Participation and Welfare in Fraudulent Elections

EERC Proposal

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Abstract

In this research I intend to theoretically examine how electoral fraud, a widespread phenomenon in CIS countries, affects voters’ and candidates’ behavior, and as a consequence social welfare, and analyze the ability of various electoral policies to increase welfare under circumstances of fraudulent elections. In addition, I plan to rationalize two empirical observations about fraudulent elections: negative relationship between turnout and magnitude of fraud, and positive correlation between fraud and victory margin. I will show that these two observations might be easily explained once fraud is thought as simply a ballot stuffing.
Introduction

Fair elections are fundamental to democracy. For a long time researchers assumed that elections are well-functioning tools for converting public preferences into social choice. However, in reality fraud has become an integral part of electoral competition in both established democracies and less-than-democratic regimes. CIS countries are not an exception: allegations in fraud and falsifications are common in elections of all levels in Russia, Belarus, Ukraine, Armenia, Kazakhstan, and others.

In recent years both economists and political scientists have started paying close attention to elections that lack integrity. The theoretical literature on fraudulent elections has a noticeable bias towards studying the behavior of candidates, while the behavior of voters as well as welfare consequences of electoral fraud is often left out of researchers’ scope. The main purpose of the proposed research is to comprehensively study the effect of electoral fraud on voters’ behavior, specifically participation, analyze how falsifications affect social welfare, and examine various electoral policies such as subsidizing participation, making voting compulsory or setting quorum requirements might improve efficiency.

In addition, the research is intended to rationalize two main empirical observations about fraudulent elections. First, there is a negative relationship between turnout and degree of fraud and second, highly fraudulent elections are associated with a high victory margin. I hope to show that these observations can be explained within a pivotal voting framework once fraud is thought simply as ballot stuffing.

The rest of the proposal in organized as follows. First, I review the existing literature on fraudulent elections. Then I generally describe a model of fraudulent elections, present its simplified version, discuss potential results which could be obtained from the model, show how electoral policies might be modeled and analyzed within the developed framework.
2. Literature Review

The literature on fraudulent elections usually considers fraud to be a wider phenomenon than just a tool of getting extra votes, and often models it as political pressure or violence. The main question raised by scholars is why and when corrupt incumbents chose to use such kind of fraud in electoral competition. Chaturvedi (2005) studies a competition between parties which can allocate resources between ideological campaigning and political violence. He shows that competing parties use more political pressure if the outcome of elections is ex-ante more uncertain. Once there is a bias towards one candidate in terms of support, competing parties prefer to gain votes through ideological campaigning. Recently, Collier and Vicente (2011) distinguish between several tools that can be used by candidates to affect the outcome of elections, and show that strategies the incumbent and challenger choose to adopt are determined by support. Specifically, a weak challenger would prefer to use violence and a weak incumbent would use repression, while an incumbent with strong support would prefer to bribe electoral officials and stuff the ballot box. Magaloni (2010) focuses on the incentives of corrupt incumbents to hold clean elections, and shows that under substantial threat of revolt, incumbents would like to avoid fraud. Because a simple promise to hold clean elections is not credible, the only way to persuade voters of election integrity is to delegate election administration to a truly independent party.

While candidates’ behavior in fraudulent elections is studied fairly well, there is no research that looks at the behavior of voters in such a context. The literature on fraudulent elections at best assumes that voters have stronger incentives to abstain if they expect fraud. In fact, this assumption is widely supported by empirical evidence, while the mechanism that leads to abstention has not been explored yet.

