Positive Spillovers from Negative Campaigning*

Vincenzo Galasso
Bocconi University, IGIER, CESIfo & CEPR

Tommaso Nannicini
Bocconi University, IGIER, IZA & CEPR

Salvatore Nunnari
Bocconi University, IGIER & CEPR

July 19, 2020

Abstract

Negative advertising is frequent in electoral campaigns, despite its ambiguous effectiveness: negativity may reduce voters' evaluation of the targeted politician but have a backlash effect for the attacker. We study the effect of negative advertising in electoral races with more than two candidates with a large scale field experiment during an electoral campaign for mayor in Italy and a survey experiment in a fictitious mayoral campaign. In our field experiment, we find a strong, positive spillover effect on the third main candidate (neither the target nor the attacker). This effect is confirmed in our survey experiment, which creates a controlled environment with no ideological components nor strategic voting. The negative ad has no impact on the targeted incumbent, has a sizable backlash effect on the attacker, and largely benefits the idle candidate. The attacker is perceived as less cooperative, less likely to lead a successful government, and more ideologically extreme.

Keywords: Electoral Campaign, Political Advertisement, Randomized Controlled Trial, Field Experiment, Survey Experiment.

JEL Codes: D72, C90, M37.

*Aniello Dell'Anno, Igor Cerasa, Enrico Di Gregorio, Valeria Ferraro, and Jacqueline Nguyen provided excellent research assistance. We thank Fabio Patritti at CE&CO, Massimo Di Filippo and Fabrizio Monaci at IPR Feedback for conducting the surveys, and Davide Baldi at DUDE for producing the graphics and the videos. Nannicini and Nunnari acknowledge financial support from the European Research Council (POLITICALMIND Grant No. 648833 and POPULIZATION Grant No. 852526, respectively). The remaining errors are ours. Vincenzo Galasso, Bocconi University, Department of Social and Political Sciences, 20136 Milan, vincenzo.galasso@unibocconi.it; Tommaso Nannicini, Bocconi University, Department of Social and Political Sciences, 20136 Milan, tommaso.nannicin@unibocconi.it; Salvatore Nunnari, Bocconi University, Department of Economics, 20136 Milan, salvatore.nunnari@unibocconi.it.

1 Introduction

Negative advertising in electoral campaigns is on the rise and social media have provided new ways of going negative. During the 2016 U.S. Presidential campaign, more than 55 percent of all televised ads released by the Clinton and Trump campaigns were negative. Even more negative were the campaigns by the respective Super PACs. Since the Democratic National Convention, Priorities USA Action released 14 (out of 15) ads attacking Trump. Analogously, of the 13 ads released by Rebuilding America Now, 11 attacked Clinton.

Apparently, political strategists have been convincing in advising candidates to vilify their opponents. Yet, the academic debate on the effectiveness of negative ads in persuading voters is still open. Indeed, despite its popularity among practitioners, the empirical evidence on whether negative ads are more or less effective than positive ones is ambiguous (Lau et al., 2007). Early studies (Ansolabehere et al., 1994) suggest that negativity demobilizes voters, while other contributions find instead a mobilizer (Goldstein and Freedman, 2002) or no effect at all (Finkel and Geer, 1998). These conflicting findings may depend on how (and when) negativity evokes emotional responses on voters. Aggressive negative messages (mudslinging) and attacks done late in the electoral campaign, when individuals have locked in their voting choices, tend to depress turnout (Kahn and Kenney, 2004; Krupnikov, 2011). Negativity is also effective in reducing the voters' evaluation of the targeted politician (Kahn and Kenney, 2004). However, since political choices tend to be persistent, even if their appraisal of the candidate decreases, voters may still continue to vote for the target of the negative ads (Lau et al., 2007). Moreover, negativity tends to have a backlash effect, which—by worsening the evaluation of the attacker (Carraro and Castelli, 2010; Lau and Rovner, 2009)—may reduce her support (Kahn and Kenney, 2004; Lau and Rovner, 2009). This backlash effect is more likely to occur if the attack is deemed inappropriate, e.g., on the opponent's family or religious views (Mattes and Redlawsk, 2014), or if a candidate launches the initial negative campaign rather than responds to a previous attack (Peterson and Djupe, 2005). Individual characteristics also matter: female candidates are more likely to experience a backlash for

going negative (Herrnson et al., 2003) and female voters to dislike negative campaigning (Galasso and Nannicini, 2016). Going negative is thus a strategic choice that a candidate makes, by weighting the benefit from driving down the positives of the opponents (i.e., the target effect) against the risk of being perceived negatively (i.e., the backlash effect). The literature (Dowling and Krupnikov, 2016; Mattes and Redlawsk, 2014) suggests that a candidate is more likely to go negative if she trails behind in the polls, has less campaign funding than the rival(s), is facing an incumbent, or is running in a close race.

We study another important, yet largely unexplored, feature of the electoral campaign that may affect the candidate choice of going negative: the existence of more than two candidates in the race. With two candidates running for office, voters' attention is split between the two of them (or abstaining). The decision to run negative ads is thus primarily about reducing the rival's evaluation among the voters, while trying to avoid a backlash effect. With more challengers in the race, going negative may help a candidate to differentiate herself from the others (Peterson and Djupe, 2005). In fact, there seems to be greater recall for negative ads (Geer and Geer, 2003). However, in a race with multiple candidates, a negative effect on the target of the attack, coupled with a backlash effect on the attacker, may benefit the other candidates, who refrained from going negative. We call this effect on the idle candidate(s) a positive externality (for the idle candidates) from negative campaigning. This effect should reduce the incentives for any candidate to go negative in races with multiple candidates (Gandhi et al., 2015). Clearly, this effect is more likely to emerge in multiparty systems (Elmelund-Præstekær, 2008; Hansen and Pedersen, 2008).

To analyze the effect of negative campaigning in electoral races with multiple candidates, we present results from two experiments with positive and negative campaigning in elections with two or three candidates. Our experiments are designed to test for the existence of a positive effect from negative campaigning in favor of an idle candidate (i.e., the *spillover effect*), and to evaluate the magnitude of the effect of going negative on the target (i.e., the *target effect*) and on the attacker (i.e., the *backlash effect*). A field experiment, run during a

multi-candidate electoral race, provides the perfect real testing ground for our hypotheses. The causal results from a real-life campaign show the existence of a positive spillover effect on the idle candidate from negative campaigning. In a set of survey experiments, we construct a controlled environment in order to isolate the mechanisms behind this spillover effect. In particular, we create a controlled setting with no ideological components and no concerns for strategic voting, in which the effect of negative campaigning on voters' decisions can be evaluated in isolation.

We implemented a large scale field experiment during an electoral campaign for mayor in Italy and a survey experiment in a fictitious electoral campaign for mayor. First, we ran the field experiment during the 2015 electoral race for mayor in Cava de' Tirreni (a midsize town in the South of Italy), which featured the incumbent facing two main challengers. In this experiment, our treatments consisted of canvassing done by volunteers of one of the challengers either with a positive message or with a negative message against the incumbent. Our randomization took place at the precinct level: a third of the 55 precincts were canvassed by the volunteers with a positive message, a third with a negative message, and the remaining third received no informational treatment. We study the effect of these treatments on the actual electoral outcome: that is, the vote shares obtained by the three candidates at the precinct level in the first round of the election.

Second, we staged a fictitious election in which either three or two candidates were running for mayor. Voters in this election were the respondents of an online survey, in which they were told to consider that they just moved to a town with an upcoming mayoral election. In the experiment with three candidates, the respondents were introduced to the incumbent and two opponents. To isolate the effect of negativity from ideological or strategic aspects, the candidates were designed to have similar individual characteristics and no ideological difference. Participants to this survey experiment were shown a video ad from each of the candidates. For the incumbent and one of the opponents, the video contained a positive message, whereas the campaign of the other opponent was randomized. The treatment

group was shown a video with a negative message against the incumbent, while the control group watched a video with a positive message. In the experiment with two candidates, survey respondents were presented with the incumbent and one opponent, again with similar individual characteristics and no ideological difference. For the incumbent, we showed the video with a positive message. For the opponent, we randomized: the treatment group was shown the video with a negative message against the incumbent, the control the one with a positive message. In both experiments (with two or three candidates), we asked the respondents to indicate whom they would vote for, and this is our outcome of interest.

