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Linking Preference Falsification and Election Fraud in Electoral Autocracies: The Case of Russia

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Abstract

This study sheds new light on whether responses to 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). 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 generalised to a broad set of electoral autocracies, enabling scholars to get a better understanding of the mechanism by which survey polls can incentivise officials to commit election fraud.

Keywords

Russia/Former Soviet Union, preference falsification, election fraud, election forensics, electoral autocracies, hybrid regimes

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In elections under authoritarian rule, the ruling party or an incumbent usually enjoys 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

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answers to this set of questions are consequential to our understanding of how elections are organised 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 organisations issued election forecasts based on Vladimir Putin's electoral ratings that successfully predicted official election results within the margin of error (see Table S2 in the Online Appendix). Surprisingly, however, despite his high popularity oftentimes driven by exaggeration of external threats and terrorist dangers (Arce, 2003; Ekman, 2009; Mansfield and Snyder, 1995), election fraud has always been an integral part of his presidency and is characterised 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 mobilisation effort (Enikolopov et al., 2013; Frye et al., 2014; Kalinin and Mebane, 2013; Kalinin and Shpilkin, 2012; Shpilkin, 2011).

The observed close congruence between Putin's official electoral support and the polling election forecasts has three explanations: (1) in reality, 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 article 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 organisations cannot explain the observed inflation in the estimates (Kalinin, 2014). Since across all the survey organisations, 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 article 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 organise 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 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 (Anderson, 1994; Beltran and Valdivia, 1999; Bischoping and Schuma, 1992; Geddes and Zaller, 1989; 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 Bischoping and Schuma (1992), almost all polls in Nicaragua forecast 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 article 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 article to the existing literature is threefold. First, this article extends Kuran's model by adding to the model the concept of election fraud and thus offers a mechanism by which an incumbent ensures his most desirable electoral outcome. Second, this article tests the theoretical implications of the model by utilising 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 an 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 article is as follows. The 'Theory' section discusses three key actors involved in the mechanism linking preference falsification with election fraud while reviewing the literature on this topic. The 'Context' section describes the specifics of Russian context and provides detail on the organisation of election fraud in Russia. The 'Model' section offers a short description of Kuran's model of preference falsification, adapted for the topic of election fraud. In the 'Data and Measurements' section I conduct an empirical analysis of the model's implications by employing the Russian data. In the final section 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 organisation. 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 organising election fraud aimed to match the magnitude of pro-incumbent bias and the survey organisation 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 (Kuran, 1991; Palfrey, 1989), 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 favourable 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 favourite 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 behaviour 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 organisation. 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, an 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 favour of the autocrat. This affects pre-election polls and exacerbates a coordination problem, in which the majority cannot guarantee itself the most favourable 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 (Couper et al., 2003; Dillman and Tarnai, 1991; Groves and Kahn, 1979; Tourangeau and Smith, 1996). Kuran's (1991) theory of preference falsification is especially helpful for our understanding of how electoral preferences can be endogenously determined in electoral autocracies. 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 the '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 unfavourable 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 minimise their own political risks (Egorov et al., 2009; Miller, 2014; Wintrobe, 1998). However, this affects 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 (Boix and Svolik, 2007; Magaloni, 2010; 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 organisations 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 (Gel'man, 2005; Lohmann, 1994; Simpser, 2005, 2013). As Susanne 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 mobilise the opposition. In this sense, election polls can be especially useful for an autocrat if they contain a survey error which inflates the autocrat's public support.

The autocrat can also rely on diversification of data sources by engaging security agencies in the polling, although given the methodological opaqueness of the data collected by these agencies, its quality is unknown and its reliability is often compromised (Biryukova and Nikol'skiy, 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 overresponsive towards the threats from the opposition and towards 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 low reliability of pre-election polls within the suppressed informational environment motivated Robert 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 data fabrication. There are two important

