

# Voting with the Enemy

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## Abstract

We study an anomaly in voting behaviour in laboratory experiments that appears as soon as, contrary to the typical protocol, the voting decision is separated from the turnout decision. Despite induced preferences and voting costs, almost half of the subjects participating in an experiment on voting turnout vote against their induced preferences at least once, and a non-negligible minority does so repeatedly. We explore explanations referring to erroneous decisions, bandwagon effects, and long-term calculations, as well as personality traits. The most likely explanations turn out to be bandwagon effects and agreeableness. We conclude that this anomaly might be a case of insufficient understanding of the induced preferences by subjects.

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# 1 Puzzle

The paradox of not voting is one of the most widely investigated topics in electoral politics (Riker and Ordeshook, 1968; Ferejohn and Fiorina, 1974; Feddersen, 2004). Most studies have, however, one important caveat in that they only deal with the decision whether to vote or not while they disregard the decision for which candidate or party to vote (for an exception, see, e.g. Thurner and Eymann, 2000). Experimental studies are no exception. Studies on turnout typically observe whether experimental subjects participate or abstain under different treatment conditions (Levine and Palfrey, 2007; Duffy and Tavits, 2008; Sonnemans and Schram, 2008). In these experiments, care is taken not to reveal to subjects that their decisions are made in an environment designed to test hypotheses derived from rational voting theory. This design seems to be plausible if one considers that most laboratory experiments induce clear preferences through transitive payoff functions and thus given the assumption of utility maximization the whole decision process can be theoretically reduced to a decision between voting for a specific candidate or abstaining.

Given the many instances of failure of subjects to meet the utility-maximization assumption in laboratory experiments (Oppenheimer, Wendel and Frohlich, 2011), we depart from the typical setup of a voting experiment in two ways. Firstly, we explicitly frame the decision in an election-like context,<sup>1</sup> and, secondly, we implement the voting decision as a two-step procedure which captures the actual process of first registering as a voter and going to the voting booth, which is costly, and second casting the vote. Thus, in the experiment, subjects first have to decide whether to participate in the poll or not under the condition of voting costs, and second, subjects have to decide which of two alternatives  $A$  and  $B$  to vote for. By assigning group memberships to individuals which determine the payoff after one of the alternative wins the poll, we induce a clear preference for one of the two alternatives. After these decisions, the alternative with more votes wins. The subjects' payoffs in each period depend on the vote result as well as on their first decision to participate or not. Depending on the vote results, individuals receive the payoffs in Table 1. The participants in the poll have to pay the corresponding cost  $c$  independently from

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<sup>1</sup>In the experiment, however, we utilized neutral terms like “group”, “alternative” and “poll” instead of “party” and “election”. The latter words have a normative connotation and might have influenced behavior.

their second decision for which alternative to vote. For those who voted, voting costs are subtracted from the payoff.

Table 1: Payoff depending on the vote result

	Group affiliation			
	Group <i>A</i>		Group <i>B</i>	
	Voted	Abstained	Voted	Abstained
A wins	$1 - c$	1	$-c$	0
B wins	$-c$	0	$1 - c$	1

Entries in €.  $c$  = voting cost

In this laboratory setting with a two-stage decision process, the second stage is irrelevant from the view of conventional utility calculation. Imagine that a member of group *A* has decided whether to participate in voting in the first stage. In the second stage, she has to choose between *A* and *B*. Voting cost have been paid in the first stage and she can only maximize her utility in this stage. In consequence, voting for *B* is dominated since this would never affect the result such that her payoffs are maximized. Therefore, as is typically assumed, experimental subjects are expected to always choose their own alternative in the second decision.

It is, however, a different question whether this prediction corresponds to empirical evidence. For this reason, we implemented the experimental setting described above in six sessions (120 individuals in total).<sup>2</sup> The experiment was programmed in z-Tree (Fischbacher, 2007). Two different voting cost treatments (0.30 and 0.18 Euro) were applied in three sessions each. Individuals were randomly assigned to one of two groups *A* and *B* in the beginning and the two-stage decision process was repeated for 30 periods while all subjects kept their group affiliation. After each period, the poll result was announced to all subjects in the session.

To our surprise, almost half of all experimental subjects (59 out of 120) have cast their vote at least once for the alternative that favours the other group. 15 subjects did this even in three or more periods. This apparently contradicts the theoretical prediction based on the simple utility maximization principle discussed above. This

<sup>2</sup>We utilized ORSEE for the recruitment of participants (Greiner, 2004).

finding is disconcerting as it might challenge previous findings from research based on a one-stage decision making protocol since the whole decision may have to be interpreted differently depending on the explanation for the anomaly in the second stage above. Therefore, this paper aims to deliver an explanation for the anomaly, which we call *voting with the enemy*.