In the field experiment, we find a strong, positive spillover effect of negative campaigning on the idle candidate, whose vote share increases by 3.7 percentage points when the incumbent is attacked with a negative ad by the other challenger (a gain of about 13% with respect to the idle candidate's average vote share). To understand the mechanisms behind this effect, we need to move to the controlled environment of the survey experiments, where we neutralize the ideological components and strategic voting aspects that are relevant in actual electoral races. The empirical evidence from our survey experiments confirms the existence of a strong, positive spillover effect in favor of the idle candidate (17.1 percentage points for a gain of about 48% with respect to the average). We also find a sizable backlash effect, which is partially attenuated in two-candidate races. Moreover, the candidate running the negative ad was perceived as less cooperative, less likely to lead a successful government, and more extreme on the political scale. The attack had little effect on the incumbent and largely benefited the idle candidate.

We contribute to a large literature on the effects of negative campaigning on electoral outcomes.[1] In their seminal experimental paper, Ansolabehere et al. (1994) use responses

[1]More generally, the effectiveness of electoral campaigns in mature democracies has been studied, among others, by Ansolabehere and Iyengar (1995), Gerber and Green (2000), Gerber and Green (2004), Gerber et al. (2003), Nickerson (2008), and Dewan et al. (2014). Typically, these studies rely on either small scale experiments for partisan ads, or on large

from a post-test questionnaire, administered after subjects had seen the advertisements, to show that negative ads reduce average voting intentions by 5%. This early result is encouraging, since in a two-party system abstaining from voting should be consider a third vote options, just as voting for a third, idle candidate in a three-candidate election. Arceneaux and Nickerson (2010) implemented a field experiment, in which volunteers personally delivered a political message to their treatment groups to find that, while canvassing is effective in influencing voters, there is little evidence of a differential effect between negative and positive campaigning.[2] Studies on negative campaigning, which use aggregate and survey data and classify the negativity of actual campaign advertisements, find either no impact of negative campaigning (Wattenberg and Brians, 1999), or even supporting evidence for a "stimulation" effect on electoral turnout (Finkel and Geer, 1998; Freedman and Goldstein, 1999; Kahn and Kenney, 1999; Freedman and Goldstein, 2002; Clinton and Lapinski, 2004; Brooks and Geer, 2007). A meta-analytic assessment of this literature by Lau et al. (2007) reports inconclusive results: negative campaigns are neither effective to win votes, although they may be more memorable, nor seem to depress turnout. Recent contributions (Dowling and Krupnikov, 2016; Mattes and Redlawsk, 2014) suggest that specific features may explain the different effectiveness of going negative: trailing behind in the polls, having less campaign funding than the opponent(s), facing an incumbent.

Our contribution to this literature is to study the effects of going negative in multi-candidate elections in order to measure possible spillover effects. In a rent-seeking contest, Konrad (2000) provides a theoretical framework to show how effort for negative activities

scale non-partisan campaigns for turnout. For (randomized) partisan campaigns, see Gerber et al. (2011), Kendall et al. (2015), Pons (2018), and Braconnier et al. (2017).

[2]Barton et al. (2014) provide evidence from a US local election that canvassing by the candidate is effective in increasing her vote share. Bhatti et al. (2019) question the effectiveness of canvassing outside the US. However, Pons and Liegey (2018) find evidence of an increase in turnout among French immigrants due to visits from political activists.

(sabotage), as opposed to positive ones (self-promotion), is decreasing in the number of contenders. In multiparty systems that feature many candidates running for election, the degree of negativity is typically lower (Hansen and Pedersen, 2008). However, as in the US politics, trailing behind in the polls and fierce competition lead to more negativity (Elmelund-Præstekær, 2008). Empirical evidence in Gandhi et al. (2015) shows that, in US non-presidential primary contests, electoral races with more challengers are characterized by less airing of negative ads than two-candidate races. Our paper provides a (causal) measure of this spillover effect and of the backlash effect in a controlled environment. In a sense, we also contribute to a recent literature that studies the increasing trend of negative advertising by independent groups in the United States (Brooks and Murov, 2012; Dowling and Wichowsky, 2015). Since the "Citizens United v. Federal Election Commission" U.S. Supreme Court decision in 2010, which abolished restrictions on campaign advertising by outside groups, negative ads run by independent groups have been shown to produce less backlash effects.

The paper is organized as follows. The next section introduces a simple conceptual framework that characterizes the electoral outcomes associated with different combinations of target and backlash effects induced by negative campaigning. Section 3 presents the field experiment in Cava de' Tirreni, while Section 4 presents the survey experiments. Section 5 concludes. Descriptions and English translations of the (randomized) campaign tools for all experiments are in the Online Appendix.

2 Conceptual Framework

We introduce a simple conceptual framework to characterize the individual voting decisions. The aim of this theoretical framework is to analyze the mechanisms that may induce voters to react to negative campaigning, in a setting in which there is no strategic voting nor ideology. This theoretical framework will help us to design a survey experiment in which we can isolate the effect of negative campaigning from other electoral features.

We consider three parties (A, B, C), which do not differ in their ideology nor in their policy. Each voter is assumed to have a preference for one party, solely based on individual sympathy. A voter i of type j, with $j = A, B, C$, is characterized by a sympathy $s_j^i \in (0, S)$ for party j and no sympathy for the other two parties, $s_{-j}^i = 0$. Parties' valence also matter for the voters. We indicate this valence factor with $\delta_j = \widehat{\delta}_j + e_j > 0$, where e_j depends on the electoral campaign of party j and $\widehat{\delta}_j$ depends on a shock realized before the election. These two components — and, thus, the valence factor — are common to all voters.

Voters' electoral decisions depend only on their individual sympathy for a party and on the common valence factor. Hence, a voter i of type A votes for:

$$\begin{aligned} &\text{party A if} \quad s_A^i + \delta_A \geq Max\{\delta_B, \delta_C\} \\ &\text{party B if} \quad \delta_B > Max\{s_A^i + \delta_A, \delta_C\} \\ &\text{party C if} \quad \delta_C > Max\{s_A^i + \delta_A, \delta_B\}. \end{aligned}$$

And analogously for voters of types B and C.

To evaluate the effects of the electoral campaign on the voting decision, without loss of generality, we assume that, if all parties run positive campaigns, the electoral campaign component of the valance factor is the same for all parties and is normalized to zero: $e_A = e_B = e_C = 0$. Consider a negative campaign run by party B against party A. This negative campaign can give raise to an effect for the target, a change in e_A, and/or an effect for the attacker, a change in e_B. The existing literature (see Lau et al. 2007 for a review) suggests that both effects are negative, $e_A < 0$ and $e_B < 0$. However, we do not rule out that they could be null or even positive, and obtain ten possible cases. For each case, we determine, ceteris paribus — i.e., for given realizations of the shocks $\left(\widehat{\delta}_A, \widehat{\delta}_B, \widehat{\delta}_C\right)$ and given distributions of the voters' types — how the votes for the three parties change with respect to our baseline case, constituted by the positive campaigning ($e_A = e_B = e_C = 0$).