A number of studies have shown that voters are less likely to participate in elections if they expect fraud. This result was established by, for instance, McCann and Domingues (1998), who explored Mexican survey data and found opposition supporters to be more likely to abstain with higher fraud expectations. The finding was re-established by Hiskey and Bowler (2005), who analyze Mexican data to study the impact of procedural fairness on citizens’ political engagement. Among other results, they find that individuals, who believe that elections are clean, are more likely to participate. More recently, Birsch (2010), empirically analyzing cross-country electoral survey data from both new and established democracies, shows that ex-ante fairness of elections is positively related to turnout. She finds that, controlling for a variety of individual- and election-level characteristics, perceived electoral integrity has a strong positive effect on propensity to vote. Similarly, Landry et al (2010) study local elections in China and find that when the race is close, voters perceive elections as fair and are more likely to vote. It is important to note that all the mentioned research use surveys, not official electoral data, and thus the observation concerns real turnout, not reported turnout.

The observed negative relationship between fraud perception and turnout is generally explained by the weak incentives of electorate to participate in costly voting if the election lacks competitiveness. Weak incentives are assumed to be a result of either direct disutility from participating in corrupt elections
(e.g. Simpser, 2008) or from the low likelihood to be pivotal, which in its turn comes from a lack of competition (e.g. Birsch, 2010). However, these explanations seem too informal and not fully consistent. Indeed, fraud could both decrease and increase the competitiveness of elections: it may give a corrupt candidate an overwhelming advantage, but it can also give a chance for an incumbent with low support to make the race competitive. Thus, lower pivotal probabilities may arise only under certain conditions. This research is intended to closely study the mechanism through which fraud affects pivotal probabilities and, as a result, participation decisions.

The second empirical observation about flawed elections relates integrity and victory margin. Simpser (2008) collects and analyzes a unique dataset on about 400 executive elections held worldwide between 1990 and 2007, in which multiple candidates were allowed to run, to establish a positive relationship between electoral fraud and victory margin. For each election he uses a variety of available sources ranging from observers’ reports and newspaper articles to academic research and poll data to mark the election as either clean or corrupt. The main finding of the analysis is that in fraudulent elections a high victory margin is observed much more frequently than in clean elections: in about 40% of elections marked as corrupt, the victory margin exceeds 40%. This result generally holds for the analysis of alternative datasets on fraudulent elections such as the Database of Political Institutions by the World Bank (Beck et al, 2001) as well as the one collected by Pastor (1999).

From this observation it follows that corrupt politicians often commit excessive electoral fraud. Such excessiveness could be partially explained by the uncertainty about election outcome faced by the corrupt candidate. If the candidate is risk averse and the costs of fraud are low relative to the stakes of re-election, such uncertainty could provide incentives for excessive fraud. Indeed, it cannot fully account for very high victory margins that are often observed in flawed elections, and thus could serve only as a partial explanation. Simpser (2008) rationalizes fraud excessiveness by a two-period voting game where a high victory margin in the first period discourages participation of opposition supporters in the second period, and thus can be desirable by a corrupt incumbent. Because a high victory margin can be achieved by fraud only, under certain conditions the incumbent can excessively commit fraud in the first period. Within the proposed project, as a secondary purpose, I will try to rationalize this puzzling observation in a simpler and more systematic way.

The main focus of the proposed research is social welfare. Pivotal voting models (e.g. Borgers, 2004) suggest that participation in elections is usually inefficient because voters, when making their participation decisions, produce an externality on pivotal probabilities of other voters which is not taken into account in individual decision making. Thus, a question of improving efficiency through various electoral policies (e.g. introducing compulsory voting or setting quorum requirement) becomes relevant. A number of studies analyze compulsory voting from efficiency improving perspectives. Borgers (2004) states that compulsory voting is never welfare improving. This result comes from equal candidates supports, which eliminates positive externality, and thus makes any increase in turnout welfare decreasing. Krasta and Polborn (2009) allow the supports to be ex-ante different and show that under certain conditions compulsory voting may be superior to voluntarily voting. Herrera and Matozzi (2010) study quorum requirement as another policy that might affect turnout and thus welfare and show that generally it might have two opposite effects on welfare and thus it total effect is ambiguous.
Though, studies of welfare effects of electoral policies do exist, their results cannot be blindly applied for elections with falsifications. This is because social welfare is affected by these policies through voters’ participation which is in its turn, as I will show further, substantially influenced by the presence of fraud. Thus, there is a need for a comprehensive study of participation incentives in fraudulent election.