In the remainder of this paper, we proceed as follows: The next section suggests some possible explanations for the anomaly and derives corresponding hypotheses. In deriving hypotheses we also refer to personality traits which enable us to deal with individual differences. Subsequently, we present empirical evidence on the hypotheses. The last section discusses the results and some implications for future research on the voting paradox.

## 2 Possible Explanations

How can we explain the phenomenon of voting with the enemy? A first thought might suggest either playfulness and lack of seriousness or boredom on the side of the experimental subjects (?, 105). As the occurrence of voting with the enemy should not be systematically related to any other variables in these cases, we use this suggestions as the default explanation. At the level of individual decision-making, we can think of at least three explanations: decision errors, bandwagon effects, and long-term strategic calculation. In the following, we elaborate the three explanations and derive testable hypotheses for each.

The first and most simple explanation is that voting for the other alternative is a decision error. Some experimental subjects may have misunderstood the rules of the game and voted with the enemy without realizing that they are voting against their interest in terms of expected payoff. If this is the case, we can expect to find the following voting patterns in our dataset. First, prior to the 30 periods of decision making subjects participated in a quiz containing questions that test whether they have understood the rules of the game. If the explanation based on misunderstanding is true, individuals who gave wrong answers in the quiz should be more likely to vote with the enemy ( $H_{1a}$ ). Second, we can also expect that voting with the enemy is observed more frequently in the earlier periods of a session ( $H_{1b}$ ), since subjects should learn from the implications of their decisions and correct their error after

some periods.

The second explanation refers to the bandwagon effect (see, e.g. Marsh, 1984; McAllister and Studlar, 1991). According to Marsh (1984: 51), “[a] ‘bandwagon effect’ is the label given by social scientists to a situation where the information about majority opinion itself causes some people to adopt the majority view for whatever reason”. If the bandwagon effect caused voting with the enemy we have to expect the following pattern in our data. First, the group of the individual who votes with the enemy lost the poll in the previous period ( $H_{2a}$ ). Losing a poll means that the enemy group has the majority. Hence, we can also expect that the likelihood of voting with the enemy is higher if the enemy’s majority is more apparent. That is, the larger the margin of victory in any particular period is, the more likely subjects belonging to the losing group will vote with the enemy in the following period ( $H_{2b}$ ).

The third explanation is based on long-term strategic consideration. Losing a poll in the situation faced by the experimental subjects means that abstaining members in their own group outnumber those in the other group. Accordingly, some members in the group with larger mobilization problems may try to present the results in a more dramatical way. By enlarging the margin, that is, they may hope to persuade their free-riding group fellows to participate in voting. If the results are marginal, in contrast, the potential free-riders can hope to win the race without their participation. Simultaneously, subjects voting with the enemy are also motivated to induce free riding in the enemy group by making the margin of difference more pronounced. If this is the case, we can expect that the likelihood of voting with the enemy is higher if a subject lost in the previous period ( $H_{3a}$ ), and if the result in the previous period was close ( $H_{3b}$ ).

The three explanations can be summarized in Table 2.

Table 2: Possible explanations and corresponding hypotheses

	Wrong answers in Quiz	Early periods	Losing in the last period	Losing with large margin
Errorneous decision	+	+	0	0
Bandwagon	0	0	+	+
(De-)Mobilization of free-riders	0	0	+	–

However, an explanation of the anomaly in voting behaviour may also be found in systematic variation across subjects. In addition to the hypotheses above, we can derive hypotheses that refer to individuals' personalities. Although findings on the effect of personality on political behaviour are mixed, the available evidence from survey research suggests that at least some personality traits are correlated with turnout (Mondak and Halperin, 2008; Gerber et al., 2011). The studies use different variants of the NEO Big Five personality traits consisting of openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. Of these five traits, extraversion and openness to experience tend to be positively associated with political participation.