It is convenient to assume, without loss of generality, that the shocks have the same realization for all parties, $\widehat{\delta}_A = \widehat{\delta}_B = \widehat{\delta}_C = \widehat{\delta}$. Hence, with all parties running positive campaigns, every type j voter ($s_j > 0$) votes for party j. Consider the case in which

the negative campaign creates only a negative effect for the target, that is, $e_A < 0$ and $e_B = e_C = 0$. Clearly, this reduces the votes for party A among type A voters. In fact, only voters with a sympathy greater than $s'_A \geq -e_A > 0$ vote for party A. The other type A voters, with $s^i_A < s'_A$, will not vote for party A and will be indifferent between voting for party B or C. If instead a negative effect emerges for the attacker only, that is $e_B < 0$ and $e_A = e_C = 0$, the negative campaign reduces the votes for B among type B voters. Only voters with a sympathy greater than $s'_B \geq -e_B > 0$ vote for party B. The other type B voters, with $s^i_B < s'_B$, will be indifferent between voting for party A or C. If instead negative campaigning produces negative effects for both the target and the attacker, both parties A and B will lose some votes among their supporters. And these votes will all go to party C. This effect is what we call the positive externality (for party C) from negative campaigning (by party B). Finally, let us consider the perhaps unlikely case in which negative campaigning induces positive effects for both the target and the attacker, i.e., $e_A > 0$, $e_B > 0$ and $e_C = 0$. With respect to our baseline situation of positive campaigning, in which every voter voted for her party type, in this case some type C voters will switch party. Which party they will turn to depends on the relative size of the effects. Suppose that this is greater for the attacker, i.e., $e_B > e_A > 0$. Then type C voters with a sympathy lower than $s_C < \widehat{\delta}_B + e_B - \widehat{\delta}_C = e_B > 0$ will vote for B. Moreover, some type A voters will also switch to party B if their sympathy is lower than $s_A < \widehat{\delta}_B + e_B - \widehat{\delta}_A - e_A = e_B - e_A > 0$. All these results can be summarized in a three-by-three matrix, which considers all the combinations of the positive, null and negative effect for attacker and target (see Table 1). According to the existing literature, the most relevant case, which we take as our testable hypothesis, is that both the effect on the target and on the attacker are negative, which corresponds to the bottom-right corner of Table 1.

We now consider an environment with only two parties, A and B, and a negative campaign run by party B against party A. As before, this negative campaign can give raise to an effect for the target, a change in e_A, and/or an effect for the attacker, a change in e_B. We also

keep the same working assumptions regarding the realization of the shocks ($\widehat{\delta}_A = \widehat{\delta}_B = \widehat{\delta}$) and the baseline positive campaigning ($e_A = e_B = 0$). In this environment, eleven cases may arise depending on the (three by three) combinations on the effects for the target and the attacker, as well as—if they go in the same direction—on which of the two effects is larger. It is easy to see that if the negative campaign creates only a negative effect for the target ($e_A < 0$ and $e_B = 0$), some of the type A voters (with $s_A < -e_A$) will switch from party A to party B. On the contrary, if a negative effect emerges only for the attacker ($e_A = 0$ and $e_B < 0$), some of the type B voters (with $s_B < -e_B$) will switch from party B to party A. But if negative campaigning produces only negative effects ($e_A < 0$ and $e_B < 0$), the relative magnitude of the effects will matter. For a larger target effect ($e_A < e_B < 0$), some of the type A voters (with $s_A < -e_A + e_B > 0$) will switch from party A to party B. Viceversa, if the effect is larger for the attacker ($e_B < e_A < 0$), some of the type B voters (with $s_B < -e_B + e_A > 0$) will switch from party B to party A. Also these results can be summarized in a three-by-three matrix, which shows all the combinations of the positive, null and negative effect for attacker and target (see Table 2). It is worth noticing that, in a two candidates race, if both the effect on the target and on the attacker are negative, which corresponds to the bottom-right corner of Table 2, we still have two possible electoral outcomes, depending on the relative magnitudes of the effects.

To summarize, this conceptual framework provides a full account of the possible electoral outcomes depending on the sign (and magnitude) of the attacker and target effects. However, in our field and survey experiments, we test specifically the following two hypotheses:

Hypothesis 1: In a three candidates race, negative campaigning by a challenger has a negative effect on the incumbent vote share (the *target effect*), a negative effect on the same challenger (the *backlash effect*), and a positive effect on the other challenger (the *spillover effect*).

Hypothesis 2: In a two candidates race, negative campaigning by a challenger has a negative effect on the challenger (the *backlash effect*).

		Attacker (B)		
		Positive	Zero	Negative
Target (A)	Positive	Case I: $\Delta B > \Delta A$ A votes ↓ B votes ↑ C votes ↓ Case II: $\Delta B < \Delta A$ A votes ↑ B votes ↓ C votes ↓	A votes ↑ B votes ↓ C votes ↓	A votes ↑ B votes ↓ C votes ↓
	Zero	A votes ↓ B votes ↑ C votes ↓	No effect	A votes ↓ B votes ↑ C votes ↑
	Negative	A votes ↓ B votes ↑ C votes ↓	A votes ↓ B votes ↑ C votes ↑	A votes ↓ B votes ↓ C votes ↑

Table 1: Predictions for Three Candidates Election for Different Combinations of Target and Backlash Effect (A = Target; B = Attacker; C = Other Candidate)

		Attacker (B)		
		Positive	Zero	Negative
Target (A)	Positive	Case I: $\Delta A > \Delta B$ A votes ↑ B votes ↓ Case II: $\Delta A < \Delta B$ A votes ↓ B votes ↑	A votes ↑ B votes ↓	A votes ↑ B votes ↓
	Zero	A votes ↓ B votes ↑	No effect	A votes ↑ B votes ↓
	Negative	A votes ↓ B votes ↑	A votes ↓ B votes ↑	Case I: $\lvert\Delta A\rvert < \lvert\Delta B\rvert$ A votes ↑ B votes ↓ Case II: $\lvert\Delta A\rvert > \lvert\Delta B\rvert$ A votes ↓ B votes ↑

Table 2: Predictions for Two Candidates Election for Different Combinations of Target and Backlash Effect (A = Target; B = Attacker)

3 Field Experiment in Cava de' Tirreni

3.1 Experimental Design

Our field experiment examines the effects of negative vs. positive electoral campaigning in an election with three main candidates, an incumbent and two challengers. The experiment took place during the 2015 municipal election in Cava de' Tirreni, a midsize town (around 55,000 inhabitants) in the South of Italy. The incumbent major, Marco Galdi, was supported by a center-right coalition, while the two main challengers were supported, respectively, by a center-left coalition and by three (centrist) civic lists (that is, party lists which have no official connection with a national political party and campaign on local issues). Our treatment consisted of positive and negative messages administered on behalf of Armando Lamberti, the candidate supported by the civic lists, through door-to-door canvassing and the delivery of electoral materials to mailboxes. During the three weeks prior to the election, a campaign team of twenty young volunteers (Figure OA.1 in the Online Appendix shows their group picture), wearing blue t-shirts with the symbols of the three civic lists and the slogan "Lamberti for Mayor,"knocked on doors of private residences and buzzed private residences' intercoms, to engage in personal interaction with eligible voters. Volunteers presented Mr. Lamberti's ideas and handed electoral materials. Alternatively, electoral materials were just left in the mailboxes of the eligible voters who could not be engaged in personal interactions. While being largely exploited in the United States, as part of "get out the vote" strategies, canvassing represented a novelty for Italian politics.[3] We approached Mr. Lamberti and proposed him to run an experiment using canvassing as an electoral campaign tool. He accepted and decided to launch a campaign called "Around the city listening to citizens." The volunteers

[3]To our knowledge, Cantoni and Pons (2016) present the only other canvassing experiment run in Italy. They compare the effect on turnout of canvassing done by paid volunteers vs. canvassing done by local candidates to the city council. Their testing ground is a 2014 municipal election in a midsize town in Northern Italy (38 precincts).

were provided by the candidate and underwent a one-day training stage with one of the authors and with our field manager.