3. Methodology

Instead of considering fraud as violence which affects voters’ or candidates’ utility, I propose viewing it as pure ballot stuffing. In such a setup voters do not directly suffer from an incumbent’s actions but instead anticipate that if they abstain, their votes are likely to be counted in favor of a corrupt incumbent.

Elections will be modeled in a way similar to the one used in a large body of pivotal costly voting literature, where voters are assumed to make participation decisions based on the probability that their votes can alter the outcome of elections. Such costly voting models have been widely studied by, for example, Palfrey and Rosenthal (1983, 1985), Ledyard (1984), Borgers (2004) and more recently by Krasa and Polborn (2009).

There are \( N \) voters \((N \geq 2)\) and two candidates to vote for, incumbent (A) and challenger (B). Voters have preferences over candidates: \( B \) voters support challenger (B-type) and \( N-B \) voters favor incumbent (A-type). Each voter has an individual specific voting cost \( c_i \) drawn from a commonly known distribution \( F \) over interval \((0, c_{\text{max}}]\), independently of his type and other voters. If a voter’s preferred candidate wins, the voter gets utility 1 if he did not vote, and \( 1-c_i \) otherwise. If his favorable candidate loses, the voter gets utility 0 if he abstained, and \(-c_i\) if he voted. Every individual observes his own cost only and votes sincerely. In this model, incumbent’s and challenger’s supporters differ ex-ante only in their preferences over candidates, while all the other characteristics such as benefits from electing a favorable candidate and expected voting costs are the same. Elections are run under majority rule and, without loss of generality, a tie is resolved in favor of incumbent.

The conceptual difference between the suggested model and a standard pivotal voting model is in the ability of one of the candidates to affect election outcomes through committing electoral fraud in the form of ballot stuffing. For a simplified version of the model assume that incumbent stuffs ballots perfectly, meaning that if a voter abstains, his vote is counted in favor of the incumbent with certainty.

Analysis of voter’s behavior starts from observation that none of incumbent supporters have incentives to vote as long as costs of voting are non-negative. This is because an A-type voter’s vote will be counted in favor of incumbent regardless of whether the voter participates or abstains. Thus, I restrict
attention to voting behavior of challenger supporters. A B-type voter compares his expected benefit to voting cost. Specifically, a B-type voter $i$ decides to vote if and only if:

$$\Pi(p) > c_i. \quad \text{(1)}$$

$\Pi(p)$ is a probability of being pivotal given that a randomly chosen B-type voter votes with probability $p$, and, at the same time, expected benefit because the voter’s benefit from electing challenger is 1.

Because the number of votes for incumbent is at least as large as $N - B$ (number of A-type voters), there is no way challenger can win elections if the number of his supporters is less than $N - B + 1$. Thus, if $B < N - B + 1$, B-type votes do not have incentives to vote either. Thus, from now on I restrict attention to the case when $B \geq N/2 + 1$.

To build the pivotal probability $\Pi(p)$ function, let $V$ be a number of B-type individuals other than $i$ who choose to vote. Thus, $V$ is a random variable that follows a binomial distribution with parameters $B - 1$ and $p$. Probability that $V$ takes a particular value $v$ is then:

$$Prob(V = v) = \binom{B-1}{v}p^v(1-p)^{B-v-1} \quad \text{(1)}$$

Without loss of generality assume $N$ is even. A voter is pivotal, given that exactly $v$ voters chose to vote, if the difference between votes for incumbent (including the stuffed ones) and votes for opposition is zero:

$$N - v - v = N - 2v = 0. \quad \text{(2)}$$

Then, a voter is pivotal if and only if $v = N/2$. For shorter notation denote $N/2 = n$ and note that $n + 1 \leq B \leq 2n$ as the number of B-type voters should be larger than number of A-types and smaller than total number of voters $N$. From (1) we obtain a probability of being pivotal:

$$\Pi(p) = Prob(v = n) = \binom{B-1}{n}p^n(1-p)^{B-n-1}. \quad \text{(2)}$$

It can be seen that this function is non-negative and reaches its maximum when $p = \frac{n}{B-1}$.