constraints making this strategy suboptimal. One constraint is related to the autocrat's interest in obtaining private information about his genuine support. Knowing this, the survey organisation 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 organisation to utilise 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 organisations 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 organisations from data fabrication is associated with reputation costs. For instance, organisations such as Levada-Center extensively work with foreign customers interested in high-quality data. Levada-Center periodically conducts the Omnibus survey, utilised in this research, with a mix of questions from both foreign and domestic clients. This incentivises Levada-Center to exercise quality control over the entire data collection cycle. Therefore, unlike other survey organisations, Levada-Center – financially independent from the Kremlin – can be viewed as least interested in data fabrication. Moreover, most recent events related to its being declared a 'foreign agent' by the Russian government, that is, a registry of non-profit organisations receiving foreign donations and engaging in vaguely defined 'political activity', can be interpreted through the lens of its independence and lack of fabrication efforts (Nechepurenko, 2016). It is interesting that back in 2012, Levada's electoral forecast for Putin's support turned out to be higher than those issued by state-controlled organisations which are presumably more prone to fabricating data.[1]

This observation indirectly refutes the notion that all forecasting data produced by the survey organisations 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 favour of pro-Kremlin candidates and parties (Buzin and Lubarev, 2008; Enikolopov et al., 2013; Kalinin and Shpilkin, 2012; Kobak et al., 2012; Mebane and Kalinin, 2009; Myagkov et al., 2009; Shpilkin, 2011). 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 in 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 election fraud reached about 40% (Klimek et al., 2012).

The organisation of election fraud is usually assigned to regional and local authorities. In federal states, such as Russia, federal elections are organised by regional authorities who are responsible for the provision of favourable electoral outcomes which match general social expectations in the respective regions. This phenomenon became especially acute with Putin's centralisation 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. 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 the Kremlin's expectations, the regional governors can resort to a broad range of methods, such as ballot stuffing, ballot switching and protocol tampering (Harrison, 2009). All three methods of election fraud are widely used in Russia, with the first two methods used at 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 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 the republics of the North Caucasus (e.g. Chechnya), and rural areas, where mobilisation 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 criterion, 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, and thereby 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 a 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 instil a pro-autocrat or a pro-incumbent bias in surveys, which in turn incentivises regional governors to mobilise their political machines for election fraud in order to match the expectations expressed in the biased public polls and to meet the 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 opinion 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 organisations; third, governors do not coordinate their strategies with governors of neighbouring 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 organisations 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 stylised model is a revised version of Kuran's (1987) and will be limited to the analysis of the governor's strategy of selected region to provide a favourable electoral outcome to the autocrat. This game is played in each of the regions. In the game, there are N individuals $S = \{1, ..., N\}$, from which the respondent i is selected into the survey. Using