We randomized our negative vs. positive treatments using canvassing and electoral materials (flyers and hangers) left in the mailboxes. Positive canvassing emphasized Mr. Lamberti's ideas, while the negative one concentrated on the incumbent wrong-doing in office. The positive and negative version of the electoral material look identical: light blue, portraying the candidate, the symbols of the three civic lists and a city monument (see Figures OA.2 and OA.3 in the Online Appendix). The slogans clearly differ, but the topic and even their length (in Italian) are the same. The positive message reads "Let's Put Ourselves on the Line. In the next 5 years, with Lamberti: more dialogue with the citizens; more competence and transparency; more health and local services,"while the negative reads "Together to Take the City Back. In the past 5 years, with Galdi: too much old politics; too much waste of resources and too high taxes; too much debt on the citizens."[4] And similarly for the

[4]Being a real-world campaign, in which all messages had to be approved by the candidate, the texts cannot be as sharp as in a lab or survey experiment. This can be seen as a particular case of the usual trade-off between internal and external validity when doing (field) experiments with politicians. However, to validate our operationalization of the two informational treatments (negative vs. positive), we ran both ex-ante and ex-post validity tests. Ex ante, we randomly assigned the two messages on the flyers to 50 university students, who did not know anything about politics in Cava de' Tirreni. We then asked them to give their subjective assessment of the candidate's attitude in the campaign message: that is, whether he was mainly campaigning against other candidates or emphasizing his own proposals for the city. For the 25 students who received the positive flyer, the average evaluation of the candidate's message as negative was 0.24 (s.d. 0.436). For the 25 students who received the negative flyer, the same evaluation was 0.44 (s.d. 0.507). Ex post, we ran a post-electoral survey of 857 voters in Cava de' Tirreni, belonging to the different treatment groups of the canvassing campaign, and asked them the same question on whether they

hangers, which only report the first part of the slogan (see Figures OA.4 and OA.5 in the Online Appendix). When canvassing, the script provided to the volunteers to approach the voters was the same in the positive and negative version. But the discussion that followed once (and if) the volunteers gained personal access to the voters, differed depending on the treatment.

All these tools were designed by professionals under our direction and in collaboration with the Lamberti's campaign. Clearly, the informational treatments coexisted with the real overall campaign, and therefore their effects (if any) operated at the margin. However, our canvassing was the only door-to-door campaigning implemented in Cava by any candidate.[5]

Our randomization was done at electoral precinct level. The 55 electoral precincts were randomly assigned to tree groups: positive treatment (18 precincts with 15,925 eligible voters), negative treatment (18 precincts with 15,424 eligible voters), and control group (19 precincts with 15,174 eligible voters), which did not receive any treatment. Table OA.1 (Panel A) in the Online Appendix reports the ex-ante balance tests of predetermined variables at the precinct level. The available variables refer to the previous election for mayor in Cava de' Tirreni in 2010. They include the number of eligible voters (absolute and by gender), the vote share of the winner and of the main challenger. For all of these predeter-

perceived our candidate's campaign as negative or not. In the positive treatment group, the average evaluation of the candidate's message as negative was 0.225 (s.d. 0.420). In the negative treatment group, the same evaluation was 0.346 (s.d. 0.479). Despite the small sample sizes, all of these group means are statistically different between each other at the 10% significance level.

[5]As discussed above, Mr. Lamberti approved all the campaign messages, paid for the electoral materials and provided us with the volunteers. However, in order to avoid contamination in the experimental design, our field manager directed the volunteers without informing the candidate about the randomization outcome, so that he could not infer which precincts were receiving a certain treatment as opposed to the other.

mined variables, our precinct-level randomization is perfectly balanced. Moreover, as shown in Table OA.2 in the Online Appendix, all of these predetermined variables are perfectly balanced also when comparing each treatment group to the control group.[6]

In their canvassing diary, the volunteers reported on a daily basis which streets were covered and how, that is, whether by canvassing or by leaving electoral materials in the mailbox. We can then construct a variable capturing the intensity of our treatment. We define as intensively treated those precincts in which at least 50% of the streets were reached by the volunteers. This occurred in 30 of the 36 treated precincts. Results reported in Table OA.1 (Panel B) in the Online Appendix show that the intensity of our treatment was ex-post balanced between the negative and positive treatment. As this intensity might be endogenous, this is an important result and allows us to perform an additional heterogeneity analysis on the precincts that received a more intense treatment.

3.2 Experimental Results

Table 3 presents estimates for the effect of negative vs. positive campaigning on actual voting outcomes (see also Figure OA.7 in the Online Appendix). The unit of observation is a precinct. We consider four electoral outcomes: turnout and the incumbent (i.e., the target) vote share in Panel A; the treated challenger (i.e., the attacker) and the main untreated challenger (i.e., the idle candidate) vote shares in Panel B. For each outcome variable, expressed in percentage points, we provide estimates for the effect of negative (vs. positive) campaigning without (column 1) and with controls (column 2), and of intense negative campaigning (vs. positive) without controls (column 3).

[6]Besides the t-tests reported in the two tables, we also ran F-tests on the joint significance of the predetermined variables with respect to the probability of belonging to the different treatment groups. The p-values corroborate the validity of the randomization and are as follows: 0.920 (negative group as opposed to positive group); 0.759 (negative group as opposed to control group); 0.858 (positive group as opposed to control group).

A clear spillover effect emerges from our empirical analysis (see Panel B): the vote share of the main untreated challenger increases by more than 3 percentage points in those precincts where the other challenger run a negative campaign. This result is robust – and the statistical significance increases – if controls are included (columns 2) or if the intense measure of our treatment is used (columns 3).[7]

Considered that in the 36 precincts receiving either negative or positive canvassing, the incumbent vote share is 24.5, the attacker 14.7, and the idle candidate 29.4, the spillover effect on the latter amounts to an impact of about 11-15% depending on the specification. Going negative has instead no statistically significant effect on the incumbent (the target) nor on the treated challenger (the attacker), although both signs are negative and these zero results might also depend on the small sample size.[8] Because of the small sample size, we provide a further robustness check by using randomization inference to provide evidence that

[7]When using the intense measure (i.e., more than 50 percent of the streets being reached), the (six) observations related to the precincts with low compliance are not used as the control group and dropped from the sample (see columns 3 in Table 3). We also calculated the complier average causal effect (CACE), by running a 2SLS regression in which treatment assignment is the instrumental variable predicting treatment intensity. The estimates are reported in columns 3 in Table OA.3 (which compares the negative and positive treatments between each other, with no control group) and in Table OA.4 (which evaluates both the positive and the negative treatment with respect to the control group). The 2SLS estimates are perfectly in line with the results in Table 3, which are reported for comparison in columns 1 of Tables OA.3 and OA.4.

[8]To accommodate for the fact that the outcome variables depend on each other and the error terms in the different regressions might be correlated, we also ran Seemingly Unrelated Regression (SUR) models. As the set of control variables is the same in all regressions, coefficients are unaffected and the OLS estimators are both consistent and efficient, but SUR allows us to perform additional tests. The first result is that error terms are indeed correlated as the Breusch-Pagan test of independence has a p-value of 0.001. The second

our estimated treatment effects are indeed causal and do not arise from chance. For each baseline estimate, we run 1,000 placebo estimates with permutation methods and evaluate where the baseline estimate falls in the empirical distribution of these simulated (placebo) estimates, reporting the corresponding p-values of one-sided tests. The p-values are reported in Tables 3 and OA.5. They strongly support our evidence: all p-values are high for the coefficients that were not statistically different from zero with standard inference techniques, while they are always below 5 percent for the coefficients that were statistically different from zero (namely, the treatment effect on the vote share of the untreated challenger). [9]

To disentangle whether the spillover effect is due to the negative or the positive campaign, we estimate separately the effect of each campaign against the control group. The results, presented in Table OA.5 in the Online Appendix, show that the spillover effect is entirely driven by the negative campaign. In all specifications (with or without controls or using the intense measure of our treatment), the idle candidate gains more than 3 percentage points if the treated challenger goes negative with respect to the control group. Instead, the positive campaign by the treated challenger has no significant effect on the idle candidate. Our field experiment thus provide strong causal evidence of a positive spillover from negative campaigning in favor of a third, idle candidate. However, it does not allow to identify the drivers of this positive spillover. Does the third candidate gain votes because of a contemporaneous reduction in the voters' valuation for both the target and the attacker, as

result is that the effect of negative vs. positive campaigning is jointly different from zero (p-value=0.065) for the incumbent's, opponent's, and idle candidate's vote shares, pointing to the joint presence of not only a spillover effect, but also a target and a backlash effect. The third result is that the spillover effect is still more robust than the others, as pairwise joint tests are statistically significant at a 5% level only when the idle candidate's vote share is one of the included outcomes (available upon request).