In standard pivotal voting models there is usually a unique symmetric equilibrium where individuals with voting costs below a certain threshold cast their vote and the others abstain. In the suggested model there are two equilibria. I am looking for a within group symmetric equilibrium where all B-type voters adopts the same voting strategy. Specifically, there must be a common threshold value $c^*$ such that a B-type voter $i$ votes if $c_i \leq c^*$ and abstain otherwise. Thus, $c^*$ should satisfy:

$$\Pi(F(c^*)) = c^*. \quad \text{(3)}$$

This condition can be rewritten as

$$\Pi(F(c^*)) = F^{-1}(F(c^*)). \quad \text{(2)}$$

Now I can make a graph in $F(c), y(F(c))$ space, where $F(c) = t$ is in fact turnout.
There could be up to three points that satisfy equation (2), out of which only $t_1$ and $t_3$ are equilibria.

Intersection 2 is a “quasi-saddle” point: once turnout is greater than or equal to $t_2$ model will converge to equilibrium $t_3$, otherwise – to $t_1$. Thus, $t_2$ constitutes a turnout threshold value which needs to be enforced in order to achieve coordination equilibrium, and which is strictly lower than coordination turnout $t_3$. While equilibrium $t_1$, in which none of B-type voters votes, always exists, the existence of coordination equilibrium $t_3$ depends on model parameters. Conditions for the existence of the second equilibrium will be studied in details within the research.

It is important to understand that coordination equilibrium is ex-ante more efficient than zero turnout equilibrium and thus solving collective action problem of achieving $t_2$ turnout level is welfare improving. Expected utility of an A-type voter is $1 - w_B$, where $w_B$ is the probability that challenger wins. Note that turnout is a random variable. This is because individual voting costs are independent random draws, with unknown exact realization, and thus the exact number of individuals with costs below some particular threshold is also ex-ante unknown. Given some voting rule $\tilde{c}$, turnout would follow binomial distribution with parameters $B$ and $F(\tilde{c})$. Thus, probability that challenger wins over incumbent is the probability that more than $n = N/2$ B-type voters cast their votes:

\[
w_B = \sum_{i=n+1}^{B} \begin{pmatrix} B \\ i \end{pmatrix} F(\tilde{c})^i (1 - F(\tilde{c}))^{B-i}.
\]

Then expected utility of a B-type voter can be expressed as follows:

\[
\int_0^\tilde{c} (w_B + \Pi(F(\tilde{c})) - c) dF(c) + \int_\tilde{c}^{c_{\max}} w_B dF(c) = w_B + \int_0^\tilde{c} (\Pi(F(\tilde{c})) - c) dF(c).
\]

The first integral of the expression above is the ex-ante expected utility of a B-type voter if his voting cost appears to be below $\tilde{c}$. Second integral is the expected utility the voter would get if his cost is such that he abstains. Thus, total social expected utility can be expressed as follows:

\[
W = (2n - B)(1 - w_B) + Bw_B + B \int_0^\tilde{c} (\Pi(F(\tilde{c})) - c) dF(c).
\]

The last expression can be rewritten as:

\[
W = 2n - B + 2(B - n)w_B + B \int_0^\tilde{c} (\Pi(F(\tilde{c})) - c) dF(c).
\]
Clearly, in zero turnout equilibrium, where $\tilde{c} = 0$ and $w_B = 0$, social welfare is lower than in coordination one:

$$2n - B < 2n - B + 2(B - n)w_B + B \int_0^{c^*} (\Pi(F(c^*)) - c)dF(c),$$

as $B - n \geq 0$ and $\int_0^{c^*} (\Pi(F(c^*)) - c)dF(c) > 0$.