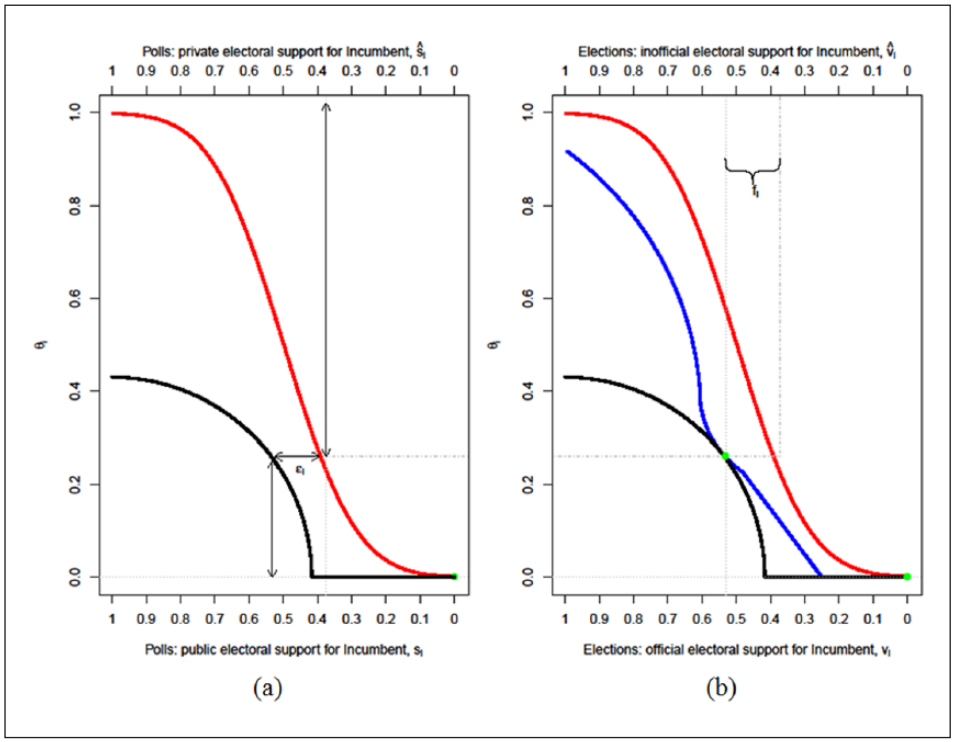

Figure 1. Preference Falsification and Election Fraud in the Elections.
θ_i: distribution of individual preferences; $\hat{s}_i$: private electoral support for incumbent in the polls; s_i: public electoral support for incumbent in the polls; $\hat{v}_i$: unofficial electoral support for incumbent in the polls; v_i: official electoral support for incumbent in the polls.

the survey, the survey organisation is able to measure both types of preferences: individual private and public preferences. It is assumed that two competing candidates enjoy a certain level of electoral support. One of the candidates is the autocrat labelled here as incumbent (I) and the other is an opposition candidate (O).

By voting for a particular candidate, the voter expects to receive a direct benefit $B_i(\theta_i^{pr})$, where $\theta_i^{pr} \in [0,1]$, that is, 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 the 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 maximised. 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 *reluctant respondents*, who respond to social pressures with a certain degree of preference falsification ($\lambda_i \in (0,1)$).

Figure 1(a) depicts the incumbent's electoral support of respondents at the pre-election polls. In this 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 the $\hat{s}_I$, the higher the probability of $\Phi(\bar{\theta}^{pu})$ of the incumbent's public support from the respondent. The red (right-hand) 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, that is, $1-\Phi(\bar{\theta}^{pr})$. 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 preference falsification, since the average public electoral support for the incumbent is 0.52, but the actual share is 0.38, indicating that the proportion of preference falsification in favour of incumbent is 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 than 40% of respondents, he will end up 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 of 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 $f_I = \varepsilon_I$ within the margin of survey 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 election fraud is not enough to win elections (less than 41%), this contributes to a reverse bandwagon process wherein no individuals support the incumbent. Thus, if $f_I < \varepsilon_I$, then equilibrium with desirable properties for the incumbent never takes place, and he will end up in the inferior Pareto outcome by losing the election. As Alberto Simpser's (2013) theory suggests, in Figure 1(b), the governor will seek to maximise the 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 on the respondent λ_i exogenously determined by the autocrat and organisation of more election fraud f_I by the governor. However, the imposed costs for the governor defined by $c_I = f_I + \varepsilon_I$ 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: $\Delta C_I / \Delta V_I = \Delta c_I / \Delta v_I$.

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

$$\begin{cases} \hat{v}_I = \hat{s}_I, & (1) \\ \hat{s}_I - s_I = \varepsilon_I \quad \text{if} \quad \varepsilon_I > 0 & (2) \\ f_I = \varepsilon_I \quad \text{if} \quad \varepsilon_I > 0 & (3) \end{cases}$$

The first condition states that the official vote share $\hat{v}_I$ is expected to be equal to the incumbent's public electoral support $\hat{s}_I$ in the polls. 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 ε_I must be equal. The marginal cost was not included in this set because it is a sufficient but not necessary 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 mobilising their political machines. Hence, Hypothesis 1 is as follows:

Hypothesis 1. Preference falsification shall positively affect the amount of election fraud across Russian regions.

From here, I also derive my Hypothesis 2:

Hypothesis 2. 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 as follows:

Hypothesis 3. The larger the vote margin between two major candidates, the weaker the effect of preference falsification on election fraud.