Using these personality traits, we can develop further hypotheses concerning the explanations above. Conscientiousness characterizes those people who are dutiful and reliable. Conversely, “[f]or those who score low, adjectives such as lazy, impulsive and unreliable are considered befitting” (Mondak and Halperin, 2008, 343). Hence, erroneous decisions can be least expected among subjects characterized by a high level of conscientiousness. The bandwagon effect, in contrast, should be associated with agreeableness which “refers to co-operative, sympathetic and altruistic tendencies, and has been shown to predict membership in coalitions and strategic alliances, social trust, conflict avoidance and conflict resolution and health behaviours” (Mondak and Halperin, 2008, 346). Which kind of personality corresponds to the long-termed consideration? This is a kind of investment in future and is accompanied with considerable risks. In our view, such behaviour is most likely to be expected from subjects who score high on openness to experience. As Mondak and Halperin (2008, 342) explain: “High scores are associated with increased creativity, curiosity, imagination and nonconformity, self-efficacy, and high-risk health behaviors.”

These considerations suggest the following three hypotheses:

$H_{1p}$ : Subjects who score low on conscientiousness are more likely to vote with the enemy.

$H_{2p}$ : Subjects who score high in agreeableness are more likely to vote with the enemy.

$H_{3p}$ : Subjects who score high in openness to experience are more likely to vote with

the enemy.

We have included a German translation of the NEO-FFI-30 inventory (Borkenau and Ostendorf, 1993; Körner et al., 2008) in the closing questionnaire of the experimental sessions.

### 3 Data Analysis

#### 3.1 Descriptive analysis

We begin with some descriptive results. Table 3 reports basic information about voting with the enemy. Our dataset contains 120 experimental subjects who made 30 decisions each. Among these 3600 decisions in total, voting with the enemy was observed 125 times (3.5%). If we consider only decision after participation, 7.3% of the choices made can be classified as voting with the enemy. Interestingly, voting with the enemy was observed more frequently under the high-cost treatment than under the low-cost treatment.

Table 3: Frequency of voting with the enemy

	Overall	in %	in %	Low-Cost	in %	in %	High-Cost	in %	in %
Abstain	1885	52.4%		928	51.6%		957	53.2%	
Voting with the friends	1590	44.2%	92.7%	819	45.5%	93.9%	771	42.8%	91.5%
Voting with the enemy	125	3.5%	7.3%	53	2.9%	6.1%	72	4.0%	8.5%
$\Sigma$	3600			1800			1800		

This result, however, might be attributable to a small number of exceptional experimental subjects. Therefore, we turn to individual subjects as the unit of analysis. Table 4 presents the frequency of voting with the enemy for individuals. A surprising result is that almost half of the experimental subjects voted at least once with the enemy. Seven subjects voted with the enemy for four times or more. Furthermore, six out of these seven persons are under the high-cost treatment, which suggests that lack of relevance is not a likely explanatory candidate. This result suggests that at least for these subjects the first explanation referring to decision errors is not persuasive.

Table 4: Individual frequency of voting with enemy

Voting with the enemy	Overall	Low-Cost	High-Cost
never	61 50.8%	30 50.0%	31 51.7%
once	27 22.5%	14 23.3%	13 21.7%
twice	17 14.2%	10 16.7%	7 11.7%
three times	8 6.7%	5 8.3%	3 5.0%
four times or more	7 5.8%	1 1.7%	6 10.0%

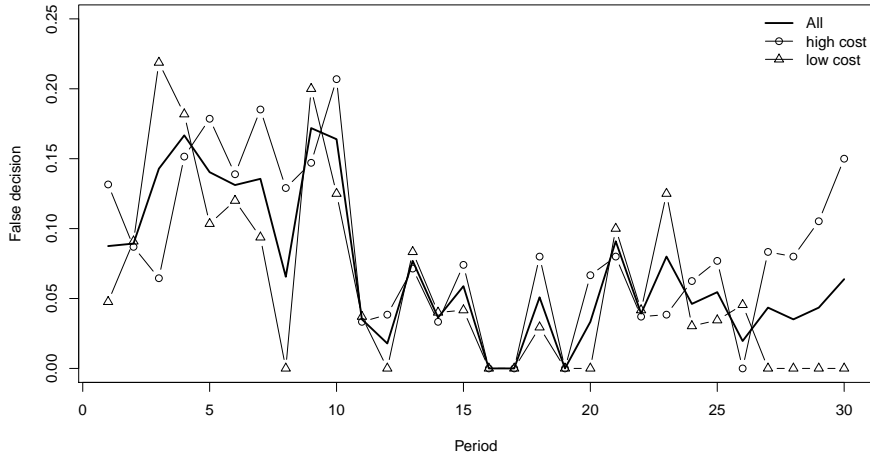


Figure 1: Voting with the enemy over time

Figure 1 provides further evidence against the first explanation. In line with this hypothesis, we can frequently observe voting with the enemy during the first ten periods. However, there is also a significant number of votes with the enemy during the last ten periods. In particular, the frequency of this behaviour rises after the second ten periods in which voting with the enemy was more exceptional. This surge toward the end can be hardly explained by the erroneous decision hypothesis.

