Mebane and Kalinin (2009); Kobak et al. (2016), a pattern initially noticed by Shpilkin and Shulgin (Buzin and Lubarev, 2008, 201). Analysis of the last digits of turnout counts in Russia shows an unusually high frequency of zeros and fives Mebane and Kalinin (2009). Hence, the only plausible explanation for the spiked distributions is a widespread adjustment of turnout to specific rounded figures. In this paper I will use two digit-based measures of election fraud: the mean of last digit of vote counts (“VL”) and the proportion of 0s and 5s (“V05”) in a given region (for the precinct-level analysis both measures).

**Finite Mixture Model (“FMM”)** The third measure of election fraud is based on a finite mixture model, which is originated from the Klimek’s parametric model (Klimek et al., 2012). Klimek et al. (2012) propose a parametric model quantifying the magnitude of electoral fraud and perform cross-national analysis to test its applicability. The basic assumption of the model is that in fair elections, vote counts and turnout must look approximately Gaussian. In contrast, in rigged elections these distributions are characterized by right-tailed skewness and larger kurtosis. The observation of bimodality in distributions for Uganda and Russia leads the authors to two separate modes of election frauds: ballot switching (“incremental fraud”,  $f_i$ ) and ballot stuffing (“extreme fraud”,  $f_e$ ). Mebane and Klaver (2015) develops this model further by utilizing a finite mixture likelihood model (FMM) to estimate three distinct components measured at the precinct level: probabilities of incremental, extreme fraud and no fraud.

Here, a measure of preference falsification based on two pre-election polls is computed using the item count technique (ICT) (Tsuchiya, 2005; Chaudhuri and Christofides, 2007; Glynn, 2013; Corstange, 2009; Imai, 2011; Green and Kern, 2012). The ICT experiment was conducted as follows:

Here is a list of five assertions. Please, listen to them all and then tell me how many you agree with. Do not tell me which statement you agree or disagree with, just give me the total estimate.

- I usually read at least one newspaper or magazine a week;
- I want to see Russia as a country with high-living standards;
- I can recall the name of the head of Russian Constitutional Court;
- **I will vote for Vladimir Putin in the upcoming Presidential election (March 4);**
- I am satisfied with the level of my income.

I agree with \_\_\_ (number of assertions)

According to the ICT, respondents are randomly assigned to two groups. One group serves as a control group, receiving both questions containing four statements each, while another group is a treatment group that receives both questions containing five statements (i.e. four non-sensitive items plus one sensitive). The share of respondents privately supporting Putin  $\hat{s}_I$  is a standard difference in means estimator of two subsamples:  $\hat{s}_I = \frac{1}{N_1} \sum_{i=1}^N T_i Y_i - \frac{1}{N_0} \sum_{i=1}^N (1 - T_i) Y_i$ , where  $N_1 = \sum_{i=1}^N T_i$  is the size of the treatment group and  $N_0 = N - N_1$  is the size of the control group (Blair and Imai, 2012). The final measure of preference falsification is computed using the formula  $\epsilon_I = s_I - \hat{s}_I$ , where  $s_I$  is Putin's public vote share computed from the direct question. This preference falsification measure is computed for forty-five Russian regions for which the polling data was available.

Since I am interested the way preference falsification affects election fraud at different levels of the margin of victory, I also construct the "margin of victory" variable based on the electoral data. It is the absolute difference in vote shares between the leading candidate (Vladimir Putin) and the second candidate (Gennadiy Zugarov, the leader of the Communist party).

## Empirical Analysis

Before getting to the main analysis, I check to see if the set of conditions derived from the model are met. For this preliminary part I apply a series of paired t-tests to check (a) if a significant difference in the means between direct self-report and official election

results is observed; (b) if the share of public electoral support is significantly higher than the share of private electoral support; and (c) if no statistically significant difference is observed between the share of election fraud due to preference falsification and the share of preference falsification. Almost all of the conditions are supported by the data: (a) no statistically significant difference in between the means of public survey preferences and Putin’s official election results is observed ( $t = 1.03$ ,  $df = 43$ ,  $p\text{-value} = 0.31$ ); (b) there is a statistically significant difference between public and private electoral preferences for the incumbent ( $t = 8.28$ ,  $df = 43$ ,  $p\text{-value} = 0$ ); and (c) contrary to my expectations, there is a statistically significant difference between election fraud (“FMM” measure) and preference falsification with regard to Putin’s support ( $t = -3.88$ ,  $df = 32$ ,  $p\text{-value} = 0.001$ ). The third assumption is the hardest one to meet. It can be violated for the reasons of poor survey quality and measurement errors. However, among the key regions with election anomalies mentioned in Kobak et al. (2016) analysis, such as Moscow ( $f_I=0.09, \epsilon_I= 0.04$ ), Moskovskaya oblast’ ( $f_I=0.09, \epsilon_I=0.04$ ) Tatarstan ( $f_I=0.36, \epsilon_I = 0.30$ ), Kemerovskaya oblast’ ( $f_I=0.22, \epsilon_I = 0.18$ ), the discrepancy between the figures is remarkably small.

