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Electoral fraud and voter turnout

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Abstract

In this paper we experimentally investigate the consequences of electoral fraud on voter turnout. The experiment is based on a strategic binary voting model where voters decide whether to cast a costly vote in favour of their preferred candidate or to abstain. Minority candidate can illicitly influence the electoral process by applying ballot box stuffing. In the experiment we implement two different framings: we compare voter turnout in a neutral environment and with framed instructions to explicitly replicate elections. This approach enables to both test the model's predictions and to estimate framing effects of voting and fraud. Comparison of experimental results with theoretical predictions reveals over-voting, which is exacerbated when fraud is applied. Moreover, turnout increases with moderate level of fraud. However, with more extensive electoral fraud, theoretical predictions are not matched. Voters fail to recognize that the existence of a relatively larger number of "agents" voting with certainty considerably decreases the benefits of voting. Importantly, framing matters, as revealed by the higher turnout of those in the majority group, against which the fraud is applied. Finally, individual level regression analysis provides evidences of strategic voting.

JEL classification: D72, C52, C91, C92

Keywords: Laboratory experiment, Framing, Voting, Ballot rigging and Voter turnout.

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Introduction

Since 1990s, with the last large wave of democratization of post-soviet and eastern European countries, the number of elections in the world has witnessed a sharp increase. At the same time, the quality of elections has deteriorated considerably over time: while the share of elections reported to be illicitly influenced was around 15% out of around 180 national level elections during the period 1980-1990, it increases to almost 40% out of around 480 elections in the period 2001-2010.[1]

Evidence of electoral fraud has been provided worldwide, both in developed and developing countries. Weak electoral identity-checking scheme are responsible for at least 42 convictions for electoral fraud in the UK in the period 2000-2007 (Wilks-Heeg, 2008) and for promoting electoral fraud in Japanese municipal elections, as showed by the natural experiment by Fukumoto and Horiuchi (2011). News reports highlighting the risk of voter fraud in several EU countries[2] have become a fairly routine part of electoral campaign. Douglas (2013) examines the multiplicity of election contest provisions and the procedural mechanism to manage them among the US states: the notorious hanging chads in 2000 in Florida is an example of US not being immune to electoral malpractices. In developing world, electoral fraud is usually more evident and takes a wider variety of forms: from vote buying to intimidation, from ballot box stuffing and carousel voting to explicit violence.

Whenever electoral fraud is pervasive and eliminates any notion of political competition, any effort made to analyze its impact on voters' behaviour will be hardly of any use. Differently, when electoral illicit intervention leaves some room for candidates or parties to compete, voters' strategic and behavioural responses to fraud will be a key determinant of the election's outcome. In this paper we thus investigate the effects of electoral fraud on voters' behavior. Understanding the effect of electoral fraud on voter turnout decisions is important for a number of reasons. First, high turnout rate is often quoted as a by-side indicator of properly organized and conducted elections. We thus provide a first evidence on whether a lower participantion rate is effectively associated with a lower degree of fraudulent intervention in the elections. Second, voter turnout in case of fraud may be not only motivated by strategic reasons, but also by behavioral

[1] Authors' calculations based on data from Institute for Democracy and Electoral Assistance (IDEA), database on political institutions (DPI) and the Cingranelli-Richards human rights dataset (CIRI).

[2] EUobserver (2014): Threat of voter fraud haunts EU vote in Romania, Bulgaria and Croatia. See http://euobserver.com/eu-elections/123485

reactions to an electoral procedure that is considered as unfair.

In order to investigate the effects of fraud on voter turnout, we modify the conventional binary elections model with costly voting to allow for fraud, where illicit intervention is promoted only by one out of two parties. Assuming that the implementation of fraud is costly (and thus limited in scope), we show that in equilibrium fraud might increase the turnout rate. In particular, a limited amount of fraud exerted in favor of the competitor with the ex-ante smaller support should increase the turnout in both groups, whereas deeper interventions should suppress voting motives and decrease the turnout rates to a level lower than in equilibrium without fraud.

We test our predictions in a laboratory experiment, where we compare voting behavior in a baseline game with respect to a situation where, respectively, a limited and a more extended amount of fraud is introduced in the elections. The baseline game is designed in a way that allows direct comparisons with the paper by Levine and Palfrey (2007). We thus provide an additional validity test for the strategic voting model. In order to analyze the effect of fraud on voting behavior we then introduce two levels of fraudulent interventions in the elections. When fraud is limited our model predicts a higher turnout than in the baseline, whereas a more extensive intervention should have the opposite effect. Moreover, we implement two different treatments: in the *Neutral* one, the wording in the instructions are written to induce as neutral environment as possible. There is no mention of voting, fraud or voting costs. In the *Framing* treatment the instructions are framed as to replicate elections. We explicitly refer to elections and fraud in the game in order to investigate the importance of social and psychological factors in affecting voting behaviour. In particular, if voters fear that polls are corrupt, they have less incentive to bother casting a vote; however, the electorate may also decide to heavily mobilize to vote, in order to punish the malfeasant politician, when fraud is acknowledged.

The experiment has provided a number of noteworthy results. First, comparison of experimental results with theoretical predictions reveals over-voting (analogous results were obtained by Levine and Palfrey (2007)). Second, as expected, limited intervention increases the turnout and this result is observed both in the Neutral and Framing treatments. Third, extensive fraud is not having significant negative impact on turnout rates as it is suggested by the theoretical model. Moreover, its effect is qualitatively different when comparing the Neutral and the Framing treatments. While in the Neutral treatment there is no significant variation in turnout between a limited and a more extensive fraudulent intervention, in the Framing treatment we do observe such differences. In particular, the majority group, against which the fraud is undertaken, responds with even significantly higher participation in the extensive intervention case. The observed differences between the Framing and Neutral treatments suggest that voting behavior cannot be solely explained by the inability of agents to correctly infer their expected pay-offs when deciding to vote or to abstain. In this paper we provide evidence of behavioural aspects that cannot be disregarded when considering voting in a fraudulent environment.

The remainder of the paper is organized as follows. Section 1 sets our paper within the related literature. Section 2 presents the model and the theoretical predictions, as well as formalizes the testable hypothesis. Section 3 describes the design and procedures of the experiment. In Section 4, we present our experimental results at the aggregate and individual levels. Section 5 contains a final discussion and directions for further research.

1 Related literature

In spite of its frequent occurrence, fraud has been rarely studied within the theoretical literature on voting. Fraud may affect elections via numerous different practises. Among them, vote buying has been mainly analysed as a legal phenomenon adopted by both competitors in binary elections. Dekel et al. (2008) present a model in which vote buying is free of stigma and show that politicians obtain higher rents when electoral competition rests on pre-electoral vote-buying rather than when it relies on campaign promises. Ellman and Wantchekon (2000) study the case of post-electoral violence and demonstrate that, in a situation without policy commitment and asymmetry of information about the probability of unrest, voters select the strong party to avoid disruptions. In a more recent paper, Collier and Vicente (2012) analyse the difference of electoral fraud and electoral violence in Sub-Saharan Africa, showing that when political competitors are weak they are more likely to resort to violence, whereas when they are strong they prefer to use bribing and ballot fraud in order to gain elections. While none of these papers is questioning the impact of fraud on voter turnout, the novelty of our approach consists in analysing and testing the effects of ballot stuffing on the decision of the electorate to participate in the elections. By mean of an experiment we show that voter turnout may increase, rather than decrease, as a consequence of electoral frauds.

In the empirical literature, differently than in the theoretical one, electoral fraud has been studied from various perspectives. Enikolopov et al. (2013) show that, during the 2011 Russian parliamentary elections, electoral fraud was sufficient to impact substantially the outcome of the elections. In line with this study, Collier and Hoeffler (2009) investigate the causal relationship between electoral fraud and the probability of the incumbent to win the elections (i.e. efficiency of fraud) in a cross-country context. According to the results obtained analysing 786 elections in 155 countries, fraud during elections increases the probability of the incumbent to win from 62% up to 84% (on average). Vergne (2009) is one of the few papers examining the role of electoral fraud in influencing voter turnout finding it to be a significant negative predictor of the turnout. Her analysis covers 60 developing countries during the period 1980-2005 and the microeconomic foundation of fraud is that it increases the cost of participation by making the outcome less predictable. Moreover, Birch (2010) shows, in an analysis conducted on aggregate-level data from 31 countries, that perceptions of electoral integrity are positively associated with propensity to vote.