[9]To implement the randomization inference permutations reducing any coding discretionary choice, we used the Stata routine "ritest" – see Hes (2017).

	Panel A					
	Turnout			Incumbent Vote Share		
	(1)	(2)	(3)	(1)	(2)	(3)
Negative Campaign	-0.722	-0.111		-0.357	-0.077	
	(2.09)	(1.09)		(1.42)	(1.17)	
Int. Negative Campaign			-1.793			-1.013
			(2.39)			(1.67)
Constant	69.977***	-13.735	70.608***	24.683***	83.968	25.080***
	(1.16)	(53.69)	(1.41)	(1.19)	(86.61)	(1.44)
Baseline Treatment	Positive	Positive	Positive	Positive	Positive	Positive
Controls		✓			✓	
Observations	36	36	30	36	36	30
R-Squared	0.003	0.789	0.019	0.002	0.319	0.014
Random Inference p-Value	0.394	0.465	0.259	0.420	0.471	0.260

	Panel B					
	Treated Challenger Vote Share			Main Untreated Challenger Vote Share		
	(1)	(2)	(3)	(1)	(2)	(3)
Negative Campaign	-0.840	-0.629		3.670*	2.730**	
	(1.29)	(1.11)		(1.83)	(1.14)	
Int. Negative Campaign			-0.803			4.490**
			(1.55)			(2.17)
Constant	15.147***	75.865*	15.090***	27.592***	-151.085**	27.256***
	(0.88)	(39.48)	(1.14)	(1.40)	(60.49)	(1.77)
Baseline Treatment	Positive	Positive	Positive	Positive	Positive	Positive
Controls		✓			✓	
Observations	36	36	30	36	36	30
R-Squared	0.012	0.402	0.010	0.105	0.684	0.136
Random Inference p-Value	0.256	0.304	0.311	0.031	0.032	0.022

Table 3: Field Experiment, The Effect of Negative Campaigning on Actual Vote Shares. LPM estimates. SEs in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Controls in columns (2) include Winner's and Main Challenger's Voter Shares, Turnout Rate, Percentage of Female Voters and Total Voters in the 2010 election. p-values of one-sided tests from running 1,000 placebo estimates with permutation methods and evaluating where the baseline estimate falls in the empirical distribution of these simulated (placebo) estimates.

our theory suggests? Or do voters, who are convinced by the negative campaign not to vote for the incumbent, strategically decide to vote for the third candidate, who may have more chances of winning the election? The latter explanation cannot be ruled out since, in our

municipal elections, the treated challenger (the attacker) ended up being a distant third in vote shares and did not manage to enter the runoff. Hence, strategic voting considerations may be a potential channel driving our results. Finally, voters reached by the different treatment may be moved in their response by ideological considerations.

4 Survey Experiment

4.1 Experimental Design

As we discuss in this section, we followed the conceptual framework developed in Section 2 and designed a survey experiment to test the existence of a spillover effect on a third candidate from negative (vs. positive) campaigning in a controlled environment. The survey experiment complements the field experiment discussed in the previous section, since it allows us to control and manipulate the number and the personal characteristics of the candidates, to measure the relative size of the target effects, of the backlash effect, and of the spillover effect, and to eliminate the possibility of strategic voting motives from individual electoral choices. As argued with our conceptual framework, to gauge the relative size of the target and of the backlash effect, we need to run an election with two candidates. On the other hand, measuring the spillover effect requires an electoral race with (at least) three candidates. We, thus, run two versions of a fictitious electoral race for mayor: one with three and one with two candidates.

We recruited 2,971 subjects through the database of volunteers maintained by an established Italian polling firm, Ce&Co. Respondents to our survey were presented with a fictitious scenario. They were asked to imagine they just moved to a town in the Center of Italy—to which we gave the imaginary name of *Castelgufo*—where elections for mayor were about to be held. We provided some background information on this town, which was portrayed as small and touristic, with local firms in food and textile industries. Moreover, we added that the political debate had been composed and that the most discussed issues

had been local transportation—especially between the center of the town and the suburbs—tourism, and closing the city center to traffic.

In the three-candidate race, all candidates for mayor (listed in a random order) belonged to civic lists, so that no ideological component could be attached to them. They were described as married males in their forties with children. Their last names were chosen to be similar: Baldi, Landi, and Vanni. Baldi was told to be the incumbent major. Participants were reminded that the electoral system was first-past-the-post, Castegufo being an Italian city with less than 15,000 inhabitants. Moreover, they were told that, according to polls, all candidates had similar winning probability. This last information was provided in order to solicit sincere voting and to avoid the strategic voting behavior that might have been present in our field experiment.

For each candidate, the respondents were shown a video, in which the candidate presented his electoral program. These candidates being fictitious, we used professional actors to record the videos. Three different actors interpreted the characters of the three candidates in addressing the voters with their electoral programs, according to scripts that we designed and that are available, in their English translation, in the Online Appendix. For the incumbent (Baldi) and one of the opponents (Vanni), we shot only one video with a positive message, which was shown to all the respondents. For the other opponent (Landi), we instead produced three videos: one video with a positive message and two videos with a negative message against the incumbent.[10] The two videos with the negative message differed only in the

[10]The positive video started with the line "with my City Council, Castelgufo will be a city for all citizens" and then continued with the candidate's policy proposal to boost tourism and economic activity. The negative video started with the line "it is the fault of the incumbent mayor Alessandro Baldi if we now have two types of citizens in Castelgufo: the lucky ones (...) and the forgotten ones" and then continued with the policy errors of the incumbent with respect to the same issues tackled in the positive video. See the Online Appendix for the full script texts.

voice tone and body language used by the actor to deliver the same message: in one version the video was delivered with a neutral tone and body language, while in the other version, the video was delivered with an aggressive tone and body language (e.g., shouting and pounding the fists on the table). We then randomized the three videos across our respondents. Those in the 'negative' treatment group (506 subjects) were shown the video with the negative message and a neutral tone; those in the 'aggressive' treatment group (510 subjects) were shown the video with the negative message and an aggressive tone; whereas those in the control group (504 subjects) were shown the video with the positive message. All respondents were provided with the same initial information regarding the city and the election. Respondents in the control group watched three videos (one for each candidate in a random order), all with positive messages; whereas respondents in the two treatment groups watched, again in a random order, two videos with a positive message (from Baldi and Vanni) and one with a negative message (from Landi).[11]

An almost identical setup was used for the two-candidate race. In this case, we dropped the third candidate, Vanni, who was idle—that is, neither attacking the incumbent nor being attacked. Respondents were thus left with only two electoral choices: the incumbent (Baldi) and the opponent (Landi). Respondents in the control groups (468 subjects) were shown videos with positive messages from both, whereas those in the treatment groups were exposed to the positive ad by the incumbent and to either the negative/neutral ad (478 subjects) or the negative/aggressive ad (505 subjects) by the opponent.

After being shown the videos, participants were asked what candidate they preferred as mayor for Castelgufo as well as a series of questions to measure their perception of the treated challenger (Landi). In particular, we asked about the perceived political ideology of the candidate, about the perceived success of a potential government led by the candidate, whether they expected the candidate to cooperate or compete with other municipalities from

[11] All the videos are available at `https://tinyurl.com/castelgufo`, with English subtitles.

the same county to access funds from the central government, and, as validation of our experimental manipulation, whether they believed the candidate had run a positive campaign, centered around the town's problems, or a negative campaign, aimed at diminishing the opponent(s).[12] Finally, we used a set of state-of-the-art qualitative questions and games from laboratory experiments to elicit participants' economic and social preferences: political ideology (with self-placement on a conservative-liberal scale), trust (with a qualitative question on who can be trusted), competitiveness (with a real effort task subjects can decide to be paid for either with an individual piece-wise rate or with a tournament, as in Niederle and Vesterlund, 2007), risk aversion (with the choice among six lotteries, as in Eckel and Grossman, 2002), and propensity to cooperate with others (with a qualitative question on what matters most to be successful in life and with contribution to a linear public good game in groups of four members, as in Isaac and Walker, 1988).[13]

The two-candidate survey lasted on average 17 minutes, while participants took on average 21 minutes to complete the three-candidate survey. For their participation, subjects received a flat fee of 1.20 euros, plus a component related to performance in the experimental tasks and games used to elicit economic and social preferences (the average additional payment being 1.90 euros). Tables OA.6 and OA.7 in the Online Appendix report summary statistics and balance tests for the personal characteristics of the survey participants across the six experimental treatments. These demographic and preference information were collected after the treatment. All predetermined variables are perfectly balanced.[14] Table OA.8

[12]In the survey with two candidates, the percentage of respondents who thinks Landi has run a negative campaign is 8% in the positive treatment, 49% in the negative and neutral treatment, and 61% in the negative and aggressive treatment. In the survey with three candidates, the same percentages are, respectively, 11%, 57%, and 64%. In both cases, the difference between the positive and the negative treatments is statistically significant at the 1% level according to a test of proportions.