While the national-level estimate of the magnitude of preference falsification in incumbent’s support is  $\epsilon_I=18.9\%(4.3)$ , the finite mixture estimator provides me with a rough estimate that 9% of Putin’s vote has been falsified. Even though both figures are roughly similar, a small statistically significant difference is observed between the two. According to the FMM, 9% of anomalies in Putin’s vote can be attributed to incremental fraud, i.e. ballot switching from one candidate to another, and only 0.02% to extreme fraud, i.e. ballots stuffing.

Although the estimates obtained from the regional level data are more “noisy” compared to the national-level estimates, implementation of the nonparametric regression analysis to measure the effects of preference falsification on the incumbent’s electoral support in the Russian presidential elections is helpful. In Figure 2(a)<sup>1</sup> preference fal-

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<sup>1</sup>“AL” - Altaiskii krai, “AR” - Arkhangel’skaya oblast’, “CH” - Chelyabinskaya oblast’, “CV” - Chuvashskaya Respublika - Chuvashiya, “GM” - Moscow, “GP” - Sankt-Peterburg, “KL” - Kaliningradskaya oblast’, “KO” - Kemerovskaya oblast’, “KH” - Khabarovskii krai, “KB” - Kostromskaya oblast’, “KR” - Krasnodarskii krai, “KD” - Krasnoyarskii krai, “KU” - Kurganskaya oblast’, “KS” - Kurskaya oblast’, “LE” - Leningradskaya oblast’, “LI” - Lipeckaya oblast’, “MA” - Magadanskaya oblast’, “MO” - Moskovskaya oblast’, “NI” - Nizhegorodskaya oblast’, “NV” - Novosibirskaya oblast’, “OM” - Omskaya oblast’, “OR” - Orenburgskaya oblast’, “PM” - Permskii krai, “PR” - Primorskii krai, “PS” - Pskovskaya oblast’, “AD” - Respublika Ad’ygeya (Ad’ygeya), “BA” - Respublika Bashkortostan, “DA” - Respublika Dagestan, “RH” - Respublika Khakasiya, “TA” - Respublika Tatarstan (Tatarstan), “RO” - Rostovskaya oblast’, “SA” - Samarskaya oblast’, “SR” - Saratovskaya oblast’, “SM” - Smolenskaya oblast’, “ST” - Stavropol’skii krai, “SV” - Sverdlovskaya oblast’, “TM” - Tambovskaya oblast’, “TU” - Tul’skaya oblast’, “TY” - Tyumenskaya oblast’, “UL” - Ul’yanovskaya oblast’, “VI” - Vladimirskaya oblast’, “VO” - Volgogradskaya oblast’, “VR” - Voronezhskaya oblast’, “YA” - Yaroslavskaya oblast’.



sification and voting show a statistically significant and positive relationship, which is fully supported by the theory: higher mean values of preference falsification contribute to greater values in Putin’s support. Thus, this finding confirms **Hypothesis 2**.

\*\*\*Figure 2 about here \*\*\*

In Figure 2(b), containing the last-digit mean of vote counts as a measure of anomaly (“VL”), one observes a statistically significant negative association with the certain degree of non-linearity present: as preference falsification increases, the last digit mean in Putin’s vote counts decreases. This pattern suggests the presence of an excessive number of zeros and fives in vote counts, i.e. signaling patterns that shift the regression line downward. The observed convex-shaped curve peaks around the value of preference falsification equal to zero, thus roughly dividing the graph into two regions. The region of preference revelation located on the left-hand side is characterized by a positive association between the two measures; here, as preference revelation decreases, the anomalies in the incumbent’s vote counts increase. The region of preference falsification on the right-hand side shows a negative association between both measures; as the preference falsification increases, the quantity of anomalies in incumbent’s vote counts decreases.

Figure 2(c), illustrating whether the proportions of 0s and 5s in incumbent’s vote counts are dependent on the level of preference falsification, shows an inverted pattern similar to the nonlinear pattern of “VL”. It can be visually divided into the region of preference revelation in the interval  $[-0.2; -0.05]$  and the region of preference falsification in the interval  $[0.06; -0.4]$ . Finally, the finite mixture estimator in Figure 2(d) indicates the presence of nonlinearity dividing the graph into three regions: the region of preference revelation  $[-0.2; 0]$ , weakly defined region of preference falsification  $[0; 0.18]$  and ending with the region of preference revelation  $[0.2; 0.4]$ . In summary, digit tests seem to yield stronger confirmation for my **Hypothesis 1**, compared to the finite mixture estimates. The former test is stronger supported by the signaling theory of election fraud compared to a parametrically estimated measure of election fraud.