When it comes to more specific types of electoral fraud, vote buying and ballot rigging have received considerably more attention in the empirical literature (see Schaffer (2007) for a survey of vote buying in different developing countries and Lehoucq (2003) for a review of studies discussing ballot rigging). Carreras and İrepoğlu Yasemin (2013) found that the irregularities (i.e. vote buying) that still characterize the electoral process in Latin America negatively affect citizens' trust in elections, finally reducing their willingness to participate in national elections (for Mexico, see also McCann and Dominguez (1998)). Differently, vote buying has shown to have no statistically significant impact on voter turnout, as shown by the paper of Bratton (2008), which is based on a voters' representative survey; moreover, the author shows that threat of violence has a negative effect on turnout. However, it is not fully clear whether those who were approached with the offer of bribe eventually accepted it and whether the intimidation was exercised to make them vote or abstain. Overall, empirical studies seem to show that fraud has a negative impact on turnout, even if there is no a clear cut result about it.

Clearly, the intrinsic characteristics of electoral fraud - difficult to observe and measure - makes it tricky to study the relationship between fraud and turnout using empirical data. The impact of electoral integrity may be not as straightforward, since different types of electoral malpractices (threat of violence, coercion, vote buying, etc.) and magnitudes of electoral fraud may lead to different and contrary effects, as well as both complex micro and macro conditions affecting voter turnout have to be controlled for in empirical studies (Norris, 2014). These studies are often based on perception of fairness of elections, an opinion that also depends on people's candidate preferences and campaign competitiveness (Wolak, 2014). Moreover, the consequences of fraud on voters' participation is not clear also from a *behaviorial* point of view. In the electoral context, the procedure by which the candidates are elected is of extreme importance. In particular, in the social psychology literature, Deutsch (1975) states that "*people are more apt to accept decisions and their consequences if they have participated in making them*" (p.139): when the electoral process is unfair, in the sense that it allows for fraudulent interventions which limit people's participation, people may be more likely to cast a vote for their preferred, but unfairly sabotaged, candidate with respect to a situation when there is no fraud at all. In order to define an election as fair, procedural characteristics are fundamental, as shown by the experiment by Wilking (2011): participants were asked to judge a series of hypothetical scenarios and their opinion about fairness in the elections was largely independent of whether they resided in a democracy or non-democracy, or whether they were politically engaged. Previous research on the effect of procedural unjustice in Economics has shown that people are prone to impose a cost, both on self and others, to resist procedures that they value as biased (Bolton et al., 2005). Whenever procedural unjustice affects emotions such as anger, we expect that it can affect turnout in turn (Tarrow, 1998). People may be willing to bear a higher cost of voting in order to take a revenge when being treated unfairly in an election. However, it is also possible that voters, when facing electoral fraud, may be rather less likely to cast a vote for their preferred party, shying away from the unfairness of the election's procedure.

In this paper we examine how these two forces affect voting behavior of the electorate by comparing a Neutral Treatment with a Framing one, where the election's environment is explicitly stated and the fraudulent intervention in the electoral process is made common knowledge. In this regard, the laboratory represents the ideal environment for testing the predictions of the strategic costly voting model with fraud, a controlled environment where ceteris paribus analysis is possible. Given the complexity of the real world, especially in the political context, we aim at analyzing whether framing the experiment as an election where a fraud in the voting system is introduced, makes people to react differently with respect to an identical situation, where actions and payoffs are expressed in neutral terms. In order to test for the external validity of our results we thus examine the role of framing the experiment as an election, which has rarely been systematically tested. Previous researchers have studied how media frames affect voter turnout and vote choice (Schuck et al., 2013, Valentino et al., 2001): by using empirical data Schuck et al. (2014) show that, when campaign news coverage was framed in terms of conflict rather than strategy, voters were more likely to turn out and vote in 2009 European Parliament elections. The recent natural voting experiment by Butler and Marchal (2007) provide evidence of how different emphasis in the initiatives' titles of two virtually identical popular initiatives, both demanding a decrease in the legal age of retirement in Switzerland, led to different approval rates. Druckman (2001b), however, put into evidence how source credibility is a prerequisite for successful framing, when elites want to manipulate public opinion. Our paper extends this literature by testing for the existence of the framing effect of ballot rigging on voting behavior within a laboratory experiment. As suggested by Druckman (2004), investigating in which contexts framing effects occur allows for a deeper understanding of the applications of the rationality assumptions.

Previous researchers have investigated voter turnout in the laboratory, under many different institutions: Schram and Sonnemans (1996), Grosser et al. (2005), Grosser and Schram (2010) focus on participation games and coordination problems such as the volunteer's dilemma.[3] One of the most influential experimental papers on voter turnout is provided by Levine and Palfrey (2007), who investigate voter turnout by addressing comparative statics questions about the effect of electorate size, relative party size, and voting cost. Their results support theoretical predictions with the exception that turnout probabilities are significantly higher than the predicted ones. The design of the experiment presented in this paper allows us to interestingly compare our results with those obtained by Levine and Palfrey (2007). Differently than in their experiment, we focus our attention on the effect of introducing fraud in the electoral system on the voting behaviour of the electorate.

2 The model

Let us first classify the types of electoral fraud we will be referring in the remaining of the text. We define electoral fraud as "*the corruption of the process by which votes are cast and counted* ", as suggested by Minnite and Callahan (2003) and, similarly, by

[3]Palfrey (2009)) provides a survey of experimental studies of voting behavior.

Lehoucq (2002).

Electoral fraud can be classified into the following three broad groups: a) limitation of the ability of a voter to express her preferences by exercising her right to vote, b) manipulation of the electoral results during or after elections without any direct interference with the voters, and c) cooperation with voters in organizing and conducting illicit practices during the election process (Douglas, 2005). Thus, according to Douglas (2005), the first group may include actions such as the access limitation to voting stations by intimidation, violence or other selective challenges to "undesirable" voters. Voters who are forced to vote are also considered to have limited decision making possibilities and can be attributed to the first group. The second group may include ballot box stuffing before, during or after the completion of elections, substitution of counterfeit ballot box for authentic box or ballot alteration. Finally, examples of actions from the third group may be one person registering in many places, voting using illegal registration, chain voting and, last but not least, vote buying.

In the present study we apply the ballot box stuffing type of fraud. However, it is worth emphasizing that qualitatively similar theoretical results are obtained when coercitive methods are applied on voters or asymmetries in costs are introduced between the supporters of the two groups.

There are N voters who can choose to vote or to abstain. They support one of the two candidates: the Incumbent (I) or the Challenger (C). $N_I < N_C$ so that supporters of the Incumbent are in minority. The sizes of the two groups are common knowledge. Voting is assumed to be costly and any voter i knows her own cost c_i. She also knows the distribution function $f(c)$ from which the voting costs of the other voters are independently drawn. The candidate who receives more votes wins the elections and ties are broken by a fair coin toss. If candidate I wins, all voters supporting him receive a reward of H and all voters supporting candidate C receive a reward of L, $L < H$, while the opposite happens when candidate C wins. The size of the rewards is common knowledge.

The Incumbent can interfere the elections by introducing fake ballots. The strategy of the Incumbent is defined as (integer) number $\delta \in [0, \Delta]$ of fake ballots which are placed in the polling box. Fraud applied by the Incumbent is supposed to be costly. Interventions must increase his probability of winning the election, given the electoral rule in force. Let $\Phi(\delta)$ be the convex cost function of the fraud. Also, let n_I^* be the expected number of Incumbent's supporters who vote in equilibrium and n_C^* be the expected number of Challenger's supporters who vote in equilibrium.

We define the expected plurality EP as the difference between the expected number of votes in favour of the Incumbent and in favour of the Challenger - $EP(\delta) = \delta + n_I(\delta) - n_c(\delta)$. The falsifier's problem would be:

$$\max_{\delta} -(EP(\delta) - \mathcal{M})^2 \tag{1}$$

$$\text{s.t.}\Phi(\delta) \leq \mathcal{B} \tag{2}$$

where $\mathcal{M}$ is the difference in votes that the Incumbent wants to achieve in equilibrium. Thus, $\mathcal{M} = 1$ describes a situation where the Incumbent is just interested in winning the elections, whereas $\mathcal{M} > 1$ corresponds to a situation where a larger expected margin of victory is required. Though theory suggests that in a binary election a candidate must be just interested in getting more votes than the opponent, there exists wide evidence that Incumbents apply wider manipulations to win elections with a larger margin. Benefits of excessive fraud during the elections can be of various types, such as discouraging opponents from joining or supporting rival parties, from voting, or from participating in the competition in other ways or on the opposite, it motivates supporters to participate more actively (Simpser, 2013). $\mathcal{B}$ is an exogenously given budget of the falsifying incumbent.

Players move simultaneously in the above described game. While for voters in turnout models simultaneity is considered a natural modelling approach, the actions of the incumbent require an additional clarification. An alternative view would be to assume that the incumbent can actually monitor the process of the election (e.g. by applying exit polls) or even falsify the results after the vote counting. Differently, we assume simultaneity believing that fraudulent interventions on behalf of the incumbent need to be planned and designed in advance and thus can hardly be considered as a "last minute" response to negative developments during the election day.