For the second (bandwagon effect) and third explanation (long-term consideration), the margin in the previous period is crucial. Figure 2 presents the frequency of voting with the enemy for different levels of the margin. Accordingly, the likelihood of voting with the enemy is higher among subjects in the group which lost the poll in the previous period. This is consistent with both explanations. If we look at the magnitude of the margin, a larger difference in the previous period seems to be as-

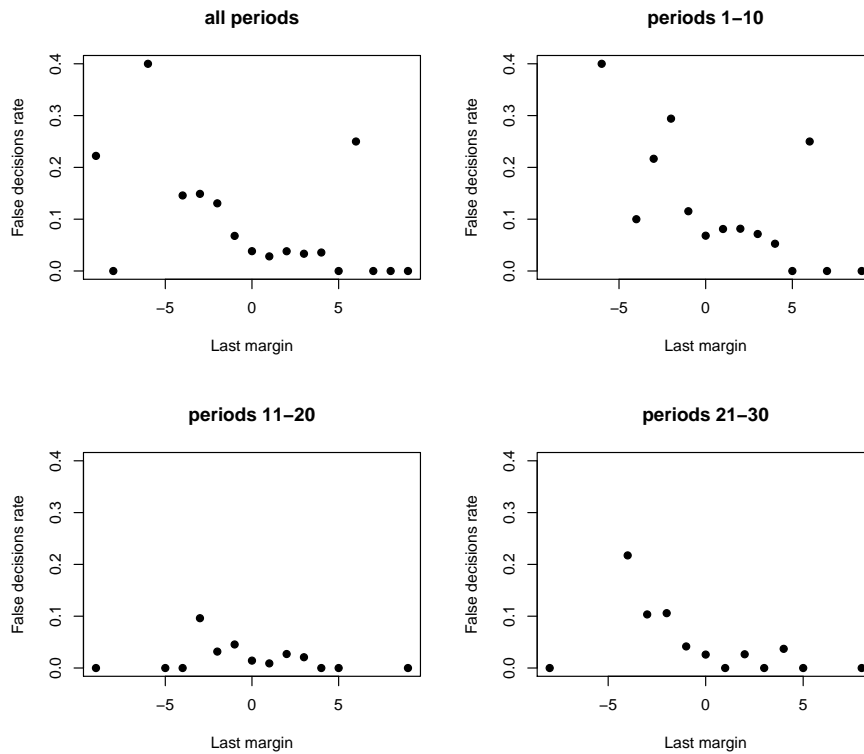


Figure 2: Voting with enemy and margin in the last poll

sociated with a larger probability to vote with the enemy. This is consistent with the explanation based on the bandwagon effect.

So far, our findings tend to be most supportive of the second hypothesis. However, we need to explore the statistical significance of these effects and test for the robustness in the presence of other explanatory variables, in particular the extent to which personality traits affect the likelihood of voting with the enemy.

### 3.2 Multivariate analysis

In order to incorporate personality traits into the analysis and also to test the effect of the suggested factors simultaneously, we estimate a multivariate statistical model. We differentiate between abstaining, voting according to induced preferences (own alternative), and voting with the enemy (the other alternative). We thus have a multinomial dependent variable. Our independent variables are the number of

wrong answers in the quiz, the period, the previous poll result, the margin of the previous poll result, and personality trait scores. Note that the 3600 decisions in our dataset are not independent observations since they are grouped in individual subjects. Furthermore, the personality scores and the number of wrong answers in the quiz are individual-level variables which do not vary across individual decisions of a single subject. In addition, various other individual-level factors which we do not control for, such as socio-demographic and socio-economic background variables, might influence the probability of voting with the enemy. For this reason, we estimate a random intercept model using a multinomial logit function (For more details concerning the advantages of random effect models see Shikano, Bräuning and Stoffel, 2012). We use Generalized Linear Latent And Mixed Models (gllamm) in Stata 12 to estimate the model.