For testing my third hypothesis about whether preference falsification has a weaker effect on election fraud where the margin of victory is larger, I apply to linear regression analysis (See Table 1).

\*\*\*Table 1 about here \*\*\*

While model 1, with the mean of the last digit as dependent variable, yields more mixed findings, the results in models 2 and 3 are in line with my conjectures. The table demonstrates statistically significant main and interaction effects in the predicted

direction. The independent effects of preference falsification and margin of victory on election fraud are positive, while their interaction is negative. Further, I visualize the marginal effect of preference falsification on election fraud, conditional on the margin of victory estimated from the electoral data (See Figure 3).

\*\*\*Figure 3 about here \*\*\*

According to Figure 3, as the margin of victory for the party increases, the marginal effect of preference falsification on election fraud decreases. The Figure 3(a) shows that the marginal effect of preference falsification on the proportion of 0s and 5s becomes statistically significant when the victory margin is in the range of values between 0.55 and 0.75. Figure 3(b) illustrating the marginal effect of preference falsification on finite mixture estimates demonstrates similar a pattern, statistically significant in the range of values between 0.43 and 0.75. Thus, both graphs confirm **Hypothesis 3**, stating that the larger vote margin between the two major candidates contributes to the weaker effect of preference falsification on election fraud (“FMM”).

For an additional robustness check, I engage precinct-level data analysis in which each of the measures of anomalies and margin of victory are provided at the precinct-level, and the measures of preference falsification, at the regional level. Based on this data, I estimate linear mixed-effects models (“VL” and “FMM”) and generalized linear mixed-effects model (“V05”) with a random intercept grouped by the region (See Table A2 in the Online Appendix). The results largely agree with my earlier findings. However, the finite mixture estimate yields the reversed results: preference falsification has a negative effect and the sign of the interaction coefficient between preference falsification and margin of victory is positive. In the Appendix, three additional models were added to the analysis with two extra covariates (“Republics” indicating if the region belongs to the ethnic region or not, and “Rural” indicating if the area belongs to rural or urban area) and two extra interaction terms. My findings from three earlier models seem to be in accordance with the results of the extended models. Interestingly, in both “V05” and “FMM” models, the effect of preference falsification on anomalies in ethnic Republics seems to be less acute compared to non-ethnic regions. The effect of preference falsification on anomalies in rural areas (vs urban areas) is strongly positive in the “V05” model but negative in the “FMM” model.

## Validation Study: Cross-National Analysis

In order to extend my findings beyond the Russian case, I also apply a statistical analysis of 59 countries with the inclusion of both electoral autocracies and democracies. Unlike the analysis of the Russian data, containing the ICT measure, which enables me to compute the measure of preference falsification, in this section I use a proxy measure of preference falsification – proportion of respondents who refused to respond to polling questions on the electoral support of the winning party. Given the difficulty of directly measuring preference falsification, particularly cross nationally, refusals are an imperfect proxy for the underlying concept. This proxy enables me to measure whether voters hide their private preferences by declining to answer the question on party support, but does not pick up voters' preference misrepresentation. I therefore assume that it captures certain aspects of social desirability bias cross-nationally. The rationale for using this measure is based on the assumption that preference falsification is strongly connected to the item nonresponse: the probability of a respondent misreporting his true preference increases with the degree of sensitivity to the question. For instance, most of the studies point out that income questions typically yield high rates of missing data (Juster and Smith, 1997; Moore et al., 1999). Specifically, Tourangeau and Yan (2007, 862) argue that the item nonresponse rate for the National Survey of Family Growth for the total household income is the highest compared to other types of sensitive behavior. The authors also conclude that sensitivity to a given question positively correlates with item nonresponse, which can be explained by the fact that sensitivity can be attributed to the content of the question rather than situational factors (Tourangeau and Yan, 2007, 862-863). Since the respondent perceives those questions as an invasion of privacy, a truthful answer on a sensitive topic can be seen as inappropriate. Another viable strategy for the respondent would be to decline further participation in the survey or simply to refuse to answer the sensitive question, thus contributing to lower response rates or an increased proportion of missing data for a variable of interest. Since the data on unit nonresponse has been unavailable, I focus my attention on the proportion of respondents who refused to respond to polling questions on the electoral support.