We look for group symmetric equilibrium of the voting game, which are known to be in cut-point strategies. A cut-point strategy for voter i specifies a cost level c_i^* such that voter i abstains if and only if $c_i > c_i^*$. This implies an aggregating voting probability for each group, (p_C^*, p_I^*) given by:

$$p_C^* = \int_{-\infty}^{c_C^*} f(c)dc = F(c_C^*) \tag{3}$$

$$p_I^* = \int_{-\infty}^{c_I^*} f(c)dc = F(c_I^*) \tag{4}$$

Given that in equilibrium every voter in the group follows same rule, this means that voter with voting cost exactly equal to c^* must be indifferent between voting and abstaining. It is easy to demonstrate that these indifference conditions are given by the following equations:

$$c_I^* = \frac{H-L}{2}(prob[n_I^i + \delta + 1 = n_C] + prob[n_I^i + \delta = n_C]) \tag{5}$$

$$c_C^* = \frac{H-L}{2}(prob[n_C^j + 1 = n_I + \delta] + prob[n_C^j = n_I + \delta]) \tag{6}$$

Superscript 'i' indicates that the number of those voted for the Incumbent is n_I excluding voter 'i' . And similar meaning has the superscript 'j'.

While we do not make any explicit assumptions about the cost function $\Phi(\delta)$ and we are interested in the reaction of participation rates to the level of fraud, we are not going to solve the Incumbent's problem explicitly. We will rather assume that the parameters of his problem are such that he can introduce a sufficient level of fraud in the election in order to win it while, when deriving the equilibrium of voting game, we will focus only on the strategies of the voters. The exogenously given absolute margin of victory $\mathcal{M}$ will derive the equilibrium of the game in that case. Then, by using this specific parametrization, the optimal fraud level will be determined endogenously in the equilibrium of the game.

Given the preferences of the falsifier, the equilibrium of the game is characterised by the following conditions:

$$c_I^* = \frac{H-L}{2}\pi_I^*(p_I^*, p_C^*, \delta^*, N_I, N_C) \tag{7}$$

$$c_C^* = \frac{H-L}{2}\pi_C^*(p_I^*, p_C^*, \delta^*, N_I, N_C) \tag{8}$$

$$\arg\max_{\delta} -(\delta^* + p_I^*(\delta)N_I - p_C^*(\delta^*)N_C - \mathcal{M})^2 \tag{9}$$

$$\Phi(\delta^*) \leq \mathcal{B} \tag{10}$$

where π_I and π_C are the pivot probabilities and have the following representation:

$$\pi_I^* = \sum_{k=0}^{N_I-\delta-1} \binom{N_I-\delta-1}{k}\binom{N_C}{k+\delta}(F(c_I^*))^k(1-F(c_I^*))^{N_I-\delta-1-k}$$
$$\times (F(c_C^*))^{k+\delta}(1-F(c_C^*))^{N_C-k-\delta} + \sum_{k=0}^{N_I-\delta-1} \binom{N_I-\delta-1}{k}\binom{N_C}{k+\delta+1}(F(c_I^*))^k\times$$
$$(1-F(c_I^*))^{N_I-\delta-1-k}(F(c_C^*))^{k+\delta+1}(1-F(c_C^*))^{N_C-k-1-\delta} \quad (11)$$

$$\pi_C^* = \sum_{k=0}^{N_I-\delta} \binom{N_I-\delta}{k}\binom{N_C-1}{k+\delta}(F(c_I^*))^k(1-F(c_I^*))^{N_I-\delta-k}\times$$
$$(F(c_C^*))^{k+\delta}(1-F(c_C^*))^{N_C-k-\delta-1} + \sum_{k=0}^{N_I-\delta} \binom{N_I-\delta}{k}\binom{N_C-1}{k+\delta-1}\times$$
$$(F(c_I^*))^k(1-F(c_I^*))^{N_I-\delta-k}(F(c_C^*))^{k+\delta-1}(1-F(c_C^*))^{N_C-k-\delta} \quad (12)$$

2.1 Predictions

Numerical estimation techniques are applied to obtain the exact predictions for the turnout rate in the game. Given that we do not have a falsifier as a subject in the lab, we fix the fraud level exogenously. As mentioned above the Incumbent has an ex ante smaller support. For the purposes of our experiment we fix $N_I = 9$ and $N_C = 18$. This corresponds to the landslide treatment with 27 voters in Levine and Palfrey (2007). Other parameters of the experiments are also matched in a way to guarantee a direct comparability of the baseline game without fraud.

The voting cost is assumed to be distributed uniformly from 0 to 55 and this distribution is the same for both groups. This ensures unique group-symmetric equilibrium and it is easy to be explained to subjects. Benefits for winning and loosing the elections are H=105 and L=5, respectively.

Table 1 presents the results of our numerical estimations of the equilibria. Though for the experiment we have picked up only two levels of fraud, here we present the estimations for a wider range of possible values in order to explicitly underline the inverse U-shaped relationship between fraud and turnout rates. [4]

[4] While we have considered two different levels of fraud to be applied, an alternative way to proceed would be to consider two different types of Incumbent - with $\mathcal{M} = 1$ (just interested in winning) and

Table 1: **Theoretical predictions: Results of numerical estimations**

Incumbent group size	9	(fraud in favour of incumbent)				
Challenger group size	18					
	Number of fake ballots					
	0	1	2	3	4	5
Group turnout probability (incumbent)	0.27	0.29	0.30	0.30	0.25	0.11
Group turnout probability (challenger)	0.23	0.26	0.29	0.30	0.28	0.19
Expected Turnout (incumbent group)	2.43	2.61	2.71	2.66	2.27	0.97
Expected Turnout (challenger group)	4.10	4.77	5.25	5.43	5.08	3.38
Expected Total turnout	6.53	7.38	7.96	8.09	7.35	4.35
Expected Plurality	-1.67	-1.15	-0.53	0.23	1.20	2.59
Pivot Probability	0.40	0.44	0.47	0.47	0.43	0.26
Total turnout rate	0.24	0.27	0.29	0.30	0.27	0.16

2.2 Testable hypothesis

Based on the predictions of the theoretical model we formulated the following hypotheses:

Hypothesis 1. In the baseline game a higher turnout is observed for the underdog candidate, as a manifestation of the classical free-riding problem in the larger group.

Hypothesis 2. There is a inverse U-shaped relationship between the extent of the fraudulent intervention and the turnout rate. Limited fraud increases turnout while higher fraud decreases it beyond the level observed in the baseline game without fraud.

Hypothesis 2a. The patterns of change in turnout rates of Hypothesis 2 are true both for minority and majority groups.

with $\mathcal{M} > 1$ (interested to win with larger margin). However, since our goal is to test for the non-linear relationship between fraud and turnout and not to identify the optimal level of fraud to maximize turnout, we have decided to analyze the first situation.

In addition to these two purely strategic hypotheses derived from the model, we have an an additional *behavorial* hypothesis:

Hypothesis 3. Framing the game as an election with vote rigging increases voter turnout with respect to a neutral environment.

3 Experimental design and procedures

We conducted 4 sessions of both the *Neutral Treatment* and the *Framing Treatment* at the experimental laboratory of the University of Milano-Bicocca. Our design is close to the one used by Levine and Palfrey (2007) but we introduce a fraud mechanism in the electoral system to study its effect on voter turnout.
In particular, our experiment consists of three parts: Baseline, Fraud I and Fraud II.

In part one, participants play the baseline game described below for 50 rounds. In part two, they play the same game for 25 rounds with the only difference that now a fraud mechanism (Fraud I) is introduced. Finally, in the third part of the game, participants play the last 25 rounds of the game where a stronger fraud mechanism (Fraud II) is included in the voting mechanism.

The baseline game develops as follows. While the entire experiment is framed as an election in the *Framing Treatment*, in the *Neutral Treatment* we never refer to elections or voting or ballot rigging, labels are as abstract as possible.[5]. Our experiment belongs to the category of equivalency framing effects rather than emphasis framing effects. As suggested by Druckman (2001a) and Levin et al. (1998), in equivalency framing effects different but logically equivalent phrases are used in the instructions; when considering emphasis framing effects, preferences change are instead due to different weights given to subsets of relevant information.
At the beginning of each period, each player is informed of whether he was assigned to group ALPHA or to group BETA (in the Framing treatment we explicitly refer to Party ALPHA and BETA);[6] Group A was composed by 9 participants while group B was composed by 18 participants. The two sizes were common knowledge to all players.[7]

[5]For the English version of the instructions (originally in Italian) please see Appendix A.

[6]In the following we refer to group A for group ALPHA and to group B for Group BETA

[7]We decided to choose these group sizes for the A and B group in order to compare experimental data with clear cut theoretical predictions about voting behavior. When theoretical predictions are not

Individuals are asked in each round to choose X (i.e. to vote in the Framing Treatment) or Y (to abstain). The voting cost is referred to as a Y bonus and is added to a player's earnings if that player chooses Option Y (to abstain) instead of choosing option X (to vote) in a round (election). Therefore, the voting cost is implemented as an opportunity cost. Bonuses are randomly redrawn in every round, independently for each subject, and subjects are only told their own Y bonus. We thus assume incomplete information about voters' heterogeneous voting costs. If a player chooses X, that player does not receive her Y bonus for that election.