[13]Full instructions are available in the Online Appendix.

[14]Besides the t-tests reported in the two tables, we also ran F-tests on the joint significance

in the Online Appendix provides descriptive statistics for all outcome and control variables used in our survey experiment.

4.2 Experimental Results

Tables 4 and 5 present estimates for the effect of different campaign modes on vote intentions (see also Figure OA.7 in the Online Appendix). Tables 6 and 7 show results for the effect of different campaign modes on voters' perception of the candidate whose campaign we manipulate. Tables 4 and 6 focus on elections where the incumbent is challenged by a single candidate, while Tables 5 and 7 focus on elections with three candidates. The unit of observation is a participant and each participant answers each question only once

In all elections, we ask participants to express a preference for one of the available candidates. No abstention or indifference is allowed. Consider elections with two candidates. In the control treatment where both candidates campaign positively, the challenger receives 54% of the stated preferences.[15] In elections where the challenger adopts a negative message but maintains a neutral tone, this share drops to 46%. The support for the challenger decreases even further, to 32.5%, when he delivers the negative message with an aggressive tone. These average treatment effects are statistically different from zero, even when controlling for demographic characteristics as well as for economic and social preferences elicited

of the predetermined variables with respect to the probability of belonging to the different treatment groups. The p-values corroborate the validity of the randomization and are as follows. For two candidates (corresponding to Table OA.6): 0.301 (negative group as opposed to aggressive group), 0.974 (positive group as opposed to aggressive group), 0.833 (positive group as opposed to negative group). For three candidates (corresponding to Table OA.7): 0.802 (negative group as opposed to aggressive group), 0.901 (positive group as opposed to aggressive group), 0.900 (positive group as opposed to negative group).

[15]This corresponds to the complement to one of the coefficient of the constant in column 1 in Table 4.

	Incumbent's Vote Share					
	(1)	(2)	(3)	(4)	(5)	(6)
Negative Campaign	0.078**	0.077**	0.078**			
	(0.03)	(0.03)	(0.03)			
Aggressive Campaign				0.135***	0.136***	0.133***
				(0.03)	(0.03)	(0.03)
Constant	0.462***	0.414***	0.293**	0.540***	0.554***	0.400***
	(0.02)	(0.08)	(0.10)	(0.02)	(0.08)	(0.10)
Baseline Treatment	Positive	Positive	Positive	Negative	Negative	Negative
Demographics		✓	✓		✓	✓
Preferences			✓			✓
Observations	946	946	946	983	983	983
R-Squared	0.006	0.012	0.026	0.019	0.022	0.047

Table 4: Survey Experiment, 2 Candidates, The Effect of Negative Campaigning on Vote Intentions. LPM estimates. SEs in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Demographics controls include Male, Age, High School Diploma, South Islands, Large Municipality (100k+) and Preferences controls include Risk Aversion, Cooperative, Competitive, Overconfidence, Public Good Contribution, Trusting, Liberal.

with experimental games.

These results show that voters evaluate negatively a politician who attacks another candidate—that is, that there is a backlash effect—and that this effect trumps any possible negative target effect, due to the negative information the message conveys. In elections with two candidates, a voter who is negatively impressed by the attacker has no choice but to express a preference for the target, even if she has learnt something new and unfavorable about the latter. To assess the existence of spillover effects on other candidates, we studied elections with three candidates. In the control treatment, in which all three candidates campaign positively, the vote share of the treated challenger is 29.4%. This drops to 17% when this challenger attacks the incumbent with a neutral tone and to 14.9% when he uses an aggressive tone. The main beneficiary of the change in preferences is the idle challenger, who is neither attacking nor receiving the attack. This candidate sees his vote share grow from 35.9% with positive campaign to 53% with negative and neutral campaign to 54.4% with negative and aggressive campaign. For both the treated challenger and the untreated challenger, the difference between the positive campaign and any type of negative campaign

is statistically significant, whereas the difference between the two type of negative campaigns is not. The incumbent vote share, on the other hand, is statistically indistinguishable across the three treatments.

To summarize, negative (as opposed to positive) campaigning produces a backlash effect, as it reduces the attacker's vote share. With two candidates, it increases the target's vote share. With three candidates, a spillover effect emerges, as the idle candidate vote share increases.[16]

Our survey experiment is designed to investigate the mechanism behind this sizeable treatment effects. In each treatment, we ask participants three sets of questions to solicit their perception of the treated challenger. We ask them whether they believe the candidate would be more likely to cooperate or compete with neighboring municipalities to win access to funds from the central government, what they believe his ideological position to be on a scale between 'left' and 'right,' and whether they think a city government led by him would be successful or not. In the two-candidate election, when the challenger adopts a negative message (pooling together neutral and aggressive tones), the belief that he is a cooperative type decreases of 5.4 percentage points, the belief that he will make a good mayor drops of around 16.2 percentage points, and the belief that he is ideologically extreme grows of 11.6

[16]As we have done in the field experiment, to accommodate for the fact that the outcome variables depend on each other and the error terms in the different regressions might be correlated, we also ran Seemingly Unrelated Regression (SUR) models. As the set of control variables is the same in all regressions, coefficients are unaffected and the OLS estimators are both consistent and efficient, but SUR allows us to perform additional tests. Error terms are indeed correlated as the Breusch-Pagan test of independence has a p-value of 0.001. However, confirming the results from Table 5, the effect of negative vs. positive campaigning is jointly different from (the p-values for the three spefications in columns 1, 2 and 3 are 0.001); while the effect of negative vs. aggressive campaign is not (the p-values for the three specifications in columns 4, 5 and 6 are, respectively, 0.6598, 0.6769, and 0.6691).

percentage points. As shown in Table 6, the differences between each pair of treatments are statistically significant, with the exception of the difference between positive and negative with neutral tone for the belief on the propensity to cooperate. In the election with three candidates, the treatment effects of going negative have similar magnitudes (see Table 7). However, in this case, it suffices to adopt a negative message with a neutral tone to be considered less cooperative. Delivering the negative message with an aggressive tone, as opposed to a neutral tone, does not depress further the belief that the attacker would be a good mayor.

To summarize these additional findings, negative (as opposed to positive) campaigning increases voters' beliefs that the attacker is competitive, rather than cooperative, that he would not be a good mayor, and that he is ideologically extreme. With two candidates, all treatment effects are stronger when the message is delivered with an aggressive tone. With three candidates, only the effect on the treated challenger's perceived ideology is stronger when the message is delivered with an aggressive tone.