Unlike the “don't know” category, the “refuse to answer” category is more restrictive, excluding those respondents who simply can't make an informed decision. Thus, here I resort to several cross-national election studies carried out in the period between 1990 and 2012, such as Afrobarometer (Rounds 1-4), American National Election Studies (1990-2012), European Social Survey (Rounds 1-6), European Election Study (Trend file), and Latinobarometer (1995-2010). The question of primary interest contains information

on the respondent's future or past electoral preferences. By using this data, I obtained two key variables of interest: "Refusals" (the proportion of item nonresponse), and either "Pre-electoral" (referring to whether the survey was conducted before or after the elections) "Margin of Victory" (the vote differential between two leading parties), depending on the timing of the survey. As far as the measure of election fraud is concerned in my cross-national analysis, I apply observer-based measure obtained from the Database of Political Institutions from the World Bank. According to the released guide, this measure of election fraud "captures extra-constitutional irregularities, which are recorded only if mentioned in sources. 0 reported for countries where, for example, opposition parties are officially and constitutionally banned or where irregularities are not mentioned (although may still exist); "1" when opposition is officially legal but suppressed anyway. Recording is irrespective of whether only opposition claims that fraudulent elections have occurred or whether allegations are backed by independent international observers" (DPI2012, 2012, 17). The method's drawback, however, is that according there may have been instances of fraud/violence that were not reported, thus resulting in false negatives (DPI2012, 2012, 17).

The proposed models include a set of controls related to the leader's success of economic policy, such as lagged GDP growth per capita (variable: "GDP growth (t-1) year"). GDP growth should help the incumbent to increase the credibility of election results, by garnering political support of the population, and to attract more resources necessary to commit election fraud in specific localities (Higashijima, 2014). Another measure used as a control variable is the amount of resources at the disposition of the leader expressed in the oil and gas per capita index (Ross, 2012). The variable is computed as the product of oil/gas production and oil/gas price divided by total population (in order to solve the scaling problem in the regression analysis the index was also divided by 100). A set of variables measuring political institutions are as follows: the form of the government parliamentary vs. presidential (variable: "Parliamentary"); the sum of the squared seat shares of all parties in the government, showing the amount of representation of the parties in the government (variable "Government"); and a variable measuring the level of democracy (variable: "Polity IV"). The degree of intimidation in a given country is measured by the variable "Violence", which contains a total summed magnitudes of both societal and interstate violence, measured on the scale from 0 to 10 (Major Episodes of Political Violence, MEPV2012 database).

In addition to these two variables I also use the polling data to obtain "Margin of Victory" variable, indicating the vote margin between the two winning parties (a proxy measure of the social pressure). A set of decade interval variables is also included to

control for time-specific effects.

Since the observer-based measure is a dummy variable, I apply to estimation of the binary logit model and compute the robust standard errors clustered by countries to solve the problem of heteroscedasticity.

\*\*\*Table 2 about here \*\*\*

In Table 2, models 1-2 present the results of statistical analysis demonstrating that the proportion of refusals positively affects the probability of election fraud being, statistically significant at  $\alpha = 0.05$  level. Thus, my original findings from the Russian data analysis for **Hypothesis 1** are supported by my cross-national data analysis.

The next set of results, utilizing the margin of victory, are shown in the models 3-6 with the main effect of item nonresponse being robust to model specifications. It yields statistically a significant and positive effect on the fraud measure at  $\alpha = 0.5$  and  $\alpha = 0.1$ . For the “Margin of Victory” variable one can observe statistically significant direct effects with a negative sign (models 3 and 6). For model 6, the interaction effect between the proportion of refusals and the margin of victory is negative and statistically significant. Further, I visualize the marginal effect of preference falsification on election fraud, conditional on the margin of victory (See Figure B1). As the margin of victory for the party increases, the marginal effect of refusals on election fraud decreases (the histogram in the Figure shows the distribution of the Margin of Victory variable). As the graph shows, this marginal effect becomes statistically significant when the victory margin is located in the range of values between 0 and 0.60. In other words, as the victory margin becomes larger, the impact of preference falsification on election fraud decreases. Thus, the presented graph supports **Hypothesis 3**, stating that the larger vote margin between the two major candidates or parties contributes to the weaker effect of preference falsification on election fraud.

\*\*\*Figure 4 about here \*\*\*

The analysis of interaction effect between the Polity score and Refusals placed in the Appendix shows a statistically significant negative effect (See Figure 4 (a,b)). There is a statistically significant difference between electoral autocracies and democracies: compared to democracies, electoral autocracies are characterized with a larger marginal effect of preference falsification on election fraud.

\*\*\*Figure 5 about here \*\*\*

In contrast to this, there is no statistically significant difference between electoral autocracies and democracies in terms of the effect of the margin of victory on election fraud. Moreover, for both electoral autocracies and democracies, a marginal effect of the margin of victory on election fraud is not statistically distinguishable from 0. In other words, according to these findings, social pressure seems to be an insignificant predictor for the level of election fraud conditional on regime type.