Payoffs in each round are determined as follows: if more members of A(B) choose X (to vote) than members of B(A) choose X (to vote, then each member of A(B) receives 105 and each member of group B(A) receives 5. In case of a tie, each member of each group receives 55.

In order to test the effect of electoral fraud on individuals' voting behavior we ask our participants to play the same game as before in the Fraud I and Fraud II parts, with the only exception that now respectively 2 and 5 fake ballots are automatically added to the minority group (party) A. Each participant is thus taking a voting decision for 50 rounds in an enviroment characterized by no fraud in the Baseline part. In the remaining 50 rounds participants have to take the same decision but are aware that 2 and 5 fake votes will be automatically added to the minority group, respectively in Fraud I and Fraud II games. It is important to note that the fraudulent intervention is described as a vote rigging in the Framing treatment while it is not framed at all in the Neutral one.

3.1 Experimental Procedures

The experiment was programmed using zTree (Fischbacher, 2007). We conducted 8 sessions at the EELAB experimental laboratory of the University of Milano-Bicocca (Milan, Italy), in October 2014, where totally 216 students participated.

Participants were undergraduate students from the University of Milano-Bicocca, recruited via the ORSEE software (Greiner, 2004).

Once arrived in the laboratory, each participant was randomly assigned to one visually isolated computer terminal. The instructions for the first part were then read aloud and participants could read them on their screen. Individuals were asked to answer a

matched, it is less probable that this will happen in a more favorable situation.

set of control questions on the screen. Subjects had to entirely fill the computerized comprehension quiz before receiving the correct answers plus an explanation of them. Before each round, each subject was randomly assigned to group A or B and was also assigned a voting cost, drawn independently from a uniform distribution between 0 and 55, in integer increments. After the completion of part one, instructions of the second part of the experiment were made appear on the subjects' screen and read aloud, explaining the introduction of a fraud in the electoral system. Finally, after participants played the second 25 rounds, instructions about the last 25 rounds of the game were read aloud and made appear on the subjects' screen.
A test for risk aversion (Holt and Laury, 2002) was implemented as a last task.

At the end of each session, the pay-off of all rounds was added up and the sum was converted into Euro. Before proceeding with the payment of the subjects, we asked participants to fill a demographic form in order to collect information about their age, and gender.[8]

The duration of each session was about 60 minutes and the average payment was 14 Euro, including the payment for the Holt and Laury (2002) test for risk aversion.

4 Results

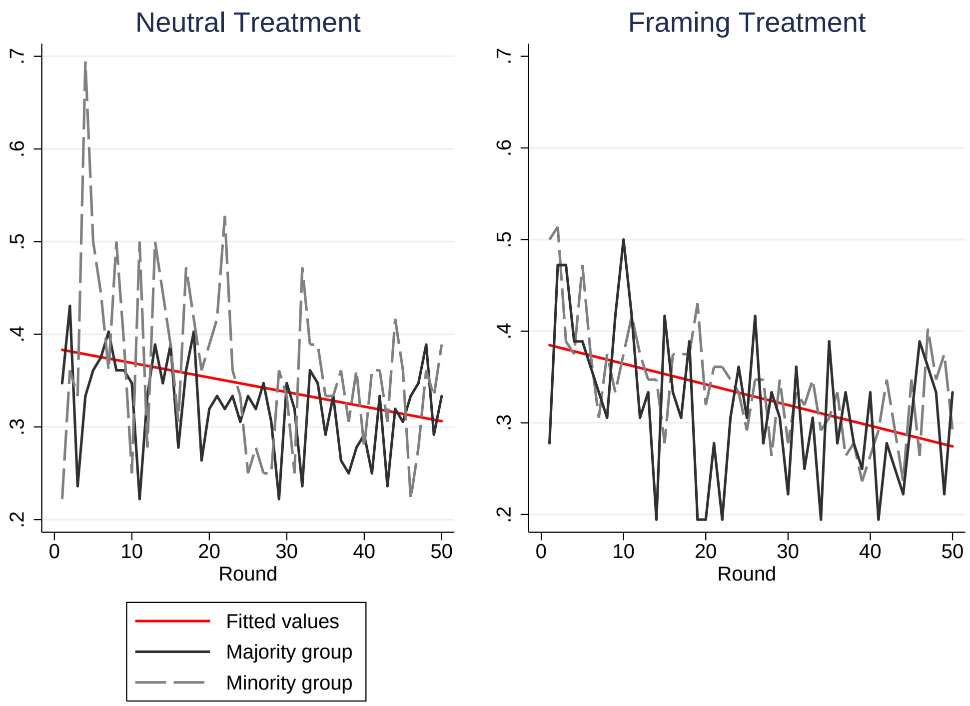
Results are summarized from two main perspectives: we first analyze voter turnout at aggregate level, then we report a more detailed study of the impact of fraudulent electoral interventions at individual level.
We initially consider the baseline game without any fraud intervention: we focus on framing differences and compare the observed results with our theoretical predictions and with those obtained in previous studies. The impact of the fraudulent intervention is then assessed both at aggregate level and at the individual level, in order to estimate to what extent voters are behaving strategically.

4.1 Aggregate level analysis

We start our analysis by considering voter turnout in the Baseline game. Figure 1 graphs, for each party and each treatment, the observed turnout rates throughout the

[8] Moreover, participants were asked to answer a very simple question about their attitude towards voting; more specifically, each participant has to choose whether he considers voting in the elections as a right or a duty, important or useless.

Figure 1: **Frequency of voting per group in the Neutral and Framing treatment**



50 rounds. Figure 1 suggests that Hypothesis 1 about the greater participation in the election of the underdog's group seems to be satisfied for the Neutral treatment but not for the Framing one. Moreover, we observe a slightly more rapid decrease in voting behavior in the Framing treatment rather than in the Neutral one. One of the central results consistently predicted in strategic costly voting games is that higher turnout is expected among the underdog candidate's supporters. This is due to manifestation of classical free riding incentives in the larger group, which in turn makes voting for the representatives of the smaller group more rewarding. While this result is observed in the abstract setting of our experiment, that's not true anymore in the Framing treatment. Table 2 presents aggregate turnout rates for the baseline game and compares them with our theoretical equilibria.[9] The difference in voting behavior between the Framing and Neutral treatment is significant at 10% level for the majority group and at 5% level for

[9]We take into consideration the possible dependence of observations within the same session by examining individual effects in the next section.

the minority group, according to a set of Chi2 tests, two-sided. Moreover, comparison of voting behavior across treatments reveals that the minority group is significantly more likely to vote than the majority group in the Neutral treatment (p=*0.001*, Chi2 test, two-sided), while the opposite is true in the Framing one (p=*0.069*, Chi2 test, two-sided).

Table 2: **Turnout rates under the baseline game (standard error in parentheses)**

	Experimental results		
	Neutral Treatment	Framing Treatment	Theoretical equilibrium
Majority	0.323	0.342	0.228
	(0.008)	(0.008)	
Minority	0.367	0.317	0.270
	(0.011)	(0.010)	

Results 1 and 2 state our main findings in the baseline game, at the aggregate level.

Result 1. *In the baseline game the probability to vote is higher than predicted for both the majority and the minority group.*

Support for Result 1 can be found in Table 1. Considerable over-voting can be detected both in the abstract setting and in the framed one. This phenomenon was observed also in Levine and Palfrey (2007), especially when considering treatments with a larger number of voters (i.e. 27 and 51).

Result 2. *The turnout rate is higher in the majority group than in the minority group in the Neutral treatment while the opposite is observed in the Framing one.*

Our second result shows that, while the *direction* of our theoretical predictions is in line with what observed in the Neutral treatment, this is no more true for the Framing one. The minority group is voting significantly less in the framed enviroment than in the neutral one, while framing the instructions as an election has the opposite effect on the supporters of the Majority party. When we compare pivot probabilities between treatments we observe that they are considerably lower in the Framing treatment than in the Neutral one. This is a direct consequence of the over-voting in the majority group and of the relative under-voting in the minority group.

Framing the experiment as an election thus has some behavioral implications. It seems that voters behave less strategically when they found themselves in a voting environment. Underdog's supporters vote less, while majority group increases its participation. Moreover, subjects seem to condition their voting behavior on the ex-ante support size of their candidate. One possible explanation of such an evidence is the relation between the electoral frame and the well known phenomena of the Incumbency advantage. People may use heuristics when voting:[10] if they like to be associated with the winner in an election, even if this comes at a cost, they will go with the party most capable of winning. In particular, in a recent experiment De Vries et al. (2014) show that when voters are fully informed about both alternatives and candidate characteristics are held constant, still they are more likely to vote for the incumbent even when a higher profit is available under the alternative. In the Framing treatment, being aware of a higher possibility of winning (i.e. being part of the majority party) make people more likely to vote, whereas when being part of the minority party people do not bother to vote, since the probability to be associated with the winner is lower.