Table 5 reports the parameter estimates of this model. The reference category is “voting with the enemy” so that we can easily compare this choice alternative to the other two. Note that the sign of the coefficient must be reversed in order to interpret the effect. We find a clear effect of the number of errors made in the quiz: the more errors, the larger the probability of voting with the enemy, whereby the difference with respect to those that vote according to their induced preferences is larger than to those who abstain. Moreover, as the number of periods played increases, the relative probability of voting with the enemy decreases as compared to the other two categories. These findings together suggest that the data contain some evidence for existence of erroneous decisions. The bandwagon effect is supported if both losing in the previous poll and losing with a large margin have negative signs, indicating that both variables increase the probability of voting with the enemy. This is clearly confirmed by our parameter estimates, although the effect of losing in the last poll only reaches statistical significance in the comparison to abstaining. Given this sign of the margin of losing, the long-term strategic calculation hypothesis is clearly rejected.

Turning to the personality traits, we find that agreeableness is the only predictor that reaches a reasonable level of statistical significance in this model. It indicates that subjects scoring higher on this trait are more likely to vote with the enemy. This result points into the same direction as the more direct measures discussed above. Subjects scoring high on agreeableness are said to be co-operative, sympathetic and

Table 5: Random-effects Multinomial Model of Vote Choice

	Abstain		Vote for own party	
Errors in quiz	-0.426	***	-0.539	***
	(-3.64)		(-4.59)	
Period	0.0762	***	0.0672	***
	(5.20)		(4.65)	
Lost previous poll	-0.704	*	-0.582	
	(-2.26)		(-1.88)	
Margin of loss	-0.179	***	-0.361	***
	(-3.35)		(-6.42)	
Neuroticism	-0.0545		-0.283	
	(-0.31)		(-1.66)	
Extraversion	-0.0368		-0.225	
	(-0.18)		(-1.12)	
Agreeableness	-0.464	*	-0.481	*
	(-2.36)		(-2.56)	
Conscientiousness	0.0630		-0.318	
	(0.34)		(-1.80)	
Openness	-0.0271		0.156	
	(-0.15)		(0.86)	
Constant	3.422	***	3.598	***
	(7.77)		(8.26)	
Random Effects	0.961	***		
	(5.31)			
$N$	3480			

Reference category: Voting with Enemy

 $t$  statistics based on robust standard errors in parentheses\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

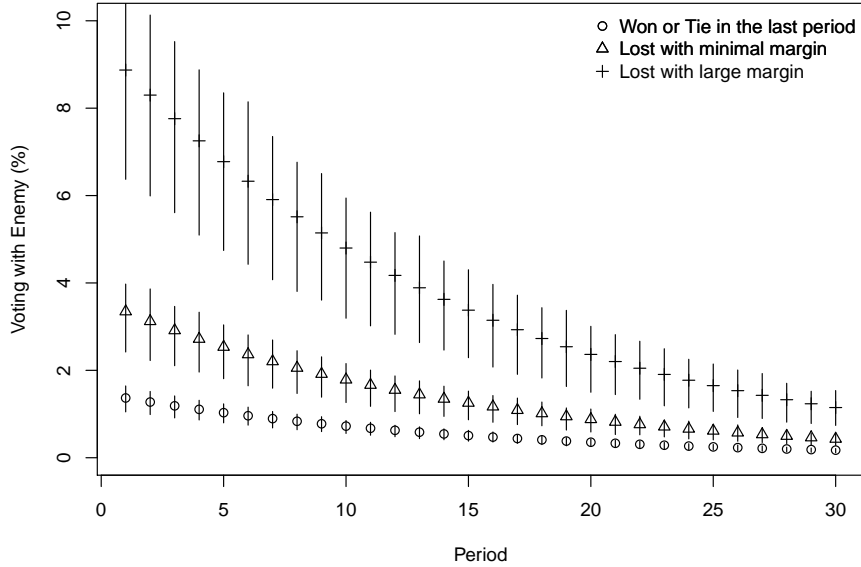


Figure 3: Margin of loss and the probability of voting with the enemy

altruistic, and to avoid conflicts.<sup>3</sup>

Figure 3 shows the predicted values of the effect of the margin of loss in the previous period on the probability of voting with the enemy for subjects who correctly answered all the questions in the quiz and who scored average on all personality traits. It shows that having lost the previous poll consistently pushes upward the probability of voting with the enemy, and that this effect increases with the margin of loss. Although the effect wears off over time, the 95 percent confidence intervals for the largest margin do not overlap with those for the smallest margin.

## 4 Further observations

What remains puzzling, however, is the surge of voting with the enemy toward the end. One explanation may be that an equilibrium emerged in which one party became locked in a permanent minority position. Figure 4 provides some rationale

<sup>3</sup>We have explored the possibility that the effect of the margin of loss depends on the score for agreeableness by including an interaction term. The coefficient, however, did not reach conventional levels of significance.