## Conclusion

The main objective of this study was, on the one hand, to provide a theoretical framework that links together preference falsification and election fraud in the revised Kuran's model, and, on the other hand, to test whether the implications of the model could be supported in by empirical data analysis.

The importance of pre-election polling in the voter's, autocrat's and survey organization's strategic behavior is truly substantial. According to my findings, the autocrat is strategically interested in boosting preference falsification and organizing the proportionate amount of election fraud in a given country so as to provide himself with the most favorable and, importantly, credible electoral outcome. Undoubtedly, the level of preference falsification exacerbates the role of pre-election polls in guaranteeing the credibility of rigged electoral outcomes for the autocrat. The autocrat's failure to meet this requirement leads to the worse-off outcomes for him, resulting in the Pareto inferior outcomes due to the bandwagon effect.

In this setting the survey organization would be interested in data collection that would permit derivation of "quantifiable" biases and errors, making it possible to extract the genuine information from the biased estimates and provide them to the autocrat. Finally, organization of election fraud in the Russian setting is entrusted to the heads of the regional governments engaging in competitive falsification to show loyalty and extract certain benefits from the center.

My empirical findings derived from the analysis of the Russian electoral data and cross-national analysis strongly support the theoretical implications of the model. First, analysis of both datasets shows that preference falsification indeed positively affects the amount of election fraud in a given country. Second, the hypothesis that the incumbent earns a larger vote share by increasing the level of preference falsification is confirmed. Third, my hypothesis about the presence of a moderation effect of the margin of victory is confirmed: indeed, the marginal effect of preference falsification on election fraud becomes weaker with an increase of the margin of victory between two leading candidates.

While these findings look promising, there are several important limitations to this research. First, analysis of the Russian data was performed on a sample of the regions, which might be different from those left outside of the analysis. Second, the presence of nonlinear patterns in my non-parametric analysis provided me with mixed evidence in favor of the main hypothesis. Third, the auxiliary cross-national data analysis on the part of the preference falsification variable was entirely based on academic surveys rather than pre-election polls. Even though these limitations are substantial for our consideration, the successful generalization of my findings makes them applicable to a broad set of electoral autocracies. This research helps to come closer to a better understanding of the mechanism by which the survey polls can be important in different political settings, and sets a new research agenda for the fields of political science and survey methodology.

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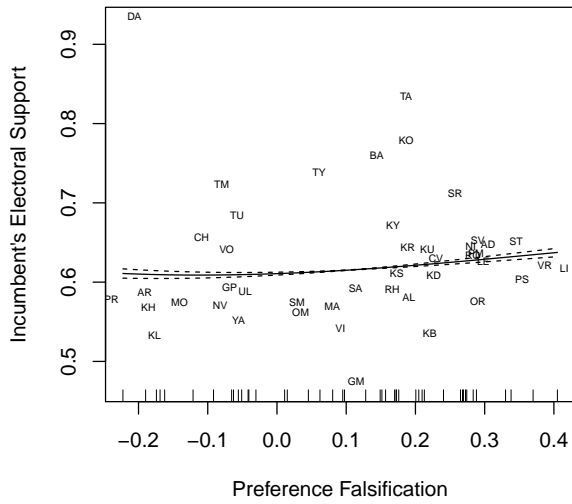
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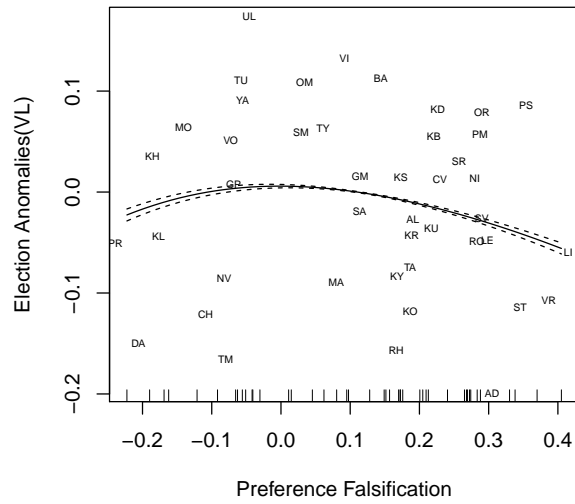
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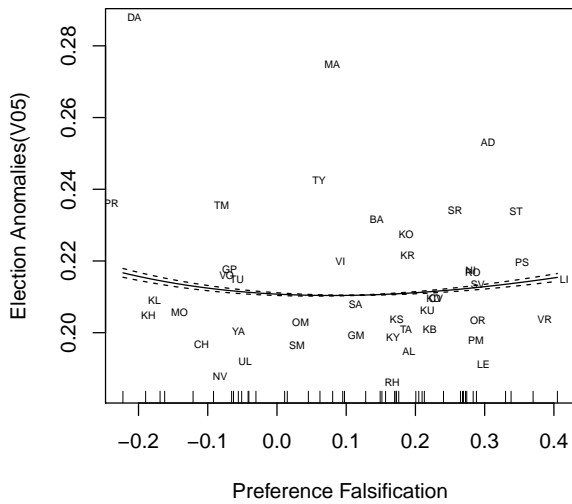
Figure 2: Nonparametric Regression: Effect of Preference Falsification on Anomalies in Putin's Electoral Support