The focal point of this study is to analyze voters' response to electoral fraud. In order to examine voter turnout, we first proceed by looking at our data at the aggregate level in the Fraud I and Fraud II games. According to our theoretical predictions, both for the majority and minority groups, voting should increase when 2 fake ballots are introduced (Fraud I) while it should collapse to a lower level than the Baseline game when 5 fake ballots are added to the minority group (Fraud II). Table 3 presents the aggregate turnout rates for both levels of fraudulent interventions.

Our third result shows that voter turnout in the Fraud I game is in line with our theoretical predictions. In particular:

Result 3. *Voter turnout increases in Fraud I game, and this is true both for the minority and majority group and independently of the treatment.*

[10] Heuristics are not equally used and useful in all (voting) contexts (Fortunato and Stevenson, 2014): heuristic's effectiveness are tied to the electoral context in which it is applied (Bower-bir and Damico, 2013).

Table 3: **Turnout rates under the Fraud I and Fraud II games, in the Neutral and Framing treatment (standard error in parenthesis)**

	2 ballots		5 ballots	
	Experiment	Theory	Experiment	Theory
	Neutral Treatment			
Majority	0.399	0.291	0.377	0.188
	(0.012)		(0.011)	
Minority	0.444	0.302	0.434	0.108
	(0.017)		(0.017)	
	Framing Treatment			
Majority	0.407	0.291	0.433	0.188
	(0.012)		(0.013)	
Minority	0.446	0.302	0.450	0.108
	(0.019)		(0.018)	

Limited intervention increases turnout as predicted by theory. Turnout increases both in the minority and majority groups, as shown by Table 3. With respect to the baseline game, voting in the majority party increases to 40.67% and 39.94% in the Neutral and Framing treatment, respectively. Similarly, for the minority group we observe that in 44.56% and 44.44% of the cases people decide do vote. While voting behavior is not significantly different when considering the Neutral or the Framing treatment (Neutral vs. Framing treatment: chi2 test, two sided, $p=0.659$ and $p=962$ respectively for the minority and majority group), turnout of both groups is significantly higher with respect to the Baseline game (Baseline vs. Fraud I, Neutral treatment and Framing treatment: chi2 test, two sided, $p=0.000$ for both the majority and minority groups). The limited ballot rigging mechanism in favor of the Minority group has the expected effect on voting behavior both when considering the Neutral and Framing treatment. In particular, in Table 3 we observe that the turnout rate of the Minority group is higher than the Majority group, even if the difference in total turnout is higher than expected.

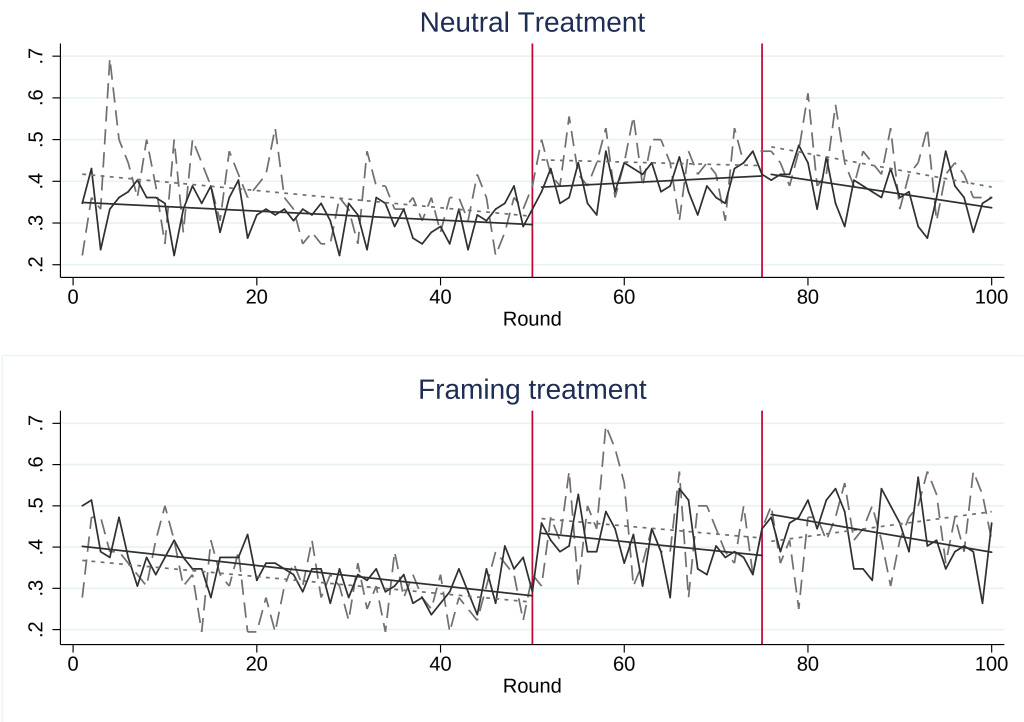
Differently, in Fraud II game we observe that, once again, framing the experiment as an election affects how participants react to an extended fraudulent intervention in favour of the minority group.

Result 4. *In Fraud II game, voters in the Majority group increase their participation in the election in the Framing treatment with respect to the Neutral treatment. Turnout is higher than in the Baseline for both groups.*

When increasing the fraudolent intervention in favor of the minority group to five ballots, we do not observe a statistically significant change in turnout rates with respect to the Fraud I game. Turnout remains considerably high both in the majority and in the minority group, so that the drastic changes predicted by the model are not matched. However, while agents do not behave differently in the Neutral and Framing treatments with limited fraud (FraudI), extensive intervention does have an effect on how voters respond to an electoral mechanism that is considered as unfair. In particular, voters in the majority group (the group that is unfairly disadvantaged by the ballot rigging) are significantly more likely to vote when the game is framed as an election in the Framing treatment than when using abstract terms in the Neutral one (chi2 test, two sided, $p=0.001$).

It is important to underline that framing the instructions as an election carries a clear negative stigma to fraud when we introduce it in the experiment. Participants' reaction to framed election with fraud is not a purely strategic response. Subjects supporting the majority candidate may consider important to counter act the ballot rigging, even if with such a level of intervention this voting behaviour is less often rational. At the same time, given that subjects are asked to play the same game more than once, one would expect the turnout to exhibit a negative trend over time, because of learning. When investigating the effect of learning over time we observe that there is a restart effect when analyzing the last periods of the Baseline game and the first periods of the Fraud I game, as shown by Figure 2. However, voter turnout in Fraud I remains significantly higher than in the Baseline for both groups, also when comparing it with the first 25 periods of the experiment.

Figure 2: **Voter turnout across periods in the Baseline, Fraud I and Fraud II parts under the Neutral and Framing treatment**



Light grey dashed line indicates minority group turnout while dark grey solid line stands for average turnout in the majority group. Vertical lines divide, respectively, the Baseline, Fraud I and Fraud II parts of the experiment.

In Figure 2 we provide evidence of the higher voter turnout of the majority group in the Fraud II game of the Framing treatment with respect to the Neutral one. Interestingly, we observe that while in the Framing treatment the majority group immediatly reacts to an increasing fraudolent intervention in the elections, this is not true in the Neutral treatment, where voters do not change substantially their voting behavior. Moreover, the turnout rate of the minority group develop along the opposite direction in the two treatments: while it decreases over time in the Neutral treatment, voters are more likely to vote when experiencing a ballot rigging in the framing one.[11] Such an evidence seems to reflect the reaction of the minority group to the increasing turnout of the majority one: since those in the majority are overreacting to the electoral fraudolent intervention, those in the minority are also increasing their participation in order to win the elections. The fraudolent intervention is meant to increase the probability of the underdog candidate to win the elections. Empirical rates of underdog winning the elections strictly increase with the level of intervention, but the outcome is considerably different for Neutral and Framing treatment.