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

Data and Measurements

In this empirical part, I utilise the official electoral and polling data from the 2012 Russian presidential elections aggregated to the regional level. The polling data were collected by the national polling organisation Levada-Center as part of the Omnibus longitudinal study on 17–20 February and 24–27 February 2012. Both these polls are most proximate to the official date of elections, 4 March 2012. For this part of the analysis, all the electoral data were downloaded from the Russian 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 techniques, based on the observer reports, and quantitative techniques, based on election forensics. The field of election forensics includes several methods of election fraud detection, such as digit tests, based on the assumption about the 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 Test (VL, V05)

The last-digit test is founded on the assumption that the 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 2003–2008 in Russia (Mebane and Kalinin, 2009). The last-digit approach was further extended by the proportion of zeros and fives in the last digit of the percentages or vote counts of the incumbent's electoral support or turnout. The presence of election fraud becomes a basic signalling 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 signalling 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, favourable

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 the last digit of vote counts and higher proportion of zeros and fives in the electoral data. This test has also been supported by the literature focusing on an 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% (Kobak et al., 2016; Mebane and Kalinin, 2009), 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 article, I will use two-digit-based measures of election fraud: the mean of the last digit of vote counts ('VL') and the proportion of zeros and fives in the last digit of the incumbent's vote counts in a given region (for the precinct-level analysis both measures).

Finite Mixture Model

The third measure of election fraud is based on a finite mixture model (FMM) which originated from 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 characterised 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 fraud: ballot switching ('incremental fraud', f_i) and ballot stuffing ('extreme fraud', f_e). Walter Mebane (2016) develops this model further by utilising a finite mixture model ('FMM') to estimate three distinct components measured at the precinct level: probabilities of incremental, extreme and no fraud.

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

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

- 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 the Russian Constitutional Court;
- *I will vote for Vladimir Putin in the upcoming presidential election (4 March)*;
- 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, which was questioned on the basis of four assertions, while another group is a treatment group, which was questioned on the basis of five assertions (i.e. four non-sensitive items plus one sensitive). The share of respondents privately

supporting Putin $\hat{s}_I$ is a standard difference in the means estimator of two subsamples: $\hat{s}_I = 1/N_1(\sum_{i=1}^{N} T_i Y_i) - 1/N_0(\sum_{i=1}^{N}(1-T_i)Y_i)$, 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 $\hat{s}_I - s_I = \varepsilon_I$, where s_I is Putin's public vote share computed from the direct question. This preference falsification measure is computed for 45 Russian regions for which the polling data were available.

Since I am interested in 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. This is the absolute difference in vote shares between the leading candidate (Vladimir Putin) and the second candidate (Gennady Zyuganov, the leader of the Communist party).

Empirical Analysis

Before getting to the main analysis, I check to see whether 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) whether a significant difference in the means between direct self-report and official election results is observed, (b) whether the share of public electoral support is significantly higher than the share of private electoral support and (c) whether 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 between the means of public survey preferences and Putin's official election results is observed ($t = 1.03$, df = 43, $p = 0.31$); (b) there is a statistically significant difference between public and private electoral preferences for the incumbent ($t = 8.28$, df = 43, $p = 0$); and (c) contrary to my expectations, there is a statistically significant difference between election fraud probabilities ('FMM' measure) and preference falsification with regard to Putin's support ($t = -3.88$, df = 32, $p = 0.001$). 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.'s (2016) analysis, such as Moscow ($f_I = 0.09$, $\varepsilon_I = 0.04$), Moskovskaya oblast ($f_I = 0.09$, $\varepsilon_I = 0.04$), Tatarstan ($f_I = 0.36$, $\varepsilon_I = 0.30$) and Kemerovskaya oblast ($f_I = 0.22$, $\varepsilon_I = 0.18$), the discrepancy between the figures is remarkably small.

While the national-level estimate of the magnitude of preference falsification in the incumbent's support is $\varepsilon_I = 18.9\%$ (standard error 4.3), the finite mixture estimator provides me with a rough estimate that 9%[2] of the election fraud probability favours the incumbent. Even though both figures are roughly similar, a small statistically significant difference is observed between the two. According to the FMM, almost all anomalies (8.4%) are associated with incremental fraud, that is, ballot switching from one candidate to another, and only a tiny portion (0.02%) with extreme fraud, that is, ballot stuffing.

Although the estimates obtained from the regional level data are more 'noisy' compared to the national-level estimates, implementation of the non-parametric 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), preference falsification 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.