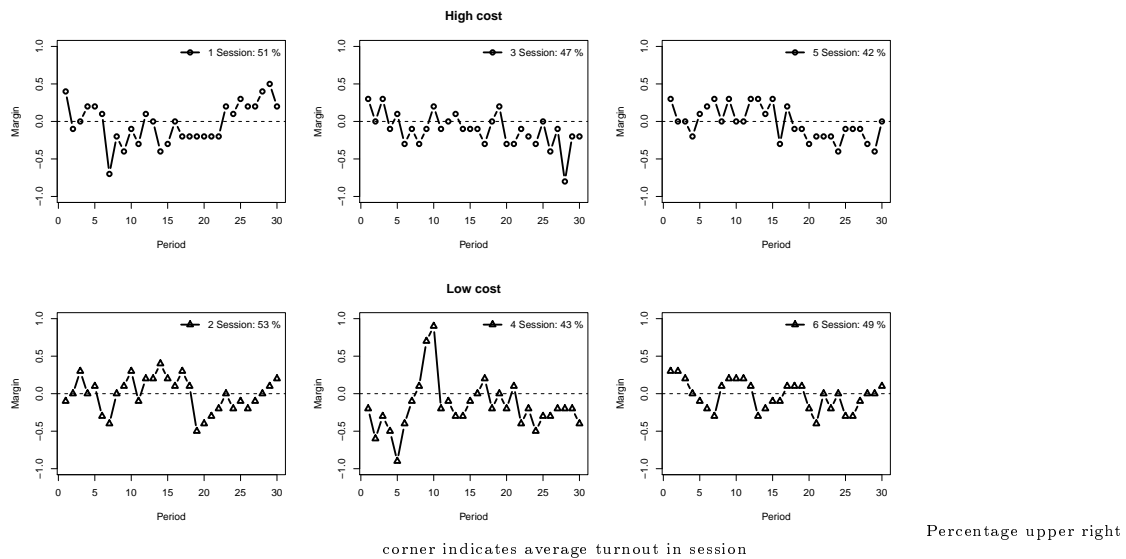


Figure 4: Margin of loss over time for separate sessions

for this interpretation. Note that the vertical axis refers to the ratio of votes for a party in the total number of party members. In most of the sessions (sessions 1, 3, 4, 5, and, to a lesser extent, 6), the pattern stabilizes around period 20, indicating that one of the parties started to dominate the polls. Members of the other party may have become desperate of persistently losing the polls and may have started to vote randomly.

An interesting pattern is observed in session 2. After a number of rather volatile periods, in which party *A* dominated, party *B* succeeded to break the series with a landslide victory in period 19, after which the odds gradually turned back to party *A*. Given that we also observe a sudden surge in overall turnout in that period (not shown), we interpret this finding as a mobilization effect of party *B*.

## 5 Conclusion

This paper has been motivated by an anomaly that was found during the preliminary analysis of the data from an experiment that departed from usual practice in experimental turnout studies. Instead of assuming that subjects adhere to their induced preferences and to equate participation with voting for their own preference, this assumption is put to test by disaggregating the voting decision into two stages:

a participation decision, which involves a cost of voting, and a choice decision which should follow in a deterministic way from the participation decision. We find that this is not necessarily the case when the protocol is repeated 30 times.

Using a random effects multinomial logit model, we show that simple errors are one reason for this anomaly. However, we also find clear evidence that independently of erroneous decisions a bandwagon effect and an agreeableness effect are operative. Subjects do not seem to strategically calculate their decision to vote with the enemy but tend to follow the crowd.

This has an important implication for the paradox of non voting as well as for modelling of repeated collective decisions. The findings from our experiments are hard to reconcile with the standard rational choice models based on prospective cost-utility calculation. In financial market economics, the efficient-market hypothesis has long been challenged by findings from behavioural economics and models based on herd behaviour. Also political scientists have begun to use models based on learning and/or adaptive behaviour of agents to solve the paradox of non voting (Bendor, Diermeier and Ting, 2003; Fowler, 2006; Bendor et al., 2011). Our experimental evidence supports this new approach in electoral studies on one hand and gives some hints for further development on the other hand: herd behaviour based on the bandwagon effect. In the future, herd behaviour should be more intensively investigated in repeated collective decisions since this phenomenon appears not only in the election context but also in further contexts like multi-lateral negotiations, communication in social networks, etc.

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