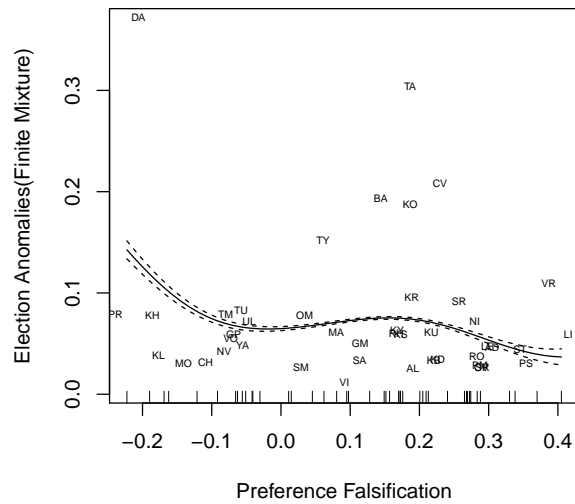
(a)



(b)



(c)



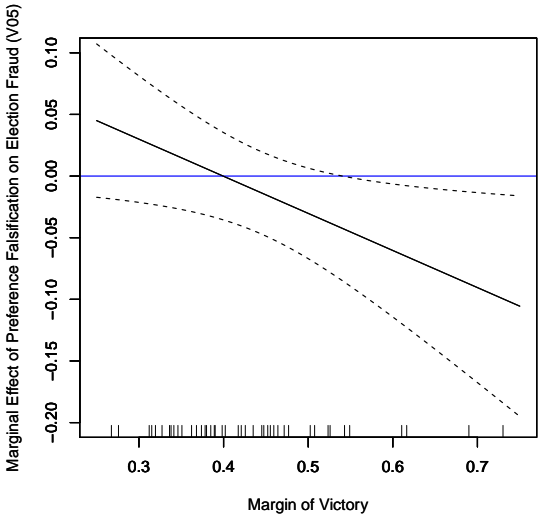
(d)

Table 1: Preference Falsification, Election Fraud and Margin of Victory in Russian Elections, 2012 (regions)

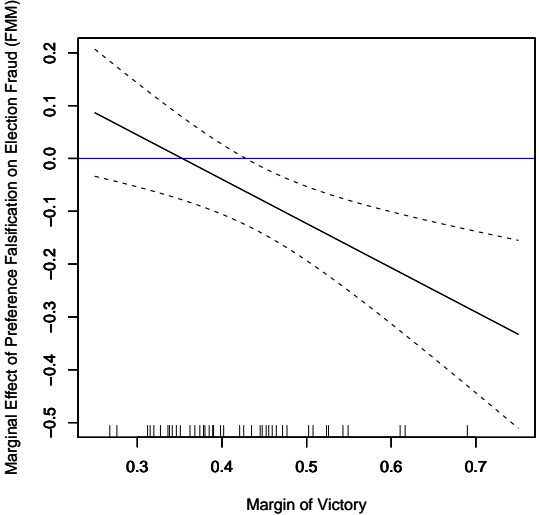
	M(01)	M(02)	M(03)
Constant	4.61*** (0.04)	0.17*** (0.01)	-0.11*** (0.02)
Preference Falsification	-0.26 (0.19)	0.12*** (0.04)	0.3** (0.12)
Margin of Victory	-0.25*** (0.08)	0.09*** (0.02)	0.42*** (0.05)
Preference Falsification X Margin of Victory	0.45 (0.36)	-0.3*** (0.09)	-0.84*** (0.28)
$R^2$	0.14	0.34	0.64
Sample Size	44	44	44

*Notes:* Robust standard errors in parentheses. Significance levels: \* $p \leq 0.1$ , \*\* $p \leq 0.05$ , \*\*\* $p \leq 0.01$ . Dependent variables: M(01) – “VL”, M(02) – “V05”, M(03) – finite mixture estimator.