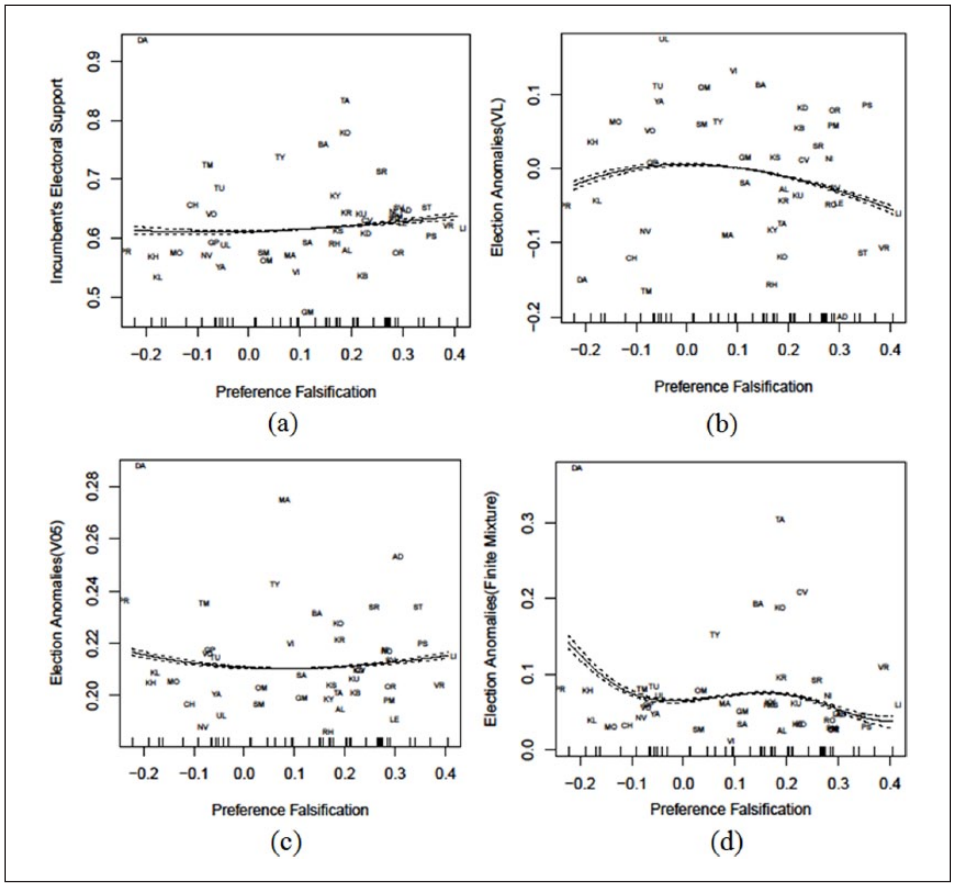

Figure 2. Nonparametric Regression: Effect of Preference Falsification on Anomalies in Putin's Electoral Support.

All are region-level estimates: *Preference Falsification*, $\hat{s}_i - s_i = \varepsilon_i$; measures of election fraud: *V05*: the proportion of zeros and fives in the last digit of percentages of incumbent's electoral support; *VL*: the mean of the last digit of incumbent's vote counts; *Finite Mixture*: the finite mixture model estimates; *Incumbent's Electoral Support:* v_i.

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 a 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, that is, signalling patterns which shift the regression line downwards. The observed convex-shaped curve peaks around the value of preference falsification being equal to zero, thus roughly dividing the graph into two regions. *The region of preference revelation* located on the left-hand side is characterised 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 the incumbent's vote counts decreases.

Figure 2(c), illustrating whether the proportions of zeros and fives in the incumbent's vote counts are dependent on the level of preference falsification, shows an inverted

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

	M(01)	M(02)	M(03)
Constant	4.61***	0.17***	−0.11***
	(0.04)	(0.01)	(0.02)
Preference falsification	−0.26	0.12***	0.3**
	(0.19)	(0.04)	(0.12)
Margin of victory	−0.25***	0.09***	0.42***
	(0.08)	(0.02)	(0.05)
Preference falsification	0.45	−0.3***	−0.84***
× Margin of victory	(0.36)	(0.09)	(0.28)
R^2	0.14	0.34	0.64
Sample size	44	44	44

Cluster robust standard errors in parentheses. Dependent variables: M(01) – 'VL', M(02) – 'V05' and M(03) – finite mixture estimator.
Significance levels: $p \leqslant 0.1$; $p \leqslant 0.05$; $p \leqslant 0.01$.

pattern similar to the non-linear 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 non-linearity dividing the graph into three regions: *the region of preference revelation* [−0.2; 0], the 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 more strongly supported by the signalling 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 linear regression analysis (see Table 1).