To see whether coordination equilibrium is efficient from the social point of view, consider social welfare as function of some strategy $\tilde{c}$ adopted by all B-type voters:

$$W = (2n - B)(1 - w_B) + Bw_B + B\int_0^{\tilde{c}} (\Pi(F(\tilde{c})) - c)dF(c),$$

$$W = (2n - B)(1 - w_B) + Bw_B + B\Pi(F(\tilde{c}))F(\tilde{c}) - B\int_0^{\tilde{c}} cdF(c).$$

Taking first-order condition with respect to $\tilde{c}$ we obtain:

$$2(B - n)\frac{\partial w_B}{\partial F(\tilde{c})}f(\tilde{c}) + Bf(\tilde{c})[\Pi'(F(\tilde{c}))F(\tilde{c}) + \Pi(F(\tilde{c})) - \tilde{c}] = 0 \quad (4)$$

It is clear that coordination equilibrium condition $\Pi(F(c^*)) = c^*$ does not immediately imply that first order condition (3) holds, which means that generally coordination equilibrium is not efficient. The inefficiency comes from the fact that, when making a voting decision, a B-type voter does not take into account two externalities his vote produces. First, an extra vote increases the chances of alternative B to be elected ($w_B$) which in its turn increases B-type voter’s expected utility and thus total welfare as number of B-types is large than number of A-type voters. At the same time an extra vote decreases the probability of being pivotal for all B-type voters and thus decreases their expected utility and total welfare. Thus, coordination equilibrium is efficient if and only if these two effects exactly compensate each other, which is a zero-probability event.

Also note that even the simplified model rationalizes two main empirical observations about fraudulent elections: low participation incentives when elections are expected to be fraudulent and positive relationship between fraud and victory margin. The model predicts the existence of two equilibria: there is either equilibrium with zero turnout, high fraud and hundred percent victory margin, or a one with high participation, relatively low fraud and high chances for challenger’s victory, which is consistent with the observations. This consistency suggests that the model might be reasonably appropriate for studying fraudulent elections, and thus may be used for policy analysis.

The model shows that presence of fraud crucially alters voters’ behavior in a voting game in comparison to fair elections case, and results in different equilibria in terms of their welfare properties. Thus, traditional methods of correction for efficiency cannot be blindly applied when elections are fraudulent. The purpose of this research is to closely study the effect of fraud on voters’ behavior and, as a result, on aggregate welfare in order to evaluate the ability of various electoral policies to improve social efficiency. I suggest focusing on three distinct policies that might have an effect on electoral participation under circumstances of electoral fraud: subsidizing/taxing participation, making voting compulsory and setting quorum requirements. Using the welfare analysis I will be able to say whether
these policies are effective at all, which of them are relatively more efficient, and how they should be implemented conditional on the model parameters in order to maximize social welfare.

5. Dissemination

The duration of the project is planned for one year. A study of the relevant literature and finalizing development of the methodology are expected to be completed by September 2012. Fall 2012 will be devoted to analysis of the model. A first draft of the paper should appear in December 2012. Winter of 2013 will be dedicated to finalizing the paper. The paper will be submitted to a relevant journal in Spring 2013.

6. Budget

The research will be conducted by Dmitriy Vorobyev only. It does not have any other funding. In addition to the stipend for the grantee, the research will require some expenses on English editing before submission the final version of the paper for publication. The paper is planned to be presented in at least two political science or public economics conferences. Furthermore, the proposed methodology will require a lot of computations and thus certain equipment such as computer and mathematical software (e.g. MatLab) will be needed. Institutional overhead is 20%.

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