	Panel A: Incumbent's Vote Share					
	(1)	(2)	(3)	(4)	(5)	(6)
Negative Campaign	-0.047	-0.047	-0.046			
	(0.03)	(0.03)	(0.03)			
Aggressive Campaign				0.007	0.008	0.010
				(0.03)	(0.03)	(0.03)
Constant	0.347***	0.246**	0.217*	0.300***	0.228**	0.209*
	(0.02)	(0.08)	(0.10)	(0.02)	(0.07)	(0.09)
Baseline Treatment	Positive	Positive	Positive	Negative	Negative	Negative
Demographics		✓	✓		✓	✓
Preferences			✓			✓
Observations	1010	1010	1010	1016	1016	1016
R-Squared	0.003	0.022	0.029	0.000	0.006	0.012

	Panel B: Treated Challenger Vote Share					
	(1)	(2)	(3)	(4)	(5)	(6)
Negative Campaign	-0.124***	-0.124***	-0.127***			
	(0.03)	(0.03)	(0.03)			
Aggressive Campaign				-0.021	-0.020	-0.020
				(0.02)	(0.02)	(0.02)
Constant	0.294***	0.345***	0.458***	0.170***	0.180**	0.265***
	(0.02)	(0.07)	(0.09)	(0.02)	(0.06)	(0.07)
Baseline Treatment	Positive	Positive	Positive	Negative	Negative	Negative
Demographics		✓	✓		✓	✓
Preferences			✓			✓
Observations	1010	1010	1010	1016	1016	1016
R-Squared	0.021	0.032	0.047	0.001	0.006	0.019

	Panel C: Untreated Challenger Vote Share					
	(1)	(2)	(3)	(4)	(5)	(6)
Negative Campaign	0.171***	0.171***	0.173***			
	(0.03)	(0.03)	(0.03)			
Aggressive Campaign				0.013	0.013	0.011
				(0.03)	(0.03)	(0.03)
Constant	0.359***	0.409***	0.326**	0.530***	0.593***	0.526***
	(0.02)	(0.08)	(0.10)	(0.02)	(0.08)	(0.10)
Baseline Treatment	Positive	Positive	Positive	Negative	Negative	Negative
Demographics		✓	✓		✓	✓
Preferences			✓			✓
Observations	1010	1010	1010	1016	1016	1016
R-Squared	0.029	0.032	0.038	0.000	0.001	0.005

Table 5: Survey Experiment, 3 Candidates, The Effect of Negative Campaigning on Vote Intentions. LPM estimates. SEs in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Demographics controls include Male, Age, High School Diploma, South Islands, Large Municipality (100k+) and Preferences controls include Risk Aversion, Cooperative, Competitive, Overconfidence, Public Good Contribution, Trusting, Liberal.

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Treated Challenger Cooperative					
Negative Campaign	-0.000	-0.004	-0.008			
	(0.03)	(0.03)	(0.03)			
Aggressive Campaign				-0.105***	-0.102**	-0.093**
				(0.03)	(0.03)	(0.03)
Constant	0.590***	0.723***	0.789***	0.590***	0.658***	0.720***
	(0.02)	(0.08)	(0.10)	(0.02)	(0.08)	(0.10)
Baseline Treatment	Positive	Positive	Positive	Negative	Negative	Negative
Demographics		✓	✓		✓	✓
Preferences			✓			✓
Observations	944	944	944	983	983	983
R-Squared	0.000	0.007	0.019	0.011	0.019	0.039

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel B: Treated Challenger Good Mayor					
Negative Campaign	-0.136***	-0.131***	-0.134***			
	(0.03)	(0.03)	(0.03)			
Aggressive Campaign				-0.050*	-0.051*	-0.048*
				(0.03)	(0.03)	(0.03)
Constant	0.400***	0.490***	0.643***	0.264***	0.226**	0.258**
	(0.02)	(0.08)	(0.09)	(0.02)	(0.07)	(0.09)
Baseline Treatment	Positive	Positive	Positive	Negative	Negative	Negative
Demographics		✓	✓		✓	✓
Preferences			✓			✓
Observations	946	946	946	983	983	983
R-Squared	0.021	0.038	0.053	0.003	0.005	0.019

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel C: Treated Challenger Extreme					
Negative Campaign	0.085***	0.086***	0.085***			
	(0.02)	(0.02)	(0.02)			
Aggressive Campaign				0.059**	0.060**	0.059**
				(0.03)	(0.03)	(0.03)
Constant	0.113***	0.101*	0.181**	0.199***	0.202***	0.180**
	(0.02)	(0.06)	(0.07)	(0.02)	(0.07)	(0.09)
Baseline Treatment	Positive	Positive	Positive	Negative	Negative	Negative
Demographics		✓	✓		✓	✓
Preferences			✓			✓
Observations	946	946	946	983	983	983
R-Squared	0.014	0.015	0.034	0.005	0.006	0.012

Table 6: Survey Experiment, 2 Candidates, The Effect of Negative Campaigning on Voters' Perception of Treated Challenger. LPM estimates. SEs in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Demographics controls include Male, Age, High School Diploma, South Islands, Large Municipality (100k+) and Preferences controls include Risk Aversion, Cooperative, Competitive, Overconfidence, Public Good Contribution, Trusting, Liberal.

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Treated Challenger Cooperative					
Negative Campaign	-0.089***	-0.088***	-0.091***			
	(0.03)	(0.03)	(0.03)			
Aggressive Campaign				-0.027	-0.030	-0.031
				(0.03)	(0.03)	(0.03)
Constant	0.562***	0.529***	0.574***	0.472***	0.535***	0.627***
	(0.02)	(0.08)	(0.10)	(0.02)	(0.08)	(0.10)
Baseline Treatment	Positive	Positive	Positive	Negative	Negative	Negative
Demographics		✓	✓		✓	✓
Preferences			✓			✓
Observations	1010	1010	1010	1016	1016	1016
R-Squared	0.008	0.012	0.017	0.001	0.008	0.019

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel B: Treated Challenger Good Mayor					
Negative Campaign	-0.150***	-0.151***	-0.153***			
	(0.03)	(0.03)	(0.03)			
Aggressive Campaign				0.012	0.012	0.013
				(0.03)	(0.03)	(0.03)
Constant	0.341***	0.305***	0.455***	0.192***	0.225***	0.350***
	(0.02)	(0.07)	(0.09)	(0.02)	(0.06)	(0.08)
Baseline Treatment	Positive	Positive	Positive	Negative	Negative	Negative
Demographics		✓	✓		✓	✓
Preferences			✓			✓
Observations	1010	1010	1010	1016	1016	1016
R-Squared	0.029	0.035	0.049	0.000	0.004	0.015

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel C: Treated Challenger Extreme					
Negative Campaign	0.114***	0.114***	0.115***			
	(0.02)	(0.02)	(0.02)			
Aggressive Campaign				0.049*	0.048*	0.046*
				(0.03)	(0.03)	(0.03)
Constant	0.093***	0.215***	0.186**	0.208***	0.219***	0.193**
	(0.02)	(0.06)	(0.07)	(0.02)	(0.07)	(0.08)
Baseline Treatment	Positive	Positive	Positive	Negative	Negative	Negative
Demographics		✓	✓		✓	✓
Preferences			✓			✓
Observations	1010	1010	1010	1016	1016	1016
R-Squared	0.026	0.036	0.041	0.003	0.006	0.013

Table 7: Survey Experiment, 3 Candidates, The Effect of Negative Campaigning on Voters' Perception of Treated Challenger. LPM estimates. SEs in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Demographics controls include Male, Age, High School Diploma, South Islands, Large Municipality (100k+) and Preferences controls include Risk Aversion, Cooperative, Competitive, Overconfidence, Public Good Contribution, Trusting, Liberal.

5 Conclusion

The use of negative advertising in electoral campaigns is puzzling. Some people have a visceral reaction to ads attacking political opponents. Many argue that negativity is bad for democracy, because it pushes people away from the voting booths. Even political scientists provide little empirical evidence to endorse its effectiveness, since, besides harming the targeted politician, negative ads may have a backlash effect on the attacker. And yet, going negative remains popular among political strategists. The use of negative ads in US elections has however changed since the "Citizens United v. Federal Election Commission" Supreme Court decision in 2010, which abolished restrictions on campaign advertising by outside groups. Candidates are leaving to independent groups the task of attacking their opponents. Two possible justifications have been put forward for this novel strategy: attacks by independents are more credible to voters or they produce less backlash effects for the candidate.