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. Furthermore, I present the marginal effect of preference falsification on election fraud, conditional on the margin of victory estimated from the electoral data visually in Figure 3.

According to Figure 3, as the margin of victory for the party increases, the marginal effect of preference falsification on election fraud decreases. Figure 3(a) shows that the marginal effect of preference falsification on the proportion of zeros and fives becomes statistically significant when the victory margin is in the range of values between 0.55 and 0.75. Figure 3(b), which illustrates the marginal effect of preference falsification on finite mixture estimates, demonstrates a similar 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 are provided at the regional level. Based on these

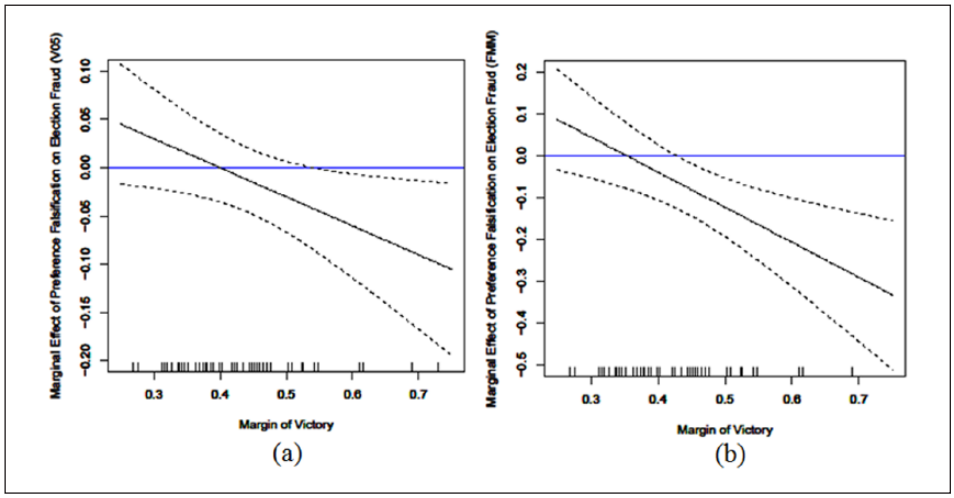

Figure 3. The Marginal Effect of Preference Falsification Conditional on the Difference of the Margin of Victory Between the Candidates.
V05: the proportion of zeroes and fives in a given region; *FMM*: the finite mixture model estimates.

data, I estimate linear mixed-effects models ('VL' and 'FMM') and a generalised linear mixed-effects model ('V05') with a random intercept grouped by the region (see Table S3 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 Online Appendix, three additional models were added to the analysis with two extra covariates ('Republics' – indicating whether the region belongs to an ethnic region or not, and 'Rural' – indicating whether the area belongs to a 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 a '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.

Conclusion

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

The importance of pre-election polling in the voter's, autocrat's and survey organisation's strategic behaviour is truly substantial. According to my findings, the autocrat is strategically interested in boosting preference falsification and organising the proportionate amount of election fraud in a given country so as to provide himself with the most favourable 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 outcomes for him, resulting in the Pareto inferior outcomes due

to the bandwagon effect. In this setting, the survey organisation would be interested in data collection which 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, organisation 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 centre.

My empirical findings derived from the analysis of the Russian electoral data strongly support the theoretical implications of the model. First, analysis of both data sets 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 in 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 the analysis. Second, the presence of non-linear patterns in my non-parametric analysis provided me with mixed evidence in favour of the main hypothesis. Third, the future expansion of this research to a cross-national setting would make my key findings more generalisable to other electoral autocracies. Even though these limitations are substantial for our consideration, 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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Supplementary Information

Additional supplementary information may be found with the online version of this article.

Table S1. The descriptive characteristics of the variables (n=44).
Table S2. Election forecasts of incumbent's support (by election year and polling organisation).[1]
Table S3. Preference falsification, election fraud and margin of victory in Russian Elections, 2012 (linear mixed-effects models).

Notes

1. Most estimates were roughly similar, within the margin of error (see Table S2 in the Online Appendix).
2. Standard error cannot be estimated using this method.

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