Figure 3: The Marginal Effect of Preference Falsification Conditional on the Difference of the Margin of Victory Between the Candidates



(a)



(b)

Table 2: Cross-Country Analysis with Margin of Victory (Monitoring Data)

	M(01)	M(02)	M(03)	M(04)	M(05)	M(06)
Constant	-3.59*** (1.000)	-3.78*** (1.12)	-3.43*** (1.13)	1.17 (1.50)	-4.02* (2.15)	-3.94 (2.56)
Refusals	7.32** (3.53)	6.73* (3.6)	2.17 (3.75)	13.59** (5.5)	81.76*** (23.19)	92.68*** (22.34)
Margin of Victory		-0.72 (2.09)	-5.48* (3.26)	-5.54* (2.86)	-12.93* (6.86)	-11.95*** (5.33)
Pre-electoral	0.67 (0.82)	0.79 (0.84)	0.8 (0.87)	-0.89 (0.97)	-1.07 (0.87)	-0.99 (0.99)
Parliamentary				-10.65*** (0.74)	-11.8*** (1.42)	-12.03*** (1.6)
Oil/Gas(per capita)		-3.92 (3.33)	-3.77 (3.13)	-4.31 (2.78)	-3.51* (1.87)	-3.62* (1.93)
GDP growth(t-1 year)		0.08 (0.07)	0.09* (0.05)	0.05 (0.04)	0.06 (0.04)	0.06 (0.04)
Violence		0.25 (0.23)	0.25 (0.23)	0.09 (0.28)	0.01 (0.29)	-0.03 (0.28)
Government				-0.86 (1.86)		-0.94 (2.11)
PolityIV				-0.34** (0.16)	0.6 (2.22)	0.93 (-2.00)
Incumbent's share					4.92 (4.01)	5.86 (4.32)
Refusals X Margin of Victory			48.36* (29.19)	-23.99 (29.96)	-84.94 (53.44)	-113.95*** (47.86)
PolityIV X Refusals					-62.69** (25.9)	-73.01*** (19.2)
PolityIV X Margin of Victory					9.55 (7.85)	7.61** (4.00)
Refusals X Margin of Vict. X Pol					-33.83 (89.27)	
2000s	0.17 (0.75)	0.4 (0.89)	0.43 (0.9)	1.10 (1.37)	1.1 (1.43)	1.2 (1.6)
$R^2$	0.04	0.11	0.13	0.4	0.43	0.44
LR $\chi^2$	6.99	16.43	19.87	65.94	72.53	73.71
Number of obs	409	361	361	359	361	359

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



Figure 4: The Marginal Effect of Preference Falsification Conditional on the Difference of the Margin of Victory Between the Parties

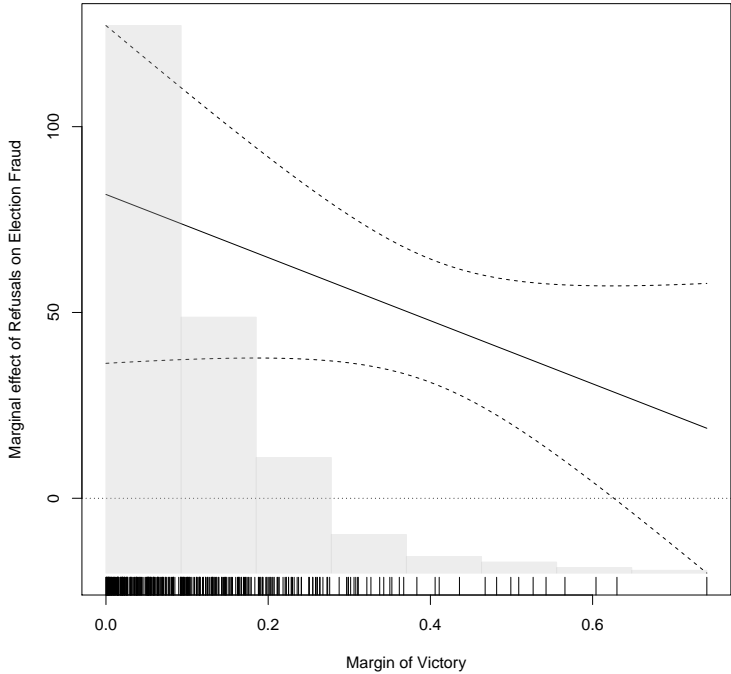
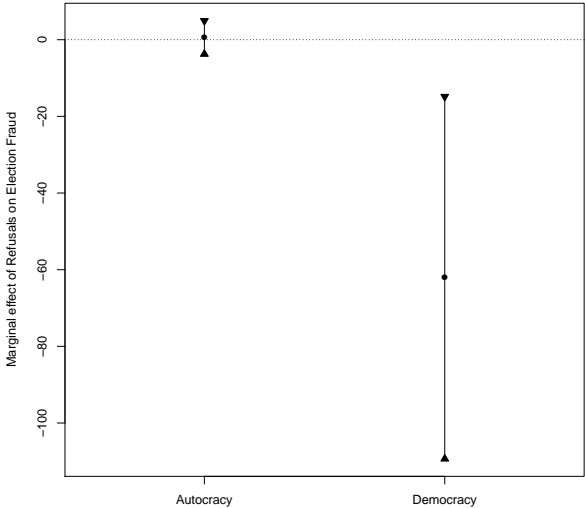
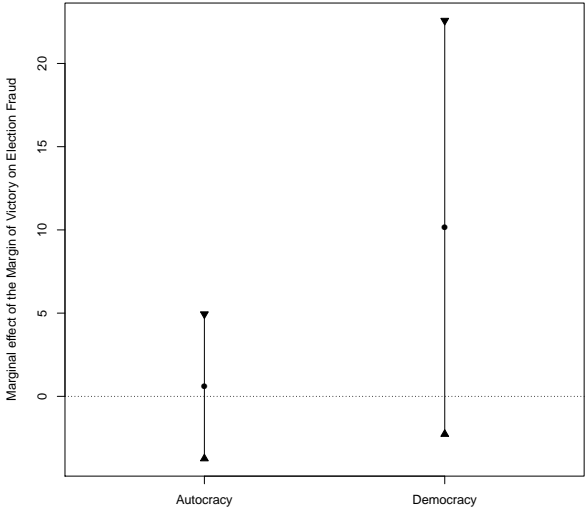