4.2 Individual level analysis

In the previous section we have analysed our experimental data at aggregate level. Now, an individual level approach will enable us to capture individual level heterogeneity that characterizes our data. In particular, given that we are dealing with a within subjects design, we have to take into consideration the standard omitted individual-heterogeneity issue. With panel data a random effects probit model tackles that challenge.[12] Table 4 reports the marginal effects of a series of Probit regressions in which the dependent

[11]When comparing voting behavior in the last 5 periods of the Fraud I game and the fist 5 periods of the Fraud II one we do observe a significant difference in voter turnout only when considering the majority group in the framing treatment (chi2 test, one sided. Neutral treatment, minority group, *p=0.230*; majority group, *p=0.270*; Framing treatment, minority group, *p=0.400*; majority group, *p=001*;

[12]Since we give feedback about the history of the game to participants, we control for possible observations' dependancy within the same session by running a set of Probit regressions with clusters at session level (Table B.1, in the Appendix B). While it is not possible to include clusters in random effects probit models, we provide evidence that results are almost unchanged. Moreover, when including dummies for the experimental sessions in the regression showed in Table 4 everything is unchanged. In table B.2 in Appendix B we also present the results of a set of regressions where clusters are based on individuals, since the same individuals participate in many voting decisions over the course of the experiment: results are unchanged.

variable is *Vote*, a dummy variable which takes value one when the participant votes and zero when the participant decides to abstain. Our explanatory variables are the following: the binary variables *Vote previous round* and *Close previous round*, which explicitly consider respectively the voting decision and whether competition was close (i.e. one of the two parties won for 1 vote) in the previous round. While the first variable enables us to capture the effect of persistency in voting, besides any strategic evaluations about the participant's party membership and voting cost, the second one evaluates whether the closeness in competition in previous round makes voters more likely to vote. *Voting cost* is a categorical variable that indicates the randomly assigned voting cost in each round of the game; *Majority* is equal to one if the participant is member of the majority group and zero otherwise while *FraudI* and *FraudII* are equal to one when participants are playing the game with the corresponding level of fraudulent intervention and zero otherwise: the omitted dummy variable is the Baseline game thus the coefficients have to be considered with respect to this category. *Experience* takes into consideration the round of the game subjects are playing, in order to allow for learning. *Neutral Treatment* is an independent variable equals to one for the Neutral treatment and zero otherwise. Finally, in all models we include a measure of individual risk aversion.[13]
In model (1), (4) and (5) we consider both treatments together while in model (2) and (3) we analyze each treatment separately.

A number of noteworthy results are observed when looking at the individual level behaviour. First of all, our variables of interest *FraudI* (limited fraudulent intervention with 2 ballots) and *FraudII* (extended intervention with 5 ballots) considerably increase the probability of a subject to vote. Using Neutral terms does not have statistically significant effect per se on voting behavior in Model (1). However, it is possible that framing the experiment as an election with fraud has different effects on the majority and on the minority group, in particular by mobilizing the first to participate in elections in order to fight the electoral procedural unfairness. In model (5) we analyse whether

[13]In particular, each subject has to make ten choices between two lotteries, one is more remunerative but more risky, while the other is safer but provides the subject with a lower amount of earnings. See Holt and Laury (2002) for more details on the test. We measure risk aversion as the number of safe choices made by the individual, ignoring possible switching from one type of lotteries to another. The analysis reported in this paper changes very little if we instead drop those 42 subjects who switched more than once from B back to A or viceversa.

Table 4: Regression table, random effects probit model

	(1) All	(2) Framing	(3) Neutral	(4) All	(5) All
Vote					
Neutral Tr.	-0.0571			-0.0373	0.101
	(0.0764)			(0.0797)	(0.0849)
FraudI	0.623***	0.678***	0.564***	0.637***	0.639***
	(0.0451)	(0.0637)	(0.0642)	(0.0522)	(0.0522)
FraudII	0.795***	0.896***	0.692***	0.819***	0.821***
	(0.0660)	(0.0931)	(0.0941)	(0.0711)	(0.0711)
Majority	-0.110***	-0.00357	-0.222***	-0.110***	-0.00373
	(0.0226)	(0.0318)	(0.0323)	(0.0226)	(0.0319)
Voting cost	-0.0641***	-0.0624***	-0.0662***	-0.0641***	-0.0642***
	(0.000809)	(0.00112)	(0.00118)	(0.000809)	(0.000811)
Experience	-0.00806***	-0.00941***	-0.00668***	-0.00806***	-0.00811***
	(0.000962)	(0.00135)	(0.00137)	(0.000962)	(0.000963)
Risk Aversion	0.0303	0.0545*	0.00627	0.0303	0.0302
	(0.0212)	(0.0289)	(0.0311)	(0.0212)	(0.0212)
Vote previous round	0.0572**	0.0482	0.0671**	0.0568**	0.0569**
	(0.0228)	(0.0321)	(0.0326)	(0.0228)	(0.0229)
Close previous round	0.123***	0.151***	0.0931***	0.122***	0.122***
	(0.0239)	(0.0350)	(0.0331)	(0.0240)	(0.0240)
Neutral*FraudI				-0.0285	-0.0273
				(0.0526)	(0.0526)
Neutral*FraudII				-0.0474	-0.0453
				(0.0523)	(0.0524)
Neutral*Majority					-0.214***
					(0.0452)
Constant	1.159***	0.927***	1.344***	1.149***	1.085***
	(0.146)	(0.191)	(0.203)	(0.146)	(0.147)
lnsig2u					
Constant	-1.239***	-1.333***	-1.156***	-1.239***	-1.237***
	(0.109)	(0.153)	(0.155)	(0.109)	(0.109)
Observations	21384	10692	10692	21384	21384
Adjusted R^2					

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

the abstract enviroment has a different impact on the minority rather than on the majority group by introducing a binary variable which interacts the Neutral treatment with the Majority group - (*Neutral*Majority)*. We also introduce the interaction terms *Neutral*FraudI* and *Neutral*FraudII* in Models (4) and (5) in order to allow for the framing of the experiment to impact differently the games we are considering. The interaction terms are never significant in Model (4), meaning that the effect of framing is not different when introducing the two types of fraud vs. the baseline. However, voting behaviour of individuals in the majority group is different depending on the framing, which was also the case in the aggregate level analysis above. Moreover, we observe that *FraudI*, which in Model (4) represents the difference in voting between the Fraud I vs. the Baseline conditions when considering the Framing treatment, is highly significant: turnout is higher when a limited fraudulent intervention is introduced in the Framing treatment, as theoretically hypothesised.

Subjects also respond to changes in the environment, in particular to voting costs and party identity, as showed by the significance of the coefficient of the corresponding variables in Model (1): when considering all treatments together, we observe that being part of the majority group decreases the probability to vote by about 10 percent. When considering Model (2) and (3) we observe that being risk averse significantly increases the probability to vote only in the Framing treatment while there is a persistency in voting behaviour only in the Neutral treatment. Similarly, only those subjects in the Neutral environment are less likely to vote when in the majority group than in the minority group. The negative coefficient of the *Experience* variable in all models proves that learning occurs, we thus observe convergence of voting behavior in the direction suggested by the equilibrium. Finally, when in case of close competition in previous round, people are more likely to vote, keeping everything else constant: participants are more likely to bother casting a vote when they have just experienced a a taugh competition in previous elections.[14]

Results presented in Table 4 do not vary when adding control for age, gender and attitudes towards vote to the regression.

[14]See also Table B.1 and B.2 in the Appendix B for further analysis.

5 Conclusion

This paper reveals that electoral fraud might increase rather than decrease voter turnout. While a high turnout is usually considered as a signal of fair elections we show, by mean of a laboratory experiment, that this is not necessarly the case. Our strategic costly voting model predicts an increase in turnout when the fraudulent intervention is moderate and a sharp drop in participation whenever fraud is pervasive. Results of our laboratory experiment confirm the first part of our theoretical predictions and this is true irrespective of the framing (neutral vs. elections). When a more pervasive fraudolent intervention is used, however, our teorethical results are not matched: depending on whether the experiment is framed as an election or not, a different voting pattern is observed. With abstract terms no significant change in turnout rates are observed when going from limited to extended fraud. Differently, when the experiment is explicitly framed as an election deeper fraud results in higher turnout among the majority group (compared with medium fraud turnout rates). These differences call for explanations that are beyond pure mistakes in strategic responses. We believe that such behaviour is an attempt of the majority group voters, who are negatively affected by the illicit intervention, to react to an unfair procedure, even if such an action is costly to them.
Our paper shows that voters fail to rationally react to a situation where a number of fake votes are added to the elections: often in the real world people are rather confronted with situations where the amount of illicit behavior in elections is uncertain, rather than having clear knowledge about the level of the illegitimate interventions. We now have provided first evidence of voters' behavior in a clear and clean environment. Examining voters' behavior in a situation of uncertainty where *perception* of fairness plays a role is thus an interesting extension of the paper.

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Appendix A

EXPERIMENTAL INSTRUCTIONS

The instructions written in red refer to the NEUTRAL treatment, while the instructions written in italics green refer to the FRAMING treatment.

SESSION 1

SCREEN 1

Thanks for agreeing to participate in this research experiment.
During the experiment we require your complete, undistracted attention. So we ask that you follow instructions carefully. Turn off your mobile phones. You cannot use mobile phones and you cannot talk with other participants. If you have any questions please raise your hand.
The choices youre going to make during the experiment will be completely anonym. It will be impossible for those analyzing the data to know participants identity.
For your participation, you will be paid in cash, at the end of the experiment. Different participants may earn different amounts. What you earn depends partly on your decisions, partly on the decisions of others, and partly on chance. So it is important that you listen carefully, and fully understand the instructions before we begin.
There will be a short comprehension quiz after the instructions reading, which you all need to pass before we can begin the paid sessions.
If you encounter any difficulty during the questionnaire, please raise your hand.