Our paper studies the effect of using negative (vs. positive) campaigning in elections with more than two candidates. In an electoral race with multiple candidates, attacking an opponent may create a backlash effect on the attacker and a positive spillover for other candidates, who refrained from going negative. To test this hypothesis, we ran a large scale field experiment during an electoral campaign for mayor in Italy and a survey experiment in a fictitious electoral campaign for mayor. In our field experiment, we randomized negative vs. positive canvassing at the precinct level and found a strong, positive spillover effect on the idle candidate. In the survey experiment, we created a controlled environment, with no ideological components and no incentives for strategic voting. Results from this experiment confirm the existence of a strong, positive spillover effect and of a sizable backlash effect, which goes against the attacker. Our empirical evidence is robust across different environment (midsize Italian city and fictitious town), methodology (field and survey), and campaigning instruments (canvassing and video ads). With more than two candidates, negative campaigning of one candidate against another creates a positive spillover effect in favor

of the idle candidate (i.e., neither the target nor the attacker).

Our findings also imply that in multi-candidate campaigns there is room for collusion among politicians, as one of them may negatively target a rival by favoring another (idle) candidate, who may then reward the attacker with some side payment (e.g., offering him the vice presidency in a presidential election) after winning the race. This collusive strategy, however, is hard to enforce and faces serious commitment problems. On the contrary, the strategy of having independent groups running the negative ads is less costly, as long as those groups are not fully identified with the true attacker, re-creating a backlash effect. From this perspective, our experimental evidence helps to explain why the strategy of having Super PACs attack rivals has gained momentum in recent U.S. electoral campaigns.

Our results have important implications also for multi-party systems. Indeed, our field experiment was run in a multi-party environment, in which each of the three main candidates belonged to a different party. Our findings suggest that in multi-party systems negative campaigning should be less popular, since every party (or candidate) has an incentive to refrain from attacking other candidate (most likely the incumbent) and to free-ride on negative campaigning done by other parties.

References

Ansolabehere, S. and S. Iyengar (1995). *Going Negative: How Attack Ads Shrink and Polarize the Electorate*. Free Press.

Ansolabehere, S., S. Iyengar, A. Simon, and N. Valentino (1994). "Does Attack Advertising Demobilize the Electorate?" *The American Political Science Review* 88.4, pp. 829–838.

Arceneaux, K. and D. W. Nickerson (2010). "Comparing Negative and Positive Campaign Messages: Evidence From Two Field Experiments". *American Politics Research* 38.1, pp. 54–83.

Barton, J., M. Castillo, and R. Petrie (2014). "What Persuades Voters? A Field Experiment on Political Campaigning". *The Economic Journal* 124.574, F293–F326.

Bhatti, Y., J. O. Dahlgaard, J. H. Hansen, and K. M. Hansen (2019). "Is Door-to-Door Canvassing Effective in Europe? Evidence from a Meta-study across Six European Countries". *British Journal of Political Science* 49.1, pp. 279–290.

Braconnier, C., J.-Y. Dormagen, and V. Pons (2017). "Voter Registration Costs and Disenfranchisement: Experimental Evidence from France". *American Political Science Review* 111.3, pp. 584–604.

Brooks, D. J. and J. G. Geer (2007). "Beyond Negativity: The Effects of Incivility on the Electorate". *American Journal of Political Science* 51.1, pp. 1–16.

Brooks, D. J. and M. Murov (2012). "Assessing Accountability in a Post-Citizens United Era: The Effects of Attack Ad Sponsorship by Unknown Independent Groups". *American Politics Research* 40.3, pp. 383–418.

Cantoni, E. and V. Pons (2016). "Do Interactions with Candidates Increase Voter Support and Participation? Experimental Evidence from Italy". *HBS Working Paper 16-080*.

Clinton, J. D. and J. S. Lapinski (2004). ""Targeted" Advertising and Voter Turnout: An Experimental Study of the 2000 Presidential Election". *Journal of Politics* 66.1, pp. 69–96.

Dewan, T., M. Humphreys, and D. Rubenson (2014). "The Elements of Political Persuasion: Content, Charisma and Cue". *The Economic Journal* 124.574, F257–F292.

Dowling, C. M. and A. Wichowsky (2015). "Attacks without Consequence? Candidates, Parties, Groups, and the Changing Face of Negative Advertising". *American Journal of Political Science* 59.1, pp. 19–36.

Eckel, C. C. and P. J. Grossman (2002). "Sex Differences and Statistical Stereotyping in Attitudes toward Financial Risk". *Evolution and Human Behavior* 23.4, pp. 281–295.

Finkel, S. E. and J. G. Geer (1998). "A Spot Check: Casting Doubt on the Demobilizing Effect of Attack Advertising". *American Journal of Political Science* 42.2, pp. 573–595.

Freedman, P. and K. Goldstein (1999). "Measuring Media Exposure and the Effects of Negative Campaign Ads". *American Journal of Political Science* 43.4, pp. 1189–1208.

— (2002). "Campaign Advertising and Voter Turnout: New Evidence for a Stimulation Effect". *Journal of Politics* 64.3, pp. 721–740.

Gandhi, A., D. Iorio, and C. Urban (2015). "Negative Advertising and Political Competition". *The Journal of Law, Economics, and Organization* 32.3, pp. 433–477.

Geer, J. G. and J. H. Geer (2003). "Remembering Attack Ads: An Experimental Investigation of Radio". *Political Behavior* 25.1, pp. 69–95.

Gerber, A. S. and D. P. Green (2000). "The Effects of Canvassing, Telephone Calls, and Direct Mail on Voter Turnout: A Field Experiment". *American Political Science Review* 94.3, pp. 653–663.

— (2004). *Get Out the Vote: How to Increase Voter Turnout*. 1st ed. Brookings Institution Press.

Gerber, A. S., D. P. Green, and R. Shachar (2003). "Voting May Be Habit-Forming: Evidence from a Randomized Field Experiment". *American Journal of Political Science* 47.3, pp. 540–550.

Gerber, A. S., G. A. Huber, D. Doherty, and C. M. Dowling (2011). "The Big Five Personality Traits in the Political Arena". *Annual Review of Political Science* 14.1, pp. 265–287.

Hes, S. (2017). "Randomization inference with Stata: A guide and software". *The Stata Journal* 17.3, pp. 630–651.

Isaac, R. M. and J. M. Walker (1988). "Group Size Effects in Public Goods Provision: The Voluntary Contributions Mechanism". *The Quarterly Journal of Economics* 103.1, pp. 179–199.

Kahn, K. F. and P. J. Kenney (1999). "Do Negative Campaigns Mobilize or Suppress Turnout? Clarifying the Relationship between Negativity and Participation". *The American Political Science Review* 93.4, pp. 877–889.

Kendall, C., T. Nannicini, and F. Trebbi (2015). "How Do Voters Respond to Information? Evidence from a Randomized Campaign". *American Economic Review* 105.1, pp. 322–53.

Konrad, K. (2000). "Sabotage in rent-seeking contests". *The Journal of Law, Economics, and Organization* 16.1, pp. 155–165.

Lau, R. R., L. Sigelman, and I. B. Rovner (2007). "The Effects of Negative Political Campaigns: A Meta-Analytic Reassessment". *Journal of Politics* 69.4, pp. 1176–1209.

Nickerson, D. W. (2008). "Is Voting Contagious? Evidence from Two Field Experiments". *American Political Science Review* 102.1, pp. 49–57.

Niederle, M. and L. Vesterlund (2007). "Do Women Shy Away From Competition? Do Men Compete Too Much?" *The Quarterly Journal of Economics* 122.3, pp. 1067–1101.

Peterson, D. A. M. and P. A. Djupe (2005). "When Primary Campaigns Go Negative: The Determinants of Campaign Negativity". *Political Research Quarterly* 58.1, pp. 45–54.

Pons, V. (2018). "Will a Five-Minute Discussion Change Your Mind? A Countrywide Experiment on Voter Choice in France". *American Economic Review* 108.6, pp. 1322–63.

Pons, V. and G. Liegey (2018). "Increasing the Electoral Participation of Immigrants: Experimental Evidence from France". *The Economic Journal* 129.617, pp. 481–508.

Wattenberg, M. P. and C. L. Brians (1999). "Negative Campaign Advertising: Demobilizer or Mobilizer?" *The American Political Science Review* 93.4, pp. 891–899.