Figure 5: Comparing the Effect of Preference Falsification and the Vote Margin on Election Fraud in Democracies and Autocracies



(a)



(b)

## A Appendix. Tables

Table A1: Election Forecasts for the Incumbent by Polling Organizations

	1996(1)	1996(2)	2000	2004	2008	2012
Pollsters/Incumbents	Yeltsin	Yeltsin	Putin	Putin	Medvedev	Putin
FOM	34.0	52.0	53.0	73.0	67.8	58.7
VCIOM	37.0	56.0	59.0	73.6	72.9	59.9
Levada-Center	—	—	—	73.7	79	66.0
<i>Mean</i>	<i>35.5</i>	<i>54</i>	<i>56</i>	<i>73.3</i>	<i>70.4</i>	<i>59.3</i>
<i>Standard deviation</i>	<i>2.1</i>	<i>2.8</i>	<i>4.2</i>	<i>0.4</i>	<i>5.6</i>	<i>3.9</i>
<b>Official</b>	<b>35.3</b>	<b>53.8</b>	<b>53.0</b>	<b>71.3</b>	<b>70.3</b>	<b>63.6</b>

Table A2: Preference Falsification, Election Fraud and Margin of Victory in Russian Elections, 2012 (Linear Mixed-Effects Models)

	M(01)	M(02)	M(03)	M(04)	M(05)	M(06)
Constant	4.53*** (0.03)	-1.51*** (0.03)	-0.03*** (0.01)	4.49*** (0.04)	-1.51*** (0.04)	-0.02* (0.01)
Preference Falsification	-0.21 (0.19)	0.6*** (0.18)	0.16** (0.06)	0.00 (0.23)	0.17 (0.2)	-0.1** (0.04)
Margin of Victory	-0.07 (0.06)	0.42*** (0.06)	0.23*** (0.01)	0.01 (0.08)	0.38*** (0.07)	0.2* (0.01)
Republics				-0.06 (0.05)	0.06 (0.05)	0.16*** (0.02)
Rural				0.02 (0.03)	0.01 (0.03)	-0.03*** (0.00)
Pref. Fals. X Margin of Victory	0.41 (0.35)	-1.42*** (0.32)	0.25*** (0.03)	0.00 (0.42)	-0.79** (0.36)	0.23*** (0.03)
Pref. Fals. X Republics				0.41 (0.3)	-0.63** (0.26)	-0.34*** (0.11)
Pref. Fals. X Rural				-0.17 (0.16)	0.52*** (0.13)	-0.05*** (0.01)
Intercept	0.01	0.05	0.05	0.02	0.04	0.03
Residual	2.87		0.17	2.87		0.17
Log-Likelihood	161205	33621	21085	161209	33607	21297
Observations	65137	65137	65137	65137	65137	65137
Number of groups	40	40	40	40	40	40

*Notes:* Cluster robust standard errors in parentheses. Significance levels: \* $p \leq 0.1$ , \*\* $p \leq 0.05$ , \*\*\* $p \leq 0.01$ . Dependent variables: M(01) – “VL”, M(02) – “V05”, M(03) – finite mixture estimator.