SCREEN 2

Everyone will be paid in private and you are under no obligation to tell others how much you earned. Your earnings during the experiment are denominated in POINTS. Your EURO earnings are determined by multiplying your earnings in POINTS by a conversion rate. In this experiment, the conversion rate is 0.0012, meaning that 100 POINTS is worth 12 cents.
The experiment consists of 2 different sessions. Each session will consist of 50 rounds. At the end of the last paid session, you will be paid the sum of what you have earned in the two sessions : the points youve earned will be converted into Euro and privately given to you in cash.

SCREEN 3

Now we are explaining you the detailed instructions for the first session of the experiment.
The first session consists of 50 rounds.
At the beginning of each round of the first session you will be randomly assigned to the ALPHA or BETA group *party*.
You will be then informed about which group *party* you are part of and about the number of members of each group *party*.
ALPHA group *party* has 9 members and the BETA group *party* has 18 members.
Moreover, to each participant it will be also randomly assigned a bonus Y. We will explain what this means in a moment.
After that, you will be asked to choose one option out of two: option "X" *to vote* or option "Y" *to abstain*. In order to make a choice you just have to select one of the two options and click on the OK button on your screen.
Your earnings depend on your choice of either option "X" *to vote* or option "Y" *to abstain* and on which group *party*. has the most members choosing option "X" *to vote*.
After every participant has made a choice between the two options, your earnings will be showed on your screen.

SCREEN 4

How are your earnings determined in every period?
It is very important that you understand this, so please listen carefully.
Suppose you choose option "X" *to vote*. If your group *party* has more members choosing option "X" *to vote* than the other group *party*, then you will earn 105 points; if both groups *parties* have the same number of members choosing option "X" *to vote*, then you will earn 55 points, and if the other group *party* has more members choosing option "X" *to vote*, than your group *party*, then you will earn 5 points.
Alternatively, suppose you choose option "Y" *to abstain*. If your group *party* has more members choosing option "X" *to vote* than the other group *party*, then you will earn 105 points plus your Y bonus; if both groups *parties* have the same number of members choosing option "X" *to vote*, then you will earn 55 points plus your Y bonus, and if the other group *party* has more members choosing option "X" *to vote* than your group *party*, then you will earn 5 points plus your Y bonus.

The amount of your Y-bonus is assigned randomly by the computer and is shown on your screen. In any given round you have an equal chance of being assigned any Y-bonus between 0 and 55 points. Your Y-bonus in each round does not depend on your Y-bonus or decisions in previous rounds, or on the Y-bonuses and decisions of other participants. Since Y-bonuses are assigned separately for each participant, different participants will typically have different Y-bonuses. While you are told your own Y-bonus, you are never told the Y-bonuses of other participants. You only know that each of the other participants has a Y-bonus that is some number between 0 and 55.

SCREEN 5

Here is an example: Suppose that one member of the ALPHA group *party* choose option "X" *to vote* and two members of the BETA group *party* choose option "X" *to vote*.
Then the BETA group party has more members choosing option "X" *to vote* than ALPHA. Each member of the ALPHA group *party* who chose option "X" *to vote* earns 5 points; each member of the ALPHA group *party* who chose option "Y" *to abstain* earns 5 points plus his or her own personal Y-bonus ; the members of the BETA group *party* who chose option "X" *to vote* earn 105 points, and each member of the BETA group *party* who chose option "Y" *to abstain* earns 105 points plus his or her personal Y-bonus.
The bottom of the screen contains a history panel. During the various sessions and rounds, this panel will be updated to reflect the history of your past sessions.
After you and the other participants have all made your choices of option "X" *to vote* or option "Y" *to abstain*, the screen will change to highlight the row corresponding to your own choice, and the column of the group *party* which had the greatest number of members choose option "X" *to vote*. At the end of each round until the session ends, you will be randomly divided between groups *parties*, and will have the opportunity to choose between option "X" *to vote* and option "Y" *to abstain*. In other words, you will not necessarily be in the same group *party* during each round.

SCREEN 6

If you have any questions at this time, please raise your hand.
Now you are going to answer a quiz to be sure everyone has correctly understood the instructions. Please read each question carefully and check the correct answer.

Once everyone has answered the questions correctly, you may all go on to the second stage of the quiz. After successfully completing the second round of questions, we will commence with the first session.
If you have any difficulties with the quiz or have other questions please your hand.

Participants answer the quiz.

QUIZ

1. How many members are in the Alpha group *party*?
   (a) 9
   (b) 18
   (c) 27
2. How many members are in the Beta group *party*?
   (a) 9
   (b) 18
   (c) 27
3. Are group *party* assignments randomly reassigned after every round?
   (a) yes
   (b) no
4. Is your Y bonus necessarily the same as other members of your group *party*?
   (a) yes
   (b) no
5. Suppose in round 1 you are assigned to b a member of the Beta group *party*. Moreover, suppose your randomly assigned Y bonus in this round is equal to 21 points.
   - Suppose you choose option "X" *to vote*.
     Totally (you are included), **three** members of the Beta group *party* and **four** members of the Alpha group *party* chose option "X" *to vote*. How many points do you earn in this round?
     (a) 5
     (b) 21
     (c) 26
     (d) 55

(e) 76

(f) 105

- Suppose you choose option "Y" *to abstain*.

  Totally (you are included), **four** members of the Beta group *party* and **four** members of the Alpha group *party* chose option "X" *to vote*. How many points do you earn in this round?

  (a) 5

  (b) 21

  (c) 26

  (d) 55

  (e) 76

  (f) 105

READY

Let me summarize those rules before we start. Please listen carefully.

In each round of this session, 9 players will be randomly assigned to the Alpha group *party* and 18 players will be assigned to the Beta group *party*.

You may choose option "X" *to vote* or option "Y" *to abstain*.

If you choose option "X" *to vote*, your payoff will be 105 POINTS if your group *party* has more members choosing option "X" *to vote* than the other group *party*, 5 POINTS if your group *party* has fewer members choosing option "X" *to vote*, and 55 POINTS if it is a tie. If you choose option "Y" *to abstain*, you will also receive the Y-bonus shown on your screen. There will be 50 rounds in this session.

After each round, group *party* assignments will be randomly reshuffled. Therefore, in some rounds you will be in the Alpha group *party* and in other rounds you will be in the Beta group *party*.

In either case, everyone is told which group *party* they are in before making a choice of option "X" *to vote* or option "Y" *to abstain*.

Please begin. (Play rounds 1 50).

SESSION 2

We will now begin session 2.

FRAUD

SCREEN 7

Session 1 is now over.
We will now begin session 2.
The second session will be slightly different from the first session. Let me summarize those rules before we start. Please listen carefully.
Differently than in the previous session, *now a vote rigging is affecting the electoral system*. in each of the first 25 rounds of this second session, 2 units *votes* will be automatically added to the sum of option "X" *votes* by the ALPHA group *party* in order to compute which group *party* has the highest number of option "X" *votes*.
As in the previous session you will be informed whether youre part of the ALPHA or BETA group *party* and of the amount of your Y bonus.
You may choose option "X" *to vote* or option "Y" *to abstain*. After you and the other participants have all made your choices of option "X" *to vote* or option "Y" *to abstain* the screen will change to highlight the row corresponding to your own choice, and the column of the group which had the greatest number of members who choose option "X" *votes*.

READY2

In each round of this session, 9 players will be randomly assigned to the Alpha group *party* and 18 players will be assigned to the Beta group *party*.
You may choose option "X" *to vote* or option "Y" *to abstain*.
If you choose option "X" *to vote*, your payoff will be 105 POINTS if your group *party* has more members choosing option "X" *to vote* than the other group *party*, 5 POINTS if your group *party* has fewer members choosing option "X" *to vote*, and 55 POINTS if it is a tie. If you choose option "Y" *to abstain*, you will also receive the Y-bonus shown on your screen. There will be 50 rounds in this session.
After each round, group *party* assignments will be randomly reshuffled. Therefore, in

some rounds you will be in the Alpha group *party* and in other rounds you will be in the Beta group *party*.
In either case, everyone is told which group *party* they are in before making a choice of option "X" *to vote* or option "Y" *to abstain*.
***Now, because of the vote rigging,* in order to compute which group *party* has the highest number of option "X" selected *votes*, in every round 2 units *votes*, will be automatically added to the ALPHA group *party*.** *Please begin.*

(Play rounds 51 75)

SCREEN 8

In each of the first 25 rounds of this second session, *there is still a vote rigging affecting the electoral process:* 5 units votes will be now automatically added to the sum of option "X" *votes* by the ALPHA group *party* in order to compute which group *party* has the highest number of option "X" *votes*.
As in the previous session you will be informed whether youre part of the ALPHA or BETA group *party* and of the amount of your Y bonus.
You may choose option "X" *to vote* or option "Y" *to abstain*. After you and the other participants have all made your choices of option "X" *to vote* or option "Y" *to abstain* the screen will change to highlight the row corresponding to your own choice, and the column of the group which had the greatest number of members who choose option "X" *votes*.

READY3

Let me summarize those rules before we start. Please listen carefully.
In each round of this session, 9 players will be randomly assigned to the Alpha group *party* and 18 players will be assigned to the Beta group *party*.
You may choose option "X" *to vote* or option "Y" *to abstain*.
If you choose option "X" *to vote*, your payoff will be 105 POINTS if your group *party* has more members choosing option "X" *to vote* than the other group *party*, 5 POINTS if your group *party* has fewer members choosing option "X" *to vote*, and 55 POINTS if it is a tie. If you choose option "Y" *to abstain*, you will also receive the Y-bonus shown

on your screen. There will be 50 rounds in this session.

After each round, group (party) assignments will be randomly reshuffled. Therefore, in some rounds you will be in the Alpha *group party* and in other rounds you will be in the Beta group *party*.

In either case, everyone is told which group *party* they are in before making a choice of option "X" *to vote* or option "Y" *to abstain*.

Now, because of the vote rigging, in order to compute which group *party* has the highest number of option "X" selected *votes*, in every round 5 units *votes*, will be automatically added to the ALPHA group *party*.

Please Begin. (Play rounds 75 100)

Session 2 is now over.

SESSION 3 H & L

In the next screen you will be asked to make 10 decisions. Each decision is a paired choice between "Option A" and "Option B."
You will make ten choices and record these in the final column, but only one of them will be used in the end to determine your earnings.
Before you start making your ten choices, please let me explain how these choices will affect your earnings for this part of the experiment.
After you have made all of your choices, the computer will randomly extract a random number between 1 and 10 included for two times. The first randomly extracted number is used to select one of the ten decisions to be used, and the second to determine what your payoff is for the option you chose, A or B, for the particular decision selected.
Even though you will make ten decisions, only one of these will end up affecting your earnings, but you will not know in advance which decision will be used.
Obviously, each decision has an equal chance of being used in the end.
Now, please look at Decision 1 at the top. Option A pays 2 Euro if the second random number extracted is 1, and it pays 1.60 Euro if the second random extracted number is 2-10. Option B yields 3.85 Euro if the second random number extracted is 1, and it pays 0.10 Euro if it is 2-10.
The other Decisions are similar, except that as you move down the table, the chances of the higher payoff for each option increase. In fact, for Decision 10 in the bottom row, the second random number to extracted will not be needed since each option pays the highest payoff for sure, so your choice here is between 2 Euro or 3.85 Euro.
To summarize, you will make ten choices: for each decision row you will have to choose between Option A and Option B.
You may choose A for some decision rows and B for other rows, and you may change your decisions and make them in any order.
When you are finished, the computer will extract a first random number between 1 and 10 to decide which of the ten Decisions will be used. Then the computer will extract a second random number between 1 and 10 to determine your money earnings for the Option you chose for that Decision. Earnings (in Euro) for this choice will be added to your previous earnings, and you will be paid all earnings in cash when we finish.

Are there any questions? Now you may begin making your choices. Please do not talk with anyone while we are doing this; raise your hand if you have a question.

Please Begin. (Play H & L test for risk aversion).
Once it is finished, start the demographic questionnaire.

QUESTIONNAIRE

Appendix B

In the following tables we report the results of a set of Probit regressions with SE clustered at the session level and at the individual level, respectively. Tables B.1 and B.2 differ only with respect to the SE and are almost similar in the level of significance of our variables of interest.

With respect to Table 4 in the main text we observe that results are almost unchanged. In particular, while the level of significance of the estimated coefficents of Table B.2 remain the same for all the independent variables considered, we just observe a slightly difference in the magnitude of the effects.

The most interesting difference is found when analyzing models "2) and (3). We observe that *Close previous round* is still highly significant when considering the Framing treatment alone, in model (2); when data are clustered at the level of session the persistence of voting behavior is always present, no matter whether instructions are presented in abstract terms or not. In model (3) the variable *Close previous round* is not significant anymore when considering the Neutral treatment alone: while previous closeness of the elections make participants in the Framing treatment significantly more likely to vote in the current period, this is not more the case when the game is presented in abstract terms. We can interpret this result as a further evidence of the effects of framing in the political context, people are indeed more prone to cast a vote, everythings equal, if they perceive elections to be highly competitive than when the same identical situation is presented in abstract terms.

Table B.1: Regression table, probit model with SE clustered at the session level

	(1) All	(2) Framing	(3) Neutral	(4) All	(5) All
Vote					
Neutral Tr.	-0.0473			-0.0334	0.0988
	(0.0619)			(0.0929)	(0.112)
FraudI	0.509***	0.554***	0.458***	0.520***	0.522***
	(0.0556)	(0.0666)	(0.0938)	(0.0678)	(0.0677)
FraudII	0.649***	0.731***	0.564***	0.665***	0.667***
	(0.0955)	(0.0579)	(0.190)	(0.0719)	(0.0712)
Majority	-0.0928*	0.00754	-0.196***	-0.0927*	0.00783
	(0.0499)	(0.0314)	(0.0586)	(0.0500)	(0.0312)
Voting cost	-0.0573***	-0.0558***	-0.0592***	-0.0573***	-0.0574***
	(0.00279)	(0.00398)	(0.00411)	(0.00278)	(0.00278)
Experience	-0.00666***	-0.00781***	-0.00545**	-0.00666***	-0.00669***
	(0.00126)	(0.00118)	(0.00226)	(0.00126)	(0.00125)
Risk Aversion	0.0249	0.0448	0.00553	0.0249	0.0250
	(0.0309)	(0.0539)	(0.0345)	(0.0309)	(0.0310)
Vote previous round	0.306***	0.291***	0.319***	0.306***	0.306***
	(0.0411)	(0.0814)	(0.0288)	(0.0411)	(0.0412)
Close previous round	0.0939***	0.138***	0.0521	0.0929***	0.0932***
	(0.0231)	(0.0132)	(0.0319)	(0.0235)	(0.0233)
Neutral*FraudI				-0.0224	-0.0220
				(0.0799)	(0.0802)
Neutral*FraudII				-0.0315	-0.0313
				(0.0707)	(0.0707)
Neutral*Majority					-0.201***
					(0.0628)
Constant	0.959***	0.754	1.122***	0.952***	0.887***
	(0.260)	(0.474)	(0.207)	(0.266)	(0.264)
Observations	21384	10692	10692	21384	21384
Adjusted R^2					

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B.2: Regression table, probit model with SE clustered at the individual level

	(1)	(2)	(3)	(4)	(5)
	All	Framing	Neutral	All	All
Vote					
Neutral Tr.	-0.0473			-0.0334	0.0988
	(0.0633)			(0.0801)	(0.0704)
FraudI	0.509***	0.554***	0.458***	0.520***	0.522***
	(0.0495)	(0.0729)	(0.0665)	(0.0609)	(0.0605)
FraudII	0.649***	0.731***	0.564***	0.665***	0.667***
	(0.0806)	(0.123)	(0.105)	(0.0963)	(0.0957)
Majority	-0.0928*	0.00754	-0.196***	-0.0927*	0.00783
	(0.0492)	(0.0649)	(0.0716)	(0.0492)	(0.0659)
Voting cost	-0.0573***	-0.0558***	-0.0592***	-0.0573***	-0.0574***
	(0.00214)	(0.00297)	(0.00304)	(0.00214)	(0.00212)
Experience	-0.00666***	-0.00781***	-0.00545***	-0.00666***	-0.00669***
	(0.00102)	(0.00154)	(0.00134)	(0.00102)	(0.00102)
Risk Aversion	0.0249	0.0448*	0.00553	0.0249	0.0250
	(0.0188)	(0.0270)	(0.0264)	(0.0188)	(0.0188)
Vote previous round	0.306***	0.291***	0.319***	0.306***	0.306***
	(0.0383)	(0.0567)	(0.0524)	(0.0383)	(0.0384)
Close previous round	0.0939***	0.138***	0.0521	0.0929***	0.0932***
	(0.0255)	(0.0356)	(0.0351)	(0.0252)	(0.0252)
Neutral*FraudI				-0.0224	-0.0220
				(0.0705)	(0.0706)
Neutral*FraudII				-0.0315	-0.0313
				(0.0932)	(0.0935)
Neutral*Majority					-0.201**
					(0.0963)
Constant	0.959***	0.754***	1.122***	0.952***	0.887***
	(0.142)	(0.198)	(0.196)	(0.143)	(0.143)
Observations	21384	10692	10692	21384	21384
Adjusted R^2					

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$